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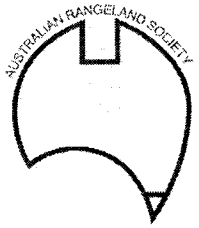

The Australian Rangeland Society

NATIONAL OVERVIEW

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THE PASTORAL INDUSTRY TODAY

The pastoral industry was established in the early years of European settlement. It was pushed back into the semi arid areas of the continent as the better watered areas were developed for cropping or mixed crop/livestock farming.

The current size of the industry is reflected in Table 1 which is obtained from the most recent survey of the Australian grazing industry by the Australian Bureau of Agricultural and Resource Economics (ABARE). The statistics show a total cash return for the pastoral section of 1.29 billion dollars. They divide this return between States in the following way:

Table 1.

	Millions $
Queensland	661
New South Wales	260
South Australia	120
Western Australia	154
Northern Territory	96

The survey also shows a total level of investment of $6.3 billion of which $4.0 billion is in land and fixed improvements.

There are approximately 4,000 pastoral properties in Australia with probably 30,000 people directly dependent on the industry. However, with the development of extensive Government administrative involvement in non pastoral activities, and the growth of tourism there are very few towns which are dependent on the industry for their survival. Nevertheless it continues to be an important part of the economy in much of the drier areas of Australia.

The arid or semi-arid areas occupy 70% of the Australian continent. About two thirds of this area is used for grazing and it carries 20-25% of the cattle and 10-15% of the sheep in Australia.

The vegetation of these areas occurred in stable but fragile ecosystems at the time of European settlement. The soils of the semi-arid and arid zones vary across the spectrum of low fertility sands; sandy loams or loams over clay, loam clay subsoils, to deep fertile, often selfmulching loams and clay loams. Unfortunately the predominant soils are of poorer quality and susceptible to degradation.

It was into this unknown environment that the grazing industry was pushed, or ventured. There were no useful rainfall records. They are still very rudimentary for such a variable climate. There was no knowledge of how to manage the shrub and grassland pastures. As a result there was extensive over grazing and degradation of the land and vegetation resources.

The magnitude of the soil and vegetation degradation problem of the industry is reflected in Table 2. Table 2 is produced from the report on "A Basis for Soil Conservation Policy in Australia" published in 1978 but reflecting 1975 assessments. In a 1989 report "Land Conservation in Australia - a 200 year Stocktake", the authors express the view that this data will still be largely accurate. The figures on costs have been scaled up to 1990 dollar values according to the index of prices paid by farmers.

These reviews summarize the degradation in the following way:

- 45% of the 3.3m square kilometres used for pastoral activity required no treatment;
- 28% was affected by vegetation degradation but little erosion;
- 14% by vegetation degradation and some erosion;
- 8.5% by vegetation degradation and substantial erosion;
- and 4.5% by vegetation degradation and severe erosion.

This damage can be compared with other land uses in higher rainfall areas. In the area used for intensive cropping in Australia 63% required treatment, and that used for extensive cropping 68% required treatment.

The major difference between the semi arid and wetter more intensive areas is the vast areas involved in the semi-arid regions, the low productivity of those areas and the extent to which productivity has been reduced since settlement. In the cultivated areas the areas are smaller, productivity is much higher and has been dramatically increased since settlement despite problems of loss of soil structure, developing acidity, dry land salinity and wind and water erosion.

The total area affected in the pastoral areas by some degradation of the vegetation is 1819 thousand square kilometres or 23% of the continent. Nine hundred thousand square kilometres or 11.6% of the continent is affected by both vegetation degradation and some soil erosion and 432 square kilometres or 5.6% by vegetation degradation and substantial or severe soil erosion.

Derived from the Australian Grazing Industry Survey

	QLD	NSW	SA	WA	NT	Total
Area utilized[1] (000's sq km)	1,217	188	371	690	953	3,419
Cattle (000's)	3,034	149	257	872	1,361	5,675
Sheep (000's)	9,559	7,030	2,490	2,450	-	21,532
Wool (m kg)	39	38	14	9	-	101
Sheep sold (000's)	1,709	136	673	279	-	4,026
Beef sold (000's)	792	38	78	268	236	1,414
Income						
Total cash return ($'m)	661	260	120	154	96	1,291
Capital Resources Invested						
Land and fixed improvements[2] ($m)	2,531	673	424	181	188	3,998
Total ($m)	3,707	946	609	604	449	6,315
Area Utilized ('000 sq km)[3]	840[4]	335	441	1,114	626[4]	

(1) This area is different from that used in the text which was derived from the report "A Basis for Soil Conservation Policy in Australia".

(2) Improvements include buildings, fences, yards, water supply.

(3) Area given in the report "A Basis for Soil Conservation Policy in Australia".

(4) Area given for non arid grazing is 752,000 sq km for Queensland and 180,000 sq km for Northern Territory.

Table 2.

Form of Degradation and Construction
Costs of Necessary Works in Arid Zone

For Australia	Land used for grazing June 1975 estimates		Construction costs of works needed in 1990	
	000 km^2	(%)	$m	(%)
Area in use	3,356	-	-	-
Area not requiring treatment	1,506	45	-	-
Vegetation degradation and little erosion	950	28	38	15
Vegetation degradation and some erosion	467	14	96	38
Vegetation degradation and substantial erosion	284	8.5	80	32
Vegetation degradation and severe erosion	148	4.4	38	15
Total treatment needs (areas and costs)	1,850		252	100

By State Total Construction Costs* ($m)

	NSW	Q'LAND	SA	WA	NT	Total
1990 $m	77	33	69	35	36	250

* Obtained by Indexing upwards the 1975 Figures by the index of prices paid by Farmers from 1975 to 1990.

This high level of loss raises the issue of sustainability and even of desertification. Total degradation of rangeland can be seen in the Middle East. Management must now be directed to stabilizing or reversing the current situation before it reaches a comparable state.

THE IMPACT OF PASTORAL LAND DEGRADATION

Degradation of pastoral resources may be viewed in two ways. There are the losses of production and income due to pastoral decline affecting principally those who derive their income from the industry and secondly the losses reflected in the decline of the natural pasture resource which have to be borne by all Australians and particularly by those not yet born.

FALL IN PRODUCTIVITY SINCE SETTLEMENT

There is some statistical, some research and much anecdotal evidence relating to the reduction in productivity since settlement.

In Western Australia the Central and Pilbara pastoral districts carried 4.37 million sheep and 109,000 cattle in 1930. These stock numbers fell dramatically following the 1930-34 drought and the land has never been capable of carrying those stocking rates since, despite improvements in the infrastructure. Estimates made during capability/land degradation surveys by the Department of Agriculture of stock currently carried compared to the carrying capacity of the areas in a non-degraded condition indicates that the current carrying capacity for:

- the West Kimberleys is only 47% of the non-degraded condition;
- the Ashburton Catchment is only 69% of the non-degraded condition;
- the Gascoyne Basin is only 74% of the non-degraded condition.

These estimates were not constrained by consideration of infrastructure but represent the residual carrying capacity.

Similar evidence is available from western New South Wales. In the Western Division stock numbers peaked at 15.5m sheep equivalents in 1887 before plummeting to 5 million in 1902. The NSW Soil Conservation Service estimates that the area would now carry about 8 million on a sustainable basis.

Lack of data prevents an assessment being made of the losses of production in dollar terms. It is reasonable, however, to assume that productivity losses are of the order of one billion dollars annually.

CHANGE IN PASTURE SPECIES

The fall in carrying capacity can be linked to the decline in the quality of the pastoral resource in which desirable perennial species have been replaced by annuals or by the invasion by less desirable woody weeds. The evidence was reported quite early in the history of settlement. In 1901 the Royal Commission of Enquiry in the Western District of NSW was advised by the Stock Inspector from Cobar that prior to stocking the country was covered with a heavy growth of natural grasses, the soil was soft, spongy and very absorbent and growth came quickly after even limited rain, but that in 1891 despite heavy rain there was no growth. This was probably the combined effect of loss of species, soil compaction and grazing pressure.

An important change in the cracking clays of the Riverine Plain in NSW is the loss of perennial saltbush Atriplex vesicaria. This is an important example of the more general problem of replacement of the shrubs and perennial grasses with annual Stipa and Aristida species.

The extensive invasions of pastures with woody weeds in Western NSW and Queensland is a product of poor and changed management. Losses of productivity of up to 20% have occurred because of this. These invasions are by native and exotic inedible shrubs and the potential extent and degree of shrub invasion on sandy soils is described as alarming.

This same trend has occurred across the whole pastoral zone with perennials being replaced by annuals or by worthless woody weeds, aggravating the already difficult climatic conditions and making the pastoral enterprise much more prone to drought, and more difficult to manage.

It is questionable whether a viable pastoral industry not dependent on periodic Government assistance can continue in areas where perennials have been lost and cannot be regenerated. Annuals are just unsuited to providing continued feed supplies in areas where drought is a feature of the environment.

THE CAUSES OF DECLINE

In the fragile ecosystem of the pastoral areas soil and vegetation will always be under pressure from grazing by both domestic and native animals wherever the basic structural conditions are changed.

With settlement the integrity of the resources was disturbed in a number of ways, each quite markedly different, having significant individual effects and substantial effects in combination. The introduction of permanent water supplies has been the major structural environmental change imposed on the semi arid areas. This has allowed both grazing stock (which were the other major changes to be introduced) and native animals to stay in the area even after drought has set in.

Under natural conditions grazing animals would have fled in the face of developing drought or would have perished, so reducing the impact of climatic variation.

It is important to emphasize that in the early days of settlement ignorance of both the climate and how to manage the pastures explained much of the pastoral decline. Those reasons for imposing damaging pressure on the systems are no longer valid.

Other major problems were caused by errors of human judgement. Two examples are:

- the introduction of rabbits and their development into plague proportions; causing immense damage in many semi arid areas;

- Government decisions that closer settlement was necessary, resulting in the cutting up of big runs to give ownership to more settlers;
  in doing this the administrators did not realize they were committing many people to penuary and the land to progressive degradation as owners tried to increase income through increased stock numbers, often with disastrous financial results and always with heavy costs of soil and vegetation degradation.

At the less visible level Governments through their management of the micro and macro economy impose costs on export industries which cause increased economic pressure and so degradation on a fragile environment.

Poorly developed infrastructure has also been a continuing problem in the industry. Concentration at water holes was discussed earlier in the conference. Failure or inability to develop sufficient infrastructure clearly has had long term implications across the industry.

DEGRADATION IN COMPARISON TO OTHER AREAS

It is instructive to compare the land degradation in the pastoral areas with other areas because degradation of the land and vegetation has not been unique to the pastoral areas. One of the better researched areas has been the Murray-Darling Basin. Covering an area of more than 1 million square kilometres (one seventh of Australia), it occupies 83% of New South Wales, 17% of Queensland, 50% of Victoria and 7% of South Australia. It produces about 35% of Austalia's agricultural and pastoral production. Production from the Basin was valued at around $10b of natural resource products in 1987/88, or about eight times more than the total pastoral industry.

A study in the Basin estimated that the losses in crop production due to land degradation was $215m annually in 1986/87. The major components were: soil structure decline $145m, shallow watertables caused by irrigation $39m and soil acidity $28m. Water and wind erosion although affecting large areas and being irreversible were estimated to only reduce production by $5m.

The total effect of losses through shallow watertables and salinity of the water supplies amounts to $100m to agriculture and rural and urban water users, a cost estimated to rise to $150m annually by the year 2015.

A large part of the land degradation of the Basin is however reversible through management. The limitation will be cost in the case of drainage of waterlogged areas or the need to lime some of the areas affected by acidity.

Rangelands in contrast are not favoured by the comparatively equitable rainfall patterns of the Basin. It will be much more difficult to reverse the damage where vegetation is badly degraded and soil damaged. This will be particularly so on areas which are scalded or the surface soil has been washed or blown away. One paper suggests a cost of $45-55 per hectare for works on a scalded area. It is difficult to conceive the feasibility of this approach for individual leaseholders where the gross return is generally less than $5 per hectare. Equally, areas which are dominated by unpalatable shrubs may prove impossible to regenerate. Individual decisions will have to be made on each case.

If it is assumed that cultural treatments or other costly treatments (in the pastoral sense) approaches to land reclamation are not economically feasible the question is what alternative methods are available to pastoralists.

It is unlikely that Government assistance in terms of grants or financial support will have a significant impact on the pastoral reclamation costs. Out of a total National Soil Conservation Program (NSCP) budget over 10 years of $350 million it is reasonable to assume that perhaps 10% may be allocated to pastoral rehabilitation. Table 2 shows that there is a need to spend $250 million. A shortfall of at least $200 million remains. Pastoralists do not generally have this amount of surplus to devote to land reclamation.

The 12.9% of pastoral area which is affected by substantial or severe erosion, together with vegetation degradation amounts to 432 000 square kms or 43.2 million hectares. This is approximately 2.5 times the total areas sown to industrial crops, grains and oilseeds in 1988/89 in Australia. It is inconceivable that the pastoral industry with total cash receipts of $1.29 billion can address, or should consider addressing such a massive problem. This does not mean that none of these areas warrant attention. That is for the individual. It does, however, indicate that research and investigation should focus on management to maintain or regenerate existing areas where erosion and massive soil loss is not a severe problem.

The important thing in the rangeland will be to preserve and by careful management improve the remaining productivity of the leases. Through careful management it is possible to replace money with time. This will require careful planning and continued professional advice.

If progress is to be made it must be on the basis of individual pastoralists accepting conservative management of their leases as a must and not an option. This requires the long term annual and daily program to be planned with tomorrow, next month, next year and beyond clearly in focus. This will also mean being sensitive to the opportunatives provided by unusual climatic conditions; taking advantage for instance of unexpected or unusual weather conditions to protect areas where desirable perennial species have germinated and being prepared to protect those seedlings until they can establish and survive. A pastoralist can only afford to seed especially valuable or small areas of land and grasping such unique opportunities will be essential.

Prolonged drought will always remain a threat to careful management. Possibly Government should be encouraged to assist in transporting stock in and out of pastoral areas at concessional rates where a pastoralist who is managing in accordance with an approved plan is hit by a drought which will put the program at risk at a time when he cannot otherwise afford to move his stock.

OTHER PRESSURES ON THE PASTORAL AREA

To date the general community has not turned its attention to the rangeland areas. It is not aware of the extensive degradation. It is doubtful if the untrained observer could identify degraded from undegraded land in either a good year or a drought except in severe cases. The media could however, always focus that attention.

So far community attitudes have been supportive of landcare and like programs. There has been a massive shift in attitude over the past decade. While currently supportive it would be difficult to manage a community asking for explanations for the large areas of degradation or for evidence that the trend has been halted.

The committed pastoralist who can explain to the public his long term program and show them the results will be the best advertisement for the industry and will be acting in his own best interests.

THE ROLE OF LEGISLATION

Legislation has always been available to control pastoralists' activities. Historically the Western Australian legislation was effective for requiring development and to control any clearing. It failed, however, to control management because the penalties were so draconian that they were politically unenforceable.

Implementation of even a reasonable level of infrastructure development was often affected by political considerations.

I am advised that new South Australian legislation will aim to require pastoralists to participate in monitoring of range condition as a requirement for continuation of their

leasehold. While this is good it would be better to require approved management plans coupled to monitoring and evidence that the plan is being implemented. Penalties could be provided, preferably as variable fines or increased rents. Threat of termination of the lease has not been effective historically. Legislation and regulation should, however, be seen as a last resort, not as a preferred course of action.

THE ROLE OF COMMUNITY GROUPS

In the agricultural areas of Australia there has been a great emphasis on the community farming groups to manage natural resources on a catchment or district basis. With smallish property sizes this is essential if the whole catchment is to be treated as a single unit. These groups are known as Land Care groups under the National Program. The same approach is the centre of the Murray Darling Basin Natural Resource Management Strategy. In that case the groups are called Communities of Common Concern (CCCs) and are expected to address all natural resource management issues within their area of interest.

The thrust of these groups is to achieve commitment through involvement in identifying the issues, in planning the solution and implementing that solution. In the major planning programs to manage degradation issues in Northern Victoria the senior coordinating committee has direct access to a Cabinet Sub Committee with the subordinate groups reporting to the senior coordinating committee. Government agencies service the committees and respond to their requests for information or research. In brief, the community group is in control and the agencies respond through servicing that group. The smaller committees operate in the same way in principle, but are not quite so high profile nor do they have the same ready access at semi political level.

The question is how does this process relate to the pastoral industry and management of rangelands. The process achieves an understanding of the issues, agreement on the nature of the problems, agreement on the approach and plans for management. In addition it provides both a focus for peer pressure and an opportunity for the group to fund the employment of a professional adviser or facilitator. In the longer term a strong group can also support the use of legislation where an unco-operative land user is threatening an otherwise successful program.

Another option would be to decide that the areas in Western Australia at least are big enough to be appropriately managed by the individual pastoralists. I doubt however, if this would be successful. To be successful regeneration has to address a complex of issues over a long term. While the "catchment" component is not so important as in more humid areas it will be important to feel part of a group and so obtain the psychological support, the information flow, the opportunity to share successes and to discuss failure which is provided through being part of an overall group planning process.

Land Care Committees have been established in the pastoral areas of Western Australia. They have as yet accepted no specific functions/or responsibility for landcare. They provide an existing structure able to assume such resposibility by their own initiative or under the influence of wider public pressure. In that way they can draw on or accept some of the responsibilities of diminishing Government regulatory services as Governments could never carry through the task on their own anyway.

CONCLUDING REMARKS

Historically it would have been hard to imagine Australia without a pastoral industry, even though it is not a major part of the economy today. It is however, relatively important in relation to its size as an export earner.

The future will depend heavily on its capacity to achieve sufficient productivity to remain viable at the same time as managing the native pastures in a sustainable and productive manner. There is almost certainly areas where the country is less productive naturally, pastures have been degraded and it is not possible to retain the necessary productive capacity which will result in either amalgamations or withdrawal of land from production. Nevertheless the heart of the industry should be retained.

Effort however, must be focussed on achieving the best results from available resources. Enterprise margins and funds available for discretionary expenditure on regeneration or repair of degraded areas are not great.

The question may be posed whether the Government will subsidize this type of work. I would not expect his to happen. There will be high value and special purpose areas such as the Ord River Catchment where the Government decides there is a special case to regenerate. But in most areas I do not believe the Government will assist in regenerating pastoral areas.

In a highly competitive situation for resources those resources are going to be attracted to more productive areas - the Murray-Darling Basin irrigation areas; the wheatbelt of Western Australia, New South Wales and South Australia, Victoria or Queensland. Even in an area like the Murray irrigation areas, funds will flow preferentially to the most productive less saline catchments and subcatchments.

I have said earlier that sound management is the only way to go, using a long recovery time as a replacement for heavy up front expenditure on rehabilitation works.

In addition the regeneration of many areas, particularly in Eastern Australia will require considerable restructuring. Property sizes are just too small as a result of previous closer settlement policies. This will be costly and disruptive but unless it is done, excessive grazing pressure will be maintained on the pastoral areas ensuring further degradation of the base resource.

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