BULLETIN 5

GRAZING

ON CROWN LAND

DEPARTMENT OF CROWN LANDS AND SURVEY

DEPARTMENT OF CROWN LANDS AND SURVEY

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STATE PUBLIC OFFICES

2 TREASURY PLACE

MELBOURNE VICTORIA 3002

BULLETIN 5

GRAZING

ON CROWN LAND

Issued as a review of the history and effects of grazing native vegetation on Crown land.

Assistance from Dr. R. G. Groves, Division of Plant Industry, C.S.I.R.O., Canberra, who helped in refereeing this material is gratefully acknowledged.

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October 1977

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INTRODUCTION

The leasing and licensing of Crown land for grazing has been one of the prominent functions of the Department of Crown Lands and Survey since it was established in 1855. Grazing tenures have played an integral role in settling the State and even today form a colourful part of country life—particularly in the alpine country and the Mallee. However, the grazing of public land has declined in significance, partly because the best potential farmlands with the most fertile soils have been alienated and also because of the great advances made this century in pasture improvement. Concurrently, the community has come to appreciate more the recreational and natural resource values of Crown land and to demand that greater attention be paid to protecting and developing these features than has previously been thought necessary. It is now departmental policy to manage Crown land carefully to prevent impairing its capability for future uses.

The management of Crown land will make an increasingly important contribution to employment and expenditure in rural districts as time goes on. Indeed, the Department is now in the process of decentralizing its operations to the Land Offices in order to bring its administration of Crown land closer to the people involved. Among other things, licensees can now obtain and renew their licences at the local Land Office.

This Bulletin has been compiled *as an aid to those involved in managing Crown land*—for officers of this and other departments, committees of management, licensees or lessees, adjoining landowners and any others. The technical content should be found sufficiently clear to be understood by the practical farmer and interested layman.

The Bulletin *deals with grazing by introduced "stock"* (including sheep, cattle, horses, goats—and depending on the context, rabbits) *on natural vegetation* or on Crown land carrying a substantial remnant of natural vegetation. The word "grazing" here includes browsing of trees and shrubs as well as grazing of herbs and grasses.

It applies to grazing on public land in all corners of the State, and to Crown land of a very wide range of designations. It must of necessity be somewhat general. Decisions on the best use and management of particular parcels of land can only be made on the merits of each case. *This Bulletin will have been misused if it is interpreted as departmental policy applying to every hectare of Crown land.*

Readers who wish to discuss management of any particular parcel of Crown land or who seek clarification of the material in this Bulletin are invited to contact the local departmental officer in their district.

C. E. MIDDLETON,
Secretary for Lands.

Sparse Poa (Tussock Grass) unimproved native pastures like this one in the north-east have in many places been grazed for more than a century. Nowadays most pastoral production comes from intensively managed freehold land.

HISTORY OF GRAZING IN VICTORIA

When settlement of Victoria began in the late 1820s and early 1830s, conditions were ideal for the beginning of a pastoral industry. The unimproved native vegetation of the extensive foothills, plains and river flats was favourable for stock feed, so that by 1860 most of Victoria was subjected to grazing. The Sunset Country, the Big Desert and the Little Desert were grazed periodically around the 1860s, and the alpine country was grazed from about 1856 onwards.

The only parts of the State which were not grazed were the steep, densely forested remote sections of eastern Victoria and the Central Highlands.

The mature forests of River Red Gum and Yellow Gum which covered a considerable portion of Victoria were admirably suited to grazing. Sheep can thrive in a variety of climates on a wide range of vegetation; they supplied fresh meat which was an immediate local requirement and they provided skins and wool which had export value as well. It would appear that the only real difficulties lay in retrieving them and protecting them from the attacks of wild dogs. Use of shepherds was one answer to these problems.

Grazing by cattle followed a similar pattern of expansion except that cattle, by comparison with sheep, do not feed as readily on native Mallee vegetation.

The Mallee has a history of settlement by pastoralists who took up very large holdings with extremely low carrying capacities, of the order of one sheep to twelve hectares. There had been a trend towards leasing large tracts of Crown land rather than investing capital in buying freehold land.

Fencing and fire were more or less the only forms of management applied to grazed Crown land. Graziers periodically burnt the vegetation to render it more palatable to stock.

As more and more land was alienated into private ownership, farmers concentrated on developing their own properties to allow intensive stocking rather than depend upon the forage on large areas of Crown land held under short-term tenure. Gradually pastures on freehold land were improved by adding superphosphate and other fertilizers, and by introducing more palatable, higher yielding grasses and clovers from overseas.

Crown land declined in importance for grazing and today it supports a very low percentage of the State's sheep and cattle numbers, even though the area occupied under leases and licences remains large.

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LEGISLATION AND ADMINISTRATION

The term " public land " has a specific meaning under the *Land Conservation Act* 1970, but it is also tending to be more increasingly used as collectively referring to all government owned or controlled land, whether ordinary unalienated land of the Crown, freehold land the title to which is held in the name of a statutory authority, or land which is either vested in or controlled by a statutory authority pursuant to specific legislation—e.g. Reserved Forest.

In regard to Reserved Forest, any grazing is under the control of the Forests Commission, and may be either by the issue of individual grazing licences or by the taking in of stock for agistment on the basis of a fee in respect of each beast. The agistment method is currently in use for Barmah Forest and other areas along the River Murray, also for some alpine country near Mansfield and for portions of the Grampians.

Public land either owned or controlled by other statutory authorities may be dealt with in various ways according to the future role of the land. Examples of such arrangements would include tenures granted by the Rural Finance and Settlement Commission, the State Electricity Commission and similar bodies.

Grazing on unalienated Crown land is provided for in a number of different sections of the *Land Act* 1958 which is administered by the Department of Crown Lands and Survey. The main tenures in this regard are mentioned in the following section.

Grazing Licence (Section 130)

This is the normal authority for grazing on ordinary Crown land. The licence is usually for a term of twelve months expiring on 30 September in each year, but annual renewals are offered unless there are reports or other evidence indicating otherwise. The licence does not authorize cultivation, although the Minister may authorize this where certified to be necessary to deal with vermin or noxious weeds. Control of vermin and noxious weeds is the responsibility of the licensee. Buildings are not permitted, but permission may be given for the erection of fencing.

The ring-barking by the licensee of timber on the land is expressly forbidden, and he is not entitled to destroy or cut and take away any such timber. Virtually all land held under grazing licence is Protected Forest as defined in the *Forests Act* 1958, and all timber thereon is under the control of the Forests Commission.

A grazing licence basically confers the right to depasture stock, and does NOT confer exclusive possession or absolute control of the land, although the law does provide remedies available to a licensee in the event of other persons' stock found trespassing thereon. The licence also requires the licensee to provide gates or slip panels in suitable places for the convenience of the public.

Non-compliance with any condition renders the licence liable for forfeiture.

Any grazing licence may be made subject to special conditions. An example of this is that certain grazing licences for the Bogong High Plains restrict the stocking rate to a figure determined each year on the advice of the Soil Conservation Authority. (In such cases the annual rental is related to the number of cattle allowed.)

Grazing Lease (Section 124)

This provision was introduced in the 1930s to allow sufficient security of tenure to justify necessary expenditure on fencing and water supply in respect of certain large tracts of Mallee country in north-western Victoria. Grazing leases may be granted for a term of up to 21 years. There are less than 40 such leases current at present and they are all in the Mallee area. Although technically leases, and registered as such at the Office of Titles, they include special conditions that timber and other forest produce remains under the control of the Forests Commission and also that existing tracks shall remain available for public use. This means that in some ways the grazing lease might be thought of as similar to a long-term grazing licence rather than conforming to the normal concept of a lease granting exclusive possession in all respects. The grazing lease does not confer any right to eventual freehold.

Unused Road Licence (Section 401)

In the original surveys for the alienation of land in Victoria, appropriate strips were retained as roads both as public thoroughfares and for access to allotments. These are commonly referred to as " Crown " or " Government " roads. When any such road is seldom or not required for public use, and subject to the agreement of the local municipal council, an Unused Road Licence may be granted authorizing the owner of adjoining private land to place fences across the ends of the road, thus effectively enclosing it with his own land. Such licences run for a term of one year from the 1st January and are renewable annually.

Where considered appropriate, special conditions may be inserted requiring either unlocked swing gates to allow vehicular traffic and/or unlocked

wicket gates or stiles to cater for pedestrian access. The licence is not specifically for the purpose of grazing, being granted for " occupation and use " of the road. However the conditions preclude building and (except with special consent) cultivation, and current policy is that they would only be granted where the proposed use is for grazing.

Water Frontage Licence (Section 401)

Although in the very early days of settlement of Victoria some land was alienated right to the water's edge, in later years it was the policy for a strip to be retained as Crown land between most rivers, streams or water bodies and allotments being surveyed for alienation. This strip of Crown land is commonly referred to as a " water frontage " and in many cases either all or part of the width of it is permanently reserved from sale. Where there is little or no public use of any particular water frontage, and subject to the agreement of the local municipal council, a Water Frontage Licence may be granted authorizing the owner of the adjoining private land to place fences across the ends of the frontage, thus effectively enclosing it with his own land. Such licences normally run for a term of one year from the 1st January and are renewable annually.

The general conditions are similar to those of an Unused Road Licence, being for occupation and use rather than specifically for grazing, and being subject to special conditions for vehicular and/or pedestrian access where required. Both Unused Road and Water Frontage Licences are within the definition of Protected Forest so that all forest produce thereon is under control of the Forests Commission.

Permit from Committee of Management (Section 221)

Where land has been reserved under the Land Act, it may be placed under the control of a committee of management which then has general authority to manage, improve and maintain the land for the purposes for which it is reserved. This includes the right to grant a permit for grazing on the land subject to terms and conditions to be determined by the committee (subject to there being no interference with the purposes of the reservation).

In practice, it is desirable that any grazing of this nature should be strictly supervised by the committee and an agistment type of arrangement is generally preferable to an unrestricted permit. It is also apparent that a committee should not enter into any agreement for a period exceeding the remainder of its own term, which is usually three years for a publicly elected committee.

O B. 172

SCHEDULE 127

SUBSTITUTE LICENCE
(in lieu of the Original)

UNUSED ROAD WATER FRONTAGE LICENCE No......

Licence under Section 401, *Land Act* 1958

Department of Crown Lands and Survey,
2 Treasury Place,
Melbourne, 3002

.....19.....

KNOW ALL MEN THAT I, the undersigned, being in that behalf duly authorized by the Governor of the State of Victoria, do hereby, in pursuance of the *Land Act* 1958 and in consideration of the annual licence-fee of .....agreed to be paid by .....of.....grant to the said ..... licence and liberty to occupy and use for the term of three years from the first day of January, 19..... (unless sooner determined) the land specified in the Schedule hereto, subject to any right-of-way reserved in the description of the land in the Schedule hereto and to the Conditions on the back hereof.

SCHEDULE

All that land in the.....of.....
Parish of.....
being .....

Secretary for Lands

CONDITIONS OF LICENCE

1. The licence-fee shall be payable yearly in advance on the 1st day of January in each year and may be varied during the currency of the licence as from the 1st day of January in any year.

2. The Licensee shall duly pay and discharge all rates, taxes and other charges assessed and payable in respect of the licensed land.

3. The Licensee shall not, except as hereinafter provided, cultivate or break the soil of any land held by him under the licence, nor shall he erect any building or construct any obstruction or sink or make any tank or dam thereon.

4. With the written consent of the Secretary for Lands and the Council of the Municipality within which the land is situated, and upon payment of such additional licence-fee as may be determined by the Secretary for Lands and specified by endorsement on the face of the licence, the Licensee may break the soil of the licensed land to the extent mentioned in such endorsement.

5. If so directed by the Governor in Council, the Licensee shall erect and maintain suitable unlocked swing gates, or cattle pits or ramps or other suitable means of passage, in such place or places as may be required in any fence bounding the land or erected on the licensed land.

6. The Licensee shall not ring-bark, destroy, cut or injure any live timber on the land or cut, destroy or injure any scrub or vegetation growing along any stream and preserving the bank from erosion unless authorized by the Forests Commission under the provisions of the *Forests Act* 1958.

7. The Licensee shall not cut, dig or take away from the land any gravel, stone, limestone, salt, guano, shell, sand, loam or brick-earth.

8. The Licensee shall fully and continuously comply with the provisions of the *Vermin and Noxious Weeds Act* 1958 or of any proclamation for the time being in force under the said Act.

9. The Licensee's interest under this licence shall not be transferable without the consent of the Secretary for Lands and payment of the prescribed fee of One Dollar

10. The Governor in Council may at any time, after giving to the Licensee three months' notice in writing, cancel the licence either as to the whole of the land or part thereof.

11. In the event of such cancellation in whole, the Licensee shall be entitled to a refund of a proportionate part of the licence-fee for the current year paid by him. In the event of a cancellation in part only, he shall be entitled to a proportionate refund, having regard to the proportion which the quantity of the land resumed bears to the quantity of land originally licensed, and his next year's licence-fee shall be correspondingly reduced.

12. On a breach or non-observance of any of the above conditions or stipulations, the licence shall be subject to be forthwith cancelled.

13. The licensee shall erect and maintain a stile unlocked wicket gate or some other means of pedestrian access in any fences across the licensed frontage.

PROBLEMS CAUSED BY GRAZING

Before settlement, Australian vegetation was accustomed to light " scissor action " grazing by soft-footed herbivores (kangaroos and wallabies) whose numbers fluctuated with seasonal conditions. Hooved stock introduced into Victoria can graze (with " plier action ") more widely, because water ing points such as bores and dams are widespread; and the pressure to graze Crown land often increases during drought as feed runs out on freehold land.

Black-tailed Wallaby (Wallabia bicolor)

Vegetation Change

Scientists have demonstrated with animal-proof enclosures that all grazing animals are selective feeders. They eat succulent plants in preference to unpalatable, spiky or unsavoury plants. Where both palatable and unpalatable plants occur in a locality then selective grazing changes the abundance of these species. Botanists have demonstrated this feature both in pasture and in native bushland. The change can be so slow that it takes place over several decades or a century and therefore goes unnoticed unless some enclosed plots are excluded from grazing (including rabbits). Such plots are rare. However, roadsides and railway reserves frequently retain ungrazed remnants of local bushland (sometimes the only examples for several kilometres around). The heavier the stocking, or the tougher the season, the faster the changes take place. Of course, it is usually when times are hard, that is, when native pastures are least able to withstand heavy grazing pressure, that they are likely to be most intensely stocked.

(Note: what is most palatable to domestic animals isn't necessarily the most attractive to vermin or kangaroos. It has been demonstrated that stock and kangaroos can often live on the same pasture with little overlap between what they eat.)

Example 1. Millewa land system near Benetook and Neds Corner, both in far north-western Victoria.

When grazed by sheep, succulent *Atriplex* salt-bushes are replaced by spiny *Bassia* salt-bushes. Succulent *Enchylaena* and *Rhagodia* are replaced by unpalatable *Bassias* and Dillon Bush. As long as grazing by sheep continues, so the progression to vegetation inedible to sheep continues and in extreme cases bare ground results. Poisoning the undesirable plant species is futile because they are not the problem, just the symptoms of it.

Example 2. Heavy grazing, by sheep and cattle, of spear grasses (*Stipa*-22 species in Victoria) kills the crowns of the tussocks and the plant then has to compete by seed with other species. If it is then grazed so continuously that seed is not set, it will be eradicated.

Spear Grass (Stipa)

Increased Fertility

Fertility is increased by adding superphosphate or introducing legumes. Nutrients are concentrated near the surface in animal droppings, especially where stock water or camp.

Native plants are adapted to infertile soils and when fertility increases they are disadvantaged and are replaced by exotic species.

Cow pats bring nutrients to surface

Invasion by Weeds

Most weeds are *unwanted* plants and are regarded as such because of their poor agricultural value. They are not grazed, therefore their ability to invade overgrazed farmland is considerable. Most of the proclaimed noxious weeds are unpalatable or prickly or poisonous.

It is sometimes claimed that native bushland needs to be stocked in order to " keep the weeds down ". However, more frequently, it is the grazing which thins out the vegetation palatable to domestic stock and allows inedible weeds to establish themselves, just as happens on run-down pasture.

Further, the fruits of weeds are sometimes relished by vermin (for example, foxes sometimes eat blackberries) and the seed passes through the animals with increased germination power. Domestic animals also transport seeds—in droppings, fur, hide or fleece.

Weeds tend to become established most easily when the surface of the soil is disturbed. Rabbits and hooved stock provide these conditions.

Stemless Thistle—a pest of grazed land

Invasion by Rabbits

In the Mallee, rabbits do not thrive in dense heathland or mallee eucalypt scrub, but on rises and dunes which have been cleared or on former pine-covered dunes which have failed to regenerate.

So where grazing and clearing have removed native herbs and shrubs and allowed weeds and grasses to volunteer, these conditions favour the invasion of rabbits. And nutrient-rich rabbit " dung-hills " are favoured sites for germination of weeds!

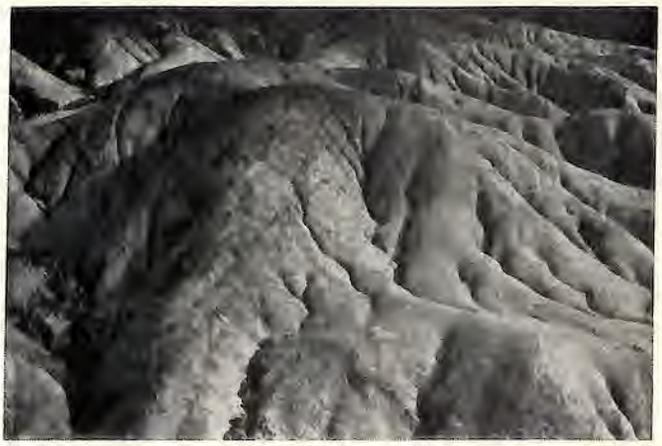
Many weed infestations spread out from rabbit warrens

Infiltration

> " Worst-ever flooding in Carnarvon in February 1961 caused the State Government to study the catchment. The main cause of the flood? Grazing stock had degraded the vegetation cover and so increased the run-off ".
>
> —C.S.I.R.O. *Ecos*, May 1976.

Rain falling on bare ground tends to run off quickly, carrying with it precious topsoil and mud in suspension and causing rapidly rising floods in local streams.

Where there is a vigorous growth of vegetation, rainwater is held from running off until it has had time to soak into the ground and down into the subsoil where plants roots can seek it out. Well-vegetated catchments tend not to suffer from big " flash-floods " but to act like giant sponges which release water steadily for weeks or months after rain falls, causing streams to flow for a much longer time into summer.



This portion of a gravel pit is not regenerating, largely because water is not soaking in and topsoil is not being retained

Regeneration Prevented

The lack of young saplings among the scattered over-mature veterans of River Red Gum which still remain on plains and river frontages in Victoria bears silent witness to the palatability of the young seedlings.

Continual grazing prevents regeneration so that there are no vigorous young trees to replace the old-timers as they die one by one. Because this process is gradual, it is usually not obvious. Remember, one generation of trees is equivalent in time to eight or ten or more generations of people! In summer in particular, when grasses are dry and tree regeneration is soft and succulent, great damage is done to stands of River Red Gum, native pine, Black Box and Buloke to mention just a few.

This photograph was taken just twenty-four months after the fence was erected. Note the heavy regeneration of red gums on the ungrazed section, yet the prolific growth of the noxious weeds Stinkwort and Spear Thistle on the grazed portion on the left. Near Edenhope.

Overgrazing of this water frontage near Ararat has removed regenerating red gums and all other bank-protecting vegetation. Overhanging bushes and reeds—and hence fish habitat—has been destroyed. Fringing trees have been undermined and river improvement works have become necessary.

Wildlife Habitat

Wildlife cannot survive independently of its habitat. If the community wishes to retain a wide and varied range of fauna to enrich our countryside and destroy agricultural pests, it will have to retain a wide and varied range of habitats. This involves much more than just planting or protecting trees and hollow logs.

Grazing of fluctuating stream and lake frontages destroys nesting habitat for water birds.

Roadsides may act as corridors for nomadic fauna. However by continual grazing, the bush on these lineal reserves is converted to closely cropped grass. Our landscapes thereby become immeasurably poorer, and farms less protected from wind and sun.

Grazing low-growing wildflowers and tussocks (even if trees are allowed to remain) eradicates the habitat of many insects, lizards and small mammals—and hence the birds which prey on them are deprived of food.

Forest Grazing

While grazing has been used successfully in some forests to prevent excessive weed and grass growth, this must be a carefully controlled operation. Even at the lowest grazing intensities livestock will always damage trees; sheep mainly by browsing, cattle mainly by trampling.

Fire Risk

An argument sometimes raised is that Crown land needs to be grazed in order to reduce the fire hazard.

In the short term, grazing by removing the standing vegetation can indeed reduce the amount of fuel. However, prolonged grazing as previously explained tends to replace low growing native grasslands with introduced (largely Mediterranean) species which grow tall and rank and pose a *greater* fire risk than the original vegetation.

Moreover, the maximum growth of native grasslands tends to occur in late spring to summer and so they remain green until the season is well advanced. Introduced grasslands on the other hand tend to grow most vigorously in early spring, and leave dry, dead material for fuel that stands over most of summer.

In an exceptional year when it is impossible to remove excessive growth due to inadequate stock numbers, the grassland which previously has been heavily grazed will present a much more serious fire risk than the lightly grazed or ungrazed natural grassland.

Salting

When land is cleared of trees and scrub and sown to annual plant species such as cereals, less water is utilized by the plants causing more seepage and excessive wetness at lower levels. The accumulation of salt in these situations promotes salt spot grazing. Increasing salt content makes these pastures more palatable to domestic stock. Salt continues to accumulate until concentrations which are toxic to pasture species are reached, and survival of vegetation is impossible. The bare saline areas then become focal points for soil erosion and are a great expense to repair, according to evidence from N.S.W., S.A. and W.A.

Soil Erosion

The process of erosion has been described very eloquently by Judge Stretton in his 1946 Royal Commission into forest grazing:

" To recapitulate briefly, where grazing causes erosion it does so by the destruction of the humus and by the pulverizing or impacting of the soil. The humus may be destroyed by the eating out of the cover of vegetation, by burning of the forest floor to promote grass growth or for forest protection or by being pulverized and released by the feet of animals. The soil may be impacted by animal traffic. Whatever the cause, the result is an increase in the speed of water run-off and a decrease in the volume of water absorption . . . It is to be noted that any one of the methods of causing erosion need not be very widespread in its results to be most damaging. One does not suggest that to be injurious a forest floor must become impacted or pulverized over wide areas, or that the humus must be destroyed on a vast scale. Destruction and damage may result from very small beginnings. This is especially so where the small beginning occurs on high sloping places or on mountain sides. For example, sheep, who seek high country at evening, take the easy path up a hillside gully. Soon they wear a track, denuding the soil or its binding cover. One heavy rain-storm bringing a fall of several inches within a day, such as sometimes occurs in the north-east of Victoria, will, if the soil is loose and friable, bring down many tons of earth to the lower levels or the river courses. The same may be said of erosion however it is caused."

Uncontrolled grazing accelerates soil erosion through the trampling of hooves which shear the soil and expose it to the elements.

Kangaroos, with their soft pads distributing weight over a much larger area do not shear the soil. They are well adapted to this country and do not cause erosion problems.

When times are hard, the numbers of native animals decline *before* the land is degraded.

Since water is a localized resource, ground around water tanks and stream frontages is subjected to greater pressure from hooves than elsewhere. Vegetation is removed and the soil becomes prone to erosion. The shear strength of peat is very low and alpine bogs, preferentially visited by cattle seeking more palatable food and water, soon get cut to pieces by the hooves.

BENEFITS OF GRAZING

Some of the possible benefits and uses of grazing on public land are listed below.

1. Waste land around rubbish tips, or recreation reserves, near silos or other structures, along golfcourses or around picnic grounds within forests can be grazed briefly to reduce fire hazard. (However, as explained elsewhere, prolonged grazing can actually *increase* fire hazard in the long term. In many places it will be found best to graze for a few weeks only, in late December or January.)

2. Rentals can provide useful income for a committee of management of a Crown reserve. (However, the fees must not be seen as an end in themselves, or as sufficient justification for allowing grazing beyond the extent which would be authorized by the committee of management if no fees were payable at all.)

Grazing is most appropriate on a reserve which is already carrying improved pasture or other introduced species. Where there are remnants of native vegetation, committees are advised not to allow grazing.

3. Sheep are often grazed in pine and other plantations after the trees reach two metres high in order to control vegetation which would otherwise compete with the young trees. (It should be ensured that hooves do not compact soil, particularly in wet weather. If the surface is made hard, it will shed rainwater instead of allowing it to soak in and benefit the growing trees.)

4. Ability to run stock on Crown land during drought can help a grazier over hard times and help him to spell his freehold.

(However the value of this security is lost if the licensee comes to rely on the Crown land, by overstocking his own land or by retaining insufficient freehold land to support a viable enterprise.)

COASTAL GRAZING

Coastal clifftops and dunes suffer severely when grazed, particularly when they are burnt as well. Fortunately, the practice of burning-off to promote green " pick " is dying out in Victoria, for it wastes humus and nutrients and so destroys the soil. Burning has often done more harm than the grazing with which it is associated. There is severe erosion on the overgrazed clifftop on the left.

Marram grass, shown here, is slowly recolonizing bare coastal sand which once supported a healthy stand of scrub. With a little care, such damage could have easily been avoided.

HOW TO ASSESS GRAZING IMPACT

It is sometimes claimed that the local, practical farmer is the best land manager. But the farmer's objectives are usually different from those of the managing authority. While the licensee hopes to optimize profits and support his own farming enterprise, the department seeks to retain the land in good condition so that future options for public use and even for future farmers are not restricted. Committees of management, officers of land management departments and licensees should consider the following points when assessing the current effects of grazing.

1. Is grazing consistent with the primary purpose of the land?
   - For committees this means " Is grazing consistent with the purpose of the reservation? ".
   - For officers this means " Is grazing consistent with keeping the natural resources on the land in good condition, thereby retaining the widest options for future use? ".
2. If so, does grazing provide any *advantages?* If not, consider disallowing it. Land has many other values and uses.

Some very worthwhile wildflower reserves were originally reserved for other purposes such as mechanics institute hall sites or recreation reserves and overgrazing could have destroyed their ecological worth.

Recently an old racecourse was re-reserved as a recreation reserve and is currently being developed as a golfcourse. The area was grazed lightly in the past but the native grasses survived and will make excellent " rough ", virtually maintenance free. The regeneration of young River Red Gum will serve as screens for the fairways, and the old native trees have aesthetic appeal. Overgrazing could have made this project very difficult and expensive.

3. If grazing is to be allowed, consider:
   (*a*) If native vegetation is present, including the grasses such as Kangaroo Grass,

Kangaroo Grass (Themeda)

it is advisable not to stock the land to its maximum carrying capacity. The native plants should be allowed to regenerate by seeds or suckers and maintain a stable ground cover. In some cases resting or spelling the land from grazing may be necessary every alternate growing season.

   (*b*) Grazing should be managed to avoid creating bare patches which allow establishment of weeds. A committee is responsible for the control of vermin and noxious weeds, and overgrazing could create a weed problem which will be expensive to solve.

   (*c*) Committees should be wary of allowing grazing on small areas. Overgrazing can become a serious problem in a short period of time on a small area. Sometimes this can be overcome by an agistment system whereby permission to graze is restricted to one or two months, after which time the reserve can be inspected and a decision made on whether to continue grazing for a further period.

   (*d*) There may be areas of the reserve which should be excluded from grazing—i.e. erosion prone areas, sewerage absorption lines, high visitor use areas, or patches of wildflowers or regeneration of trees which may need temporary protection.

   (*e*) Avoid allowing landowners whose own properties are poorly managed (eg. weak fences, poor stock, weed infestations) to graze public land.

   (*f*) Consider the needs of the public for access. Are stiles or unlocked gates necessary for reasonable recreational use?

Stile—saves wear and tear on fences

4. Check for the following signs of overgrazing:
   - bare soil (perhaps with lichens obvious).
   - absence of herbs, shrubs, or regenerating tree seedlings.
   - weeds present.
   - change in the composition of the plant species.
   - need to handfeed stock.
   - stock eating bark off trees; roots exposed.
   - soil erosion; pugging.
   - prickly or inedible plants common.
   - dead stock.

In short, if grazing is to be allowed, it must be controlled. The managers of land must be able to recognize native shrubs and grasses and evaluate their botanical worth. If they cannot they should seek assistance from one of the Department's officers (see back cover).

SUMMARY

Signs of overgrazing are not always obvious. Note these remarks in the C.S.I.R.O. magazine " Ecos ": " Scientific researchers have found that the human memory is very bad at recalling what an area looked like 20–30 years ago. So it is extremely difficult for an individual to know if his pastures are slowly going down hill. The very extremeness of the climate (in the arid zone) makes it even more difficult to remember their past conditions, since a piece of ground looks startlingly different during a drought compared with its appearance during years of better rainfall. Thus after a drought, when a run of good rains brings rank stands of grass growing where there was nothing before, it's very hard to believe that the pasture hasn't fully recovered. There is the widespread attitude among the grazier community that arid zone pastures always come good after a drought.

But what has happened over the years is that after each succeeding drought the pasture has seldom ' come good ' quite as well as it did after the previous one ".

—*Ecos*, May 1976

Drought is tough. But it is inevitable. The effects of drought on Crown land —and on the licensee—can be minimized by understocking in good years.

Finally, to complete this booklet, here is another quotation from the memorable prose of Judge L.E.B. Stretton, who was appointed to carry out the 1946 Royal Commission into forest grazing:—

" Amongst the many subjects which fill the field of this inquiry, three stand, pre-eminent, in an inseparable trinity—Forest, Soil, and Water. No one of them can stand alone. No one of them, alone, can be understood. No one of them, without the others, can prosper. Each keeps the others in health. If one is injured, the three must share the injury. A cycle of destruction of all three may begin with any one of them. Destroy your forests and your water will destroy your soil. Destroy your soil and you destroy your forests and your water supply. Destroy the sources of your water storages and your forests and soil will vanish. Destroy any one of them and, by the inexorable cycle which works for health or disease within this fundamental syllogism of the productive world, you destroy the well-being of your people. You may even destroy the people themselves. This is no mere pattern of fantasy built into an edifice of words. Civilizations have perished, leaving only the monuments of man's pretentiousness to mock their memory, because in ignorance or wantonness man's impious hand has disturbed the delicate balance which nature would maintain between forest, soil, and water. The active destructive agent in the cycle is man-made erosion, which is his great enemy ".

And one of the major causes of erosion is overgrazing.

F. D. ATKINSON, Government Printer, Melbourne

DEPARTMENTAL OFFICES

The Department of Crown Lands and Survey has offices throughout the State, and committees of management or licensees should feel able to contact the local departmental officer regarding problems they may have.

PLANT IDENTIFICATION

The identification of plants is undertaken by the Department through the National Herbarium, Royal Botanic Gardens, South Yarra. Enquiries regarding identifications should be made to the curator before sending specimens.