How wildlife habitats can benefit your property

September, 1999
LW0010
ISSN 1440-2106

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This Note is a companion to Land for Wildlife Note No. 9 'What your property can do for you'. Over recent years there has been a growing awareness that, to obtain the maximum benefits a property has to offer, over the long term, it should be managed in an 'ecologically healthy' and sustainable way. The statements in this Note are summarised from existing sources. To obtain the most from a property, it is worth considering the full range of benefits it has to offer. Similarly, in counting any loss in production from fencing areas for revegetation, it is also necessary to consider the considerable gains that might be made. Wildlife habitat, appropriately incorporated into a property, can play a role in obtaining these benefits and has the added advantage of providing for our wildlife species.

Shade & shelter for stock & crops

Native vegetation can be used to provide shelter and windbreaks to protect stock and crops from exposure to extreme weather. Bird (1990) has shown that shade and shelter benefits alone mean that 10 per cent of a farm can profitably be devoted to trees in the higher rainfall areas of southern Australia. Although `trees' are mentioned, more benefits are likely to come from vegetation including trees, shrubs and ground covers.

Local climate modification

"Trees can shelter an area downwind for at least 15 times their own height".[1]

"Trees conserve precious ground moisture."[1] [by reducing wind speed].

Reduced death rates, higher birth rates

"Studies in the eastern highlands have shown that lambing losses can be reduced by 50%. Average losses without shelter were 36% for twins and 16% for single births. When shelter was provided, the figures dropped to 18% for twins and 8% for single lambs. In a flock of 1000 ewes, such a 50% drop in mortality is going to mean 100 extra lambs which survive the critical first 48 hours of life - the time when cold stress takes its greatest toll".[1]

"CSIRO results predict that a newly shorn sheep in the rain can die at 5^{o} in still air. If an 18km/h wind is blowing, the lethal temperature rises to 19^{o}C. At anything below this sheep can die. A national survey in 1968 put the annual loss of newly-shorn sheep at over 1 million".[1]

Shelter prevents death by exposure.[2]

Wool/liveweight gains

"Lack of shelter not only kills stock, it also affects how much wool, meat and milk they produce".[1]

"In one five-year study at Armidale, sheep on sheltered plots produced 35% more wool and 6kg more liveweight than those without shelter. This effect was most noticeable at the highest stocking rate used".[1]

"Heat depresses milk production and can depress liveweight gains of cattle by up to 0.6kg a day".[2]

Reduced heat stress

Temperatures as high as 88^{o}C [have been] recorded from wool on the backs of exposed sheep. The temperature in a woodlot of trees may be a cool 22^{o}C while in the open it is as high as 36^{o}C".[1]

"Heat stress reduces wool growth by reducing feed intake, and is detrimental to ram fertility, ovulation rate and conception in ewes, and foetal development".[2]

"Failure to dissipate heat will lead to heat exhaustion. The animal will try to reduce its metabolic activity by eating less and being less active".[3]

"Heat stress can markedly reduce stock fertility, milk production, and weight gain, and increase mortality of calves and sheep".[3]

"For pregnant cows heat stress may cause abortion and certainly causes calves to be born undersized and consequently more susceptible to heat stress".[3]

"Studies involving both Jerseys and Holsteins have suggested that milk production declines as air temperature rises above 20^{o}C, dropping steeply as the temperature reaches 27^{o}C".[3]

"Shorthorn cows resting in shade continue to chew their cud whereas cows in the sun abstain. Because rumination increases the heat produced, heat-stressed stock abstain so as to reduce metabolic heat production. After grazing,

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chewing cud is the second most important activity of cattle, so abstaining directly affects productivity".[3]

Reduced cold stress

"Cold stress has been shown to depress wool growth by 25% and live-weight gain by 6kg in sheep and with cattle, liveweight gain has been reduced by 31% over several weeks".[2]

"Milk yields are similarly depressed by cold at a rate of up to 1.34kg per day (4% fat corrected milk)".[2]

"Rain also reduces the insulating value of an animal's coat by up to 30%. This is particularly a problem for sheep".[3]

"If the still air temperature is 4^{o}C a modest wind of 20km/h reduces the effective temperature to approximately -4^{o}C".[3]

Improved crop yields

"Many overseas studies have shown that crop yields can increase by more than 20% when windbreaks are established".[1]

"Sand blasting of cereal crops, at the seedling stage, by wind leads to reduced plant growth due to moisture stress and physical damage".[2]

Shelterbelts increase production by about 30% to a distance about ten times the height of the trees beyond the area of reduced production (=to height of trees).[2]

"Wind can destroy blossom prior to setting, damage and discolor fruit, increase fruit fall and increase insect damage."[3]

Natural pest control, less chemicals

Wildlife contributes to the health of natural vegetation by preying upon invertebrates directly and by acting as vectors for parasites and diseases that reduce invertebrate populations. In this way wildlife can help protect natural vegetation which is important in providing social, environmental and economic benefits to landholders. Wildlife also preys directly upon some pasture and crop pests. There is limited quantitative information available.

Regular bird surveys were undertaken over seven years as wildlife habitat was being established on a dryland wheat and sheep property in north-eastern Victoria. By the end of this time, 106 bird species had been recorded. Sixty-seven percent of these were largely or exclusively insect-eating birds, which foraged on all parts of the farm.[4]

It is estimated that insectivorous birds and honeyeaters consume about 24 to 38 kg of invertebrates (mainly insects) per hectare per year in eucalypt woodland, New England, NSW. (10-11 from leaves, 4 to 7 from bark, 9 to 18 from the ground and 1 to 2 from the air).Based on energetics, it is estimated that in the same woodland type 16.4kg of insects are produced from eucalypt leaves per hectare per year. It is also estimated that 10-11 kg of insects are consumed by birds from leaf substrates. Thus one can estimate that birds may consume some 60-67% of the available insects [from leaf substrates].There is some evidence that birds, along with many other natural agents, control the populations of potentially harmful herbivorous insects in healthy eucalypt woodland in New England.[5]

"By establishing habitats for birds and small mammals, trees and shrubs help control insects and should eventually reduce reliance on insecticides".[6]

"It has been estimated that a colony of 250 000 common bent-winged bats at Mt Etna (Queensland) ate one tonne of insects per night".[7] [bats are common in rural Victoria where shelter is provided].

"The Australian Straw-necked Ibis, sometimes called 'the farmers friend', feeds on small animals such as mice, crustacea, and insects, especially grasshoppers. Researchers estimated that one ibis rookery in Victoria consumed about 500 tonnes of food per day."[11]

"Birds eat a wide variety of insects. Parrots, although usually considered herbivorous, eat many lerp-insects and scale-insects. Cuckoos are well known predators of hairy caterpillars, including stinging cup-moth larvae and even sawfly larvae. Sacred kingfishers, as well as eating lizards, consume large numbers of Christmas beetles and other scarabs. Whistlers and grey shrike-thrushes prefer beetles, especially leaf beetles and weevils, and sometimes larvae. Honeyeaters are generalised feeders but lerp-insects and scale-insects are important foods, with beetles, spiders, flies and ants also eaten frequently. Noisy friarbirds and other larger species eat Christmas beetles. Treecreepers eat mostly ants whereas varied sitellas and shrike-tits eat many beetles. Pardalotes also eat lerp-insects and scale-insects as well as many beetles".

"Thornbills eat small beetles, ants and caterpillars, as do robins and fairy-wrens. Woodswallows take large beetles, including chrysomelids and scarabs. Black-faced cuckoo-shrikes also favour large beetles, snatching them from the foliage of eucalypts. Magpies are important predators of scarab larvae, and an adult may eat up to 40 of them per day. Clearly, many of the insects that have been blamed as serious defoliators of eucalypts (scarabs, chrysomelids, caterpillars and other larvae, weevils, sap-sucking lerp insects and scale insects) are eaten frequently by many of the common birds".[8]

"The sugar glider, one of the most common and widespread tree-dwelling mammals in Australia, feeds extensively on scarabs, caterpillars, weevils, lerp-insects and scale-insects".[8]

"Over the whole year, on the average, 81 per cent of invertebrate production is consumed by vertebrate predators, and in summer and autumn this consumption causes a decline in the standing crop (of invertebrates). Clearly, vertebrates are important predators on insects and other invertebrates on eucalypt branches, and encouragement of wildlife in eucalypt woodland would aid in controlling insect defoliation".[8]

Erosion/salinity control

Erosion and salinity reduce the area available to a landholder for social and/or productive uses. The figures for Victoria are shown below. It is easy to think that this is

a problem for someone else. However, even if a property is not directly affected, as many are, its water supply might be, as might other industries in the area that together support infrastructure, such as schools and hospitals, upon which landholders depend.

Excessive salt in our water and soil has already damaged 2500 square kilometres (about the size of the Australian Capital Territory) of the State's [Victoria] land and threatens an area of more than twice that size.[9]

Salinity costs Victoria over $50 million a year. Much of this loss is in farm production. Crops yield much less and some farming land cannot be used at all.[9]

Loss of income borne by farmers amounts to $32 million each year in irrigation areas and $4 million in dryland areas. This could treble within the next 30 years without control.[9]

The physical environment changes too, not only in the immediate area but downstream from the salt-affected areas. Rivers and streams receive salt laden run-off and silt as soil structure changes and erosion occurs.[10]

The quality of water supplies for towns, livestock and domestic purposes also deteriorates.[10]

140 000ha of irrigated land is seriously salinised.[11]

100 000ha of dryland farming area is seriously salinised.[11]

The area affected by salt is likely to increase four-fold over 50 years whether or not remedial action is taken.[11]

3 200 000ha of land is affected by erosion, acidity and compaction.[11]

7 800 000ha is at high risk of degradation.[11]

25 000km of streams are actively gullying or vulnerable.[11]

65% of streamlength in cleared areas is in poor or very poor condition.[11]

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Salinity/Southern Australia

3% of agricultural land in southwestern Australia is unproductive because of soil salinization.[3]

The area affected is increasing by 25 000 ha per year.[3]

Nearly 20% of this agric. land could be rendered useless for cereal cropping within the next 30 years.[3]

Revegetation can control rain-water accessions to the water table.[6]

Dryland salinity now affects 45 000 hectares of Victoria while 140 000 hectares suffer from irrigation salinity. Annual losses due to salinity is estimated at $40 million.[6]

Increased rainwater run-off has accelerated the natural processes of erosion in rural streams some 1000 to 100 000 times; approx. 25, 000 kilometres of gullies are either actively eroding or vulnerable to erosion. Crop land erosion costs $25-30 million per year in lost productivity. Water erosion now effects 0.6 million hectares of crop-land and 2.6 million hectares of grazing land.[6]

Declining agricricultural productivity allows fewer families to make a living from the land, in turn reducing the services and quality of life for those who remain. The effect multiplies and rural communities decline.[6]

Reduced fire risk

A glimpse of the past, record of our history

Improved landscapes

Better recreational opportunities

Potential for higher real estate value

Clean water, flood mitigation

Attractive places to visit, natural beauty

Wildlife sounds

Wildlife sights

The satisfaction of contributing to the survival of wildlife species

There are at least five mammals, sixteen birds and thirteen reptiles and amphibians, whose survival is dependent upon

habitats occurring substantially on private land, currently on the treatened species list for Victoria.

There are at least 500 plants threatened with extinction in Victoria, many of these also occur on private land.

The Helmetted Honeyeater, our State faunal emblem, occurs only in one small crown reserve. Other habitats are on private land.

Many threatened plants and animals occur on private land.

The long-term viability of isolated reserves, without interlinking corridors of vegetation, is now in doubt. Private land can play a major role in connecting isolated remnants of natural vegetation.

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Timber for fenceposts & construction

Alternative crops/grazing

There may be opportunities to manage commercial crops in ways that benefit wildlife on private land. Some examples follow:

Sale of seed collected from naturally occurring species.

There will be more demand for seed as the technique of direct seeding gains popularity.

Australian pot-pourri.

Using hakea, banksia, callistemon pods, gum nuts, dried leaves, bark, flower heads.

Honey production using native species.

Cut native flowers.

Species of Banksia, Grevillea, Callistemon and Thryptomene can be grown for the cut flower market and for export. In future, more unusual species such as Atriplex (Saltbush) and Eriostemon (Wax Flower) may become popular. An Agnote is available on cut flower cultivation.

Dried flowers and foliage.

Evergreen foliage may be used in floral arrangements.

Fencing material such as Broombush (Melaleuca uncinata).

Sustainable production of Broombush on private land may be profitable in some areas.

Swamp Paperbark (Melaleuca ericafolia) and other ti-trees can be used as pickets for domestic fences. Cut ti-tree regenerates by shooting from underground stems.

Oils/medical uses