

Appendix 12

Weeds of the Kosciuszko Region

A12.1 Significant Weeds of Kosciuszko Ski Resort Areas

Yarrow (Milfoil)

Achillea millefolium

Description: A small creeping plant with finely dissected, feathery leaves. Flower shoots are taller, producing clusters of tiny white or pink flowers.

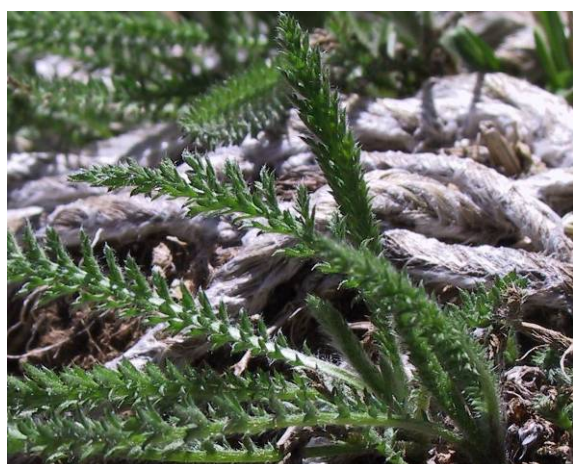
Occurrence: Common in all disturbed areas around the resorts, as well as on roadsides and track edges.

Dispersal: Individual plants spread by underground runners (rhizomes). Easily spreads to new sites when chopped up rhizomes are moved in soil and on machinery. Also spreads by windblown seed.

Control: Do not reuse soil that contains rhizomes or straw from areas where Yarrow occurs. Ensure earth moving equipment is clean when moving from site to site or between infested and non-infested parts of the site. Dig or spot spray prior to seeding. All rhizomes must be removed if dug-up. A long term program is necessary for control.

Left

Top, entire plant
Bottom, leaves



Right

Top, flower, white form
Bottom, flower, pink form



Browntop Bent

Agrostis capillaris

Description: Mat forming grass with strong above and underground runners. Leaves 1-5 mm wide, branching seed heads up to 20 cm long. Reddish-purple seed heads are initially tightly packed, close to the stem then spread out to become feathery as seed matures.

Other Species: Other *Agrostis* species that are also weeds in KNP include *A. gigantea* and *A. stolonifera*.

Occurrence: Common in all disturbed areas around the resorts, where it has been planted for soil stabilisation. Invades native vegetation by spreading out from disturbed areas.

Dispersal: Individual plants spread by underground and above ground runners. Easily spreads to new sites when chopped up rhizomes are moved in soil and on machinery. Possibly also spread in the gut of grazing animals.

Control: Do not reuse soil that contains rhizomes. Ensure earth moving equipment is clean when moving from site to site or between infested and non-infested parts of the site. Spot spray in spring.

Left, Developing seed heads

Right, Sketch showing mature seed head and ligule inside leaf joint



Source: Hitchcock/Chase (1950)

Sweet Vernal Grass

Anthoxanthum odoratum

Description: Tufted grass with unbranched seed heads (like foxes tails) 1-9 cm long. Seed heads on a long, bare stem and are green-greyish, drying to gold. Leaves 2-5 mm wide. The whole plant has a new mown hay smell.

Some Wallaby Grasses (*Austrodanthonia* spp.) appear similar but mostly have hairy seeds and a fluffy looking seed head that does not turn golden. The native species also lack the distinctive hay smell.

Occurrence: Commonly associated with Montane vegetation, preferring wetter areas. Often on roadsides and track edges, as well as other disturbed areas.

Dispersal: Seed spread by wind, water, animals and slashing. Also in contaminated soil and machinery.

Control: Dig out or spot spray before seeding.

Left, leaves

Middle, mature seed head

Right, flower head



Early Wintercress

Barbarea verna

Description: Care must be taken to distinguish this species from native species. NPWS should be notified. Belongs to the cabbage and mustard (Brassicaceae) family. Yellow flowers and rocket like leaves. Flowers early in the season.

Occurrence: Occurs around all the resort areas, particularly Perisher Range and Charlotte Pass.

Dispersal: Prolific seed production. Mainly spread through movement of soil and slashing.

Control: In most cases can be hand pulled. NPWS have been trialling a combination of hand pulling and herbicide application.

Left, Plant



Right

Top, flower

Bottom, basal leaf



Cocksfoot

Dactylis glomerata

Description: Grass that forms dense tussocks with wide leaf blades (to c. 14mm) that tend to fold so that the upper half bends downwards. Membranous ligule and boat-shaped leaf tip. Compact, blunt-ended seed heads.

Occurrence: All the resort areas.

Dispersal: Spreads from roots and seed. Dispersed by wind, water, slashing and contaminated soil.

Control: Do not reuse soil that contains rhizomes. Ensure earth moving equipment is clean when moving from site to site or between infested and non-infested parts of the site. Spot spray in spring.

Right, immature seed head



Vipers Bugloss

Echium vulgare

Description: Bright green, fleshy herb growing to about 50 cm high. Bright blue-purple flowers similar to Patterson's Curse, but more coarse, prickly hairs. Normally one main flower stem whereas Patterson's Curse is usually more branching.

Occurrence: Occurs in disturbed areas including roadsides and around resort areas and Snowy Hydro sites. Also along river beds.

Dispersal: Spread by slashing, vehicles and in contaminated soil and straw. Sticky seed can also be spread on fur or clothes. Benefits from fertiliser application.

Control: This is a Noxious Weed so control is mandatory.

Avoid over fertilising or broad scale fertiliser application in rehabilitation areas where Vipers Bugloss occurs. Ensure that straw mulch, machinery and other equipment is weed free. Do not use straw from an area where Vipers Bugloss occurs. Work and move from non-infested to infested areas rather than the reverse to avoid spreading seed to the weed free areas.

Left, flower

Right, basal leaf rosette



St John's Wort

Hypericum perforatum

Description: Branching herb up to around 60 cm high with small pale bluish green leaves. When held up to the light, numerous tiny oil dots can be seen in the leaves. Yellow flowers similar in form to briar roses but smaller. Flowers occur in summer, followed by tiny seed held in papery brown capsules.

Dies down in late Autumn and sprouts anew in Spring.

Occurrence: Common in disturbed areas all over KNP, especially dry areas where there is not much other vegetation.

Dispersal: Spreads in contaminated soil and on machinery, and in straw. Seeds stick to fur and clothes. Also produces underground runners by which the plant can be spread.

Control: This is a Noxious Weed so control is mandatory.

Small infestations can be hand dug and disposed of carefully, however, all underground runners must be removed. Otherwise spray and cultivate, taking care not to spread root fragments on machinery.

Do not use straw from an area where *Hypericum* occurs. Work and move from non-infested to infested areas rather than the reverse to avoid spreading seed to the weed free areas.

Does not tolerate strong competition from healthy vegetation so effective rehabilitation of disturbed areas may help exclude the species from some sites.

Left, flower



Middle, plant



Right, seed head



Soft Rush

Juncus effusus

Description: Tussock forming rush occurring in wet places. Tubular round leaves filled with white pith that is dense and uniform.

Looks very similar to native *Juncus* rushes, however the stem of Soft Rush is very easy to compress between the fingers and white stem pith is continuous (in native *Juncus* the pith is often interrupted by air spaces).

Occurrence: Established in the Victorian Alps and starting to appear in KNP.

Dispersal: Fine seed is spread by wind and water. Also in contaminated soil and on boots and machinery.

Control: Notify the National Parks office in Jindabyne if you discover an infestation. Get the plants identified properly to ensure that it is not a native species. Prevent seeding by removing flowers and seed heads and destroying them. Clumps can be dug out or careful spot spraying can be carried out, using a wetting agent. Note that herbicide use is restricted near watercourses.

Right

Flower head

Below

Several plants



Photos in this section courtesy of Jackie Miles, except where otherwise credited.

A12.2 Other Common and Important Weeds Occurring in Kosciuszko National Park

Black or Spear Thistle (*Cirsium vulgare*) - Produces large quantities of seed that are dispersed by wind, water, and on the fur of animals, as well as on contaminated machinery, soil and straw. Many thistles are Noxious Weeds so control is mandatory.

Cotoneaster (*Cotoneaster* spp.) – Heavy seeder and invasive woody weed that requires persistent control. Commonly planted in the past around lodges and in former townships.

Broom (*Cytisus scoparius*) – 1-4 metre tall shrub with yellow pea flowers (sometimes with red or purple markings). Common along the Guthega Road, around Snowy Hydro Sites and in lower parts of the park. A Noxious Weed, therefore control is mandatory. Spreads in contaminated soil and on machinery so do not move or reuse soil from areas infested with Broom. Seed can last for 100 years in the soil so an ongoing control program is essential. Fire and disturbance may stimulate germination but it must be followed-up with comprehensive control to avoid creating a greater problem. Smaller plants can be dug or pulled out. Infestations are cut and painted or sprayed with herbicide.

Patterson's Curse (*Echium plantagineum*) – Spread by slashing, vehicles and in contaminated soil and straw. Sticky seed can also be spread on fur or clothes. Benefits from fertiliser application, therefore broad-scale spreading should be avoided in areas where this species occurs. Patterson's Curse is a Noxious Weed so control is mandatory.

Hawkweed (*Hieracium aurantiacum*) – Like an orange dandelion with hairy leaves and stem. Has become a significant weed in New Zealand, North America and is now spreading through the Australian Alps. Appeared in Kosciuszko in 2003. New infestations, if discovered, need to be controlled immediately. It is a Noxious Weed. Notify the National Parks office in Jindabyne immediately if you discover an infestation. Get the plants identified properly and removed from the site as quickly as possible. Prevent seeding by removing flowers and seed heads and destroying them.

Yorkshire Fog Grass (*Holcus lanatus*) - Prefers wetter areas with acid soils, including bogs. Often on roadsides and in drains but spreads insidiously into undisturbed areas.

Bird's-foot Trefoil (*Lotus* spp.) – Invades disturbed wet sites including drains and waterways. Very hard to control with herbicide.

Lupin (*Lupinus* spp.) – Colourful flower spikes and distinctive leaves arranged in a whorl of 9 or more, like a fan. Hairy bean like seed pods. Common around Cabramurra. Potentially very invasive in forest and wetter subalpine woodlands. Spread is most likely through contaminated soil. Plants can be chipped or spot sprayed.

Musk Monkey Flower (*Mimulus moschatus*) – Invades pools and dominates native vegetation.

Timothy Grass (*Phleum pratense*) – Spreads insidiously into undisturbed areas.

Pine (*Pinus* spp.) - Heavy seeder that was commonly planted in the past around lodges and in former townships. Only mature trees produce seed – immature plants should be controlled early.

Briar Rose (*Rosa rubiginosa*) - This is a Noxious Weed so control is mandatory. Woody weed that requires persistent control.

Blackberry (*Rubus* spp.) - This is a Noxious Weed so control is mandatory. Grows and spreads quickly and therefore should be controlled when first identified. Tends to be inhibited by very cold temperatures, therefore it is more of a problem in the lower parts of the Park.

Willow (*Salix* spp.) – This is a Noxious Weed therefore control is mandatory.

Flourishes in wet areas, potentially choking bogs and streams (One species, *Salix cinerea* has become a significant problem invading bogs in the Victorian Alps). Roots easily from vegetative matter, and also from windblown seed. Isolated seedlings can be pulled out and destroyed. Infestations are treated by cutting in Summer or early autumn and painting or injecting with herbicide.

Mullein/Aarons Rod (*Verbascum thapsus*, also *V. virgatum*) – Burry seeds are very viable and spread easily on fur, clothing and machinery. Flower spikes are produced in the second year of growth so plants should be destroyed before flowering.

Periwinkle (*Vinca major* and other species of *Vinca*) – Periwinkles are very invasive and hard to control once established, therefore they should be controlled when first identified. They are most common on river banks and spread by broken off pieces of plant, like willows.

A12.3 Common weeds at lower elevations

These two potentially very invasive species must be controlled if found in the Park

African Lovegrass (*Eragrostis curvula*) – Thrives and easily dominates dry, low fertility soils where it also creates a fire hazard, as it is extremely flammable. Occurs on the Monaro and many lower areas surrounding the Park and has the potential to significantly affect KNP. African Lovegrass is a Noxious Weed so control is mandatory. Report any occurrence of the species to the National Parks office in Jindabyne and make sure it is positively identified. Care must be taken to distinguish this species from native *Poa* grasses. In the interim period, remove and destroy any seed heads.

Serrated Tussock (*Nasella trichotoma*) – Occurs on the Monaro but easily invades adjacent grassland and bush. Has the potential to significantly impact on KNP. The species is a Noxious Weed so control is mandatory. Report any occurrence of the species to the National Parks office in Jindabyne and make sure it is positively identified. Care must be taken to distinguish this species from native *Poa* grasses. In the interim period, remove and destroy any seed heads.

A12.4 Three weeds that are common but should be controlled

Minimising ground disturbance will reduce opportunities for these species to spread or become established in new areas.

Sheep Sorrel (*Acetosella vulgaris*) – Commonly found in Podocarp heath, snowpatch vegetation, subalpine woodland, sod tussock grassland, stream side vegetation and montane frost hollows, suggesting that these areas are probably more vulnerable to infestation, therefore extra precautions should be taken to minimise risk in these areas.

Cat's Ear/Flatweed (*Hypochaeris* spp.) – Commonly found in subalpine heath and montane frost hollows, suggesting that these areas are probably more vulnerable to infestation, therefore extra precautions should be taken to minimise risk in these areas.

Dandelion (*Taraxacum officinale*) – Generally prefers richer, more moist soils but occurs throughout the park.

A12.5 Other Exotic Species Recorded in KNP

<i>Anagallis arvensis</i> (Scarlet Pimpernel)	<i>Malva</i> spp.
<i>Aira caryophyllea</i>	<i>Marrubium vulgare</i> (Horehound)
<i>Alchemilla xanthochlora</i>	<i>Medicago lupulina</i> and <i>M. sativa</i> (Black Medic)
<i>Alnus glutinosa</i> (Alder)	<i>Melilotus albus</i>
<i>Alstroemeria aurea</i>	<i>Mentha spicata</i> (Mint)
<i>Amsinckia calycina</i>	<i>Moenchia erecta</i>
<i>Anthemis arvensis</i>	<i>Muscari armeniacum</i> (Grape Hyacinth)
<i>Aphanes arvensis</i>	<i>Myosotis discolor</i>
<i>Aranaria serpyllifolia</i>	<i>Narcissus</i> spp. (Jonquil)
<i>Arrhenatherum elatius</i>	<i>Oenothera glazioviana</i>
<i>Avena</i> spp. (Wild Oats)	<i>Onopordum acanthium</i> (Scotch Thistle)
<i>Borago officinalis</i> (Borage)	<i>Oxalis corniculata</i>
<i>Bromus</i> spp.	<i>Paspalum dilatatum</i> (Paspalum)
<i>Callitriche stagnalis</i>	<i>Pastinaca sativa</i>
<i>Campanula ranunculoides</i>	<i>Penstemon</i> sp.
<i>Capsella bursa-pastoris</i>	<i>Petrorhagia nanteuillii</i> (Proliferous Pink)
<i>Centaurium erythraea</i> (Centaury)	<i>Plantago lanceolata</i> (Ribbed Plantain)
<i>Cerastium</i> spp.	<i>Poa annua</i> and <i>P. pratensis</i>
<i>Chenopodium</i> spp.	<i>Polygonum</i> spp.
<i>Chondrilla juncea</i> (Skeleton Weed)	<i>Populus alba</i> (White Poplar)
<i>Collomia grandiflora</i>	<i>Potentilla recta</i>
<i>Conium maculatum</i> (Hemlock)	<i>Prunella vulgaris</i>
<i>Conyza bonariensis</i> (Fleabane)	<i>Prunus cerasifera</i> (Cherry Plum)
<i>Crepis capillaris</i> (and <i>C. virens</i>) (Hawk's Beard)	<i>Quercus</i> spp. (Oak)
<i>Dianthus barbatus</i>	<i>Ranunculus muricatus</i> and <i>R. repens</i>
<i>Diplotaxis tenuifolia</i>	<i>Raphanus raphanistrum</i> (Wild radish)
<i>Elytrigia repens</i>	<i>Reseda luteola</i> (Weld)
<i>Epilobium ciliatum</i> (Willow Herb)	<i>Ribes uva-crispa</i>
<i>Erodium cicutarium</i>	<i>Rorippa palustris</i>
<i>Erophila verna</i>	<i>Rumex</i> spp. (Clustered Dock)
<i>Festuca rubra</i>	<i>Sagina procumbens</i>
<i>Fumaria</i> spp.	<i>Salvia verbenaca</i>
<i>Gnaphalium coarctatum</i>	<i>Silene vulgaris</i>
<i>Hordeum</i> spp.	<i>Sisymbrium officinale</i>
<i>Hyacinthoides hispanica</i>	<i>Sonchus</i> spp. (Sow Thistle)
<i>Hypochoeris radicata</i>	<i>Spergularia rubra</i>
<i>Ilex aquifolium</i> (Holly)	<i>Stellaria graminea</i> and <i>S. media</i>
<i>Juncus</i> spp.	<i>Tragopogon dubius</i> (Salsify/Goat's Beard)
<i>Lamiastrum gemeobdolen</i>	<i>Trifolium</i> spp. (Clover)
<i>Lepidium</i> spp. (Peppercress)	<i>Ulex europaeus</i> (Gorse)
<i>Leucanthemum</i> spp. (Ox-eye Daisy)	<i>Veronica</i> spp.
<i>Linaria arvensis</i> (Toadflax)	<i>Viola arvensis</i>
<i>Lolium perenne</i>	<i>Vulpia</i> spp.
<i>Malus x domestica</i> (Apple)	