

Have Your Say



Discussion paper No 2: Biosecurity, Weeds, Pest Animals and Disease

This discussion paper is part of a series covering all of the 'Big Issues' raised by the community during meetings and workshops about the new Kangaroo Island NRM Plan. It provides a summary of the current state of knowledge about the issue, suggests courses of action and identifies who might work together with us in addressing it.

We now invite your comments, suggestions, criticisms and ideas.

Introduction

Biosecurity is the protection of the economy, environment and people from the negative impacts of invasive species. As for many things, **prevention is better (and far cheaper) than cure.**

The surrounding sea protects Kangaroo Island from many weeds, pest animals and diseases found on the adjacent mainland as there are relatively few entry points to be defended. As a result, KI has no foxes or rabbits, European wasps, honeybee diseases like European and American foulbrood, or marine pests such as Caulerpa seaweed. Deer and goats are close to being eradicated and there is little risk of reinvasion from the mainland.

Nevertheless, Phytophthora root rot, weeds such as bridal veil, cape tulip and boxthorn and feral pigs and cats still pose significant threats to our biodiversity and industries and are difficult and expensive to control. Some potential pests such as European wasps, weeds such as caltrop or various species of tramp ants could also cause inconvenience or direct harm to people should they become established.

New pest incursions could prove expensive through reduced agricultural production, increased control costs, quarantine restrictions and certification problems. They also have the potential to negatively impact on our high-value natural ecosystems, increase management and control costs, and detract from the important local tourism industry that is based upon the natural environment. In a worst-case scenario they could lead to increased regulation or restrictions on inter- or intra-island movement or **trading**¹.



¹Glatz, R.V. (2014). Native Vegetation on Kangaroo Island: landscape resilience and the triple bottom line. Draft report to Department of Environment, Water and Natural Resources, South Australia, Kingscote.

The KI community also benefits greatly from those who purchase real estate on KI (and therefore pay Council rates) as a result of its natural beauty and pristine wilderness values. Any loss of these values is likely to have negative economic impacts on our community.

There are currently some 26,000 introduced plant species in Australia. Most of these are garden plants and many are potential weeds. In comparison, Australia only has about 20,000 native plant species. A number of Kangaroo Island's existing environmental weeds originate in people's gardens, including wild olives, Italian buckthorn, sweet pittosporum, bridal creeper and coastal tea tree.

Many agricultural species including crops and pasture grasses are also potential weeds and may pose significant threats to the environment if their spread beyond the paddock is not **prevented**². By increasing vegetation cover, species such as kikuyu offer both production and environmental benefits: they can reduce sediment and nutrient runoff, increase soil carbon storage and reduce salinity impacts, but they pose a threat to watercourses and the integrity of native vegetation when not well managed.

Climate Change

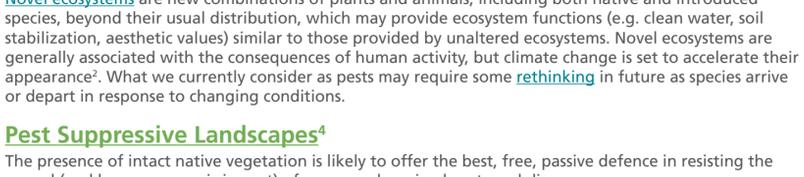
Climate change will place additional stresses on our native and agricultural plants and animals, and conditions will begin to favour new weeds, pest animals and diseases. We need to identify the most likely and/or the most potentially damaging pest species that might reach our shores so that we can take steps to prevent them getting here or control them if they arrive.

Climate change will cause higher temperatures, changed rainfall patterns, increased atmospheric CO₂, more extreme weather, changes in the seasonal cycles of plants and animals and changes to land use. Introduced pests are likely to be able to respond to these changes faster than many native and agricultural plants and animals. Extensive modelling indicates that species distributions in southern Australia will probably move **southwards**³. Kangaroo Island is thus likely to become climatically suitable for a whole new set of pest species, but may also become unsuitable for some current ones. 'Sleepers weeds' that are already present on the island but have not yet become highly prevalent or dispersed may become a more significant problem.

As the climate changes, the resilience and persistence of our native species and ecosystems will be greatly helped by the exclusion of additional pests. This is particularly important for an island as there is limited capacity for our native plants and animals to move to more favourable climates as conditions change.

Climate change will bring an increased risk of bushfire, which may contribute to the spread of weeds through disturbance to natural vegetation. Of particular concern are fire-adapted weeds such as gorse, which currently has a very limited distribution here. Elsewhere it is a serious weed of natural systems and reduces value of **agricultural land**³. Fuel reduction burns may have unfortunate side effects in future if they encourage growth and spread of weeds such as gorse.

Oceanic warming is causing range shifts in marine species, including invasive pests. European fan worm, which has been detected around Kangaroo Island at several sites over the last seven years and persists at one, is currently limited in its southward spread by low water temperature. As conditions warm, the risk increases of successful establishment in our coastal waters of this and other marine pests.



³Scott JK, Murphy H, Kriticos DJ, Webber BL, Ota N and Loechel B (2014) Weeds and Climate Change: supporting weed management adaptation. CSIRO, Australia. ISBN 978-1-4863-0401-1 http://adaptnrm.csiro.au/wp-content/uploads/2014/08/Adapt-NRM_M2_WeedsTechGuide_5.1_LR.pdf

⁴Department of Agriculture (DAFF) (2006) <http://www.weeds.org.au/WoNS/gorse/>

Novel ecosystems are new combinations of plants and animals, including both native and introduced species, beyond their usual distribution, which may provide ecosystem functions (e.g. clean water, soil stabilization, aesthetic values) similar to those provided by unaltered ecosystems. Novel ecosystems are generally associated with the consequences of human activity, but climate change is set to accelerate their appearance⁵. What we currently consider as pests may require some **rethinking** in future as species arrive or depart in response to changing conditions.

Pest Suppressive Landscapes⁴

The presence of intact native vegetation is likely to offer the best, free, passive defence in resisting the spread (and hence economic impact) of new weeds, animal pests and diseases.

There are four main reasons why intact native vegetation helps to control **agricultural pests**¹:

1. Pests and diseases that attack introduced crops are usually introduced themselves and less likely to be found in native vegetation. However, beneficial insects such as parasites and predators of pests are commonly found in native vegetation.
2. Introduced crops are often closely related to weeds and share the same pests and diseases. Weeds frequently provide a reservoir of pests and diseases that can attack crops. Intact native vegetation contains few weeds.
3. Crop plants, weeds and invertebrate pests on Kangaroo Island mainly come from similar climatic zones in South Africa or the Mediterranean region. In their new location they can interact in unpredictable ways to create bigger problems. Intact native vegetation surrounding agricultural areas can prevent these unfavourable interactions.
4. The abnormally high nutrient levels commonly found on and around agricultural land favour introduced weeds. Intact native vegetation around farms forms a barrier preventing weeds from infesting this productive land.

As the resources available to control new pest outbreaks are unlikely to be sufficient to prevent them from proliferating and spreading, the presence of intact native vegetation should be seen as an insurance policy. The potential cost of a pest invasion far outweighs the cost of leaving significant areas of native vegetation uncleared.

Current Management Activities

Natural Resources Kangaroo Island (NR KI) directly manages high risk weed species that are still relatively confined, such as gorse, Montpellier broom and blackberry. Tackling them now before they become widespread will prevent greater impacts and costs in the future.

Weeds which are already widespread are managed through increasing community awareness, promoting control, providing assistance and advice to landholders, and the use of biological control agents where available. A weed risk assessment process allows resources to be allocated for maximum return. Declared weeds (plant species listed under the NRM Act 2004 to restrict movement and sale and enforce control) are managed in the same manner. High risk declared weeds present in low numbers or with limited distribution receive a higher level of management attention than widespread, lower risk weeds.



⁴Grains Research and Development Corporation (GRDC) Fact Sheet: Pest Suppressive Landscapes May 2014

The main focus of the Kangaroo Island pest animal program is on eradicating feral fallow deer and goats. Expanding feral peacock populations are also being targeted through a trial eradication program and groups of landholders are being supported to manage pigs cooperatively across catchments. NR KI will continue to play an active role in trialling new control devices such Judas animals, pig baits and cat tunnels.

A new KI Biosecurity Strategy (aligned with the PIRSA State Biosecurity Policy 2013–16 and the national Intergovernmental Agreement on Biosecurity) will be developed in 2015. Engagement with all stakeholders on- and off-island will take place in 2015.

Control and Eradication Challenges

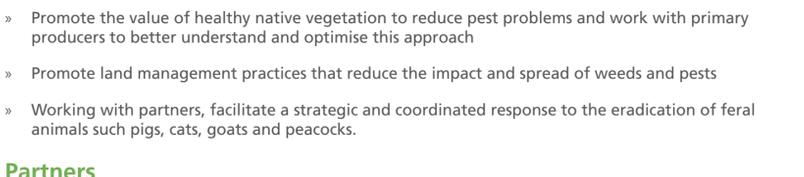
As a high proportion of environmental weeds start off as garden plants, nurseries and associated industries need greater awareness of the risks of introducing potentially invasive species. Community involvement in all aspects of weed prevention and control is also essential, especially for surveillance and monitoring.

The high number of non-resident landholders on KI creates a challenge for pest management: some lack awareness of the problems, some are largely absent and hence unable to participate, and some don't care as they suffer no personal inconvenience or financial cost. Lack of action by some (despite the requirements of the **NRM Act 2004**) undermines the efforts of others. Concerted, ongoing and coordinated efforts across the landscape are required if significant control and eradication (where possible) is to be effected.

Activities that move soil (e.g. with potted plants, compost, potting mix or building materials) risk spreading pathogens and weed seeds. The disturbance of natural vegetation (e.g. for building activities and road works) creates an ideal opportunity for weeds to establish or diseases to spread. Soil-borne Phytophthora dieback is a significant threat to biodiversity and some agriculture sectors on KI but there is limited awareness of it and limited action to prevent its further spread.

Efforts to control feral cats and pigs tend to fluctuate: as their numbers decline (due to environmental factors or control actions), efforts to eradicate them also tend to decline (either due to decreasing returns on effort or due to decreasing economic impact leading to decreasing interest in their control), allowing populations to recover. There is some vested interest in maintaining pig populations as they are a favoured target of hunters. Cats are notoriously difficult to control. Some have learned how to negotiate traps, retrieving bait without being caught. Current biological control options such as introducing feline enteritis are partially ineffective due to some natural immunity within the cat population, but they also pose health risks to humans (e.g. the potential to cause miscarriage in a pregnant woman).

There is also a potential conflict between a desire to project a '**clean and green**' image for Kangaroo Island while maintaining traditional use of agricultural chemicals. Whilst the judicious use of certain chemicals can be beneficial from an environmental and production perspective, it is well documented globally that the impact of many commonly used chemicals is deleterious to biodiversity and the environment, as well as **detrimental to health of humans**^{5,6,7,8}.



⁵<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1518967/pdf/ehp.per00368-0204.pdf>

⁶<http://weedsnetwork.com/traction/permalink/15895/News4793>

⁷<http://ehp.niehs.nih.gov/wp-content/uploads/122/10/ehp.1307044.alt.pdf>

⁸http://apps.who.int/iris/bitstream/10665/78102/1/WHO_HSE_PHE_IHE_2013.1_eng.pdf?ua=1

chemical resistance is a growing phenomenon, particularly associated with the use of **GM crops**⁹, but also evident in other instances. Such resistance generally leads to reduced choice of chemical use, due to the loss of efficacy of some chemicals, heavier and more frequent doses of chemicals, combinations of chemicals, or the use of **increasingly toxic chemicals**, all posing further risks to environmental and human health.

There is growing consumer awareness about the issue and a growing market for ethically produced, chemical-free food and wine. People increasingly want to know the provenance of their food and how it has been grown or produced. Kangaroo Island has a potential advantage here with its iconic image and relatively clean environment. However, it needs to ensure that it lives up to this promise and takes advantage of the opportunity of its growing reputation for producing premium clean **food and wine**.

Strategies and priorities

- » Strengthen Kangaroo Island's biosecurity to minimize the risk of future weed and pest invasions
- » Have plans in place to eradicate new incursions immediately upon detection
- » Reduce the impact of existing priority weeds through preventing outliers from spreading, eradicating known populations where possible, and taking measures to prevent the build-up of the seed bank
- » Identify and work with stakeholders that may unwittingly be spreading weeds and diseases (e.g. work with Council to reduce the spread of weeds and disease through road maintenance activities)
- » Encourage community surveillance to detect new pest incursions
- » Conduct a risk assessment to better understand future threats due to climate change, including possible new invasions and the response of sleeper weeds and current weeds and pests
- » Develop awareness and understanding of the threat posed by Phytophthora and encourage the implementation of best practice to reduce its spread and impact
- » Promote the value of healthy native vegetation to reduce pest problems and work with primary producers to better understand and optimise this approach
- » Promote land management practices that reduce the impact and spread of weeds and pests
- » Working with partners, facilitate a strategic and coordinated response to the eradication of feral animals such pigs, cats, goats and peacocks.

Partners

- » Primary Industries and Regions SA (PIRSA)
- » Kangaroo Island Council
- » Industry
- » Community



⁹http://www.ucsus.a.org/sites/default/files/legacy/assets/documents/food_and_agriculture/rise-of-superweeds.pdf

What are your thoughts?

1. Have all the key issues relating to this BIG ISSUE been adequately captured and understood?
2. Are there any gaps or misinterpretations?
3. What is the overall trend in relation to this issue — are matters improving or deteriorating, how fast and why?
4. In order to address this challenge, will the 'business as usual' approach work, or is adaptation (substantial change) or transformation (complete rethinking of how we do business and how we tackle this issue) needed?
5. Do you agree with the strategies and priorities listed and/or do any need adding?
6. Who are the partners that need to collaborate to address this challenge?.



FOR MORE INFORMATION

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