

BUDAWANGIA*

AN E-NEWSLETTER FOR ALL THOSE INTERESTED IN THE NATIVE PLANTS OF THE NSW SOUTH COAST

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Aims: To connect those interested in the native flora of the NSW South Coast, to share up to date information on the flora of the region and to broaden the appreciation of the region's native plants.

Editorial

I am sure I am not the only one wondering where winter was this year. The strong winds of August arrived on time, but the warm and sunny days during the last couple of months were most un-winter like. August is the month for wattles; the region is yellow everywhere one looks. The large tree wattles covered in foliage-obscuring yellow sprays of flowers is a wonderful sight at this time of year. The Echidnas are on the move, so spring must be just around the corner.

My research and interest in islands brings me to consider how plants disperse to colonise new areas. The remotest island in the largest ocean supports vegetation of some kind, even if it is of relatively low diversity. This edition starts a serious on seed dispersal, so important to ensure the continuing existence of a plant species.

Other items herein include a note on *Pittosporum undulatum* as an invasive species, an update on White Smut Fungus and the usual trivia spot, weed of the month and the answer to last month's mystery weed. I would like to get some feedback on the issue of *P. undulatum* as a 'weed'. What do you think? What experiences have you had with this native tree? How are bush regenerators dealing with it?

I would be pleased to receive appropriate articles, however small, on interesting observations, new discoveries, plant name changes, etc., up to two A4 pages, including some photographs.

With science regularly under attack these days, I felt impelled to quote from Galileo Galilei (1564-1642), Italian philosopher, mathematician and astronomer who believed, correctly, that the Earth revolved around the Sun and was castigated by the church for his beliefs.

"In questions of science the authority of a thousand is not worth the humble reasoning of a single individual."

"Science proceeds more by what it has learned to ignore than what it takes into account."

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* *Budawangia* is a monotypic, endemic genus restricted to the Budawang Range on the western edge of the South Coast region. The genus was named by Telford in 1992; the species *Budawangia gnidioides* (Ericaceae) was previously *Rupicola gnidioides*.

Seed Trek - The Next Generation - Episode One

Next time you are sitting on the back step picking grass seeds out of your socks after a walk in the bush or across a paddock, contemplate why evolution has arrived at such a diabolical test of your patience. The seeds you are struggling to prize from your blend of nylon and wool have evolved to attach firmly to animal fur and feathers, thus ensuring dispersal of the seed as far as possible from the parent plant.

Seeds or their attachments can have various barbs, hairs, spines or hooks for passive animal dispersal. For example, grasses (family Poaceae) and plants from the daisy family (Asteraceae) often have such devices, having evolved for the specific purpose of animal dispersal. *Velcro*, the hook and loop fastening device we are all familiar with, was developed by imitating the hooks produced by the fruits of some plants. Migrating birds travel many thousands of kilometres each year and can transport seeds across wide oceans such is the success of the devices that have developed.



Above. Cobblers Pegs or Farmer's Friend *Bidens pilosa* (Asteraceae); barbs ensure secure attachment to passing mammals, birds and socks.



Above. Wild Oats *Avena* sp. (Poaceae), a common grassland exotic on the tablelands. The backward orientated hairs make it ideal for attachment to fur and feathers.

Photographs © Kevin Mills 2013

Many other mechanisms have been developed by nature for seed dispersal, either associated with the actual seed or the fruit in which the seeds are embedded. Some plants produce very sticky seeds that adhere to an animal's body, thus ensuring dispersal well away from the parent plant. Local species producing sticky seeds include Rough-fruited Pittosporum *Pittosporum revolutum* (see photograph) and Bird-lime Tree *Pisonia umbellifera*.

Fleshy fruits are attractive to and ingested by fruit-eating animals; the often hard seeds are later voided, intact and hopefully introduced to a new and suitable site for germination. The importance for the plant of dispersing its seeds is reflected in the large amount of energy that a plant can expend in growing a large crop of fleshy fruits. Most of our local rainforest trees, for example, produce fleshy fruit and are primarily bird-dispersed. These plants and rainforest birds, particularly pigeons, have co-evolved and developed a most efficient system of seed dispersal, which benefits the birds as well as the plants.



Left: The fleshy fruits of *Coprosma quadrifida*; dispersed by birds attracted by their bright red colour.
Right: The sticky seeds of Rough-fruited Pittosporum *Pittosporum revolutum* readily adhere to an animal's fur or feathers, thus ensuring dispersal. Photographs © Kevin Mills 2013.

We may ask why most fruit is brightly coloured or at least stands out from the general green of the plant's foliage. Why aren't fruit green like other parts of most plants? Just as flowers are coloured and shaped in a particular way to attract pollinators, fruits are often colourful to attract seed-dispersers. Most fleshy fruits gain their colour at maturity, such as red, purple, orange and yellow; these colours not only attract the animals to eat them, they differentiate the ripe fruit from the fruit that is not ripe, which is usually green. It is no good to the plant if unripe fruit (non-viable seed) is taken by animals. The smell of ripe fruit is also likely to be important, especially to nocturnal animals.

Some animals literally plant the seeds of plants. This happens by animals caching food resources, including seeds, for later retrieval and consumption when the seeds are not otherwise available. The most obvious may be the squirrel, but many other species including birds and invertebrates store plant seeds for use in lean times.

Through experiment, Charles Darwin found that seeds can be transported successfully in mud stuck to the legs of birds. One can imagine that seeds encased in hardened mud or hidden in feathers could be transported great distances on migratory birds, which can fly hundreds if not thousands of kilometres before landing. An interesting local example of such a species may be Yellow Loosestrife *Lysimachia vulgaris* var. *davurica*. In Australia, this species occurs only on three NSW wetlands, including Wingecarribee Swamp near Robertson, and in Victoria. The plant mainly comes from Europe and Northern Asia and may have been transported by a migratory bird such as Latham's Snipe, which could have brought a seed from Japan. In Australia no viable seed is produced, the plant spreading only by root suckering. Next edition, we will look at wind and water as seed dispersal agents.

Trivia Spot

Here is a new word for you all – *pteridomania*. I came across a book review that deals with this affliction; parts of which are reproduced here. 'Of all the many passions and crazes in nineteenth-century gardening and natural history, none was as long lasting or as wide reaching as fern fever, or Pteridomania as it became known. The obsession with ferns was not confined to botanists and affected men, women and children from all classes through the British Isles, the Empire and America.' If interested, the book is titled *Fern fever: the story of Pteridomania* (published in 2012).

Mystery Weed - Answer

The plant is *Sida rhombifolia* (Malvaceae), also known as Paddy's Lucerne. This sub-shrub occurs throughout the region and is most abundant near the coast in disturbed areas. In some old books, this species is regarded as native. Weeds officer David Pomery was first in with the answer.



Plant of the Month – *Zieria cytisoides*

The genus *Zieria* (Rutaceae) is represented in our region by about 11 species, these are mostly small shrubs. Two endemic species are threatened because of their limited population. Some species are quite attractive and have horticultural potential. The featured species here is *Zieria cytisoides*. This small shrub is relatively common on cliff edges in the gorge country to the west of Nowra, and occurs widely across the eastern half of NSW. This species is probably a parent plant of the endangered Bomaderry Creek *Zieria* *Zieria baeuerlenii*.



Zieria cytisoides growing on a sandstone cliff edge near Nowra.



Flowers and leaves of *Z. cytisoides*.
Photographs © Kevin Mills 2013.

***Pittosporum undulatum* – an invasive native**

During the month I drove to Merimbula and back and one of the things that struck me along much of the route travelled was the prevalence of *Pittosporum undulatum* in the forests. This species is sometimes regarded as invasive and in need of control, even though it is a native tree. The primary reason for its increasing abundance and indeed dominance in some coastal areas is the absence of bushfire. Additionally, increased runoff and possibly increased nutrients in urban bushland promotes the proliferation of this species.

In some places, the forest is being transformed into a rainforest, below a tall, emergent and non-regenerating eucalypt canopy. The shady and moister conditions promoted by the dense canopy of *Pittosporum* provide conditions for other rainforest species to colonise the site. *Pittosporum* is operating as a pioneer, colonising species, much like a tree wattle, although in this case *Pittosporum* usually lives for a much longer time than a wattle.

The species has extended its range across Victoria and has turned up in Western Australia. In those states it is regarded as an environmental weed. In some parts of NSW it is also regarded as an environmental weed, particularly in the Sydney region.

There is a conundrum here in that a native species is proliferating beyond its normal range and abundance because of human modifications to the landscape and land management regimes. I would be pleased to include some feedback on this issue in subsequent newsletters if readers wish to participate in a discussion.

Update: White Smut Fungus

Les Mitchell of Kangaroo Valley has again sent us an update on the White Smut Fungus and the control of Mistflower. Les writes – ‘Thought you might be interested in the latest photo from a site on our property which I’ve been monitoring since the release of the White Smut Fungus, 500 metres from this site in May 2011. First photo shows the extent of the mistflower in 2010 before bio-agent release. I’ve sent around a series of photos from this point before and the latest one taken yesterday shows further reduction in mistflower cover. Quite significant change and my observation is that the fungus is most active over winter, as Louise and Melissa (CSIRO) have suggested.’ Les’ photographs are shown below.

July 2010



August 2013

