



Press Release:

Urgent need to recreate flood resilient rivers and floodplains **27 January 2011**

The recent floods in eastern Australia highlight the power of water to destroy. Pioneering Australian ecological designer and co-originator of the permaculture design system, David Holmgren is calling on governments and landholders to spend **less money more wisely** in managing our watersheds and streams. Holmgren says the permaculture design slogan for water “Slow it, spread it, and sink it”¹ can be applied at all scales from the backyard to the watershed. The tools to do that include earthworks and water tanks but soil and vegetation do the bulk of the work in reducing the destructive power and increasing the life giving qualities of water. Riparian (streamside) vegetation is our last line of defence to buffer the force of floods.

But over the last two decades government funded “streamside management” programs in Victoria, Tasmania and southern NSW, have seen thousands of kilometres of waterways denuded of the vegetation best able to slow the water, stabilise the banks and retain sediment and debris that causes so much damage to farm and urban landscapes.

Holmgren says willow removal programs have set back central Victorian streams almost to their guttered gold era condition while the native revegetation programs that mostly follow willow destruction have mostly failed to restore functional riparian vegetation. He says the extraordinary fibrous surface root mat² formed by streamside willow trees acts like a continuous “living shock absorber” able to resist the powerful erosive force water while capturing sediment and nutrients from both normal and flood flows. No local native tree species have this characteristic. Holmgren claims willows consistently outperformed native trees (especially eucalypts) in these critical landscape functions.

Hepburn Shire Mayor Cr Rod May has urged streamside managers to heed the words of wisdom from Mr Holmgren. “We are beginning to understand the role of biodiversity in our pursuit of sustainable and resilient development, but our understanding is an impoverished one if we fail to recognize the assets we have in the form of exotic species. Willows are just one of the many species that comprise our biodiversity and play a positive functional role,” he said.

Haikai Tane³, an international expert on watershed management says willows are the most important trees in stabilising degraded rivers and streams in temperate climates around the world.

Extensive scientific research in central Victoria by ecologist Dr Michael Wilson⁴ and colleagues has confirmed that the fibrous root mats of willows are unique in their ability to stabilise streams, capture sediment and provide native fish habitat in previously barren farm landscapes. Michael Wilson says, “*Willow removal, even if followed by planting of tube-stock eucalypts and Acacias*

¹ Coined by permaculture designer and teacher, Brock Dolman. See Brock’s inspirational presentation on water and watersheds at the Bioneers conference in California
<http://www.youtube.com/watch?v=UXi0ysNUa3Y&NR=1>

² See photo gallery of willow root mats at Spring Creek Community Forest
<http://www.holmgren.com.au/PG/Galleries/SpringCk/Z7.html>

³ See website for more information about Haikai Tane’s work <http://www.cyberport.net.nz/>

⁴ Dr M. Wilson, *Willows: Weeds of Retention*,
http://www.fromthesoilup.com.au/15/images/stories/Sept%2009/wilson_nsf_willows.pdf. Also see interview on ABC radio Nov 2009 <http://www.abc.net.au/rural/content/2009/s2739765.htm>

has the potential to release hundreds of tons of sediment and tens of tons of organic matter per kilometre as the material trapped by willow roots is released as they breakdown.”

Carol White, owner of the local tourist icon Lavandula⁵ on the banks of the Jim Crow Creek, has seen how her planting of eucalypts along the stream bank has been ineffective and counter productive while her persistent management of self established willows has stabilised eroding banks while creating an aesthetically pleasing and fire safe landscape.

Holmgren agrees that the combination of willow root mats and grass cover at Lavandula has been critical in resisting the erosive force of the flood while capturing debris and sediment to build new soil and protect downstream bridges and fences.



Managed willows and grass cover at Lavandula, Shepherds Flat, holding stream bank after latest severe flooding on the Jim Crow Creek.

Many people point to vegetation clogging waterways in low lying towns such as Creswick and Clunes as the “cause” of flood damage. White says that management of the constant load of fallen debris from willows (or any other trees) is essential to avoid debris dams such as the one that destroyed the foot bridges at Lavandula and Tipperary Springs. Rod May, mayor of Hepburn Shire acknowledges there are particular issues with streamside management through low lying towns that could be better managed to reduce the extent and duration of impact on homes and businesses. On the other hand, he believes we need functional streams and floodplains that can capture sediment and debris mobilised in large floods. Opening up watercourses to get faster removal of floodwater is a long discredited approach to floods that only makes the problems worse and threatens even larger disasters as climate change delivers even more extreme weather events.

⁵ <http://www.lavandula.com.au/index.php>



Holmgren at Tipperary Springs where log jams of debris destroyed the pedestrian bridge and diverted destructive flood flows through the picnic ground. The log jams consist of long poles of living eucalypts unable to resist the scouring force of the water combined with massive quantities from willow trees killed by NCCMA willow poisoning squads more than two years ago. If these willows had been living they would have slowed and spread the flood waters, protecting soil and built assets.

Holmgren agrees that management of streamside vegetation must be informed by bigger and longer term issues than immediate flood damage. He says climate change is a misnomer for the climate chaos we are already experiencing. Arguments whether the recent run of extreme events is caused by human or natural causes are of little consequence if our land management and disaster responses are ignoring those emerging realities. As with the increasing threat from bushfires⁶, we need landscapes and communities that are more resilient to escalating climate chaos.

Holmgren further contends that throwing more money, resources and technology at these problems is not sustainable in a world of peak oil and global economic instability. His own research on peak oil suggests that blowouts in the cost of fuelling excavators and buying the massive quantities of herbicides used to kill streamside vegetation will end willow removal programs within a decade, but that in the meantime governments flush with money from the mining boom could cause untold damage.

On the other hand, he suggests common sense management of existing vegetation is one of the low cost options we can take whatever the future. His own modest interventions, along with other locals, in Spring Creek between the Springs Reserve and Breakneck Gorge have demonstrated that willows root mats have been critical in stabilising and filtering increasing storm water flood flows over more than twenty years. Once we better understand what nature is already doing for

⁶ See Bushfire Resilient Landscapes and Communities discussion paper
<http://www.holmgren.com.au/frameset.html?http://www.holmgren.com.au/html/Writings/Bushfire.html>

us, then larger scale projects to manage willows for livestock fodder and other yields can be explored⁷ to redirect the current funds being wasted on willow removal.



Holmgren inspecting intact 50 year old willow root mat that has survived the latest floods through the Spring Creek Community Forest downstream of Hepburn. Willow root mats purify and oxygenate the water while absorbing flood impacts.

According to Holmgren, North Central Catchment Authority, Parks Victoria and other government agencies responsible for stream management are driven by a “nativist ideology” that treats all naturalised vegetation as bad for the environment. This ideology is used to justify a scandalous waste of taxpayer’s money that degrades the ecology of our streams and rivers while making them more vulnerable in the face of increasing threats from both floods and bushfires.

While Holmgren is not romantic about the days when adjoining farmers managed the creeks and river as they saw fit, he regards the current policies as a new form of environmental vandalism. “As a pioneer⁸ of ecological design in this country, it is very galling to have the insights of ecological thinking so side tracked and degraded by nativist prejudice.”

On several occasions over the last few years, Holmgren has called on the North Central Catchment Authority to put up any expert prepared to publically debate willow management in central Victoria. This unprecedented run of floods shows that this issue is more than an obscure spat between competing schools of environmental thinking. The inland tsunami in the Lockyer Valley in Queensland shows that watersheds unable to slow and spread floodwaters can be as terrifying and lethal as bushfire.

For more information or to organise an interview contact info@holmgren.com.au or 5348 3636. www.holmgren.com.au - See in particular Spring Creek page – Willow management update.

⁷ See Willow Management discussion paper

<http://www.holmgren.com.au/DLFiles/PDFs/Willow%20Management%20Ag%20Landscapes3.pdf>

⁸ Holmgren’s work as the co-ordinator of permaculture has been recognised in the book *Ecological Pioneers of Australia* by Hill and Mulligan.