

The numbering in these comments refers to the numbering of sections used in the Issues Paper.

Theme 2, conservation action, points 1 and 2, page 5.

Our own experience with a Voluntary Conservation Agreement has been quite positive so far. I believe that most people who enter into Voluntary Conservation Agreements are enthusiastic about biodiversity conservation and would not require any great incentive to conserve the habitats that may occur on their land. The main issue is what happens after we die or are too old to continue living here? In this regard, the discount on local government rates is important. I understand that a future owner would have to pay back the rates forgone if they wanted to withdraw from the agreement. This is really the most important feature of the VCA in ensuring the best chance of biodiversity conservation on private land in perpetuity. (This is particularly relevant to point 7, page 6, Legacy issues.)

The effectiveness of conservation on private land in this valley is severely compromised by the presence of a large and growing number of feral deer. These are mainly fallow deer from a failed deer farm but also include Sambar deer actively introduced to the area by hunting enthusiasts. In a river valley subject to periodic flooding, there is no prospect that fencing can be maintained to exclude deer at all times. Hunting pressure by recreational hunters is minimal and is unlikely to have a significant impact on the burgeoning population because of the fragmented nature of land ownership and the reluctance of most landowners to allow hunters that they do not know well onto their lands.

Deer have a severe impact on many shrubs including many of the remnant rainforest understorey plants because they eat the young bark. Fruit bearing shrubs such as the scrubby violet (*Hymenantha dentata*), Blueberry ash (*Eleocharpus reticularis*) the mock olive (*Notolea venosa*), *Santalum obtusifolium* and *Coprosma quadrifida* are targeted by deer and often killed outright. This has a negative effect on frugivorous birds and many of the small insectivorous birds that like to nest in the thorny shrubs. Deer also eat young tree-ferns.

It would be useful if feral deer species were declared noxious pests like rabbits are, and landowners were required to actively suppress them. The idea that recreational hunting can be an effective means of control is ridiculous in this landscape, with many small landholdings and a flood-prone river winding through.

These comments on feral deer are also relevant to theme 5, Wildlife management, point 1 (b) feral animals and weeds, page 10.

In relation to weeds, our VCA agreement requires us to make “best efforts” to suppress feral pests and weeds in the agreement area. Some of the highest site quality land in our VCA area includes river flats. High site quality land is not just productive for agriculture but also wildlife such as wombats, wallabies, possums and gliders, as well as a range of birds. Weeds management is always going to be an issue on river flats, and experience has shown us that an integrated approach has the best chance of some degree of success. Establishing a tree and shrub canopy is very useful in slowing down the growth of invasive weeds such as kikuyu, but is not all that helpful in suppressing periwinkle (*Vinca sp.*) and the wire tree guards required to establish tree and shrub species in the face of grazing pressure by wallabies, wombats and feral deer are frequently infested with vine weeds like cape ivy (*Senecio sp.*) and turkey rhubarb.

Hand weeding is necessary around new plantings but is impractical over large areas. Frequent mowing or brush-cutting can help to weaken periwinkle over time and replace it with a “marsupial lawn” of native groundcover plants like *Microlaena stipoides*. This strategy has been thwarted for a time by the March 2011 flood in the Towamba Valley, which dumped a large amount of woody debris on our flats and knocked over many established trees that we had planted in the early 1980’s. This woody debris has made mowing and brush-cutting impossible until the larger debris can be stacked and burned safely.

The severity of the March 2011 flood surprised the Bureau of Meteorology, which had predicted about 100 mm of rain from an east-coast low pressure system. We had 92 mm at lower Kiah, while the Kiah store about 5 km upstream had 170 mm and along the escarpment (say around Rocky Hall and Cathcart) about 500 mm fell over 2 days. A met-bureau spokesman subsequently said that the reason for the very heavy rainfall along the escarpment was that the sea was exceptionally warm, putting more water vapour into the atmosphere than might have been expected.

On the 27 of March 2011 I attended the Sapphire Coast Marine Discovery Centre annual seminar. There I learned that the East Coast Australian Current has intensified by a factor of 3 or 4 times, most probably as a result of global warming. (“The Sun, the Moon and the Oceans, Pieces in the Energy Puzzle”, an address by Ross Griffiths, Earth Sciences, ANU).

The view that the intensity of storms will increase as the Earth warms up is widely supported. (See for example, “Storms of my grandchildren” by James Hanson of NASA.) Perhaps our VCA area is particularly vulnerable to the effects of flash flooding, being downstream from a sharp bend in the Towamba River and on the outside of the bend. (Portion 47, Parish of Kiah). Action to combat anthropogenic global warming will be important for many biodiversity conservation outcomes.

#### Conservation of native fishes and other freshwater aquatic biota.

It is not really clear where this topic should fall. However, there are no national parks which conserve whole large catchments since most river valleys have had the best agricultural lands on river flats cleared and these are privately owned. Effective conservation of the aquatic habitat(s) requires both thoughtful management of the riparian areas and steeper lands in the upper catchment as well as careful management of the flow regime. The information required to manage flow regimes for native fish conservation is scant. There are obvious issues such as the removal or modification of weirs (with “fish ladders”) to allow breeding migration of native fish species. There is also evidence that adequate flows are required to maintain healthy macroinvertebrate diversity and native fish populations. (PBH (2001) Chessman B. “Pressure-Biota-Habitat Stream Assessment: report on field trials in 1999-2000”, Review draft January 2001, DLWC.)

Water sharing plans have been in place for NSW streams subject to significant irrigation and urban water extraction. Clear criteria and indicators for assessing the adequacy of these water sharing plans in conserving aquatic biota are generally lacking. Monitoring of native fish species diversity and macroinvertebrate diversity should be implemented in all streams subject to significant water extraction. Funding for this could be built in to the water use license fees.

In conclusion, I would like to reiterate the following main points:

- Local government rates reductions are a very important way of ensuring ongoing conservation of private lands for biodiversity outcomes.
- Feral deer should be declared noxious pests and should be more actively suppressed.
- Action on climate change is important for a range of conservation objectives.
- Water sharing plans should be reviewed in the light of monitoring for biotic indicators.