

July 2010 in Our Catchment

A good, brisk winter.

The water in the weir at Queanbeyan had the colour of milky instant coffee on Saturday morning. It was also running well, and carrying plenty of flotsam. That didn't appear to worry the moorhens and the ducks much! This has felt as if it has been a cold winter so far. We certainly appear to have had plenty of -4° and -5° frosty mornings; and we have had quite a few heavy grey days. All this, with the consistent rainfall has helped to make the soil moisture level better than it has been for quite some time. That means good run-off from whatever we get in rain from here into the spring. There shouldn't be too many 'no water' reports for a while now!

Your Results:

It is worth noting just how many of you took the opportunity to enjoy the pleasant afternoon on Saturday. So far the reports have been extremely encouraging...the lakes and dams are warmer than the flowing creeks and rivers. Yes, the turbidities are elevated but nearly everything is running! Most pH readings are in the expected range. Only Yarralumla Ck and Stony Ck at Carwoola still have high levels of Electrical Conductivity. A few high phosphate and nitrate readings may indicate some soil disturbance. Yarralumla Ck has some algal fringe and Chimney Ck has a winter fuzz of diatoms and *Phormidium*; most people reported no algae, or none to be seen. Thank you all very much.

Why Native Riparian vegetation makes a difference

The third year Natural Resource Management students from ANU recently worked on various projects to do with the Sullivans Ck Sub-catchment. One group surveyed the condition of the creek above the Barton Highway. They found numerous examples of incised channel and continuing bank erosion in open paddock sections of the creek, but contrasting stabilised bank and less deep incision where riparian vegetation had been restored.

The reintroduction of native vegetation, both canopy and shrub species, into waterlines helps water retention in the soil and the reengagement of the water table, which together over time brings about increased flow in groundwater.

The deeper root development of shrubs and trees, rather than shallow development below grass and annual weeds, opens the spaces in the soil and subsoil and allows movement up and down. The root system of a manna gum (*Eucalyptus viminalis*) or a river sheoak (*Casuarina cunninghamiana*) is deep and spreading, finding its way through the rocks and sediments of the river flood plain where it thrives. In the one development it knits all the elements of the soil, the sub soil and the bedrock and provides pathways for both air and water to travel through that knitting. The shorted lived and somewhat shallower rooted shrubs that form the understorey increase the complexity of this knitting and sometimes add extra dimensions to it. The local wattles (*Acacia dealbata* and *A. mearnsii*) like all the legumes, form root nodules with nitrogen fixing soil bacteria; other plant root and fungal or bacterial mutually beneficial

associations are common. The very real increase in carbon content in the soil improves soil vitality as well as water penetration and retention.

The presence of leaf and twig litter and fallen branches increases the complexity of runoff passage of water and helps water penetration, even after storm events. Pine plantations are renowned for their deep needle litter, but sheoaks are just as productive in this field. Eucalypts and wattles drop a persistent rain of leaves, twigs and branches across the whole year. Some of the other common riparian shrubs provide an enriched litter, as does the hempbush (*Gynatrix pulchella*). The leaves of this shrub are very efficiently peppered with holes by a small leaf-eating beetle. The beetles' dropping



are scattered beneath the host plant and act as pelletised fertilizer for the area. So not only does a complex water slowing system develop but nutrient recycling is facilitated at the same time. Grass leaf-litter does little to impede runoff or assist in pooling of rain and often has little nutrient value.

The reappearance of tussock grasses and allied plants (*Dianella* and *Lomandra* for instance) on the banks and reeds and rushes fringing water margins also increases the dynamics of the soil water interface by mechanically interrupting flow and by increasing localised moisture retention within their tussocks or beds. Many of our native water animals are exploiters of the dappled shading provided by native vegetation, and are poorly adapted to either the constant lighting of bare banks or the deep shade of deciduous northern hemisphere trees.

While putting together the current M-CHiP report I have seen the contrasts between sub-catchments where stream-bank vegetation has been preserved or restored and those where it is largely gone. As you all appreciate we can only keep monitoring things for so long before it becomes very clear that actions need to be taken to promote the best possible outcomes. One such outcome can be the recommendation of riparian vegetation restoration, with an indication of where funding for such works may be found.

Think about the condition of the waterway bank where you sample. Does it need support or improvement? What might be done? Then bring it to our attention, and that of your local Landcare group.

Calendar:

Thursday, 22nd July: Frog Call Identification Evening Queanbeyan TAFE

Saturday, 21st August: August Sampling Weekend

It will soon be time to register for this year's Frogwatch; encourage all your friends!