

## Healthy Catchments, waterways and habitats

A catchment, or watershed, is the area of land from where a river or lake captures water from rain, ice or snow. The water may remain above ground as surface water, in creeks, pools and other wetlands, or it may pass underground to become groundwater, within layers of porous soil or rock called aquifers. Water follows the rules of gravity and always flows downhill, winding its way through the landscape to the lowest point it can find passing through small rivulets, filling creeks and then eventually flowing to the largest lakes, rivers and wetlands.

Catchments can vary in size from many square kilometres in size to hundreds of square kilometres to the size of half a state !! Catchments do not adhere to modern ways of dividing land such as state borders, shire boundaries, CMA regions, town footprints or fencelines. They are as old as the land itself, dictated by geography, and slowly constantly being altered by natural weathering. Human intervention can play a large role in altering natural systems with the building of dams, weirs and channels, the addition of industries and towns that consume large quantities of nature's water and the alteration of catchment behaviours through the hard surfaces of towns and cities. It is human nature to try to harness the potential of life-giving water but nature always retains the power, seen at its best during times of flood when water will always travel where it naturally wants to go despite the infrastructure of roads, bridges, towns and properties.

The characteristics in a catchment change as the water flows through it. The upper catchments are defined by mountainous regions and foothills, and are usually made up

of streams that are narrow and steep. The water moves very fast through these areas as it meanders its way down the middle catchment. The middle catchment is defined by flatter land and lower gradient streams with less bends. The water slows down as it moves through this part of the catchment, making its way to the lower catchment where the land is generally flat. Waterways then open up and become much wider, and water slows down as it makes its way to its confluence at a bigger river, lake or to the sea.

### *Why are catchments important ?*

Catchments provide people, stock and flora and fauna with drinking water. They provide people with water for domestic and industrial use, including irrigation, and they cater for recreation and tourism. They may also include important cultural sites. Wildlife depend on catchments for food, shelter and breeding sites. Catchments are important in environmental, economic, social and cultural terms.

Any negative change in the condition of a catchment is likely to be reflected in local streams and lakes, and in the groundwater. For example, pollution by chemicals, soil erosion due to land clearance, or excessive water use may result in a decline in the health of local streams and lakes.

### *Water quality and quantity*

The quantity and quality of water affect river red gums, birds and frogs, other aquatic flora and fauna, and ecological communities like wetlands, floodplains and nearby land.

Take a river, for example. A healthy river needs water of sufficient quality and quantity. And there can be little surface flow until groundwater reserves are recharged. The surface water must be delivered often enough and at the right time of year, to meet the needs of aquatic plants, animals and people.

The quantity of water matters little if its quality is unsuitable. It may contain too much salt or sediment, perhaps as a result of land clearing, or too many nutrients from sewage or other sources.

Saline water, for example, is unlikely to be drinkable or useful for irrigation, and it can kill many kinds of aquatic organisms. Trees like river red gums are often victims of salinization. Excessive salt in the soil may kill mature trees or prevent regeneration. In turn, the loss of trees reduces habitats for parrots, possums and many insects and other invertebrates. Fish, frogs and other species are likely to be lost.

Where there are fewer fish and frogs, water birds may not have sufficient food, and they too may leave the area. In ecosystems like these all things are connected, so that a change in any one thing inevitably has consequences up and down the food chain.

In very disturbed areas, pest species often take over, and the effects on the ecosystem are magnified.

Pest animals like wild goats, for example, can damage watercourses by eroding the banks, pugging the sediments, fouling the water and destroying vegetation and pasture cover. This spoils drinking water for stock, leading to lost farm productivity.

Pest plants like peppercorns, blackberry, gorse, willows, African boxthorn and introduced grasses add to the damage. Autumnal leaf fall into a watercourse for example adds nutrients and organic matter, and these may degrade the quality of water, limiting its use by wildlife and stock.

When you encounter a stream or a lake infested by pest species, or polluted or degraded in some other way, the cause often is to be found not in the waterbody itself, but in the surrounding catchment. It is hard to

imagine a healthy stream or lake in a degraded catchment.

*How can catchments be protected?*

- Control pest species like goats, foxes and rabbits
- Remove other weeds, and replace them with native species
- Plant appropriate native species to control sedimentation and run-off into watercourses
- Ensure that farming practices are sustainable
- Ensure that water and land together are managed sustainably for the benefit of people and the environment
- Follow best-practice guidelines and regulations relating to water use
- Follow recommendations in catchment management plans
- Monitor the health of waterways and catchments
- Protect permanent pools as wildlife refuges
- Restrict stock access to waterways

There are many more ways – what can you think of ?

