



Bellinger Valley

MANAGING STOCK ON WATERWAYS AND IN WETLANDS

On-farm Benefits of active stock management on waterways

A well planned farm including riparian (stream bank) fencing can lead to

- More efficient stock mustering.
- Reduced loss of stock through accidents, falls and bogging.
- Less erosion and loss of land.
- An increase in productivity.
- More even grazing patterns.

Off-Stream watering leads to

- Reduced environmental mastitis and less time spent cleaning udders.
- Reduced foot health problems (e.g. foot rot).
- Reduced risk of water-borne parasites and diseases.
- An increase in farm productivity through stock access to clean water. Clean water helps maintain stock condition and improves milk and wool production.
- Stock have been shown to prefer drinking cleaner water from troughs.

Retaining and restoring riparian and wetland vegetation can

- Improve the ability of the land to trap and use available rainfall.
- Provide a shelter-belt for neighbouring paddocks by reducing wind velocity and moderating extreme temperatures. This is particularly valuable during calving and lambing.
- Increase land value by making the farm more attractive. A well managed stream frontage can increase property values by up to 10%.
- Provide drought reserves for stock.
- Reduce loss of valuable land by erosion.
- Increased biodiversity benefits such as insect pest control through increased bird numbers.

A well-managed sustainable farm that is considerate of other river users including plants and animals gives the landowner a sense of pride.



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River health benefits

A vegetated riparian zone which excludes stock:

- Rapidly restores river water quality.
- Filters run-off from developed and agricultural land uses. Generally, the wider the buffer zone the better it can filter pollutants such as sediment, heavy metals, pesticides, herbicides and fertilisers.
- Is less likely to erode than cleared areas. Trees, shrubs and rushes protect the bank with their roots and reduce stream velocities especially in times of flood.
- Provides excellent habitat for many species of plant and animal. There are many flow-on effects which lead to a healthier river system.

What impacts do stock have?

Sedimentation and pollution of streams

- Stock excreting directly into streams reduces water quality and can lead to outbreaks of algae.
- Stock loitering in streams can stir up sediment, damaging the habitat of fish and other important aquatic organisms.
- Many people use the local rivers for recreation and as a source of household water - decreased water quality can put their health at risk.

Increased erosion

- Stock trample and destroy riparian vegetation leaving banks exposed and vulnerable to erosion.
- Stock cut tracks into the banks that can lead to slumping and erosion; tracks also concentrate run-off which can lead to gully erosion.
- Stock can damage the toe of the bank causing the bank to collapse.
- Stock pug damp sites, which damage the soil structure, leads to erosion and draining of important wetland soak.

Damage to important riparian and wetland vegetation

- Wetland, riparian and in-stream vegetation slow down the movement of water and filter out sediments, maintaining river health.
- Without the shade of riparian vegetation, higher water temperatures can cause excess algal growth and dominance of exotic species.
- Stock compact the soil, which prevents growth and regeneration of desirable species.
- Opening up of the plant canopy, combined with high nutrient loads from dung and urine, provides ideal conditions for weeds.





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KEY CONSIDERATIONS FOR MANAGING STOCK

Planning

Having a plan is very important. A rough sketch of your waterway can be a good start but a whole farm plan will allow you to manage your property in a way that will save time, cost and effort in the long run. A whole farm plan:

- Uses an aerial photograph or map to identify natural features such as waterways and rock outcrops, problem areas, and farm infrastructure such as fences, crossings and buildings.
- Identifies areas with similar management requirements and land capability and locates fences following natural landforms. Many farmers have found that subdivision of larger paddocks and development of rotational grazing programs boosts productivity by letting them use each part of the farm according to its capabilities.
- Leads to practical and well planned siting of new infrastructure (e.g. appropriately locates laneways, gates, watering points, stock crossings and other easements to help control stock and manage grazing pressure in riparian areas).
- Takes a long-term and realistic view- all works require time, effort and money. Seeking appropriate technical expertise (e.g. from Landcare, Council, & Catchment Management Authority (CMA) and applying for funding can assist in achieving the goals of sustainable farm management.

Fencing

Developing effective and practical fencing is probably the main challenge for landholders managing stock on waterways. Things to consider include:

- Where a fence should go depends on the size of the waterway, landform features and local flood characteristics.
- Functional aspects should also be considered when siting a fence. Some farmers in the local area include a laneway on the bank side of their riparian fences. This allows them to maintain the fence from both sides, access the bank vegetation to carry out weed control and also to move stock through.
- Fences should be sited as far away from the waterway as possible. In an ideal situation, 5-10 metres away from banks of small creeks and at least 20 metres from major creeks and rivers. Anywhere that there is active erosion, banks are steep or unstable, or vegetation cover is poor, a greater setback should be allowed, to achieve better control through revegetation. Ultimately, site specific characteristics will determine suitable fence placement and this may need to be reassessed periodically.





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Fence positioning



Source - Stock & Waterways: a manager's guide



- To restore functional riparian zones that provide habitat for wildlife, fencing a minimum of 30m and preferably 50m from stream banks is recommended.
- Fencing should be situated above the annual peak flood level, in a position that avoids high flows and also debris. If this excludes too large an area, place a permanent fence above the floodline and use replaceable electric fencing to protect the stream bank vegetation.
- Straight fences are cheaper and simpler to erect than one that follows the bends of a waterway and also less likely to collect debris during floods. Setbacks generally need to be larger with a straight fence; however, the fence will be safer from changes in the watercourse. Position the fence parallel to the stream/flood flow direction to reduce the risk of damage.
- In upper catchment areas some farmers use "run around" strainers. In this situation wire is not secured to each strainer but is tensioned around several consecutive strainers in notches cut with a chainsaw. This makes fences following a winding creek line much more practical.





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- In flood-prone areas, a drop-down fence design can be used; these fences drop down when pressure from water and debris builds up behind them. Also useful are fences that can be laid flat prior to flooding: for these to work, good flood forecasting and time for active management is vital.
- Some floodplain fences are designed with a built in “weak link” which allows the fence to trail downstream as the water level builds. These are then rein stated after the flood.
- Electric fences allow more flexibility of positioning and are cheaper than traditional fences. Electric fences can be temporary structures using tape or permanent structures made from plain wire. Portable electric fences which have a solar charger are available and provide the advantage of an independent power supply.
- Use different types of fencing around the farm. Important fences (eg boundary fences) should be made of sturdy materials, while cheaper fences can be used for various purposes (e.g. rotational grazing, fencing of small wetlands etc).
- To boost rehabilitation of fenced areas and to control erosion, it is recommended to plant native trees, shrubs and groundcover. Information guides available from Council, Landcare & CMA detail methods for riparian revegetation. See further information section for details.

Off-Stream Watering

A major consideration in planning to fence and manage riparian areas is the need to provide stock with water. Things to consider include:

- The cheapest and most common system is to pump to a tank installed on a high point in the landscape and gravity-feed water to troughs.
- A relatively cheap option is to use moveable plastic troughs and poly-pipe with a system of frequently spaced taps. This allows movement of watering points to control grazing pressure and assist with locating and mustering stock.
- Plastic troughs need to be situated above flood level, otherwise they may float away. On floodplains, use concrete troughs.
- Diesel, petrol or mains powered pumps are commonly used to fill tanks from creeks and dams. Other types of pump such as solar are increasingly available. No permit is required for domestic and stock watering purposes.
- As a general rule the daily amount of water required per head of stock during summer is: Sheep 7 litres; Beef Cattle 30 litres; Dairy Cattle 50 litres.
- Local pump and irrigation equipment suppliers can provide advice tailored to farm situation and goals.





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In-Stream Watering

In some circumstances, using the stream for stock watering is the only option. It is then important to restrict stock to designated watering points along the stream to minimise disturbance. When choosing an access point, keep the following in mind;

- The site should be relatively flat, with a maximum slope of 1:6, to reduce erosion and make it easier for stock to get to the stream edge.
- The site should be located on the inside of a bend, where water movement is slower and the banks are less prone to erosion. The outer bend of the stream is the eroding point and is thus more sensitive to trampling.
- To prevent erosion, harden the surface of the access point with gravel. A hardened surface will also provide a better footing for stock.
- To minimise problems associated with stock camping or loafing around the watering point, make sure the site is not well sheltered.
- Angle the access point in a downstream direction, so stock enter in direction of water flow, to minimise flood damage and erosion.
- Fence the access point as part of the riparian corridor fencing. The corridor can be broken at selected places and two parallel fences run from one side of the stream to the other, or else to the low water mark in the stream. It is important to ensure that stock cannot get into the riparian corridor from the stream channel. Depending on the grazing system and stream characteristics the fence can be temporary or permanent.
- Width will depend on the number of available access points and the number of stock to be watered – the suggested range is 2 to 20 m wide.

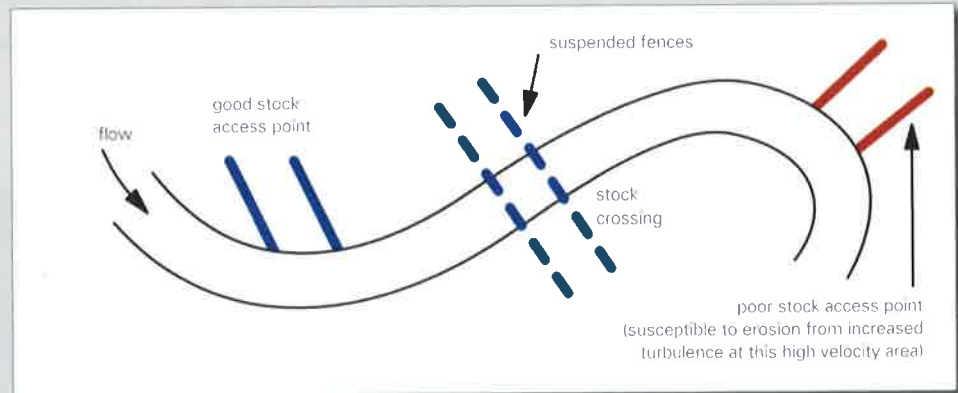




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Placement of stock crossings & in-stream watering points



Source - Stock & Waterways: a manager's guide

Crossings

In some parts of the landscape, stock will need to cross waterways. Ways of minimising impacts include:

- Crossings should not be sited on a bend.
- Ideally each crossing should be gated on each side of the stream and opened only when transferring stock from one paddock to another, but this is not always feasible. Where the crossing needs to remain open or forms part of an in-stream watering point, it may be necessary to hang a suspended fence across the stream to prevent stock from entering riparian areas during low flow times. Further information on the design of suspended fences is available in Stock and Waterways: A managers guide. See further information section.
- Any construction of a crossing on a stream (e.g. a culvert) requires approval from Industry and Investment NSW (former DPI Fisheries) to ensure minimal impacts of passage of fish. A guideline for designing and constructing crossings so as to minimise the impacts on fish passage and aquatic habitats is available from their website. See further information section.



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Grazing management

Grazing management practices can be used to help maintain the health of riparian areas and benefit production through more even paddock use. To improve paddock use, keep the following in mind:

- Locate gates, watering points and salt, protein or mineral blocks away from the riparian margin.
- Ensure there is adequate shade in the paddock - plant shade trees or preferably a shade lot.
- If it is necessary to graze riparian land, adjust the stocking rates and frequency to suit the sensitive nature of the land i.e. smaller animals at low stocking rates for short periods with long rest periods.
- It is recommended not to graze riparian zones in the first few years after fencing, to let the vegetation recover and avoid setbacks to growth.
- Only graze riparian areas when the bulk of the vegetation is dormant and the soil moisture levels are low, i.e. not after floods and not at all during the wet season (November-April).
- Avoid grazing riparian land during the growing and flowering season (Spring-Summer); seedlings can be destroyed by grazing and trampling, and grazing when plants are actively growing leads to plant stress and poor root development.
- Strategic crash grazing of fenced areas can help with weed control.



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Local Case Study- Richard Bromley

Where: Old Punt Road Urunga

Enterprise: Breeding cattle

Size: 25ha (60 acres with 50 acres available to cattle)

Length of Riparian Zone: 4.5 km

What was the motivation?

- Controlling erosion - When the property was purchased the majority of the bank was exposed to wave action, boat wash and flood erosion. This, combined with easily dispersed sodic soils, meant that valuable land was being lost through erosion.
- Protecting the asset - It's expensive to set up a farm so it's important to protect that asset. It may take money and time to fence and restore vegetation but it's worth it to protect the asset of farm acreage.
- Richard knew that by establishing a rotational grazing system he could make up in productivity for any loss of land due to fencing and re-planting the riparian zone.

What has been done to protect riparian areas?

- Fencing at an average distance of 10-15 metres from the bank – more in some places, depending on bank height and shape.
- Tree planting- site preparation of spraying out grass at 3 metre spacing, then planting with a mix of fast growing species suitable to the site including Acacia, Eucalyptus, Casuarina and Lophostemon, watering in and during dry spells watering from a tank on the back of the farm buggy.
- Tree root balls (sourced from highway upgrade works) were anchored along a low bank exposed to wind driven wave action and boat wash using posts, wires and cables. Trees were also planted behind the root balls.
- A tidal wetland was fenced and the edges planted with native trees.

Assistance

- Advice on permits, management techniques, funding and appropriate species selection was sought from Bellinger Shire Council, Northern Rivers Catchment Management Authority and Bellinger Landcare.
- Site visits were conducted by the Land and Property Management Authority, NSW Maritime, & Northern Rivers Catchment Management Authority.
- Envirofund Incentive funding was secured in 2006/2007 to fence and plant the 5ha riparian zone and 2.5 ha wetland margins.





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Wetland before



Regeneration



Wetland after

Benefits

- Improved bank stability.
- Better stock control – no risk of them falling into or bogging in the river.
- The plantings act as shelter belts and provide shade which protects stock.
- Natural regeneration of mangroves and other species has occurred along the banks which further helps protect banks from erosion.
- Increased soil moisture near shelterbelts resulting in better growth in pastures.
- Planted trees slow water flow during floods which protects riparian fences and reduces erosion risk.
- More attractive river frontage.

Challenges

- Installing root balls - working with government departments to determine boundaries was an issue but persistence paid off.
- In some areas cattle have accessed planted areas and pruned new shrubs setting them back in their growth. In the wetland, crabs damaged plantings resulting in them dying off.
- Some plants have died, possibly due to species being unsuitable for the site, but enough have survived to form a canopy and others are naturally regenerating (e.g. Swamp Oak).

Additional information

- Weed control is minimal- Richard estimates that he carries out weed control approximately 2 days a quarter. His main weed control includes spot spraying and cutting out of Lantana, Bitou Bush and Coastal Morning Glory and cutting back of native vines, which grow up the trees. He is reluctant to spray around plantings as spray drift will affect their growth.
- Richard's recommendation is to get as much advice as you can before you start.



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Further information

Stock Management

- Stock and Waterways: a Manager's Guide (2006) Staton J. and O'Sullivan J. published by Land and Water Australia
- Fencing (1998) Laffan, J. NSW Agriculture. Land Management Home Study Unit series.
- Electric Fencing (2007) Laffan, J. NSW Department of Primary Industries

Creek Crossings

- Policy and Guidelines for Fish Friendly Waterway Crossings. Department of Primary Industries NSW
<http://www.dpi.nsw.gov.au>

Revegetation

- Revegetating Streams in the Bellinger and Coffs Harbour Catchments- A Guide to Species, Planting Locations and Planting Methods (2007) Northern Rivers Catchment Management Authority. Original material by Raine, A. and Gardiner, J. (1997).
- Bellinger River Estuary Revegetation Guide. Compiled by Bellinger Landcare based on material by Stuart Johnson Environmental Consultants (undated).

Further Advice

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Bellingen Shire Council
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Industry and Investment NSW (Previously Department of Primary Industries)
Coffs Harbour District Office (Agriculture)
Phone: (02) 6650 3111
Coffs Harbour Fisheries Office
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