

The history and trends in farming and land use in the Rangitikei catchment

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The Rangitikei catchment is as diverse as any that you will find in New Zealand.

The Rangitikei River rises in the interior of the north island in an area bounded by the Kaimanawa ranges to the north and west, and the Kaweka ranges to the north east and east. The rock type here is predominantly greywacke basement rock that has been uplifted to an altitude of around 1500 m above sea level. In some areas in these uplands there are of volcanic tephra that have been erupted from the andesite volcanoes of the Tongariro national park to the west, and also rhyolite pumice from the Taupo volcanic zone to the north east. It is thought that this area historically, was the general source region for most of the sedimentary material that was deposited in much of the Wanganui sedimentary basin through which the Rangitikei River has carved its path. As you follow the river south from its source you slowly move from the old metamorphic greywacke rocks into increasingly younger sediments that have been deposited over the last five million years. It is on these young sedimentary rocks that the farming systems in the Rangitikei have evolved.

First settlement of this area was by Polynesians who settled New Zealand somewhere between 1000 AD and 1300 AD. At that time most of the Rangitikei landscape would have been forested except for the very geologically dynamic areas adjacent to the sea, the bed of the Rangitikei river, and the high altitude uplands where tussock grasslands and herb fields dominated. Following Polynesian arrival successive fires did occur especially in the coastal zone and in the upland areas, quite often along what would have been routes for travel and in areas of food harvesting, specifically where there were moa. In the region to the east of Waiouru the beech forest that had previously existed gave way to the tussock grasslands that we see today, due to beech being a relatively poor recoloniser of that area after successive fire events due to its poor seed dispersal. Climate also played a role in limiting the re-colonisation of many of these upland areas as frost limited the growth of hardy colonising species such as manuka in the upland basins.

When the first Europeans arrived in New Zealand the only open and easily accessible areas of the Rangitikei were the coastal sand country and some of the adjacent lands that had been previously burnt and were slowly reforesting, the riparian areas surrounding and upon some of the Rangitikei River degradation terraces and the elevated inland areas of what was then called "inland pate" in an area between the desert road and the Karioi in the north, Moawhango to the south and across the main Ruahine and Kaweka ranges to the east. All the rest was forested what we would now describe as a mixed species

temperate rain forest. Transport was either on foot, or by way of open canoes fashioned out of totara on sections of river that allowed their use.

European colonisation, settlement and change of tenure

The first Europeans to arrive in the Rangitikei area were probably traders or sealers along the coastal strip prior to 1840. In the time period between 1840 and 1850 attempts to purchase land were made in the area between the mouth of the river and what is now Bulls by the New Zealand company, but as with other potential purchases by "Wakefield" and the New Zealand company there was a considerable amount of acrimony and alienation of all involved. The original purchase of what was to be called the Rangitikei Block was concluded by Donald McLean who due to his skill at negotiation between the government of the day, and the local Maori, was able to eventually conduct many of the purchases of native land that would eventually form what is now the Rangitikei and Manawatu regions. The original Rangitikei Block is bounded by the sea and the Rangitikei and Turakina Rivers and extends almost as far north as Rata. The negotiations between McLean and the 4,000 Maori including a very aged Te Rauparaha at Parewanui Pa down river from Bulls took a fortnight, with the agreed purchase price being 2,500 pounds sterling. This purchase was to be the base of farming in the Rangitikei up until the 1880's. The produce of this area in that early period was wool, grains, flax and possibly some timber. The dominant means of transport was on foot, on horse back or where the topography allowed on a wagon or dray. In terms of the export of farm produce out of the region there was a port in the tidal portion of the lower Rangitikei River, at the site of the original "Scots ferry". It was originally serviced by single masted cutters of about 10 ton displacement, but by the late 1890's 120 ton steamers were servicing Port Rangitikei with the largest ever cargo being 350 bales of wool in February 1897. This transport link ended during Easter 1897 when a major flood swept down the Rangitikei River from a very large two day rainfall in the upper catchment. Every bridge between Mangaweka and the sea was destroyed. A lake formed behind the mouth that was six miles long and the lower river was silted up to such an extent that the port never functioned again.

Further purchases of land from the Maori owners proceeded steadily inland with large blocks on the eastern side of the river downstream from Rata purchased in 1866, the Rangitikei-Manawatu Block, and in 1871 the Taraketi Block upstream from there to the Kauwhata river near Taihape. On the west bank of the Rangitikei in 1874 the

Paraekaretu Block was purchased with the site of what is now Hunterville near to its centre. In 1881 the Otairi Block, which reaches almost as far as Mangaweka, and then from 1892 through to 1896 the remaining northern blocks of Te Kapua, Pohonuitane, Rangitira and Awarua were purchased. Three remaining Maori land blocks of Ruanui, Raketapama and Motukawa in the north western corner of the district have significant areas remaining under Maori ownership to this day with long term leases to mainly non Maori farmers.

From 1896 nearly all the potential farmable land in the Rangitikei catchment had been transferred to system of European tenure, and was under-going a significant change in terms of its flora and fauna. In all approximately 350,000 ha had been transferred from Maori communal ownership with little or no agricultural modification of the ecosystem, to one of European ownership with massive modification of the surrounding ecosystem in order to support a European style of agricultural production system in a little under 50 years.

The building of infrastructure

During these pioneering years the settlement of European immigrants was largely limited by the availability of land, but that was largely cured by the mid 1890's. The second most limiting factor was being able to get to where you intended to live, clear the area out of native forest, and then get the farm produce out for sale. The initial settlement phase in the lower Rangitikei was primarily on what was either very young recent alluvial soils and sands or, as you move inland from the coast, older uplifted alluvial soils that have been clothed in many layers of wind blown loess and volcanic tephra. The landscape is either flat or gently rolling with only moderate dissection by rivers and streams, resulting in an easy landscape for conversion to agriculture as well as the transportation of people and produce. With each subsequent Crown purchase of land inland from the coastal area the elevation of the land began to rise and the landscape changed from that of a gentle sloping plain such as you would see around Marton, to one of a rolling landscape with steeper sidelings and even gentle hills with increasingly down cut streams such as you would find at Hunterville. This trend for slope was also mirrored by the increasing density of the underlying subsoils and rocks, from sands and gravels at the coast changing to poorly consolidated sands and silts as you move inland and finally as you move north from Hunterville and further inland a gradual change to increasing more consolidated, dense and subsequently older rock types. At the area known as "Vinegar Hill" these consolidated rock types begin to emerge at the surface and there is a noticeable change in the landscape from flat or gently rolling, to one where steep, sharp, dissected and erosion sculpted hills begin to appear.

This had major implications for the pushing of transport links especially rail into the hinterland. Whereas south of Hunterville roads and railways were simply laid on top of

the already smooth landscape, north of Hunterville roads and railway had to be cut through the landscape, sometimes at incredible expense. In 1878 the "Railway Construction Act" was passed through Parliament and one million pounds voted towards finishing the main trunk line. During 1883 the 341 km route from Marton to Te Awamutu was totally surveyed. By 1891 it had reached the site of the Makohine viaduct just south of Ohingaiti, but it wasn't until 1902, some eleven years later that the section to Mangaweka opened and the section to Taihape opened in 1904, with final completion in 1908. The major hold ups were the bridging of deep gorges and the tunnelling required through the dense concretionary mudstone and sandstone ridges that are typical of this area. The main roading network was completed much earlier with the contracts let in 1892 and the main road formation from Hunterville to Waiouru and onto Tokaanu finished by 1894. These roads were mostly compacted clay with a small amount of shingle added and for the most part went over or around any landscape obstacles and not through them. These roads were a vast improvement on the unformed bullock tracks that had been cut through the bush after the purchases from Maori owners as they were un-passable for at least five months of the year. Many books on this era have photos in them of bullock trains trying to drag wagons loaded with wool that are bogged up to their axles in thick mud. An anecdotal story of the main street of Taihape when it was little more than a track through a bush cutters camp in the middle nowhere and which was notorious for mud prior to gravelling went something like this

"...a man was walking along the side of the main street (track) one day in the middle of winter and trying not to fall in, when he came upon a nice new hat floating upon an extremely large puddle of muddy water. Thinking to himself that he would retrieve the hat for himself he bent down and picked it up and to his dismay there was a man's head under it looking up at him. The passer by asked the head if he would like help to extricate himself from the mud to which the head repliedyou will have to lift quite firmly as my feet are still stuck in the stirrups..."

The access across the area's rivers was equally difficult as fords were not always shallow and in winter extremely dangerous and drowning was common. Access to some of the more remote areas such as Taoroa, to the east of Taihape was very limited because the Moawhango river which was Taoroa area's western boundary was deeply incised into the sandstone bed rock in a gorge some 80 m deep and 10-20 m wide.

An enterprising bushman had cut a large totara tree some 2 m in diameter across the Moawhango river gorge and then adzed the top off to leave a flat surface to walk on. One of the first European woman to go and live with her husband in that area had refused to walk across the log bridge, but after she had re-mounted the animal side saddle as was the custom for women in those days in order

Land-use change

to return to Taihape, but as she and her horse prepared to leave, they found themselves being led across anyway.... she was so traumatised by the experience that she never went out to town by that route until a proper bridge was built some ten years later.

At the time of the 1897 flood the Rangitikei River was bridged in seven places between Mangaweka and the mouth, all the bridges were lost and the replacement cost for the fledgling Rangitikei county was approximately 33,000 pounds. It should be noted that this flood event also damaged infrastructure in the Hawke's Bay as many of those rivers rise in the Ruahine and Kaweka ranges that border the Rangitikei catchment to the east, and all this at a time when there had been limited forest clearance in the upper catchment, a sign of things to come.

Growth, wars and economic depression

The period after 1900 is noted for the steady growth in farm produce that was emerging from the hinterland of the middle and upper Rangitikei valley. First wool and then butter were sold from farms through out the area and as neither of them were too perishable they could withstand the rough transportation on wagons to various rail heads that existed along the Main Trunk rail line route. While some forest had simply been cut and burnt many areas were progressively logged using bullock teams and steam cable haulers where the topography was suitable. White pine was the favoured species for the production of butter boxes due to it being odourless and tasteless. Totara was favoured for railway sleepers as it was easily split and adzed to dimension. Prior to the railway completion many of dry stony terraces that are common along side the middle and upper Rangitikei river and its tributaries were mined of their totara resource which was cut into sleepers and then dragged to the river and then rafted down to as close to the rail head as possible for collection and use. The first cooperative dairy companies were set up in the early 1900s and with the completion of the railway, and the new technology of refrigeration being available, there were soon two fledgling freezing works co-ops as well. One on the banks of the Rangitikei River at Kakariki east of Marton, and the other at Winiata, 2 km south of Taihape. Both plants operated for a short time only, making good profits during the First World War, but each being squeezed out financially in the early 1920s when plants located in Feilding, Palmerston North and Wanganui that were owned by British meat magnates outbid them for livestock which was then railed out of the hinterland.

As time progressed the size of farms slowly increased, initially the ballots blocks were 200 acre sections but these proved to be uneconomic in hill country situations and were slowly amalgamating. Also all of the boundaries were drawn in straight lines on maps, but the reality was that straight lines didn't work in a hill country landscape where the easy and logical places to fence were along ridge lines that were never ever straight nor where the map boundary

was. As time went on many boundaries were realigned to avoid erosion prone gully sides that were always slipping so as to cut down on maintenance cost, and to make stock movement easier.

Soil erosion became a major issue approximately 15 -20 years after the bush had been cleared in the steep incised hill country of the region. As the whole of the Rangitikei valley had not been cleared at once, erosion didn't necessarily occur all at the same time, and nor were all areas affected to the same degree due to the differences in geological parent material, slope and rainfall patterns. However it must be recognised that vast amounts of soil were removed from hill slopes steeper than 25 degrees and on slopes of greater than 35 degrees on compacted mudstone rock there is very little left. The only saving grace for the occupiers of these farms is that the mudstones of the middle and upper Rangitikei valley are inherently fertile and weathers to form soils relatively quickly due to the clay forming minerals that comprise them. Thus sites that become denuded of soils did heal over in a few years and grow grass again, just not at the same rate as it had before. In the very top of the catchment farmland that is on greywacke, limestone and volcanic ash is relatively free of slip erosion due to its inherently better drainage capability and low clay content. After the initial clearance of the mixed podocarp forests, the resulting landscape was sown in introduced grass species and there was a brief rush of growth that soaked up the fertility that 10,000 years of rainforest cover had accumulated from the soils. Without any available fertiliser source to replenish the landscape however, native colonising species such as manuka started to emerge and dominate the introduced grasses, which resulted in the need for lots of manpower and a sharp slasher.

Roading in the district steadily improved with metalling of the roads, first with "burnt papa", which was obtained by quarrying out mudstone rock, and then stacking it with alternate layers of dry fuel wood such as maire and then setting the whole thing ablaze. The cobbles that were retrieved had been cooked hard in the same manner as bricks thus providing a source of hard rocky material for the parts of the district that were well away from sources of alluvial hard rock gravel that was to be found on the old Rangitikei River terraces and in the river itself. As the early 1900s progressed bullocks and horses slowly gave way to vehicles powered by internal combustion engines. By 1910 the Rangitikei County Council had raised 50,000 pounds by way of loans to be spent on roading and owned motorised vehicles for carting gravel and grading of the roads and telephone was beginning to connect the major towns. This sort of borrowing and capital expenditure went on until the mid 1920s when most of the districts roads had been all gravelled once. As the population of the district grew schools were added for the growing number of children and district halls were added to the landscape to provide gathering points for social entertainment.

In August 1914 war was declared in Europe. This was

to be a major setback for the region and New Zealand as a whole, because rural New Zealand was still very much a man power economy. Approximately 1,250,000 people lived in NZ in 1914, 103,000 served overseas, 18,500 died and 50,000 were injured they were all the type of fit, strong young men that the young economy depended on. It was a major set back for the Rangitikei region, and unfortunately it all got repeated 21 years later.

Many hundreds of returned soldiers from WW1 were settled on farms that were subdivided off from larger properties, or in many cases the entire property was bought and subdivided. Many of these farms were utilised for dairying in areas such as Marton, Rata and Ohingaiti.

In the 1920's the county road from Bulls to Waiouru became designated a state highway, and slowly received a 240,000 pound upgrade funded by central government, electricity generation and reticulation started for many towns, the price of land slowly climbed, but introduced noxious weeds also began to take control of areas where they had a competitive advantage over grasses or the remaining native species. The Rangitikei region had sheep farming as its dominant land use at this time and wool was worth one shilling per pound. Dairying was carried out on some of the flat land near to the small dairy factories that had sprung up, and the growing of oats that had previously been used for chaff to feed horses, was giving way to other grains as the machines powered by internal combustion engines took over the role of the horse.

Many of the potentially plowable areas of the middle and upper Rangitikei valley had been extremely heavily forested and were still in stumps at this time, but were being cleared by hand and with rudimentary lever operated winches such as the "Trewella stumping machine".

During the early 1930s economic depression hit, unemployment grew as central government and private industry cut wages and laid off staff to balance their books and as much as 25% of the nation's export earning went into the payment of interest on overseas loans. The main highway upgrades started with men who were otherwise unemployed, and the first pine tree planting out in the sand dune country on the coast was achieved in a similar manner. In 1935 the Savage labour government came to power, there were guaranteed minimum prices put in place for dairy products, but not for meat and wool but luckily for them world agricultural prices were on the rise. Tar sealing of what are now the main highways around Marton and Bulls was completed when the Public Works Department came into being, as it took over responsibility for the maintenance of all state highways and their bridges, thus freeing up considerable amounts of rated money for the maintenance of the back country roads that wind their way through the landscape today.

On 3rd September 1939 New Zealand and all the other British Empire countries and their allies were back at war

with Germany, and the drain of young men and money from regions like the Rangitikei happened all over again. The only upside of this for the Rangitikei area was the formation of two military bases at Ohakea and Waiouru and the upgrading of State Highway One due to its strategic nature.

The golden age of farming

Post war another bout of returned servicemen's ballot farms got underway, however due to the steady increase in cost structure over the preceding 20 years the average size of hill country ballot farm had increased from 400 acres to 600 acres.

The beginning of soil conservation started with the passing of the "Soil Conservation and Rivers Control Act" in 1941. In March 1945 the Rangitikei Catchment Board came into being, but it was not until the early 1950s that it really started to have an impact on the landscape that we see today. Initially there was a lack of skilled staff, but after the introduction of soil conservation training courses at Lincoln College a steady stream of soil conservators became available. Tree planting, mainly in the form of poplar poles in the hill country and pines on the lowland sands became the norm, with many of the trees that were planted under Catchment Board schemes, still partly clothing hillsides and gully systems today. As with all new applications of technology some plantings were more successful than others. In the context of the Rangitikei landscape, trees were seen as playing a supporting role to grass, not a replacement for it. Production forest was only planted on areas that were not good for grass such as the coastal sand dune country or the high elevated volcanic plains near Waiouru. At a similar stage the farm forestry movement came into being and this was an organisation of enthusiastic farmers who were not averse to planting farm land in species other than grass, and in many ways provided a link between the Catchment Board and Forest Service on one hand and the broader farming community on the other. During the year of 1951 the price of wool reached over one pound sterling for a pound of wool and many over those ballot farmers on soldier resettlement blocks paid off their entire debt in that season.

Another post war phenomenon was the advent of aerial top dressing. The application of super phosphate and lime had started pre-second world war and was done by hand. With the return of many young men with flying skills obtained in the wartime air force there was a well trained pool of talent available when the idea of spreading fertiliser from the air was conceived. There was also a large supply of cheap aeroplanes available as war surplus. This single technological quantum leap was probably the most important tool in the maintaining of grass and clover pastures as the dominant ecosystem on the farms of the Rangitikei for the next 50 years. When combined with modern anthelmintics that effectively removed infestations of intestinal parasites from sheep and cattle for short periods of time, the productivity on farms took a great leap forward

Land-use change

in what could be described as New Zealand agriculture's golden age. There was the ability to produce large amounts of product relatively cheaply off largely debt free farms and then sell it into the UK market where they almost couldn't get enough of what was supplied.

The downward slide

This pattern continued right up until the early 1970s when the UK joined the EEC.

This was a major turning point for the rural economy as our once prime spot as the producer of edible proteins for the English market was significantly reduced. This in combination with the oil price shocks of the mid 1970s and price inflation meant that the modern farming methods that had come so far in terms of production were struggling to maintain the lifestyles to which farmers and New Zealand in general had become accustomed. New Zealand adopted farm support measures that had become common overseas, minimum price payments for sheep meats, and subsidies for the application of fertiliser, and cheap government loans to re-clear land that had previously reverted to colonising species such as manuka and gorse on soils and topography that in many cases were totally unsuited to grassland production. The side effects of this interventionist time are still being felt in many ways. A new generation of farmers was coming onto the land, and with price support structures in place the price of land went up despite the income from it going down. To afford farms government settlement loans were offered and with little and sometimes no deposit required from the purchaser and an artificially low interest rate these new young farmers were on the brink of a change that would permanently change the lives of many. In some ways rural New Zealand was insulated from the price shocks, but it couldn't avoid inflation, a highly protectionist and an interventionist political regime funding itself through a policy of high taxation and to top it all off abandonment by the mother country and decreasing primary product prices. The really tough political decisions had been put aside for someone else to make and a few short years later they were made, en masse.

In 1984 a reformist Labour Government came to power, and within a few short years the New Zealand economic landscape was completely turned on its head. Price support mechanisms were gone, many of the government agencies in the rural towns were shedding staff and rural communities were fighting for survival and many government departments were put to the sword. Spending on items such as fertiliser and fencing ground to a halt, and the lure of diversification beckoned with all sorts of weird and wonderful new money making ventures tried but with few succeeding. Many people flocked to the only thing that was doing well in the economy, the newly deregulated share market, with its tax free capital gains. Why would you spend money on fertiliser or planting poplar poles with little or no immediate cash return, when you could double your money within months on high flying stocks

and shares? The clamour to be involved was infectious and the results disastrous. Following the '87 share market crash and into the early 1990s there were many farming families that came close to, or actually were forced to sell out. Some were young and with an impossible debt burden on small marginal farms that in the previous generation were soldier settlement blocks but were now no longer viable, others were older and had borrowed against the equity that in some cases had taken generations to accumulate to purchase shares in companies that no longer existed. Pastoral farming was almost down for the count, and it was against this backdrop that many of the farm to forest conversions in the middle Rangitikei near to Hunterville happened. Since that time there has been a brief resurgence in profitability on the sheep and beef farms. All the planets seemed to align and for a brief period in 2002, with a combination of a low overseas exchange rate, high product prices and favourable climatic conditions. It was short lived just like the '51 wool boom, but on the back of it land prices had rocketed in value. Those that bought in and sold out over that period and got out with their tax free capital gain had won, sometimes handsomely. Those who didn't buy and sell have higher rates bills, and those who have bought at the inflated price level??.....well the jury is still out on them.

Consequently farms since then have been awash with paper equity and again the lure of off-farm riches has been tempting. Borrowing against equity to take part in the new bonanza of the urban property market and shared equity dairy farms has been all the rage, but as has happened in all previous cycles there will always winners and losers. In terms of where this leaves pastoral farming in the Rangitikei, watch this space.

Other financial impacts that have been slowly eating away at the viability of the hill country pastoral farming system have come from our socialist egalitarian view in the distribution of family assets, the old system of estate duties, the effects of the Matrimonial Property Act, and even society's view on the down stream effects of a farmed landscape. No longer is the farm unit held as sacrosanct over and above the wants, and or perceived needs of family, or society as a whole. Assets are now distributed equitably and if not, trustees and estate executors are legally challenged. The issue of most significance is the timing and valuation of the asset, so if a property changes hands when prices for land is low and incomes rise then servicing debt becomes easy, conversely if the valuation is at the top of a market cycle and is followed by an income downturn, many years of considerable financial hardship follow sometimes with the only outcome being a forced sale. It is interesting that of the seven farm to forest conversions north of Hunterville that occurred since the late 1970s, three of them have occurred following a change in family circumstances, and the inability of the owners to cope with a sudden increase in debt levels combined with low product price levels and at a time when pastoral farmers were not confident enough to buy.

It will be interesting to witness the long term results of a society that no longer views that it should have to sacrifice environmental quality in order to have a job or income stream in what is still an economy underpinned by agriculture.

There has been a continued upward trend in prices for land since the 1970s when the value of land was approximately three times the gross income (GI) on a per hectare basis, five times GI in the late 90s, six times GI in 2000, seven times GI in 2003, eight times GI in 2004, ten times GI in 2005 and fourteen times GI in 2006. At these prices and at current interest rates it is economically prohibitive for farmers let alone foresters to be buying land for taxable profit.

One must really wonder how big the next price correction will really be and how long it will take to arrive. In the middle and southern Rangitikei, south of Hunterville topography allows a multitude of land uses apart from growing grass for the feeding of livestock. But in areas north of Hunterville the amount of flat and rolling land is limited to the few river terraces and some of the rolling volcanic land near Waiouru. The vast bulk of the north Rangitikei valley is hill country, some of it heavily dissected and erosion prone with few alternative land uses.

Where to from here?

As an audience of foresters you must be wondering why this paper is so orientated to what happened on farms and not to what happened in forests. Well the truth of the matter is that the role that forests played in pre European times was that of an open air supermarket, i.e. that's where the food lived. During the pioneering phase it was as a resource that was there to utilised and plundered in order to make a grass based economy, and in reality this region's economy has not moved on from there. The fertility and moisture holding ability of the compacted mudstones and sandstones and the soils that they produce meant that even in the bad times pastoralism could hang on to bounce back when the time was right as long as your debt levels were not excessive. In comparison the volcanic soils at the very top of the catchment and in the neighbouring Whangaehu catchment are inherently low in fertility, prone to drying out and blowing away, as are the sands in the coastal region bordering the Tasman Sea, and so from the perspective of a grass growing local economy these were the areas that were no good for conventional farming and so that is where the trees went.

The planting of woody vegetation in the pioneering phase was limited to homestead plantings of pine or macrocarpa for shelter as well as ornamental species. Post WW2 and with the advent of the soil conservation movement the planting of willows alongside rivers and streams, and poplars in the gully bottoms and on hill slopes to limit the erosion of productive grassland soils began to take hold, but only on farms where the land owner was sympathetic to

trees. It was in this period that the farm forestry movement began to grow with many of its members planting species such as *Pinus radiata*, Douglas fir, *Thuja plicata*, larch and eucalypts in small woodlots on their farms. Some of these planting as still present today, with many of them unharvested especially on inaccessible sites. For many farmers of that period though, trees simply got in the way of being a good farmer, and interfered with the mustering of livestock especially when they fell over, especially sheep. This attitude was even more strident with respect to native manuka which arrived on the wind and which covered up grass, and also enabled sheep to easily hide especially when being moved. No thought was given to the soil reinforcement that its roots provided, gorse was even worse as it smothered grass, hid sheep and it was prickly!!!



Eucalypt farm forestry, access & gorges

In the period immediately after the 1992 winter and the 2004 flood people were horrified at the level of destruction especially the financial cost of repairing it, although it must be added that following the 2004 event government came to the party with a large amount of money for both farming, forestry and community assets and in doing so removed the financial anvil upon which many people would have been placed, that had the potential to actually facilitate a change in perspective and actions.

Four years on from 2004, the hardships of blocked roads, wrecked fences and lost assets are largely forgotten as someone else paid to fix a lot of the damage, and the slip scars have a veneer of green on them, but attitudes haven't really changed that much. Helicopters loaded with nice cheap metsulfuron herbicide are cruising the back country spraying out manuka re-growth "so that the bloody stuff doesn't take over again" and in many cases old conservation plantings are being removed, but not replanted by the new purchasers of properties in an effort to "clean them up". The ability to buy, window dress, and then sell-on a property in what was a very buoyant rural property market, with capital gains being tax free has not helped in this regard. There has been a change in mindset by some, but it is slow and for many painful, as the present crop of farmers both

young and old is the result of many generations of social conditioning. In many ways the broader population of the region recognises that how we have lived in the past is not sustainable in the long term, and those of the rural population that are not in denial do so as well. The real problem is how do you transform a local economy that has been dependent on not having woody species as part of its economic and cultural matrix, into one that does?

The current management of woody vegetation over the vast majority of the Rangitikei is currently inappropriate if soil cover on slopes above 25 degrees is to be maintained at its presently degraded level, as on the whole there isn't a lot of woody vegetation. In some cases where small remnant stands of indigenous forest remain they have been retired, which is commendable. However one has to wonder how long they will survive as *Clematis vitalba* is now endemic in much of the Rangitikei River system and without an effective bio-control agent, or a large continuous supply of funding, this genie will continue to crawl further and further out of the bottle.

In areas where there is plantation forestry in the Rangitikei region it is currently under some pressure as in many cases it occupies land that is also suitable for dairy conversion. It will be interesting to see how many of the "investment block" forests that were planted in the late 1970s and early 1980s are replanted at harvest, or are returned to grassland or other uses due to the current returns available to the owners by simply selling it. On land with moderate contour and with other options in terms of investment returns it is currently unlikely that replanting after harvest will be undertaken.

One problem that has never been clearly addressed, especially on the consolidated mudstone derived soils on dissected hill country, is that of a suitable suite of species that can cope in this particular environment. It is characterised by a periodic fluctuating water table, extremes of climatic micro-sites between sunny and shady faces, skeletal soils, moderate fertility, wind exposure and the occasional heavy winter snowfall. Our main forest species *P. radiata* is unsuited to life with this heady cocktail, and the wider forest industry is shy of investing in anything else, as many of the alternatives apart from Douglas fir, are largely unknown quantities and so have higher risk associated with them. One species that has been planted lately near Hunterville is coastal redwood, by a corporate North-American forestry company looking to diversify its forest resource out of North America. The one genus that does thrive in these soils is poplar, but there has been no real impetus to build an industry based around any of the poplar species, and without wanting to push the point too far, plantation forestry means exclusion of livestock. There is certainly a niche to be filled; the challenge is to find a species that can fill it.

In terms of whether there should be more woody species in the landscape, well the answer is yes. The logical place to

start is on sites that have the greatest potential for further erosion and where the lowest economic benefit is obtained from the present land use. On steep dissected hill country with skeletal soils, partial reversion with manuka is the obvious choice as it arrives free and requires no management input and is indigenous, but it does have the problem of being demonised by successive generations of farmers.

Another option would be to look for a new species to introduce into the landscape, that has a good strong root system, is possibly leguminous, is deciduous, non toxic to livestock, that would spread perpetually by suckers or seeds and possibly has some other economic benefit that could be accrued by farmers. A big ask you might say and with the current ERMA regime it would be almost impossible to import what would amount to another weed species into New Zealand. The real problem in terms of uptake of any non forest woody species in the current rural business environment is the need for it to be culturally unthreatening and also un-intensive in terms of its capital requirements and to generate a positive cash-flow, and not exclude grass.

At the present time "whole of catchment" thinking is only really a consideration at the level of regional council soil conservation staff and planners. At a farm level the only real concerns are with on-farm infrastructure, the financial well being and operation of that particular business and the viability of the road that runs past the front gate. To date there has been no mechanism to either reward or penalise land owners for the off-farm costs of on-farm management decisions, and their associated consequences with respect to land use. It is not that the present crop of land managers don't care about what happens downstream of their sphere of influence, it just that they have never been required to care, in the same way that urban society has never been required to be responsible for the rubbish and sewerage that they generate, they simply bag it or flush it and the problem goes away. Generally economic self interest comes first, and service to others comes second within the bounds of what is legally allowable. One possible solution to this problem is the payment to land managers for services other than the supply of conventional primary products. In the long term, economic instruments could have a significant role to play as long as they are adequately financed.

In terms of the responsibility for promoting the awareness for whole of catchment thinking, planning and implementation of any required changes in terms of by-laws it rests squarely with central and local government authorities. Legally it is their role to administer the Resource Management Act, and whole of catchment management fits within this role. It will not happen however without the right suite of tools and without those tools being applied in an effective manner by both land managers, their advisers or local government.