



Chapter 2

Pastoral Systems

Garth Eyles

Introduction

This chapter provides a summary of the grazing practices in the Tamingimangi catchment during the duration of the project. Land ownership has remained constant throughout, with three owners occupying land within the catchment boundary. (Fig.1). The information in the chapter has been obtained from the owners of the blocks and is a record of their development and management of their properties.

History

Much of the original forest cover in the Hawke's Bay was subjected to progressive burning by Polynesian settlers from about 1000 AD (McGlone, 1978). This was followed by large-scale scrub and fern clearance and conversion to pasture by European colonists in the mid-to-late 19th Century (Guthrie-Smith, 1969). Both the Tamingimangi and Pakuratahi catchments were part of the Waipunga estate which was leased in 1856 for grazing. Prior to the 1914-18 war the area was predominantly in pasture but during that period and immediately following, little fertiliser was applied, resulting in significant scrub reversion. In 1916 Charles Ruddenklau acquired the land. Pasture reversion to scrub, coupled with periodic slip erosion, continued to be a problem in the Pakuratahi catchment. In 1971/72 Carter Holt Harvey planted the catchment in radiata pine, and the area became part of Tangoio Forest.

Top Run

The Ruddenklau have a breeding and store property on which management has been consistent throughout the study period.

After occupying the property in 1961 the Ruddenklau faced a landscape covered with predominantly danthonia and browntop pastures on the tops and manuka and kanuka scrub on the valley sides and bottoms. Development concentrated on scrub clearance through cutting, burning, over sowing with European grasses (rye and crested dogstail) and clover, and subdivision fencing, resulting in the property being divided into four paddocks. In the late 1960s giant discing of the tops was used to break up the native scrub. Reversion was rapid on south facing slopes and these were regularly cut and burnt. In the 1970s over-sowing using aircraft was introduced. Although expensive, good results were achieved.

Fertiliser has been applied since the 1950s. It was first spread by hand, but in the late 1950s spreading began from the air and this method of application continues today. On average 100 t is applied to the property each year. Each area gets covered every second year with an average of 250 kg/ha (2 cwt /acre). In 2004 200 t was applied.

The emphasis has always been on farming on a conservative basis with a keen appreciation for erosion control and conservation. Stocking rates remain constant, with a concentration nowadays on stock performance. Stock comprise a mix of store sheep and cattle at about 5:1 (Angus and Hereford crosses) with a set stocking rate of 9.8-12.4 su/ha (4-5 su/acre). Prior to Cyclone Bola stock numbers reached 4,000 ewes and 550 cattle with replacements, but following this event it was dramatically reduced, and since has risen to a stable 3,500 ewes and 300 breeding cattle with replacements. Significant seasonal production variations occur with November–December, on average, being the driest months and February–March the most productive.

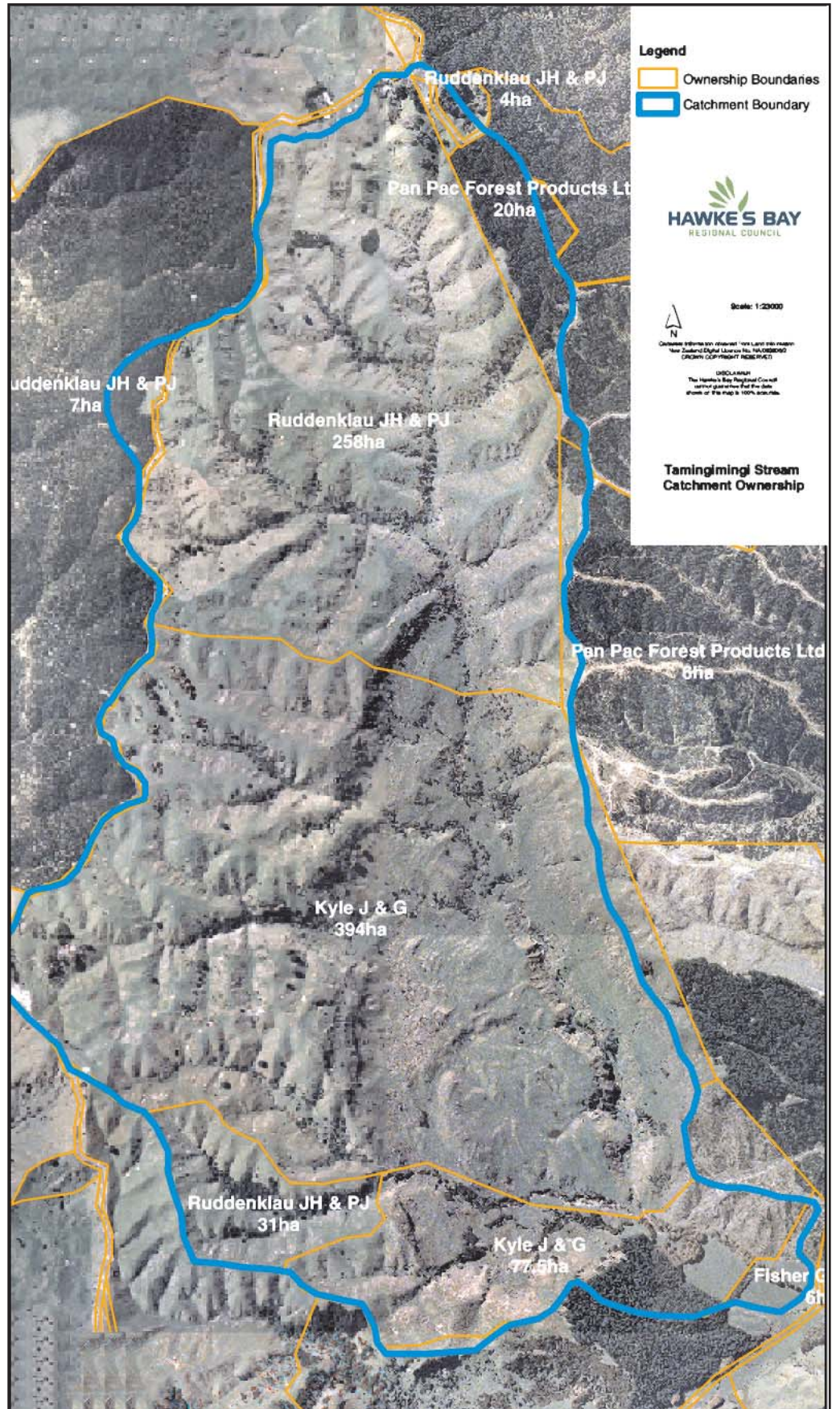


Figure 1. Farm ownership in the Tamingimangi catchment



The farm is susceptible to erosion events with significant slips in 1963 and again during Cyclone Bola in 1988 when there was severe damage, with an estimated loss of productive pasture of 80-120 ha (200-300 acres) (Fig.2). The bottom block, comprising easier land, has mostly been disced and converted to English pastures.



Figure 2. The middle reaches of the Tamingimingi catchment (Top Run) looking downstream (southeast) showing evidence of two phases of slip erosion.

Rocky Basin

The Kyles have a breeding and store property on which management has been consistent throughout the 1993-2005 period.

Early development was similar to that at Top Run with the land being relatively clear in the early 1900s but reverting during the First World War when scrub and blackberry became a problem. There has been a continuing need for scrub clearance over the years but as soil fertility has gradually built up this reversion has become less of a problem.

Topdressing was by hand in the 1940s and 50s until aerial application was introduced. Currently, 250 kg/ha (200 cwt/acre) of super is applied to half the farm annually.

In the 1960s conversion from native to English pastures was undertaken via giant discing and sowing with a turnip and English grass mix. This system smoothed out the pig rootings and made access and management easier. However, drought often led to reversion to native pasture. Since 1993 stocking rates have averaged 9.8-12.4 su/ha (4.5-5 su/acre).

As with Top Run this property is susceptible to droughts and floods. A drought in 1997, for example, caused cattle numbers to fall from 200 to 48. Slip erosion is common, and within the farm boundary there is a unique area formed by a 64 ha collapse structure called Rocky Basin. Except for small patches of remaining bush this area is in pasture but gullies are steadily cutting back through the disturbed bedrock, providing sediment to the stream.



Fishers

A small area immediately upstream of the weir on the Tamingimangi is owned by the Fishers. This contains a small area of podocarp hardwood forest with the remainder in pasture. Management is similar to both the upstream properties.

Summary

The NZ Land Resource Inventory provided a national assessment of the nation’s rural resources in the 1970s at a scale of 1:63,360. This does not separate out detailed on-farm relief but it does provide a general overview. The survey classified the Tamingimangi catchment as LUC unit VIe5 (moderately steep to steep hills in areas subject to summer drought with a moderate potential for soil slip and gully erosion). The Pakuratahi catchment had the same classification with the exception of gorge areas which were LUC unit VIIe3 (long steep to very steep hills and gorges subject to summer droughts with a severe to very severe soil slip potential).

LUC Unit	Present average (su/ha) 1998	Top farmer (su/ha)	Attainable physical potential (su/ha)
VIe5	12	17	17
VIIe3	7	11	14

Table 1. Stock carrying data for VIe5 and VIIe3 land based on Page (1988).

Table 1 identifies stock carrying data for this type of land. Management of the properties within the Tamingimangi catchment has, for the duration of the project, been both consistent and conservative with stock densities less than the average indicated in Table 1.

Fertiliser application rates have averaged 250 kg of superphosphate applied each second year. Scrub reversion has been a continuing problem. However, with increasing soil fertility, scrub clearing is becoming less of a problem. The need to periodically clear scrub and spray for blackberry and thistles has limited the ability to plant exotic trees for erosion control. Streams are not fenced but the low stocking levels mean that there is no significant pressure on access to the streams for drinking. Hence there is little stream bank damage from stock activity. There was little evidence of slip erosion in pastoral areas during the study until 2005 when 167 mm fell at the Top Run rain gauge and 161 mm at Fishers on 21 October. This caused significant slipping and gullyng.

References

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