Progress in identifying sediment sources in the Motueka Catchment

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Introduction

Sediment researchers in the Motueka Catchment aim to compile a sediment budget - an accounting of the sources and fluxes of sediment through the catchment. It will be used to determine:

- relative significance of hillslope sources (such as landslides and gullies) and bank sources to sediment yield,
- spatial pattern of sediment sources and their relationship with factors such as geology and land use/vegetation cover.

From this future options for managing sediment load can be derived.

Inset: Detail of landsliding in the Upper Wangapeka Catchment. Scale 1:10,000



Photo 5 Severe small-scale bank erosion in the Waiwhero Creek

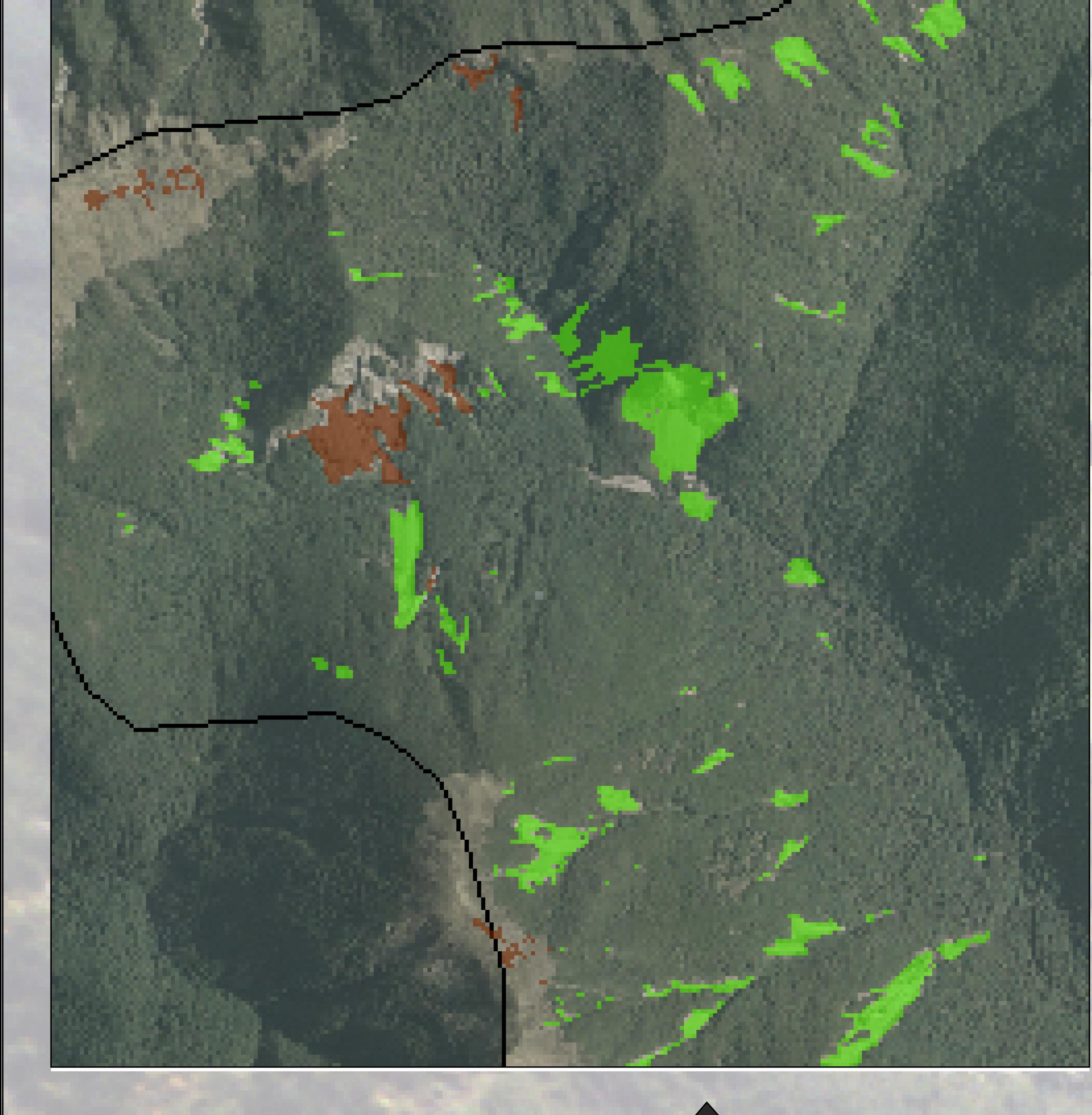


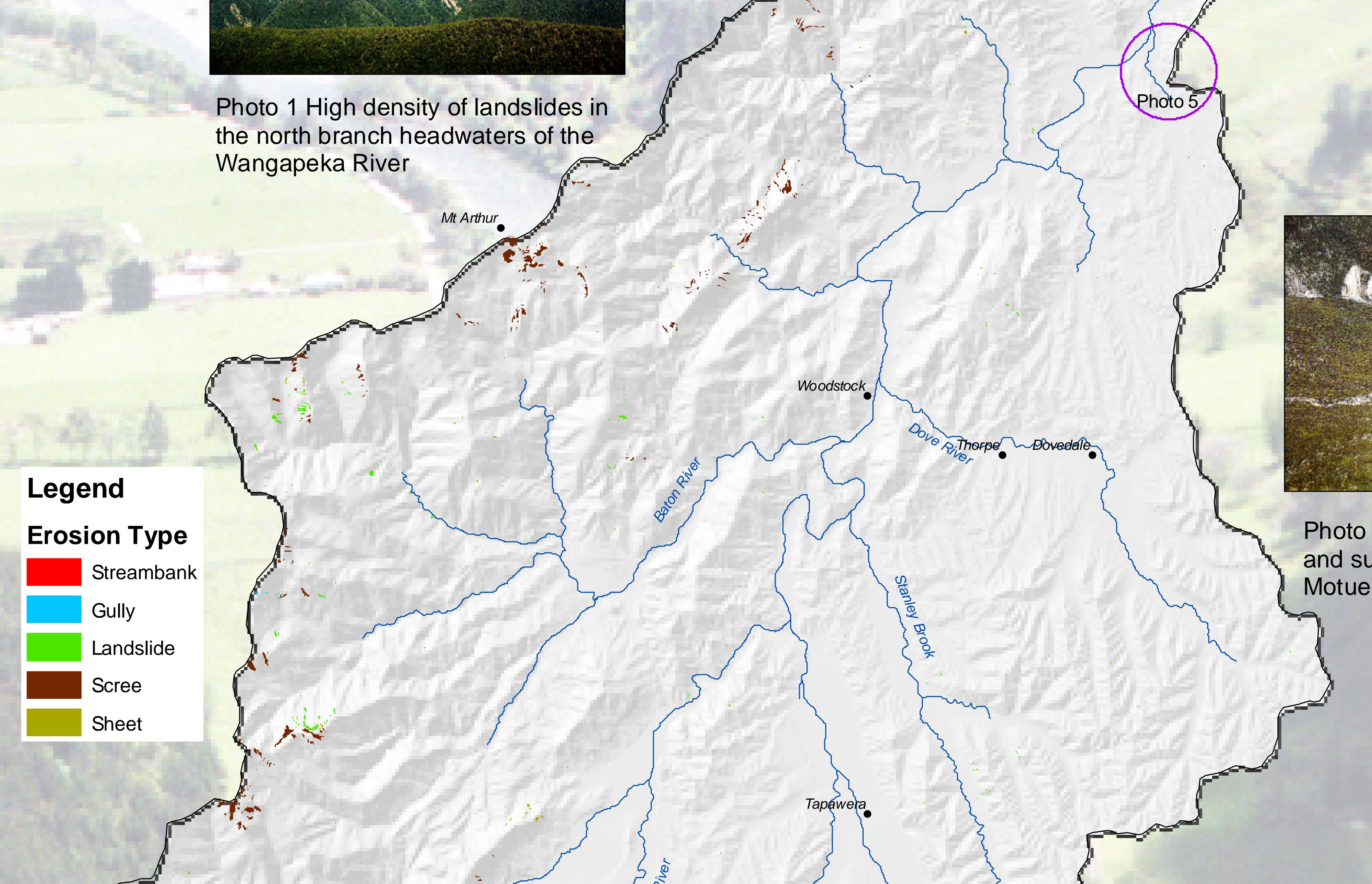
Manaaki Whenua Landcare Research

Riwaka

Motueka

Brooklyn





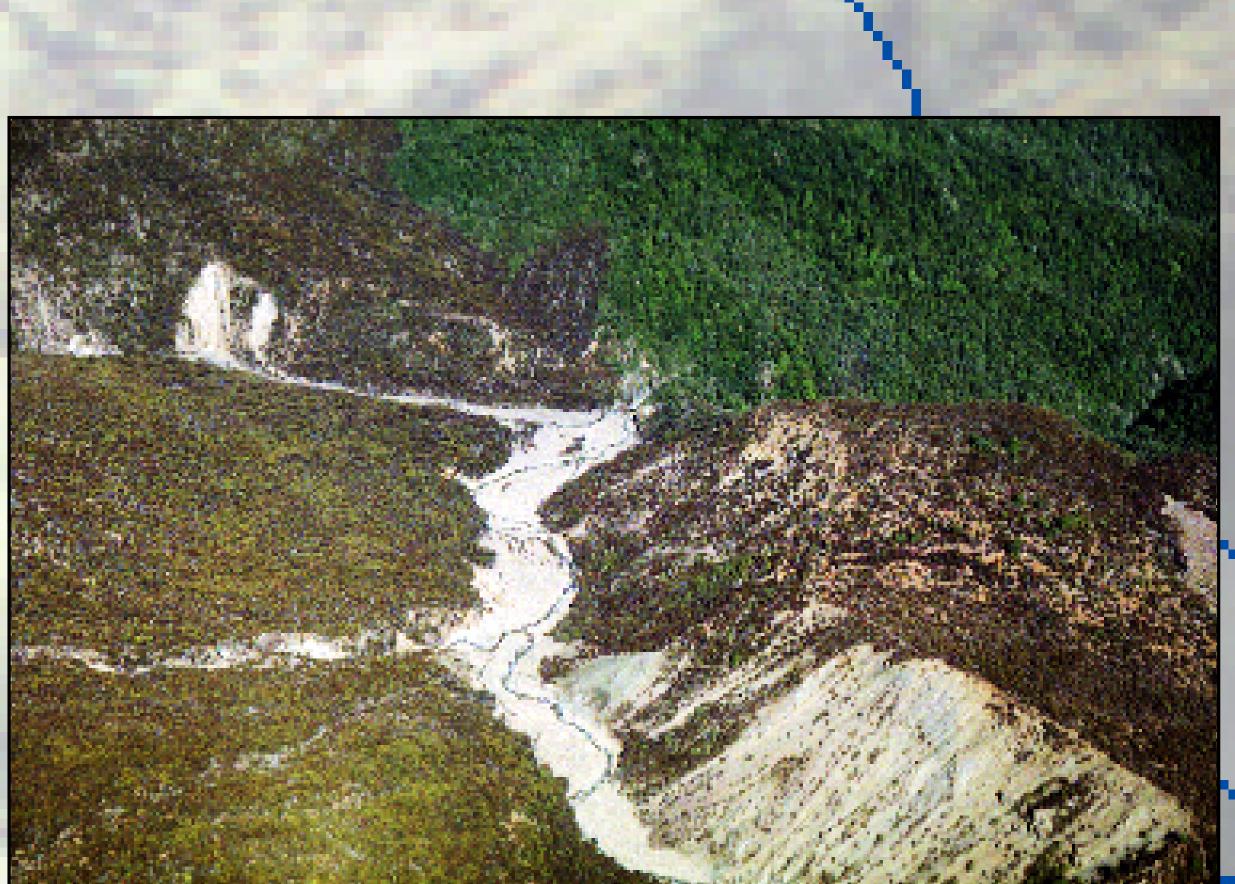


Photo 2 Active gullying, bank erosion and surface erosion in the upper Motueka



Photo 4 Severe large-scale bank erosion in the Motupiko River

Methods

Sediment sources were identified from digital colour orthophotos taken in 2000. The spatial extent of each feature was digitised and the following attributes recorded in a Geographic Information System: erosion type, connectivity to a stream channel, substrate exposed by erosion, % vegetation cover of the erosion feature. The extent of sheet erosion is being mapped automatically by image analysis techniques.

Results

The density of erosion features is very low. The most common forms of erosion are



Photo 3 Severe gullying of ultramafic rock in the upper Motueka

landslides, sheet erosion and scree (Table 1). High areal density of landsliding is restricted to one very small area (Photo 1). Gullies, landslides, and extensive bare ground subject to surface erosion by water and wind are common in the upper Motueka River (Photos 2 and 3). Bank erosion covers a small area (Table 1) and ranges from infrequent large features (Photo 4) to frequent small bank failures along many stream channels (Photo 5). Scree and sheet erosion are extensive but often not connected to stream channels. Much of the erosion occurs under indigenous forest and high-altitude tussock grassland and scrub.

Table 1 Extent of mapped erosion types under different vegetation

	Total area (km)	Number of features	Portion connected to stream channel (%)	Portion (%) under		
Erosion type				Pasture	Exotic forest	Indigenous forest and grassland
Bank	0.4	69	100	9	0	91
Gully	0.7	48	93.8	100		
Landslide	3.2	2499	54.8	3	2	95
Sheet	6.7	683	13.9	2	1	97
Scree	4.0	802	34.8	2	1	97

Work to be completed

 Field survey of bank erosion which is difficult to recognise on the orthophotos

Tophous

Improved mapping of sheet erosion in the Red Hills

Golden Downs

 Quantifying fluxes of sediment from each source, including the short-term influence of forest roading and harvesting

Acknowledgements

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