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Debris flows and debris avalanches in Clayoquot Sound
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23.1 INTRODUCTION

Clayoquot Sound on the west coast of Vancouver Island is rich in natural resources. The watersheds in Clayoquot Sound are heavily forested with a variety of conifers, and five species of salmon spawn in the streams of the area. Both aboriginal and western cultures harvest the abundance of resources that these streams and watersheds supply. The area supports a major tourist industry as well as commercial fishing and logging operations.

Clayoquot Sound is rugged, with steep mountains rising directly from the ocean, or from a narrow coastal plain that lies in front of the mountains (Figure 23.1). The winter months are wet due to cyclonic storms that originate in the northern Pacific Ocean and track eastward towards the coast of British Columbia (BC). Intense precipitation frequently occurs as the storm fronts rise over the coastal mountains. Debris flows and debris avalanches are common as a result of this intense precipitation.

Until the 1960s, most forest harvesting in Clayoquot Sound occurred at low elevations on the coastal plain and along the valley bottoms. As logging moved onto steeper slopes, landslides became more common; a result of changes in hillslope stability due to both clearcut harvesting and road-building practices that failed to address landslide concerns.

In the 1980s and 1990s, environmentalists began to direct criticism against the forest industry on Vancouver Island and, particularly, in Clayoquot Sound. One of their strongest criticisms was directed towards the effects of forest harvesting on steep slopes that led to debris avalanches and debris flows that delivered large quantities of sediment into fish streams. The visual effect of logged hillslopes scarred with landslides was a potent image (Figure 23.2), and photographs of clearcuts and landslides on west-coast mountainsides were featured in environmental
Figure 23.1. Location map.

Figure 23.2. Landslides at Rae Lake, Clayoquot Sound.