only effective means of protecting the plains and the coast. Emergency pine stabilisation of category 3 lands is essential. There is a role for commercial forestry, enhancing the regional economic base, and for catchment management on the better hills close to the plains. However the most cost-effective catchment protection for a huge area between these different plantation types is to allow the bush to return. All this land needs is retirement and pest control; nature will do the rest. It is here in the naturally revegetating lands that conservationists can enhance the process with judicious planting of seed source trees that are regionally scarce. The manuka and scrub species are already there, in pockets and gullies, waiting to do their job.

If it is appropriate for this region to return to subsidised pseudo-commercial forestry, then it is essential to first zone land suitable for commercial forestry and zone out with a green line those lands requiring permanent tree cover. We have enough to pay for without replacing one cycle of inappropriate land use with another.

The nation does owe a debt to the East Cape. We have had 100 years of wrenching export earnings from these hills. We will all have to pay if the category 3 lands are to be purchased, replanted and retired. We will all have to pay if most of the category 2 lands are to be purchased and retired. Anything less than this commitment to a "green line" is a decision to let the region die.

Land erosion – a marine disaster

by Quentin Bennett

UNTRUE, UNFORTUNATELY, is the commonly held belief that the seas surrounding New Zealand are an unpolluted paradise.

One particularly destructive type of pollution, land erosion, has had a marked effect on many large sections of the New Zealand coast.

The recent Cyclone Bola has raised awareness of the effects of land slippage on our steeper hill country. While concern has been focussed particularly on the East Cape, the problem exists over most of the country.

Alarm has been aroused regarding the effects of erosion on the hills and in the valley bottoms.

Almost forgotten is the equally destructive effects of the vast amount of silt and mud that is washed into the sea.

This covers the sea floor in a choking layer, smothering and suffocating many forms of marine life.

It clogs the systems of the many forms of marine life that depend on filtering planktonic food from the water.

Every time the sea is rough or the swells increase, so the disturbance lifts the fine silt back into suspension to continue its deadly effects.

While in suspension, it reduces the light reaching the algae or sea weeds that, like land plants, need light.

We all know how the grass turns yellow and dies if a plank of wood is left lying on the lawn, sealing it off from light. All plants, whether on land or in water, require light to carry out photosynthesis, an essential part of their being.

The algae and seaweeds, which are underwater plants, also perish without light, and require relatively clear water to exist.

Sometimes the layer of silt can be so thick that it simply buries areas of reef. I remember returning to the wreck of the *Tasmania* with Kelly Tarlton to find that it had been covered by two and a half metres of mud following a big Queen's Birthday flood some years ago.

The source of this mud was the Waipaoa River, the mouth of which is almost 30 nautical miles away!

This river's catchment includes some of the world's most eroded land and its effect on the sea is never the talking point or concern that the land is. We must face the fact that the sea is also being badly affected.

The Gisborne and Hawke's Bay hill country has one of the worst erosion problems anywhere on earth. Country that is now regarded as too steep even for forestry has in the past been cleared of bush and brought into pasture.

To a certain extent the roots remaining from the long removed bush continued to hold the land. With time these old hardwood roots have rotted away leaving little to hold the topsoil from slipping down the slopes.

Much of the East Cape's silt has pumice origins, so is very light, and remains a long time in suspension, prolonging its effects.

The East Cape may well be the worst, but many other areas suffer a similar fate. The Firth of Thames suffers badly from the effects of silt.

Silt enveloping a hermit crab in Hawke's Bay.
Photo: Quentin Bennett

I know the changes that have occurred in the last 20 years in the Tutukaka area of Northland as land has been bulldozed and developed. Too much of the local clay has finished up in the sea.

Unfortunately examples can be drawn from all over New Zealand.

Underwater silt causes similar problems to that caused on land, covering and choking much in its path. Suspended in water, the silt's ability to travel is vastly increased and its effects more widespread than were it on land.

The world below the ocean's surface is not seen by many and is easily and conveniently ignored by both the authorities and the public.

In 1960 it was estimated that the Waipaoa River alone discharged 30 million tonnes of material into Poverty Bay. During a major flood in 1948 it is believed that a similar 30 million tonnes went out to sea in one day.

When in flood the Tuki Tuki River carries 9,000 tonnes of silt per hour into Hawke's Bay. Several other rivers also carry immense silt loads into the bay.

One small 10 square kilometre catchment under study in the Ruahine Ranges is known to be eroding at the rate of 7,000 tonnes per year.

Authorities believe that 2.6 million tonnes of silt and soil per year wash into the hydro lake behind Central Otago's Roxburgh dam.

And so the story is repeated around our coast.

My home diving area is Hawke's Bay and because of our pleasant climate friends of mine from outside the area assume that I get a lot of local diving.

In fact I get little home diving because of this little recognised silt problem.

These days the diving in Hawke's Bay is generally hopeless.

The areas that I have known and frequented since the early 1950s now rarely offer clear water. Previously sandy bottoms are covered in mud and only a small swell or chop is required to stir this up and reduce visibility.

Much of the interesting life has been destroyed so there is less to see even if the water clears.

I know areas where overfishing gets blamed for a problem that in fact is caused by our ignorant mismanagement of land.

Those with a close interest in the coastal resources of New Zealand must retain an interest in the conservation of our land all the way from the mountain tops right down to the sea.

The beginning of the chain of life in the ocean is, we now know, already at the end of another chain that we are mismanaging and is in dire trouble.

Earlier generations were innocently unaware of what they were doing by their removal of the bush from hill country. The present generation knows better and must act to preserve the economy, the land and the ocean, interrelated as they all are.

Quentin Bennett is a Forest and Bird member from Napier who has long held a keen interest in marine matters.