

BECAUSE RIVERS are contained within their watersheds and many freshwater species do not disperse easily over land, the distributions of some animals can be very localised. In a recent analysis, I identified 178 species of freshwater and groundwater aquatic invertebrates which are presently known from three or fewer ecological regions in New Zealand. Aquatic habitats on Banks Peninsula, for example, are home to five invertebrate species that are found nowhere else in the world. Then there are at least 37 species of aquatic invertebrates which are known only from off-shore islands. The native plants and animals living in our fresh waters make an important contribution to the biodiversity of New Zealand.

WE ALL KNOW that introduced species can modify habitats and adversely influence the native communities of plants and animals. There are many species of introduced aquatic and riverside plants in New Zealand; the algal water net *Hydrodictyon* is one that has recently been causing major problems in some North Island waters. Several invertebrates have also been introduced to our freshwaters, either accidentally from fish tanks or intentionally as trout food. One species of introduced snail is believed to be forcing a native snail, *Glytophysa variabilis*, out of many lowland rivers and lakes. In addition, 20 species of introduced fishes – almost as many species as native fish – are now found in New Zealand waterways.

Fortunately, most of these introduced fish still have localised distributions. The most widespread are brown and rainbow trout which are the basis of an important



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A free-flowing river in a natural catchment: the Travers River in Nelson Lakes National Park. Native riverside vegetation stabilises the banks and provides an important natural corridor for the movement of animals and plants up and down catchments.



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A catchment cleared of beech forest in the 1920s at Tokomaru Bay. The land has been destabilised, increasing the amount of sediment carried by the river and changing the habitat of aquatic fauna.

What has been lost?

factors contributing to the degradation of freshwater habitats in New Zealand

- 🐟 85% of lowland forest cleared
- 🐟 90% of wetlands drained
- 🐟 almost half the length of larger North Island rivers in catchments with modified vegetation cover
- 🐟 more than 62 hydroelectric projects
- 🐟 at least 200 introduced wetland plants
- 🐟 5 species of introduced freshwater snails
- 🐟 3 species of introduced frogs
- 🐟 20 species of introduced freshwater fishes

sports fishery. In terms of their recreational value, trout can be thought of as the freshwater cousins of deer in native forests. And like the deer in our forests, the presence of trout in our rivers is not without ecological consequences. An increasing body of evidence indicates that trout adversely affect many native fishes and some invertebrates through predation and competition. There is a strong case for stopping any further spread of trout and other introduced sports fishes into relatively unmodified catchments.

IT IS ESTIMATED that two-thirds of world river flow will be regulated by the year 2000. In New Zealand over 62 hydroelectric schemes are our contribution to this loss of wild fresh water. Hydroelectricity should not be seen as a low-impact form of energy. The construction of dams and subsequent altered river flows, sediment levels and water temperatures can have significant effects on native plants and animals and natural river processes. The recent power crisis has shown us just how much energy