



Orange lined perch (*Lepidoperca*) is a Tasmanian species which has also been collected as deep as 500 m on the Chatham Rise. It appears to live in family groups in shallow water only in Preservation and Chalky Inlets. (Inset) Pink soft coral covering a dead branch of black coral. The tiny 1 cm long arms each have eight tentacles with stinging cells used to capture tiny plankton.

Below this, the water in the deep basins may remain undisturbed for years, particularly in fiords with very shallow sills. Water in these basins can be renewed only when nearby coastal water at the sill depth is denser than the basin water so it can spill over the sill. If the basin water is not renewed, it becomes isolated. Eventually dissolved oxygen is consumed through animal respiration and oxidation of organic material, sulphur is reduced, and hydrogen sulphide is liberated. This has profound effects on the sediment and organisms living at that depth resulting in generally low species diversity. The dominant animals are heart urchins, tube worms, bivalves, and tusk shells, but the actual species are the same as those found in bathyal depths (around 1,000 m) in the open ocean outside.

### Different coast

A further effect of the freshwater layer is to lower salinities (salt levels) to near zero in the intertidal region, so that at low tide one does not see the usual abundant masses of mussels, barnacles and seaweed characteristic of open coasts, although some brackish-water species can tolerate the conditions and colonise the fiord walls between tide levels. These include small snails, barnacles and blue mussels.

On most rocky shores throughout New Zealand large seaweeds are found at low tide and for some distance sub-tidally, depending on light penetration and water density, but in the fiords the low salinity of the surface layer prevents most seaweeds growing at low tide level, and its dark brown colour does not allow sufficient light to penetrate down to the seawater for luxuriant seaweed growth to occur. Fur-

