



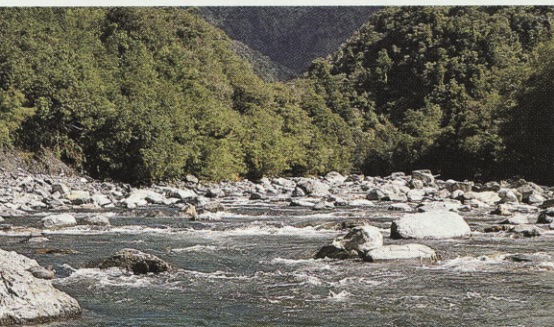
Department of Conservation staff (Murray Williams on right) taking measurements after banding a blue duck on the Manganui-a-te-Ao River.
Photo: DoC

squeeze in a new territory amongst existing pairs, displace an adult bird, or fill the gap left by a dead bird. However, numerous sightings of blue ducks on alpine tarns and of single male birds have suggested that young birds are more mobile than previously expected. This has been confirmed recently by sightings of colour-banded birds in rivers some distance from their home territory in both the North and South Islands.

Blue ducks show all the symptoms of a species in decline. Populations are scattered between the headwater tributaries of major rivers. Blue ducks are present in some streams but absent from adjacent, and apparently similar, streams. The lower modified reaches of rivers are usually unoccupied as though blue ducks are reluctant to disperse over land or across unfavourable habitat. While the total population is estimated to be about three



Blue ducks have large strong feet – an essential adaptation for survival in fast turbulent water.
Photo: Alan Reith



Westland's Toaroha River is typical blue duck habitat. The wild mountain rivers of the South Island's West Coast are a national stronghold for blue duck. Photo: Alan Reith

to four thousand adults, this is split into discreet sub-populations. The largest two in the North Island are the 40 pairs in each of the Motu and Whanganui catchments. Their small size and lack of interaction makes these populations increasingly vulnerable to habitat changes.

In 1980, Wildlife Service (now DoC) scientist Murray Williams set out to solve the mysteries of the blue duck by studying their ecology on the Manganui-a-te-Ao River, a tributary of the Whanganui. The stimulus, Murray recalls, came from two people – Janet Kear of England's Wildfowl Trust and US waterfowl biologist Frank McKinney. They had carried out brief

studies of blue duck and recognised the need for further, more detailed, research. As well as their encouragement there was a conservation imperative. The National Government's subsidised loans for small hydro schemes had focussed attention on the Manganui-a-te-Ao. The entire river, the only remaining free-flowing tributary of the Whanganui rising in Tongariro National Park, was under threat.

For over ten years, Murray colour-banded every resident bird and all juvenile birds that fledged in a ten kilometre stretch of the river, monitoring an increase from four to nine pairs. Initially limited to 20 field days each year, the research project is now one of the longest studies of any duck species in the world and certainly the most important study of a riverine duck. It has revealed some interesting results. Most significant is that inbreeding appears to be a natural feature of the blue duck population – a surprising discovery in light of the widely-held view that a broad genetic base is essential for the long term survival of a species. Colour banding of individuals by Murray, and genetic 'fingerprinting' by fellow DoC scientist Sue Triggs, has confirmed that there are successful brother-sister pairings and even a grandmother-grandson pairing. In this study no duckling established a territory more than ten

kilometres from its natal area.

Blue ducks have much in common with other relict New Zealand species. They are relatively long-lived, have a low reproductive rate and irregular breeding success, similar to our more critically endangered species. Fortunately, the blue duck is still what Murray calls a 'second tier' species. The blue duck joins a long list of native birds which are still reasonably widespread but are nowhere common. Birds like the kea, kaka, kiwi, falcon, robin and blue duck are still adjusting to extensive loss of habitat, introduced predators and competition from browsing mammals. At least

with these species, early attention may ensure that last-ditch rescue programmes, like those mounted for the black robin, black stilt and kakapo, may not be necessary.

Suited to fast water

Blue ducks are admirably suited to the fast water habitat. Their strong webbed feet can propel them across rushing white water – the young chicks literally run across the top. They are superb divers and adept at foraging amongst the stones in riffles, and in the lee of large boulders. A curious-looking black flap on either side of the bill protects it from abrasion against rocks. So harsh is their rough rocky home that plastic leg bands can wear through completely in two years and the identification numbers stamped into the thick aluminium bands soon become illegible.

Blue ducks rely on insect larvae for food. These invertebrates live on and under the stones of the river, occasionally drifting downstream, particularly in floods. Recent studies by Kevin Collier (DoC) and Clare Veltman and Ian Henderson (Massey University) indicate that large prey items, particularly caddis fly larvae, are preferred in North Island rivers. The frequent shiny dark fragments of insect exoskeleton in their conspicuous droppings testify to their