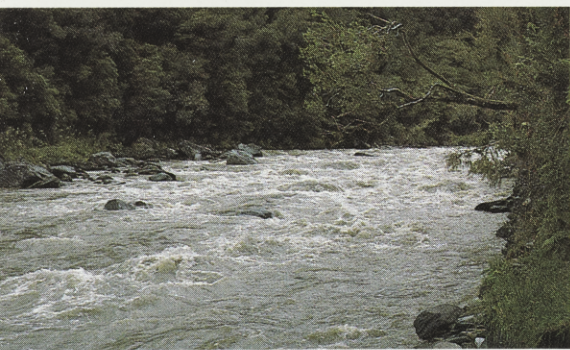


rich invertebrate diet. In the Southern Alps, where blue ducks are present in the subalpine zone, fruit from riparian shrubs forms an important part of their autumn diet. I have observed blue ducks amongst the streamside shrubs, gorging themselves on *Coprosma* berries and leaving thousands of undigested seeds splattered on the open riverbed.

Year-round territoriality has probably evolved from the need for a pair to maintain their breeding partnership and to defend their nesting and feeding areas. Observations by blue duck researchers, including my own over several years in the Arthur's Pass area, indicate that the main constraint on blue duck productivity is the availability of females. Female blue ducks have a lower survival rate than males, because of the energy demands of producing eggs and their vulnerability to predators during nesting. Males are more common. They often engage in spectacular fights, swiping at each other with the prominent spurs on their wings, when competing for the limited number of females.

Recovery plan

Work on blue duck is now coordinated by a national liaison group with representatives from DoC, Forest and Bird, Ducks Unlimited and universities, as well as independent researchers. The group's working document, compiled after the first national blue duck meeting in 1987, has directed efforts over the last five years. A revised version of this Blue Duck Recovery Plan will guide blue duck work for the next decade, identifying research and monitoring priorities for blue duck conservation. The annual meetings of the group provide valuable forums for discussing the latest research results and for encouraging



Styx River, Westland. Flooding is a common occurrence in mountain rivers and one of the major hazards for young blue ducks. The relatively peaceful waters of the Styx River are transformed by heavy rain. Photo: Alan Reith

regional conservation projects. Colour-banding of individual birds and monitoring of small populations is now occurring in most blue duck areas.

Several studies of blue duck ecology are being carried out by Massey University and DoC researchers, including an important study of the effects of introduced trout on blue duck productivity. Birds have been transferred from the central North Island to Mt Taranaki where they have successfully established a new breeding population. Also, scientists are experimenting with radio transmitters in an attempt to solve

A year in the life of a blue duck



Three week old chicks on the Manganui-a-te-Ao. Photo: Alan Reith

AS MORNING MISTS SWIRL down the open riverbed, there is a flurry of activity on the rapids as a pair of adult blue duck work from rock to rock gleaning insects from beneath the current. It is winter and the pair are travelling over most of their territory each day, wary for intruders. Feeding is concentrated in the first hours of the day and several hours after dusk, with the middle of the day spent preening or asleep on river boulders or hidden amongst the riparian vegetation.

By late August, the female selects a sheltered site to nest, often a previously-used nest and usually beneath a rock overhang, or in dense vegetation with complete cover overhead. The female lays six white ovoid eggs. Each egg is ten percent of her body weight, and they are usually laid two days apart. The eggs are in a shallow depression lined with a few feathers. For the next 32-35 days the female incubates the eggs, leaving the nest for only about 45 minutes in the morning and evening to feed. The male is usually inactive and often concealed near the nest, joining the female when she feeds. Nesting can be a month to six weeks later in the alpine regions of the South Island.

In early October, the first fluffy white and grey chicks emerge, with tiny bodies and huge feet, ready to start life battling the strong current of a stream frequently swollen with spring snow melt. The main causes of nest failure are flooding and predation. Flooding continues to be a major hazard for the young brood as the adults share the difficult task of raising the young. The adults remain vigilant, watchful for threats such as predators. Paddling frequently around the chicks, they call softly, herding them into a tight bunch, especially when guiding the brood across difficult water.

The young birds remain flightless for 80 days, about 60% of them surviving to fledge. Fragmentation of the brood is a major threat as young birds have a significantly reduced chance of survival away from their parents. As the young fledge, they explore beyond their home territory while their parents begin their annual moult. They need to be fully feathered when the time comes to defend their territory from other blue duck, including their own offspring. Juveniles have only a 50 percent chance of surviving their first year, males a slightly better chance than females. On average, only one juvenile will survive from each breeding attempt. Some pairs are much more successful at raising young than others.

Most juveniles disperse up-river searching for a vacant territory, a lone bird to pair with, or a weaker adult that they can displace. About one juvenile from every two breeding pairs will be successful in establishing itself as a breeding adult. Some juveniles may travel a considerable distance, seeking a mate and territory, perhaps right out of the catchment, but most attempt to settle close to their home territory.

Once successfully established as a pair, blue duck can expect to live for about seven years. A pair will defend a stretch of river about one kilometre long, all year-round, provided it contains a suitable nest site, roosting areas and adequate feeding riffles to raise a brood. They usually maintain a buffer between theirs and the adjacent territory and will fight fiercely to defend it from aggressors. Pair bonds are long term, with changes resulting from successful male challenges or the death of one of the pair. Both birds remain close together throughout the year and, as winter eases, prepare for another breeding season.