

Foragers, food-switchers and innovators

Finding food is essential for survival and through learning and experience such tasks will usually be mastered very well. Many birds need to learn which food items they can eat, where to find them and how to get them into their stomachs. Some foods are also hidden from view. They may need to be peeled and their outside appearance may be entirely different from the enclosed edible part (protected by rind, peel or hard shell). Other types of food must even be extracted from below the ground. The question is how such mastery works and what it implies. Furthermore, one would think that a bird needs to be aware of food shortages and of possible competition for food and may need to either plan ahead to obtain as much as possible for lean times and hide it (hoarding or caching), or migrate to new areas to avoid acute food shortages. Such food shortage may not be the result of seasonal change, as is the case in high latitudes of the northern hemisphere (with its reliable changes in temperature), but based on a decision at a time when it becomes clear, through certain weather conditions, that a food source or several ones have dried up. In Australia, this could be any part of the year in so many of its regions.

Type of foods eaten

As a general rule, we subdivide landbirds into groups by the food they eat. We talk about frugivores, nectarivores, insectivores, granivores, carnivores and omnivores. In other words, we generally accept that some species feed largely on seeds or fruit, others on invertebrates or other animals and another large group on nectar, while some are identified as just about being able to feed on anything. There are physical adaptations, particularly of the beak, that may reflect preferential foods. Carnivores have strong beaks curved at the end of the upper mandible so they can pierce a hide and tear flesh, while honeyeaters have finely curved beaks with long tongues that can be inserted into the neck of nectar-producing flowers, and so forth. Roughly, the beak can show on which food type a species relies, although some species may have an all-purpose beak.

But how true is all this in Australian birds? Australia's flora and climate are fickle, unreliable and irregular (also referred to as environmental stochasticity) – for vast tracts of land there may be droughts for many years running or floods, fire, sandstorms, devastation of grasses and crops by locusts. There may be sudden frosts in areas that do not often get frost, delayed onset of rainy seasons or plagues that may devastate whole stretches of land, storms that unearth ancient trees and hailstorms that denude entire stretches of forest. Australia is the 'land of the seven plagues' and demands a range of adaptations that can somehow meet these challenges.

There are some specialists that defy the rules and have become so specialised that the very nature of their specialisation now threatens their survival. Black-cockatoos,