

Living with Uncertainty

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Why do pelicans fly inland after rain, even though they never saw it falling? They somehow 'know' that this is the moment to go and breed. Inland they find huge ephemeral lakes in country that is normally desert. Such knowledge is becoming increasingly essential to their survival. Pelicans must now co-exist with people who drain or pollute wetlands and lakes closer to their coastal roosts. They need to know where other wetlands are, where they can find resources to breed and feed hungry chicks.

Pelicans have evolved to work with the 'boom-and-bust' cycle of the Australian desert. They are adapted to the world's most variable climate, the climate of inland Australia. They can find and exploit its resources. It is just as well, as the people who now dominate the coastal ecosystems of the country have changed these dramatically.

Pelicans are not the only birds that have adapted to both the people and climate of Australia. In a land where floods and droughts are natural parts of a bigger ecological cycle, birds (and other animals and plants) depend for their survival not on regular rains but on how long they can stretch out their resources between big flooding events. They need to seize the opportunities offered by booms and stay within the constraints of bust-times. They must live with respect to the whole boom-and-bust system.

Drought is normal in Australia. In the arid lands of Australia, 'normal' ecosystems do not follow annual seasons as they do in other parts of the world, but rather boom (or 'pulse') after rare rain events. Flowers, seeds, seedlings, baby birds and other animals all follow at different times after the events, but the 'pulse' produces activity, and then inactivity. During the long dry times between booms, the natural systems wait (or 'reserve' their energy). The length of the wait is variable. There are no regular seasons in this country. The survival of creatures depends on how well they can adapt: how long they can wait and cope with the uncertainty of the wait, and then how quickly they can respond to opportunity, if and when it arises.

In our new book, *Boom and Bust: Bird Stories for a Dry Country*, we explore the workings of the exceptional Australian ecosystems and how people have changed them. Some birds, like the pelicans, adapt to them and cope well with the uncertainties of never knowing when the bust (or resource poor) time will end. They must learn to adapt to new factors as well. There have been great changes wrought in the Australian landscape by humans.

The first wave of human settlement was Aboriginal people who arrived about 55,000 years ago and burned vegetation to improve their hunt, thereby changing

profoundly the vegetation patterns of the landscape. Human fires changed the food sources available to birds as well as the structure of the vegetation cover. In changing times it is better not to be a fussy eater. The huge duck-like bird, *Genyornis*, taller than a man and weighing about 275 kilograms, was, it seems, too particular about what it would eat. It died out about 45,000 years ago, probably because its preferred food, chenopod shrubland (saltbush, bluebush), became increasingly replaced by grasslands and open Eucalypt woodlands. Without its preferred tucker in large quantities, *Genyornis* did not survive. But Emu, another big bird that lived in some of the same places in the Australian desert, adapted. It seized on available food sources, and learned to eat them. Changing its feeding pattern ensured its survival.

Then the second wave of humans arrived just over 200 years ago and introduced European farming practices to the wide expanses of inland Australia. The adaptable Emu discovered a taste for wheat and ate it with enthusiasm, much to the chagrin of Western Australian farmers, who declared an Emu War in 1932. In Queensland Emus ate Prickly Pear and spread the seed of that noxious plant, making farmers unhappy there too. The opportunist Emu added to the woes of the new human arrivals who were trying to make a European-style living from a country so unlike Europe.

In the northern hemisphere, where most of our economic and many of our ecological models are based, there is a historical certainty that resources will return with movement of the sun each year: spring brings new growth, autumn, harvests. Global and national financial systems are built on this certainty; mostly based on annual cycles built up from the deeply seasonal agricultural past of dominant western nations.

As global climate change affects ecosystems everywhere, certainty is increasingly eroded: seasons fail, food supplies are no longer reliable, and extraordinary weather patterns bring disasters on unprecedented scales – not just in marginal places, but even in places where certainty was the norm and boom times appeared every year at the same time on the calendar. Increasingly the whole world is seeking models of how to live with uncertainty and unpredictable seasons, and how to adapt to disasters or wait out the uncertain stretches of time between good seasons.

Australian Aboriginal people have a different calendar: they watch the birds and flowers and use their behaviour to understand the structure of each year on its merits. 'Tellers' provide crucial information, very specific to country. 'When the brolga sings out, the catfish start to move', Daly Pulkara told Deborah Rose at Yarralin. Tellers create a calendar, but the calendar is not cyclical or certain, rather interconnected and ecological. The coming of rain, of fish, of edible seeds is each an important season, but it is not necessarily annual, and the order of events is knowledge that is embedded in country. This is a calendar that can wait, that can adapt people's behaviour to suit unpredictable rain and the ecological response following fire events.

In uncertain times, we need *Bird Stories for a Dry Country*. These magnificent creatures regard uncertainty as normal. They have built up resilience to cycles of boom and bust: they know how to wait for resources, living on the edge on very little, and then to seize the opportunity to breed when it arrives. For some, like the Night Parrot, perhaps the wait between resources has been too long.

Ecological systems have booms (opportunities) and times of reserve. Humans, like birds, need to know when to take opportunities to grow and when it is better to wait and conserve resources. The Global Financial Crisis has everyone talking about Booms and Busts. But busts attract all the attention: they are 'abnormal'. Yet good and bad economic times have always been interconnected. Perhaps human society has much to learn from life in the Australian desert.

All creatures need to be able to recognise the moment in the cycle when it is safe to expand, to place demands on our ecosystems. Understanding the natural system as a whole, its patterns and its irregularities, its booms and its busts together is essential to survival in an uncertain world. The only certainty is that if we don't realise that expansion puts pressure on the ecological systems, then the economic systems that depend on expansion are sure to collapse.