IN BRIEF

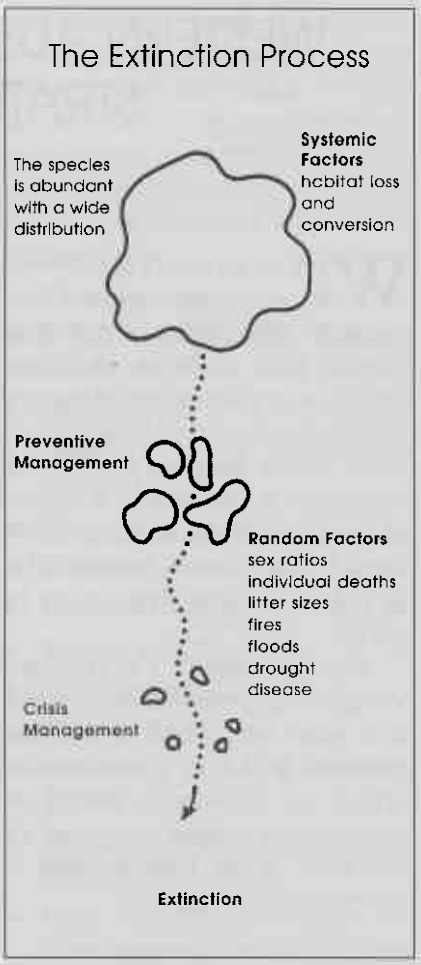
Sustainability or Extinction?

THE following is an extract from a book produced in Victoria. It is equally relevant to WA.

Sustainability is an important concept in land management. 'Sustainable development' and 'sustainable agriculture', for example, have become common terms reflecting our recognition that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. In the agricultural environment this has led to increased national and local efforts to improve land management practices in order to maintain the soil resource and the quality of water resources – the essential requirements for productive land use now and in the future.

Extinction is the loss of all living individuals of a species from the Earth. In Australia, 19 species of native mammals have become extinct over the last 200 years. The loss of a species can also occur at the local or regional scale, even though it still survives elsewhere. But when, and how, does extinction occur? Is it sudden or gradual? Are there lessons to be learned that are relevant to the sustainable management of flora and fauna?

A key concept in conservation biology is that extinction is a *process* that usually happens gradually; it is rarely a sudden event. It is possible to describe a general model of how extinction occurs (see diagram). Typically, a species may initially have a wide natural distribution, but this distribution becomes broken and fragmented. If the processes (such as land clearing) that caused the fragmentation continue to operate, the range and population size of the species will continue to be reduced. The outcome is a series of small, isolated populations that become increasingly vulnerable to further disturbance, to catastrophic events, or to fluctuations in environmental conditions. One by one these isolated populations disappear, until the final loss marks the extinction of the species.



A generalised model of the extinction process. The population is fragmented into smaller and more isolated components, on which systemic and random factors take their toll. (After Clark et al 1990.)

Management intervention is needed urgently in the latter stages, when only a few populations remain, but it is difficult and frequently expensive. This is the situation facing recovery conservation programmes for endangered species. It will be more effective in the long term if we can tackle the process of extinction at an earlier stage, by identifying and reversing disturbances before populations decline to critical levels.

From: Fragments for the Future: Wildlife in the Victorian Riverina. 1998. A. Bennett, G. Brown, L. Lumsden, D. Hespe, S. Krasna & J. Silins. NRE, Melbourne.