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Populations, genes and captive breeding

This chapter looks at the genetic aspects of managing animal populations in a wetland, including how large a population must be to remain viable in the long term, and the thorny issue of whether it can be rebuilt through a captive breeding program if numbers fall to an unstable level. Plants are not considered here as their biology is different enough that a different set of considerations applies, but also because most replanting is done with plant material collected and propagated directly from wild populations.

Population size and genetic problems

Whatever type of animal is being considered in later chapters, an issue that must affect all of them, and also the planning needed for long-term management of a wetland for particular populations, is sustainable population size. This can best be described by the '50 to 500 rule', where at the lower end of the scale a population of 50 or so animals of a single species may *theoretically* be genetically diverse enough to scrape by from one generation to another, as long as no major disaster such as fire, extreme drought or invasion by a serious predator or competitor occurs.

In the real world, there is no guarantee of such stability, and even relatively minor mishaps may gradually eat away at variability in a small population over many generations; for example, if only half a dozen of them carried a particular gene, and all of these just happened to die out simultaneously for any reason. It need not be that these genes are unfavourable; in a small enough population such an effect can happen every now and then by chance alone.