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I am a research scientist in Australia with a background in kangaroo population ecology and the impacts of harvesting. In 2004, I gave a testimony to the Californian Senate on these subjects. In that testimony, I detailed relevant aspects of the kangaroo harvest and its management. Since then, kangaroo populations have continued to be harvested across Australia under management plans that have included regular monitoring. Further research has also been undertaken, allowing fine-tuning of the management plans. With over 35 years of monitoring data across large areas and through a number of droughts and high rainfall years indicating no long-term decline in state-wide populations, there is now convincing empirical evidence that kangaroos have been harvested sustainably.

Two websites (<http://www.kangaroosatrisk.org> and <http://www.kangaroosatrisk.net>), that question the sustainability of the kangaroo harvest, have recently been brought to my attention. Some of the demographic statistics and claims on the websites are either erroneous or misleading, such as maximum rates of increase of 8-14%. For example, red kangaroo populations with a stable age distribution are capable of increasing at a maximum rate of around 30%. This might occur at a time of abundant resources. However, if the population sex ratio is skewed towards females or the population contains few juveniles, then much higher rates of increase (e.g. 50%) are possible. This may be the case immediately after a drought. I could address each erroneous statistic and claim in turn, but that would be inefficient and risks being side-tracked from the criteria for a sustainable harvest. The relevant kangaroo biology has been well studied and documented (e.g. Caughley et al. 1987; Pople and Grigg 1999; Pople et al. 2010a,b). That information has been incorporated into harvesting programs to ensure the harvest is sustainable and populations are conserved.

The harvest strategy involves setting conservative quotas that are set as proportions of regular estimates of population size. Those proportions are determined from harvest models (e.g. Caughley 1987, Hacker et al. 2003, Pople 2008, Jonzen et al. 2010) based on relevant species biology and using harvest theory that is well understood (Ludwig 2001). Harvest reserves such as National Parks provide a further safety net (Gell and Roberts 2003; Tenhumberg et al. 2004). Population monitoring has been well developed over a number of decades and is tailored to species and regions. Estimates are determined mostly by extensive aerial surveys. The national approach to management is described at:

<http://www.environment.gov.au/biodiversity/wildlife-trade/publications/commercial-kangaroo-harvesting-fact-sheet-2012>

Each Australian State where harvesting occurs undertakes population monitoring that underpins the management program. Examples of this are described at:

<http://www.environment.nsw.gov.au/wildlifemanagement/KangarooManagementProgram.htm>

<https://www.qld.gov.au/environment/plants-animals/wildlife-permits/macropods/>

http://www.environment.sa.gov.au/managing-natural-resources/Plants_Animals/Abundant_species/Kangaroo_conservation_management

<http://www.dpaw.wa.gov.au/plants-and-animals/animals/kangaroo-management-in-western-australia>

Importantly the management programs are overseen by government conservation departments, where the primary goal is conservation of each of the kangaroo species.

In summary, kangaroos are commercially harvested in Australia under a government-run management system that uses scientifically-developed monitoring methods to set conservative quotas based on well-understood harvest theory and using harvest models based on empirical data. This is designed to ensure a very low risk of overharvesting. There is now a long (>35 years) time series of data on kangaroo distribution and abundance that show that this harvest strategy has been sustainable.

Sincerely,

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