

Factors influencing the efficacy of contraceptive regimes in the field: Marsupial case studies from down under

¹Herbert, C.A., ²Handasyde, K., ³Whisson, D. and ²Coulson, G.

¹School of Life and Environmental Science, The University of Sydney, NSW, 2006, Australia

²School of BioSciences, The University of Melbourne, Parkville, Victoria, 3010, Australia

³School of Life and Environmental Science, Deakin University, Burwood, Victoria, 3125, Australia

CONTACT: Cathy Herbert, catherine.herbert@sydney.edu.au

Fertility control is often viewed as a palatable alternative to lethal control for highly charismatic vertebrate species. In Australia, this is exemplified by the management challenges surrounding some of our endemic marsupial species, most notably the koala and kangaroo. Fertility control methods, such as contraceptive implant treatment or surgical sterilisation, are frequently called upon to manage these challenging scenarios, but the relative efficacy of different approaches is still debatable.

Over the last 15 years, our research teams have trialled a variety of fertility control techniques on different marsupial species under various field conditions. This includes tubal ligation and/or contraceptive implants containing levonorgestrel or deslorelin (Suprelorin ®) in koalas on French, Raymond and Kangaroo Islands; Suprelorin and levonorgestrel implants in eastern grey kangaroos in the peri-urban areas of Melbourne and the New South Wales east coast; and Suprelorin implants in tammar wallabies on the Abrolhos Islands, Western Australia. We draw on this extensive experience to highlight key aspects of the fertility control method, species biology and population characteristics that have a significant influence on contraceptive efficacy.

The efficacy of different contraceptive regimes for wildlife management is often calculated on a species by species basis, with efficacy viewed primarily as a function of contraceptive success and longevity. We argue that any assessment of contraceptive efficacy needs to incorporate a range of other variables, many of which vary on a population by population basis. Using examples from our research, we highlight how comparisons of fertility control efficacy need to take account of the following five inter-related factors:

1. Properties of the fertility control agent
2. Management objectives for the population/environment
3. Timeliness of management intervention
4. Environment within which the animal lives
5. Biology of the species and population

We will use these five factors to outline a framework for evaluating the efficacy of different wildlife fertility control methods on a population by population basis, with a view to developing an approach that is relevant to a wide range of wildlife species throughout the world.