2. Veterinary aspects of hand-rearing orphaned marsupials

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1 MARSUPIAL NEONATAL BIOLOGY AND PHYSIOLOGY: CONSIDERATIONS FOR HAND-REARING

The hand-rearing of any young animal should mimic the natural situation as closely as possible to optimise its chance of normal health, growth rate and assimilation into a social group of its own species. It is therefore important to have a good knowledge of the development, growth, environment, diet and parental care of the young animal in the natural rearing situation.

1.1 Development of marsupial neonates

The characteristic of marsupials that most clearly distinguishes them from eutherian mammals is the immaturity of their young at birth (Tyndale-Biscoe & Janssens 1988). Gestation is very short in marsupials, ranging from 11–35 d (Tyndale-Biscoe & Renfree 1987) and the young are born at an early embryonic stage, weighing from 3–6 mg in the honey possum (*Tarsipes rostratus*) to approximately 900 mg in the larger kangaroos. The neonate climbs from its mother's cloaca towards her mammary gland where it attaches to a teat and completes embryonic development and growth (Russell 1982; Merchant 1989). In most marsupial species, the teats are enclosed within a bag-like pouch that supports the young as it grows, providing an environment with stable temperature and humidity. Many small dasyurid species and the numbat (*Myrmecobius fasciatus*), however, have no pouch. In some of these dasyurids, lateral folds of skin develop during gestation and progressively cover the young after attachment, partially enclosing them. As they grow, the young become exposed and hang from the mother's ventrum, supported by the *ilio-marsupialis* muscle that extends into the mammary gland and each teat. Larger dasyurids, bandicoots, wombats, marsupial moles, the koala (*Phascolarctos cinereus*), yellow-bellied glider (*Petaurus australis*), musky rat-kangaroo (*Hypsiprymnodon moschatus*) and greater bilby (*Macrotis lagotis*) all have permanent enveloping pouches that open caudally. All other macropods, possums and gliders have deep permanent forward-opening pouches. These permanent pouches may be closed and opened by contraction and relaxation of the underlying muscle, the *panniculus carnosus*. The number of teats varies between species, ranging from two to twelve. In many species the normal litter size is less than the number of teats and newly born young will attach to teats that were not used by the preceding offspring (Tyndale-Biscoe 2005). In dasyurids, particularly the smaller species, it has been observed that some species give birth to more young than can be accommodated on the teats (see Chapter 10).