

THE GENERAL BIOLOGY OF EUROPEAN RABBITS

(Reprinted with the permission of TerraMar Environmental Research Ltd)

Endemic to the Iberian Peninsula and Northwest Africa, the European Rabbit has been introduced widely across Europe, North America, Australia, New Zealand, South America, and several islands. In Australia and New Zealand, this species has become very abundant, with major adverse ecological and economic consequences (Douglas 1981). European Rabbits have also become established on San Juan Island in Washington State, where they have persisted since the 1880s, and where they have caused significant impacts to native vegetation and wildlife (Weisbord and Stevens 1981). All strains of domestic rabbit are derived from this species.

The following sections summarize information on the biology of the European rabbit.

Social Organization

European Rabbits have a social structure based on both territoriality and a dominance hierarchy (Daly 1981, Garson 1981). Breeding groups of from two to ten adults hold territories. These territories are delimited by dung deposits. Within the adult population, there is a hierarchy of dominant and subordinate animals. In addition, the rabbits form reproductive pairs made up of individuals of the same rank. However, the rabbits are not strictly monogamous, and dominant males tend to do more breeding than do subordinate males. In sub-optimal habitat surrounding that held by a breeding group, “satellite” animals, which have been excluded from the “mainstream” of rabbit society, may also breed, although they have relatively low success.

New breeding groups are established by emigrant females that start a warren (i.e., burrow system). Males are then attracted to join the new breeding group (Garson 1981).

The size of a breeding group does not typically exceed ten individuals, and consequently, most of the offspring are forced to emigrate. For a breeding group made up of five pairs of adults, about 100 offspring might be produced annually. Female offspring are more likely than their male counterparts to remain with a breeding group, either to add to the group or to replace a member that has died (Garson 1981). Male offspring, on the other hand, usually must emigrate. This is a result of active harassment by resident adult males and of antagonism among the juvenile male members of the breeding colony.

Presumably, the highest mortality occurs when young animals disperse from the breeding groups into areas that are both unfamiliar and less favourable than their natal area.

Reproduction

Rabbits have the potential to produce a large number of offspring each year. In northern Europe, they may produce three to five litters / year (Schneider 1985), with three to seven young / litter (Corbett and Harris 1988), although litters can be as large as 12 (Schneider 1985). Under conditions of nutritional stress, however, entire litters may be resorbed *in utero* (Corbett and Harris 1988). Newborn rabbits are blind, naked, and weigh only 40-45g (Schneider 1985). By 18 days, the young rabbits may venture from their burrows and they are weaned at about 21-25 days (Corbett and Harris 1988).

During the breeding season, females come into estrous for 12-24 hours about every seventh day (unless pregnant) (Schneider 1985) or with 24 hours after giving birth (Corbett and Harris 1988). Gestation lasts 28-33 days (Schneider 1985). Consequently, some females may be both nursing young and pregnant simultaneously; theoretically, they are capable of producing a litter about every 30 days during the breeding season. In some areas, they may produce up to five litters / year (Schneider 1985).

Dominant and subdominant females usually give birth and nurse their young in underground chambers situated within burrow systems (Schneider 1985). As the female leaves to feed, she may cover the entrance to the natal den to exclude predators (Corbett and Harris 1988). Puberty is attained at three to five months of age (Schneider 1985);

thus in some populations, young-of-the-year may breed. European rabbits can live up to ten years in the wild (Schneider 1985), but the majority die much earlier.

Several studies, particularly in Europe and Australia, have shown that breeding is associated with the availability of green vegetation (King and Wheeler 1981; Mykytowucz 1958; Rogers 1981; Soriguer and Rogers 1981; Stoddart and Myers 1966). Presumably this is true on southern Vancouver Island as well, and we would expect breeding to cease with the onset of the summer drought period, except where artificial watering maintains green vegetation.

There is a tendency for the females in any given area to breed synchronously (Garson 1981; Weisbrod and Stevens 1981). As in many other mammals, synchrony of breeding (and weaning) serves to “swamp” predators with prey so that the odds of survival of any given females’ offspring is improved in direct proportion to the presence of offspring of other females.

Habitat

European rabbits can adapt to a variety of habitat types (www.abdn.ac.uk/mammal/rabbit.shtml). They may be found almost anywhere they can burrow, including fields, sand dunes, railway verges, and urban areas. The most suitable areas are those where cover and food are side by side, such as woodland edges and hedgerows. Burrows are maintained where good burrowing conditions exist. Rabbits are rarely found above the tree line, and they avoid damp conditions and areas deep in coniferous woods. Rabbits prefer to graze in the open and use vegetative cover for shade, protection, and browse. Rabbit runs and burrows are frequently located in dense, shrubby vegetation. The members of “mainstream” rabbit society hold the better habitat for their own use, while other individuals are excluded and forced into marginal habitats where food and cover are inadequate.

Feeding

European Rabbits are entirely herbivorous (Corbett and Harris 1988; Chapuis 1981). They feed on grasses and herbs, roots, the bark of trees and shrubs, and cultivated plants. Among non-woody plants, only Canada thistle (*Cirsium arvense*) and rush (*Juncus* sp.) are usually avoided. They also feed on the young and accessible parts of Himalayan Blackberry (*Ribes discolor*), Common Snowberry (*Symphoricarpos albus*), and wild rose (*Rosa* sp.)