

THE YEAR OF THE RABBIT: SPRING

The European rabbit is the only truly gregarious and burrowing species of lagomorph

Photo: C. Norris

In the first of a four-part series, Dr Anne McBride looks at how the behaviour of wild rabbits is affected by the seasons of the year

As our part of the world slowly tilts back toward the sun, the air becomes increasingly warm. Frosts are dispelled and water falls as rain, not snow. As Burnett put it in 'The Secret Garden', spring is "the sun shining on the rain, and the rain falling on the sunshine". These two factors combined have the effect of warming and loosening the soil, thereby stimulating and enabling plants and grasses to grow and push their way through to the surface. The world turns into a carpet of colours on a green background, and food once again becomes abundant.

But when does it start? For many humans, spring is marked by the blooming of flowers around March or even April; for some perhaps it starts when the British put the clocks forward an hour at the end of March. For rabbits, however, spring started many weeks beforehand, back in January. Nature's seasons are marked by the equinoxes and solstices, dividing the year into quarters of about 12 weeks' length and marking each season's midpoint. The winter solstice marks mid-winter, the spring equinox mid-spring, the summer solstice is rightly known as mid-summer's day, and the autumn equinox is mid-autumn. So spring really starts some six weeks after mid-winter, around the end of January in the UK. Of course, this will vary slightly from year to year depending on weather effects. A mild winter can bring forth flowers and bees around New Year, a harsh winter can put spring back weeks. Consider the lateness of spring in 2012 as the freezing, wet winter of 2011 carried on well into 2012. The effects were disastrous for crops and wildlife. The lack of food and drenched ground meant many did not survive, and seriously compromised the business of spring, namely rearing the next generation.

The rabbit is a burrowing species and tends to inhabit well drained areas, such as sand dunes, chalk downland and gravelly substrates. Although adults sometimes live on the surface, young are born underground and drained soils helps prevent nestlings being drowned. Likewise, preferred habitat includes a short grassland area around the warren, maintained by grazing and which reduces the chances of baby and adolescent rabbits getting wet in long grass and then dying of hypothermia.

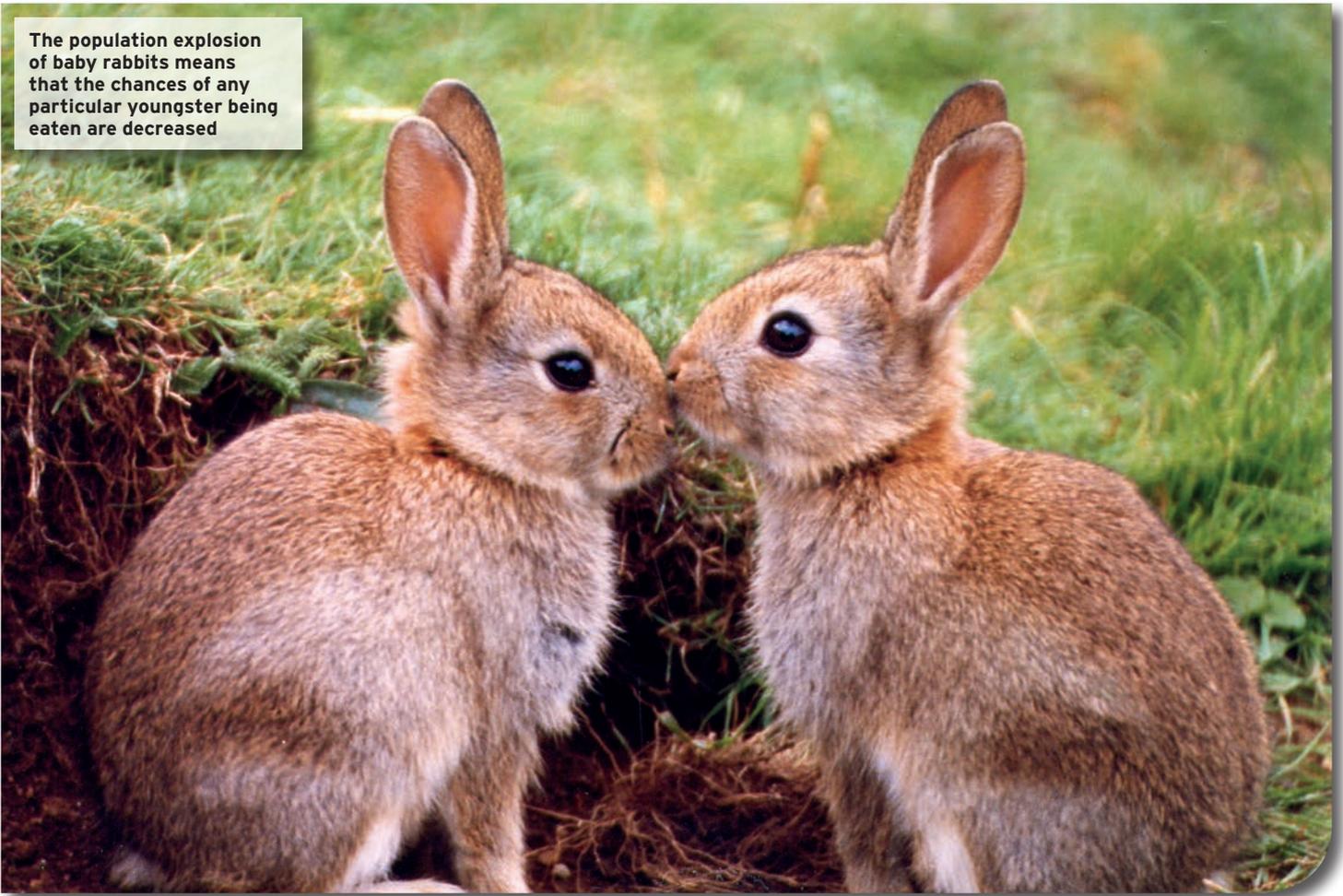
Rabbits live in social, breeding groups of 2 - 14 individuals. Smaller groups are found

where resources are limited and population density low. In the larger groups there will be more females than males. All group members defend a small area in the Home range called the territory that includes the warren. Home ranges of two or more groups may overlap resulting in communal grazing areas, but the boundaries of the warren territory are clearly marked with scent and actively defended by rabbit patrols! In the home range there may be satellite individuals who live near, but are not accepted into, the group or its territory. The group males deny satellite males access to the females, and the group females deny satellite females access to breeding sites, and this becomes all the more apparent in Spring.

The lengthening daylight in early January affects the pineal gland and the secretion of melatonin, in turn triggering the release of reproductive hormones and the cycle of life begins. In males the testes become heavier and descend from the abdominal cavity where they have been retained over winter.

During the next few weeks, the breeding group will become more active and more aggressive. The male adults start to re-establish their hierarchy. The relaxed attitude of the winter is replaced with displays of strength, and some fighting, ensuring the

The population explosion of baby rabbits means that the chances of any particular youngster being eaten are decreased



winner access to important resources, namely females and the areas of the territory with the best drained tunnels. The more dominant male may end up with quite a harem, whilst lower ranking individuals may only have one female with which to breed. The females too can become quite violent as they defend their chance of being able to rear their young in the best tunnels and these can be fights to the death.

Once the quarrelling is over, work on extending the tunnels begins; predominantly done by the females. The males do little housework, being more preoccupied with patrolling their boundaries from any rival male who comes too close and checking the females' scent to see if any are ready to be mated.

By the end of January the females are reproductively active and are sexually attractive for one to three days of each seven-day reproductive cycle. Rabbit courtship is brief and to the point. The male will follow the female quite closely, chasing any other males away. He tests her readiness by seeing how she responds to his courtship 'walk', circling her and parading with a stiff-legged posture and rump held high. She may ignore him and he may up his game by running past her and squirting her with urine! If she is interested, she will approach and they will indulge in some canoodling, with him licking her head and nuzzling her. When she is ready to be mated she will flick her tail in response to his courtship walk and a few moments later it is all over! Rabbit mating comprises a few seconds of vigorous and rapid thrusting by the male who, after ejaculating, may momentarily lose consciousness and slip sideways off his partner. Mating may be followed by some more licking and nuzzling, but it is just as likely that the two will part and carry on with the normal activities.

For a good reason the onset of the main breeding season is sharply defined. By mid-February 50 percent of the females will become pregnant within a period of seven days. Pregnancy lasts 30 days, and the females will be mated again within a day of giving birth. Thus they spend the breeding season continually pregnant

The hares, pikas and 28 species of rabbit make up the Lagomorphs. Rabbit species vary in looks and behaviour, having evolved in different habitats from swamps to volcanoes. Perhaps the most familiar are the North American Cottontail group (*Sylvilagus*) and the European rabbit (*Oryctolagus cuniculus*). The latter is very common, but others are endangered or, like the South African Riverine rabbit, critically endangered. All domesticated rabbits are directly descended from the European rabbit and these articles will describe the behaviour of this species through the year, beginning with Spring.

and lactating. This requires a lot of energy, and a cold, wet spring can cost the lives of both babies and their mothers. The peak of the season is mid-March, the spring equinox, by which time 90 percent of females will be pregnant. This is an effective survival strategy as baby rabbits are very important in the diet of many young predators. They emerge from the nest around four weeks old, thus the litters conceived in mid-March emerge in mid-May, just in time to feed the weaned or recently fledged young of species like fox and buzzard. The synchronised population explosion decreases the chances of any particular rabbit youngster being eaten.

In the next instalment we will look these rabbits' early life as they grow and learn about their world between spring equinox and mid-summer.



There are 28 species of rabbits