



## Breeders' Briefcase

by Amy & Bonnie

*This is an excerpt from Breeder's Handbook on Canine Reproduction from Royal Canin.*

### Calculating the date of whelping

The **actual** duration of pregnancy does not show any great variation. In order to have an accurate idea of the date of whelping, it is essential to know the time of ovulation. Gestation in bitches lasts 63 days on average across all breeds. However, its apparent duration, i.e., the interval between mating and whelping, may vary from 56 to over 70 days. Many females will accept the male well before ovulation, so mating is possible relatively early. Due to the long survival rate of sperm in the uterus (sometimes up to a week), a bitch may be mated but not actually fertilized until a week later. This makes the duration of gestation appear quite long, although it obviously does not correspond to the actual duration.

At the other end of the scale, bitches mated at the end of their estrus period may whelp earlier than planned. The same is true for bitches expecting a large litter because their uterus is too distended and fetuses do not have enough room. In summary, realizing that a bitch may be fertilized if mated anytime from five days before ovulation to five days after, there easily may be differences of up to 10 days in the apparent duration of gestation, merely counting the interval between mating and whelping.

### Start of Whelping - precursory signs

It is useful to identify precursory signs so as to avoid being taken by surprise at the onset of whelping, but at the same time, it is also important to understand the signs' reliability in order to avoid needless worry.

### Clinical signs

- *Appearance of milk in the teats.* Although this often occurs approximately one week before whelping, it is not a reliable criterion for the imminence of giving birth, since lactation can begin much earlier in bitches that have already produced litters or later if it is the first time.
- *Distension of vulva and pelvic ligaments.* During the final week because of a slight increase in estrogen, the bitch's vulva dilates and the pelvic ligaments become distended, which may considerably alter the bitch's silhouette (her ribs may "spring").
- *Discharge of cervical mucus plug.* In the 24 hours before whelping, effacement of the cervix results in the appearance of a semi-transparent liquid from the vulval fold. This sign is not always easy to detect and therefore unreliable.
- *Discharge of placental pigment.* When the placentas begin detaching themselves, the placental pigment—uteroverdine—flows into the uterus and produces a dark green vulval discharge. This marks the onset of whelping.

## Behavioral signs

- *Scratching at the ground.* From one to seven days before term, the uterus begins to contract slightly. These contractions are imperceptible from the outside, but they generate a change in the bitch's behavior. During these contractions, she begins to scratch at the ground energetically with her forepaws. Although this may look spectacular, it is nothing to worry about.
- *Refusal to eat.* Most bitches refuse to eat in the hours before whelping. This is a good indication of the imminence of parturition.

## Hormonal changes

A bitch on the verge of whelping undergoes considerable hormonal changes, essential in triggering contractions that otherwise cannot occur. Estrogen levels increase slightly, but above all, progesterone levels in the blood, having remained high until now, drop sharply. Veterinarians use this information to determine whether or not a bitch is at full term; if she is, her basal progesterone concentration will be less than 2 ng/ml.

## How to detect the imminence of whelping

- *The rectal temperature.* The sudden drop in blood progesterone levels during the 12 to 48 hours preceding the onset of labor disrupts the bitch's body temperature regulation, causing a transient drop in rectal temperature that lasts for a few hours before returning to normal. Breeders are therefore accustomed to taking the

bitch's temperature three or four times daily in the week leading up to full term. The ideal method is to record each figure in a notebook. In general—although, unfortunately, not always—the temperature will drop by 1.5 to 2.0 degrees Fahrenheit in the 12 to 48 hours before whelping, compared to the average for previous days.

- *Measuring devices.* There are devices for measuring uterine activity and fetal heartbeats. These are in the shape of a belt that can be fastened around the bitch. Breeders can rent these belts for use at whelping time.

## Stages of Whelping

Whelping is a stressful time. It's important for breeders to remain calm and remember a midwife's motto: The art of giving birth is knowing how to wait.

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## Normal duration

The total duration of whelping can vary considerably—it depends on breed, litter size, and whether or not the dam has already given birth. In general, the entire whelping

process takes four to eight hours, though it may last far longer if the litter is very large (it is not uncommon for the bitch to rest for a few hours after having delivered only some of her puppies), or if this is her first litter.

The average time taken for each puppy to arrive is 20 to 30 minutes. This is only an average, however, and toward the end of parturition, the time taken tends to increase. In order to avoid problems, it is advisable to consult a veterinarian

if the interval between two successive births is more than three or four hours, or if the bitch has no contractions. If she is having contractions but nothing is coming out, it is absolutely essential to consult a veterinarian without delay.

### **Birth of the puppies**

Labor begins gradually. At first, contractions are outwardly imperceptible. The future mother starts to pant and look worried.

#### *Appearance of the first amniotic sac.*

The first fluids (from the allantois) usually appear just before expulsion of the first puppy; the flow of liquid is not always seen, though this will probably be evident from the dampness of bedding.

#### *Contractions and the appearance of the second sac.*

In the minutes preceding expulsion, the bitch often becomes very agitated. She gets up, turns round and round, and whines. Sometimes, she will squat as though to defecate. Strong abdominal contractions are visible in salvos lasting between 30 and 60 seconds, accompanied by periods of calm. It is during a slightly stronger contraction that a greenish bubble will appear at the vulva—this is the amnion containing the puppy. If the pouch is broken, this is not serious. However, if the pouch is visible but nothing else happens over the next hour, it is necessary to consult a veterinarian. The puppy may be too big or wrongly positioned, or the bitch's contractions may not be strong enough.

During a stronger contraction, the puppy is usually delivered in a single push. If this is not the case, the bitch must be made to stand up and the puppy pulled downward every time that the bitch pushes.

In fact, the umbilical cord is very short in carnivores and the puppy needs to breathe

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on its own immediately after it is born, as it no longer receives oxygen from its mother. If it remains inside the pouch, it will inhale the amniotic fluid instead of air. The placenta usually is delivered within minutes following birth. Great care is required at this point,

because if the placenta is retained inside the uterus, this may lead to problems after whelping.

Stress and infection are the main risk factors for the correct progress of whelping and the subsequent survival rate of the puppies.

It is important for the bitch to be placed in quiet and familiar surroundings in order to get ready for whelping. That is why it is recommended that she be placed in the maternity quarters at least three weeks before the expected date of giving birth.

This will help to reduce stress, which can be a powerful inhibitor of uterine contractions, and will give her enough time to produce antibodies against any ambient infectious agents that she may not have encountered before. Since puppies receive nearly 85 percent of their immune protection through colostrums, this is vital for their survival.