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*l i m i t e d*

## **BREEDING DOGS AND REARING PUPPIES**

Breeding from your bitch and raising her puppies can be an extremely rewarding experience or it may produce frustration and failure. Pet bitches are often torn between their instinctive desire to be with their puppies and the routines they have acquired with their owners. This can lead to problems and should be borne in mind before breeding is contemplated. Also raising a litter of puppies is an extremely time-consuming exercise and one which should not be embarked upon without due consideration. The following information is provided in order to increase your chances of success.

### **How often does a bitch come into heat?**

The bitch comes into heat about every 6 months, although very large breeds of dogs may cycle anything up to once in 15 months. In most giant breeds (Great Danes, Irish Wolfhounds, St Bernards etc.) a yearly heat is normal. Normally most dogs are on heat for about 3 weeks.

### **What are the signs of heat?**

The most notable signs of heat are vaginal bleeding and vulval swelling. There are three 'stages' to the term 'on heat'. The first phase (*proestrus*) is characterized by both bleeding and swelling. Male dogs are attracted to the bitch but she will not usually stand and allow them to mate. In the second phase (*oestrus*), the bleeding ceases and the vulval swelling decreases significantly. During this phase the bitch will stand for mating. The third phase is usually a period when the bitch is going off heat, ie. No swelling or bleeding, not interested in the dog.

The difficulty with dogs is that each stage of being on heat lasts on average about one week but can vary from 2-10 days between different bitches. This means that the calendar can not be relied upon to tell you the perfect time to mate the dog or when it is safe to reintroduce her to male dogs you do not wish her to mate with.

### **What should I do to be sure that a mating is accomplished successfully?**

Male dogs are more successful when the environment is familiar. Therefore, it is preferable to take the female to the male's home for breeding. The timing for mating is critical. The most fertile time is considered the 10th through the 14th days of the heat period. However, as already inferred above, some dogs will be fertile as early as the 3rd day and as late as the 18th day. The best 'rule of thumb' is to mate the bitch every second day from the first day she will stand for the dog until she is no longer interested.

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## **Are there tests to determine when to mate my bitch?**

There are two tests that are used for this purpose:

The first is a microscopic examination of vaginal cells to detect changes in cell appearance and numbers. This has been used for many years and is reasonably reliable in some dogs. However, A more recent test determines changes in the progesterone level in the blood. This test is very sensitive and can often be carried out in-house by the veterinary practice. It gives a very good indication of when mating is most likely to be successful. It is used for dogs that have a history of unsuccessful mating or for very valuable bitches.

## **What should I expect during my dog's pregnancy?**

Pregnancy, also called the gestation period, normally ranges from 60 to 67 days, the average being 63 days. Most dogs deliver (whelp) between days 63 and 65. The only way to accurately determine the stage of pregnancy is to count days from the time of mating. With all planned matings the date should be recorded and the bitch then examined approximately 3 weeks from the date of mating to detect the signs of pregnancy. Ultrasound scans can be carried out at around the 28th day and radiographs from around day 38.

## **Feeding**

It is important that a bitch is in good condition before she is mated, neither too fat nor too thin. Her food intake should not be altered during the first two thirds of her pregnancy, and if a complete formula is being fed there is no need to use additional vitamin or mineral supplements. After the 6th week food intake should be gradually increased and high energy, low bulk foods may be useful in ensuring the bitch is adequately nourished. As abdominal pressure increases with the size of the foetuses, smaller meals fed more frequently may be helpful. During the last three weeks food intake will often increase by up to one and a half times the normal level and at the height of lactation, approximately three weeks after whelping, food intake is often two and a half to three times normal, particularly if she is feeding a large litter.

## **What should I do to prepare for whelping?**

From the time of mating, many dogs show behavioral changes. Most develop an unusually sweet and loving disposition and demand more affection and attention. However, some may become uncharacteristically irritable. Some experience a few days of vomiting ("morning sickness"), followed by the development of a ravenous appetite which persists throughout the pregnancy.

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During the last week or so of pregnancy, the bitch often starts to look for a secure place for delivery. Pet bitches often become confused, wanting to be with their owners and at the same time wanting to prepare for the forthcoming event. It is therefore a good idea to get the bitch used to the place where you want her to have her puppies well in advance of whelping but even then some bitches insist on having their pups in close proximity to the owner. Under these circumstances it is better to let the bitch have her way and then when she has finished, gently try moving her to the place that she should have already been introduced to some days or weeks previously. However some bitches are very determined and under these circumstances less trauma is caused if, within reason, her demands are met or at least some compromise is achieved, e.g. the bitch that wants to nurse the puppies on your bed is quietly moved to a whelping box in a corner of the bedroom. Ideally you may prefer her to use the whelping box you had prepared for her in a quiet corner of the kitchen. Similarly some bitches need the owner present during the whole time of delivery and if they are left alone they are likely to endeavour to delay delivery of the puppies which can create subsequent problems - compromise is the name of the game!

Prior to the time of delivery, a whelping box should be selected and placed in a secluded place, such as a closet or a dark corner. The box should be large enough for the dog to move around freely, but have low enough sides so that she can see out and you can reach inside to give assistance, if needed. The bottom of the box should be lined with several layers of newspapers. These provide disposable, absorbent bedding which the bitch can tear up and reorganise according to her own requirements. At the same time they will absorb the fluids which are always more copious than you would ever expect at the time of whelping. If sufficient thickness of newspaper is laid at the outset, the upper, soiled layers may be removed with minimal interruption to the mother and her newborn puppies.

### **What happens during parturition?**

Most dogs experience delivery without complications; however, first-time mothers should be attended by their owners until at least one or two puppies are born. If these are born quickly and without assistance, further attendance may not be necessary. However, with a bitch having puppies for the first time a careful watch should be kept upon her until she has finished, just in case any complications develop. If the owner elects to leave, care should be taken so that the dog does not try to follow and leave the whelping box.

### **Signs of impending whelping**

These generally include nervousness and panting. The bitch will often stop eating during the last 24 hours before labour although with some breeds this does not apply. All the textbooks tell you that rectal temperature will drop below 100°F (37.8°C) but this again may only occur an hour or two before she starts producing.

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Delivery times will vary. Dogs having slim heads, such as Shelties, Collies, and Dobermans, may complete delivery in one to two hours. Dogs having large, round heads generally require longer delivery times. English Bulldogs, Boston Terriers, and Pekingese puppies tend to have sizeable heads that make delivery more difficult. It is not unusual for these breeds to rest an hour or more between each puppy. Rarely, a dog may deliver one or two puppies, then have labour stop for as long as twenty-four hours before the remainder of the litter is born. However, if the bitch does not start to strain in two hours and you think there are further puppies veterinary advice should be sought without delay.

## **The normal birth position**

Puppies are usually born head first; with the head and forelegs extended. This is called anterior presentation. Posterior presentation is also normal in the bitch. The puppy is born with tail and hindlegs coming first. Breech presentation in which the hindlegs are forward and the tail and rump is presented is abnormal. However it does occur and can result in a normal birth although breech presentations frequently present problems. If a puppy's rump is presented and the bitch is straining continuously without making any progress, veterinary attention should be sought without delay. Each puppy is enclosed in a sac that is part of the placenta ("afterbirth"). These usually pass after the puppies are born. However, any that do not pass usually disintegrate and are passed within 24-48 hours after delivery. If the bitch develops a blood stained, pussy or smelly discharge consult your veterinary surgeon. Note that it is normal for the mother to eat the placentas.

If the delivery proceeds normally, a few contractions will discharge the puppy; it should exit the birth canal within ten minutes of being visible. Following delivery, the mother should lick the newborn's face. She will then proceed to wash it and toss it about. Her tongue is used to tear the sac and expose the mouth and nose. This vigorous washing stimulates circulation, causing the puppy to cry and begin breathing; it also dries the newborn's haircoat. The mother will sever the umbilical cord by chewing it about to 1 inch (1.9 to 2.5 cm) from the body. Next, she will eat the placenta.

If the puppy or a fluid-filled bubble is partially visible from the vagina, the owner should assist delivery. A piece of dampened gauze or thin face cloth can be used to break the bubble and grasp the head or feet. When a contraction occurs, firm traction should be applied in a downward (i.e. toward her rear feet) direction. If reasonable traction is applied without being able to remove the puppy, or if the mother cries intensely during this process, the puppy is wedged. Veterinary help may be needed.

It is normal for the mother to remove the placental sac and clean the puppies; however, first-time mothers may be bewildered by the experience and hesitate to do so. If the sac is not removed within a few minutes after delivery, the puppy will suffocate, so you should be prepared to intervene. The puppy's face should be wiped with a damp face cloth or gauze to remove the sac and allow breathing. Vigorous rubbing with a warm, soft towel will stimulate circulation and dry the hair. If the puppy does not start to take a breath, gentle blowing down the throat after gently opening the mouth with the fingers also helps to assist respiration. The umbilical cord should be tied using sewing

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thread or dental floss and cut with clean scissors. The cord should be tied snugly and cut about half an inch (1.3 cm) from the body so it is unlikely to be pulled off as the puppy moves around the whelping box.

Newborn puppies may aspirate fluid into the lungs, as evidenced by a raspy noise during respiration. This fluid can be removed by the following procedure. First, the puppy should be held in the palm of your hand. The puppy's face should be cradled between the first two fingers. The head should be held firmly with this hand, and the body should be held firmly with the other. Next, a downward swing motion with the hands should make the puppy gasp. Gravity will help the fluid and mucus to flow out of the lungs. This process may be tried several times until the lungs sound clear. The tongue is a reliable indicator of successful respiration. If the puppy is getting adequate oxygen, it will appear pink to red. A bluish coloured tongue indicates insufficient oxygen to the lungs, signalling that the swinging procedure should be repeated.

It is helpful to have a smaller, clean, dry box lined with a warm towel for the newborn puppies. After the puppy is stable and the cord has been tied, it should be placed in the incubator box while the mother is completing delivery. Warmth is essential so a heating pad or hot water bottle should be placed in the box, or a heat lamp may be placed nearby. If a heating pad is used, it should be placed on the low setting and covered with a towel to prevent overheating. A hot water bottle should be covered with a towel. Remember, the newborn puppies may be unable to move away from the heat source. Likewise, caution should also be exercised when using a heat lamp.

Once delivery is completed, the soiled newspapers should be removed from the whelping box. The box should be lined with soft acrylic type bedding, prior to the puppies' return. The mother should accept the puppies readily and settle down to feed them.

The mother and her litter should be examined by a veterinary surgeon within 24 hours after the delivery is completed. This visit is to check the mother for complete delivery, and to check the new-born puppies. The mother may receive an injection to contract the uterus and stimulate milk production. sometimes antibiotics may be prescribed if it is thought there is any infection present.

The mother may have a bloody vaginal discharge for 3-7 days following delivery. If it continues for longer than one week, she should be examined by a veterinary surgeon for possible problems.

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## **What happens if my dog has trouble delivering her puppies?**

Although most dogs deliver without need for assistance, problems do arise which require the attention of a veterinarian. Professional assistance should be sought if any of the following occur:

1. Twenty minutes of intense labour occurs without a puppy being delivered.
2. Ten minutes of intense labour occurs when a puppy or a fluid-filled bubble is visible in the birth canal.
3. The mother experiences sudden depression or marked lethargy.
4. The mother's body temperature exceeds 39.4°C (via a rectal thermometer).
5. Fresh blood discharges from the vagina for more than 10 minutes.
6. If a green discharge is seen without any puppies having been born.

Difficulty delivering (dystocia) may be managed with or without surgery. The condition of the mother, size of the litter, and size of the puppies are factors used in making that decision.

## **Is premature delivery a likely problem?**

Occasionally, a mother will deliver a litter several days premature. The puppies may be small, thin, and have little or no hair. It is possible for them to survive, but they require an enormous amount of care, since they are subject to chilling and are frequently very weak and unable to swallow. Some may be able to nurse but are so weak that they must be held next to the teat. Puppies that do not nurse can be fed with a small syringe, bottle, or via stomach tube. The equipment and instructions for these procedures are available from your veterinary surgeon. Premature puppies must be kept warm. The mother can provide sufficient radiant heat from her body if she will stay close to them. If she refuses, heat can be provided with a heat lamp, heating pad, or hot water bottle. Excessive heat can be just as harmful as chilling, so any form of artificial heat must be controlled. The temperature in the box should be maintained at around 30°C but the box should be large enough so the puppies can move away from the heat if it becomes uncomfortable. In addition the warmth provided by the mother is moist warmth: she is licking and cleaning the puppies and they are suckling; therefore if artificial heat is supplied it is essential to ensure there is sufficient moisture present and a dampened towel or wet cotton wool in the whelping box will provide this essential moisture.

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## **Is it likely that one or more puppies will be stillborn?**

It is not uncommon for one or two puppies in a litter to be stillborn. Sometimes, a stillborn puppy will disrupt labour, resulting in dystocia. At other times, the dead puppy will be born normally. Although there is always a cause for this occurrence, it is often not easily determined without a full post mortem examination of the puppy including bacteriological examination and submission of tissues to a pathologist. Your veterinary surgeon may in certain circumstances recommend this procedure and it is worthwhile discussing the cost beforehand since sometimes it can be considerable. However it may prevent future problems.

## **What do I do to care for the newborn puppies?**

The mother will spend most of her time with the puppies during the next few days. The puppies need to be kept warm and to nurse frequently; they should be checked every few hours to make certain that they are warm and well fed. The mother should be checked to make certain that she is producing adequate milk.

If the mother does not stay in the box, the puppies' temperatures must be monitored. If the puppies are cold, supplementary heating should be provided. During the first four days of life, the environment for the puppies should be maintained at around 30°C. The temperature may gradually be decreased to 27°C by the seventh to tenth day and to about 22°C by the end of the fourth week. If the litter is large, the temperature need not be as high. As puppies huddle together, their body heat provides additional warmth. Their behaviour will give a guide to whether they are comfortable. If they are warm and content they will be quiet and gaining weight.

If the mother feels the puppies are in danger or if there is too much light she may become anxious. Placing a sheet or cloth over most of the top of the box to obscure much of the light may resolve the problem. An enclosed box is also a solution. Some dogs, especially first-time mothers, are more anxious than others. Such dogs may attempt to hide their young, even from the owner. If the bitch continues to move her puppies from place to place, some attempt at confinement may be worthwhile. However if she is still unsettled, veterinary advice should be sought since the puppies will certainly be endangered if they are placed in a cold or draughty location. If the bitch becomes too distressed she could kill her puppies as a means of "protecting" them from danger.

## **What are the signs that the puppies are not doing well and what should I do?**

Puppies should feed and sleep 90% of the time during the first two weeks. Any "mewing" type noises may indicate lack of nourishment or an infection, i.e. they are not thriving. If in doubt consult your veterinary surgeon.

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Another good indication of thriving is weight increase. Any available postal scales will usually suffice for this purpose. Puppies may be identified with fibre tipped pen on the abdomen and careful weight records kept.

When the milk supply is inadequate, supplemental feeding one to three times per day is recommended and should be performed on any litter with more than 5 or 6 puppies. There are several very good commercial formulae available. The directions on the container should be carefully followed before feeding particularly with regard to temperature. One method of testing the temperature of the feed is to drop some of the warm formula on to your forearm. It should be about the same temperature. The commercial products have directions concerning feeding amounts. If the puppies are still nursing from their mother, the amounts recommended will be excessive. Generally, 1/3 to 1/2 of the listed amount should be the daily goal. Supplemental feeding may be continued until the puppies are old enough to eat puppy food.

If the mother does not produce milk or her milk becomes infected, the puppies will also cry. If this occurs, the entire litter could die within 24 to 48 hours. Total replacement feeding, using the mentioned products, or finding a foster mother is usually necessary. The owner of the stud dog, if a breeder, your local veterinary surgeon, or other breeders may be able to help with this. If replacement feeding is chosen, the amounts of listed on the product container should be fed. Puppies less than 2 weeks of age should be fed every 3-4 hours. Puppies 2-4 weeks of age do well with feedings every 6-8 hours. Weaning in these circumstances, should begin as early as possible and certainly no later than about 3 weeks of age.

### **What should I expect during the puppies' first few weeks of life?**

For the first month of life, puppies require very little care from the owner because their mother will feed and care for them. They are born with their eyes closed, but they will open in 7 to 14 days. If swelling or bulging is noted under the eyelids, they should be opened gently. Cotton wool dampened with warm water may be used to assist opening the lids. If the swelling is due to infection, pus will exit the open eyelids and should be treated as prescribed by a veterinary surgeon. If the eyes have not opened at 14 -16 days of age, or if there is any pus or discharge, consult your veterinary surgeon at once.

Puppies should be observed for their rate of growth. They should double their birth weight in about one week. Use postal scales as described above. The accuracy of the scales is not important, since it is weight increases that you are looking for.

At two weeks of age, puppies should be alert and trying to stand. At three weeks, they generally try to climb out of their box. At four weeks, all of the puppies should be able to walk, run, and play.

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Puppies should begin eating solid food about three and a half to four and a half weeks of age. As soon as their eyes are open, one of the bitch milk replacers should be placed in a flat saucer. The puppies' noses can be dipped into this or their noses and mouths wetted with a finger dipped into the formula. Repeat this 2 or 3 times per day until they begin to lap; this usually takes 1-3 days. Next, raw scraped meat can also be smeared around their mouths or alternatively canned puppy food can be placed in the milk until it is soggy. As the puppies lap the milk, they will also ingest the food. The amount of milk should be decreased daily until they are eating the canned food with little or no moisture added; this should occur by 4 to 6 weeks of age. As soon as they are able to eat it is worthwhile weaning them on to one of the complete puppy foods of which there are many today, both dry and canned as well as semi-moist. Most puppies, particularly those of the toy and smaller breeds prefer the canned varieties. Once the puppy is happy with a complete formula there is no need to add any vitamin or mineral supplements.

### **I have heard of milk fever. What exactly is it?**

Eclampsia, or milk fever, is due to a depletion of calcium in the blood of the mother due to heavy milk production. It generally occurs when the puppies are 3-5 weeks old (just before weaning) and most often to mothers with large litters or with an abundance of milk as some bitches naturally have. Good mothers, especially attentive of their puppies, always seem to suffer more severely.

The mother has muscle spasms resulting in rigid legs, spastic movements, and heavy panting. This can be fatal in 30-60 minutes, so a veterinary surgeon should be consulted immediately. This is a major emergency situation.

### **Do puppies need a special diet?**

Diet is extremely important for a growing puppy. There are many commercial foods specially formulated for puppies. These foods meet their unique nutritional requirements and should be fed until 12-18 months of age. Puppy foods are available in dry and canned formulations. Dry foods are less expensive in the long run and can be left in the bowl for the puppy to eat at will. Canned foods offer a change and are just as nutritious.

We recommend that you buy **food formulated for puppies**. Adult formulations are not recommended since they do not provide the nutrition required for a puppy. Advertisements tend to promote taste rather than nutrition, so be careful that their influence on purchasing habits is not detrimental to your dog. Table food is not recommended; although often more appealing than dog food, balanced nutrition is not easily achieved.

We recommend that you buy food of a reputable brand.

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## **When should vaccinations begin?**

Puppies are provided some immunity to canine diseases from their mother before and shortly after birth. This is particularly true if the dam's vaccinations are up to date. Some of the mother's antibodies cross the placenta and enter the puppies' circulation, but most antibodies are provided in the mother's milk, particularly the first milk or colostrum. These "maternal antibodies" protect the puppies against the diseases to which the mother is immune. This explains why it is so important to ensure that any booster inoculations are administered prior to mating.

Although very protective, maternal antibodies last for only a few weeks; after this time, the puppy becomes susceptible to disease. The duration of the maternal antibodies is quite variable depending on several factors. In general, vaccinations for the puppy should be started at about 6 weeks of age. Puppies should be vaccinated against distemper, hepatitis, kennel cough and parvovirus. Other vaccines are also available for certain situations, and will be discussed at the time of the first visit for vaccinations.

Maternal antibodies are passed in the mother's milk only during the first 1-3 days after delivery. If, for any reason, the puppies do not nurse during this important period of time, their vaccinations should begin about 2 to 4 weeks earlier depending on likely disease exposure although some maternal antibodies are transferred throughout the whole of the suckling period via the milk. Your veterinary surgeon can make specific recommendations for each particular situation.

## **Do all puppies have worms?**

Intestinal parasites ("worms") are common in puppies. Sometimes no signs are apparent but often poor condition, chronic soft or bloody faeces, loss of appetite, a pot-bellied appearance, loss of lustre of the haircoat, and weight loss are seen. Some parasites are transmitted from the mother to her offspring and others are carried by fleas. Some are transmitted through the faeces of an infected dog. Very seldom are these parasites visible in the faeces. Their detection depends on demonstration of their eggs under a microscope. Generally puppies are wormed from about 2 weeks of age and medication is usually supplied by your veterinary surgeon at the time of the post natal examination. It is well worth consulting the veterinary surgeon regarding a deworming programme for a litter of puppies rather than purchasing branded products over the counter although these are often effective, although sometimes for types of worms that may not be present in your particular litter.

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