

# PANTING

Anatomically speaking, a bird's respiratory system has some similarity to our own in that inhaled air travels down a central windpipe, which then opens into a set of lungs. There are, however, several critical differences. In an evolutionary sense, the respiratory system of birds is more primitive anatomically than our own. Birds do not have a diaphragm, which is the muscle sheath that separates the abdomen from the chest and contracts to create a negative pressure in the chest cavity causing air to rush down the windpipe into the chest. Also, the ability of the respiratory tract to heal after infection or injury in birds is considerably reduced. A major anatomical difference is the presence of air sacs in birds. Although regarded as primitive, the bird's respiratory system has some amazing functional advantages. Air sacs are transparent tissue balloons that open off the lungs. Because they occupy a lot of internal body space, this means that much of the bird is filled with air and therefore comparatively light, making flight easier. Because of the nature of air flow through the air sacs, fresh air can enter the lungs both during inhalation and exhalation, making for very efficient oxygen delivery to the tissues. This is part of the reason why pigeons have the stamina and speed that they do. Fast humans can run 100 meters in 10 seconds, while a good greyhound can run 300 meters in 16 seconds but compared to a pigeon they are 'stuck in third gear'. Pigeons can not only match the greyhound's fastest speed but maintain this velocity for hours and hours and, of course, they can fly even faster if they need to.

Apart from being involved with buoyancy and indirectly with oxygen delivery to tissues, the air sacs are also integral to maintaining normal body temperature and fluid levels. Birds do not have sweat glands and so cannot cool themselves by evaporation of moisture from their skin. When hot, their only metabolic option for cooling is to evaporate moisture from the lining of the air sacs. This is why, when pigeons become hot, they start to pant. The resultant increase in air movement over the air sacs leads to increased moisture evaporation, which, in turn, leads to loss of body heat and cooling.

Because this method of cooling involves the loss of moisture, it is vital the pigeons have access to water to replace the fluid lost; otherwise the birds will start to become dehydrated.

## **Panting and Disease**

Panting, at times, can be of concern for fanciers because birds with a respiratory infection are more inclined to pant. As mentioned, however, panting is not always a sign of ill health. As explained, panting encourages evaporation from the lining of the respiratory system, in particular, from the air sacs. This evaporation cools the bird in the same way as an evaporative air conditioner and is, in fact, the only way that birds can cool themselves in this manner because of their lack of sweat glands. It is therefore a normal mechanism by which healthy birds can cool themselves.

In birds with inflamed air sacs, moisture fails to evaporate from the air sacs in an efficient way, resulting in incorrect amounts of moisture being lost. If too much moisture is lost, this leads to dehydration and makes the birds thirsty. Alternatively, if not enough moisture can be lost from the air sacs, then evaporative cooling cannot occur and the birds become 'overheated'. Either way the result is protracted panting. This is why birds with inflamed air sacs are more likely to pant excessively. In the longer-term, interference with oxygen delivery to tissues inhibits the development of race form and predisposes birds to muscle cramping. A failure of this mechanism therefore has a disastrous effect on the bird's stamina.

## **Panting In Young Birds**

A common concern of fanciers who contact the clinic during June July and August is that the birds are panting and reluctant to fly around the loft. Certainly, birds that have a respiratory infection are more inclined to pant but more often than not, during this time of year, the panting is associated with other factors. The weather at this time of year is often hot while the growing young birds have yet to develop any real fitness. At the same time, they are molting, which can lead to increased effort involved with flight. Panting, however, does alert the fancier to the possibility of a respiratory problem. Inflamed air sacs do not work as well and so the birds try to compensate for this decreased function by increasing the amount of air flow over the air sacs through panting. However, if panting is associated with inflammation of the deeper respiratory structures (such as the air sacs), it is usual to also find signs of inflammation of the upper respiratory structures (such as the sinuses and windpipe). Fanciers can expect to see watery red eyes, swollen sinuses and nasal discharge and to observe sneezing. If signs consistent with upper respiratory tract inflammation are not apparent, it is unlikely that any panting observed is due to inflammation of the deeper structures such as the air sacs. These signs are therefore more reliable indicators of a respiratory infection during this time.

Often, however, signs can be very subtle, particularly in older youngsters where a reasonable natural immunity may have already formed. All that may be noticed here is an increased level of panting coupled with a subtle decrease in flying in a team that had been flying the loft well. In these older youngsters, sneezing in particular is a good indication of low-grade sinus irritation. If respiratory infection is suspected, a veterinary visit and health check are indicated.

A health check involves a microscopic examination of a faecal smear and a crop flush. The faecal smear is

Examined for evidence of parasites. Worms and Coccidia sap the energy of the growing pigeon and not only compromise long-term development but lead in the short term to poor exercise tolerance and predispose the birds to panting. The crop flush is examined for wet canker and heterophils. Heterophils are white blood cells that weep away from the inflamed lining of the sinuses and windpipe into the throat, if inflammation is present. Their appearance is therefore a good indicator of respiratory infection.

Often, however, if respiratory infection is diagnosed at this time it is not treated. The usual causes of respiratory infection are chlamydia and mycoplasma. Young birds need exposure to these organisms to develop a strong natural immunity. Any treatment programmed must be aimed at the development of a strong natural immunity by the start of the racing season so that the birds will be able to tolerate high levels of stress and disease exposure once racing starts. Treating the birds in the post-weaning time certainly keeps them well but does not allow for the disease exposure required to stimulate the development of a strong natural immunity. If mild respiratory infection is detected, then any parasitic disease detected during the health examination is treated and this, coupled with ongoing good care and the maintenance of a clean dry loft, often results in the birds mounting an immune response and becoming well. This ongoing low level of disease exposure acts like a mini vaccination and helps develop a good level of natural immunity. Respiratory infection at this time is only treated directly if things progress to the stage where they are compromising the bird's development. Do keep in mind, however, that most panting in young birds is associated with either the moult, hot weather conditions or a lack of fitness, rather than a respiratory illness.

Whether the birds are overweight or at a difficult stage of their molt can be determined by handling. Exercising the birds in a cooler part of the day will allow a fancier to determine if the panting is heat-related.

### **Panting and Aerobic Exercise**

Healthy fit birds that are forced to fly hard for a short period of time will pant. They do this to compensate for the oxygen deficit created by the burst of activity, in the same way that a marathon runner will pant for a short period of time if forced to sprint. We see this in lofts where the birds experience repeated falcon attacks. Birds in such situations are often reluctant to leave the loft but when forced to do so often fly in tight hard circles around the loft, being reluctant to range in case they are surprised by a falcon while away from their loft. In most States, February to May are the months that hawk and falcon activity is highest. The fear that establishes itself in some teams is obviously quite high because some will continue to fly like this even when hawk appearances decrease, almost as if the behavior has become a habit. Often the only answer is to short toss the birds for 7 to 10 days. This breaks the habit by building up the birds' confidence while at the same time giving the bird's adequate exercise.

After any exercise period, there may be individual birds that pant. These are usually birds that for one reason or another are finding it hard to keep up with the others. These individual birds should be examined for signs of injury or illness. I have always believed that panting in a few birds as the team lands from a training toss is a good sign. This often means that the team as a whole is fit and is happy to push as hard as possible to get home. For these birds, tossing enhances their fitness. The few birds that are 'not quite right' struggle to keep up with them. These birds should be evaluated to ensure that there is no underlying disease problem. Healthy but unfit birds will recover quickly in themselves and their droppings will remain normal. Tossing unwell birds tends to exacerbate their illness. This means that their recovery from the training toss will be prolonged and their droppings may change to green or green and watery. The muscles of birds that are healthy but worked beyond their fitness capability or of birds forced to work when unwell are inclined to become bluish and increase in tone due to cramping.

### **Panting During Competition**

Because panting is the healthy pigeon's natural way of cooling itself, panting will be observed in birds during the racing season when they are hot. This means that healthy birds that are exercised on hot days will pant. Similarly, it is possible to see birds panting while resting in the loft during the heat of summer. However, if during the competitive season a team that has been going well suddenly starts to pant, this may be an indication of respiratory infection. This is particularly so if the sudden increase in the amount of panting is accompanied by reluctance to fly or other signs of airway inflammation, such as sneezing. Because by the time racing has started the birds are older, their natural immunity is already quite high. As a result their response to disease is considerably modified. This means it is unusual to see the more obvious signs of respiratory infection such as a 'one eye cold' or dirty care. Often all that will be noticed are vague signs of respiratory tract inflammation such as sneezing and panting. A sudden reluctance to fly coupled with sneezing and panting warrants a veterinary health check.

The atmosphere in a pigeon transporter provides a particular challenge. Pigeons have a high body temperature (40.7°C) compared to our own. With the large number of pigeons confined to the relatively small area in a race basket, a large amount of heat can be generated even on a cool day. If the birds become hot, they will pant. In a well-ventilated transporter where the birds are provided with water, this is not necessarily a problem. However, if the transporter is not well ventilated, the moisture evaporating from the bird's air sacs creates a humid environment. As the humidity starts to climb, less and less moisture can evaporate from the air sac surfaces with the result that the pigeon gradually loses the only ability it has to keep itself cool. The pigeon therefore starts to overheat. Unless the pigeon has ready access to water this is quickly accompanied by dehydration. Experiments have shown that at 25°C, pigeons will become 5% dehydrated in only 24 hours if deprived of water. Similarly, experiments have shown if they have access to water no dehydration will occur even at higher temperatures. In a transporter that is inadequately ventilated or where birds do not have easy

Access to water, the result can be an overheated, dehydrated pigeon by the time of release. Birds released in this condition can be expected to orientate poorly and fatigue readily. It is therefore vital that transporters are adequately ventilated and water is provided in all races.