

# Pigeon Health

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## **LOFT HUMIDITY AND TEMPERATURE AND THEIR EFFECT ON HEALTH**

It is not possible to design a single loft that is going to be suitable for all areas of Australia. Australia is a big country and birds race under an extremely diverse range of conditions ranging from the cold rainy areas of southern Tasmania to the humid hot areas of northern Queensland, even including islands of the Great Barrier Reef. Other birds race into the dry central deserts, with one of the better known races - the Silver City Classic - being raced into Broken Hill. Fliers in Victoria and New South Wales contend with warm days but very cold nights for much of the year.

Because of the different conditions, loft designs must vary. Open lofts in the north may be conducive to good race form, while similar lofts in the south would be a disaster.

European books, for the most part, discuss a single loft design, which works well for their particular latitude, and indeed it is important

that we use the principles that they suggest. These principles must however, be adapted to our own unique conditions.

Many things are important when considering what type of loft to build. Quite apart from the loft's geographical location, there are other factors that are site-specific. For example, the way the loft faces, the prevailing wind direction, whether it is in shade from trees, etc. Other factors that will also influence the style of the loft include the type of racing that is to be conducted, ie natural or to the perch, the trapping method, the method of basketing, the mode of cleaning, loft security, protection from predators, etc. However, for a loft to be good it must provide an environment that is conducive to health. The successful loft is one that is dry without being dusty, and provides sufficient air exchange (ventilation) without exposing the inmates to extremes of

temperature. The winning loft is one that, in addition to this, keeps the temperature and humidity as close to ideal as possible. The ideal temperature is 15 - 20°C. The ideal humidity is 50 - 60%. The installation of a thermometer/hygrometer with a max/min facility is an excellent way of assessing how good the loft is.

### **TEMPERATURE AND VENTILATION**

It is relatively straightforward to build a loft. By definition, it just has to be a cage to confine the birds, and in its simplest form just needs to be a roof and four walls. However, it can be very difficult to build a loft in which the birds can obtain superhealth all year round. Open lofts provide no means of controlling the environment within them and so really only work if located in an environment that is conducive to pigeon health. No area in Australia is perfect all the time, however, most areas are good for certain times, eg in Melbourne during September to December where the actual temperature and humidity are ideal for pigeons and so birds can achieve good race form in a relatively poor loft. As modifications are introduced so that the environment within the loft can be kept ideal for longer and longer periods as the weather changes, the design of the loft becomes more and more complex and the potential for mistakes becomes greater.

I find it best to start with a simple box. To this box, openings have to

be made to provide ventilation. The ideal temperature in the loft for a pigeon is between 15 and 20°C. It is not always possible to attain this, however, and pigeons can race well at temperatures above and below this. Indeed, overseas researchers tell us that the more important parameter is not so much the temperature but rather the variation in temperature over a 24-hour period. Ideally, the temperature in the loft should not change by more than 5°C over a 24-hour period. To achieve this, particularly in the colder areas of Australia, it is important to make use of the birds' own body temperature to warm the loft. Over-ventilated lofts mean that this beneficial heat is lost. It is possible to balance the number of birds in the loft and the degree of ventilation to control temperature swings. If the openings for air movement or vents are made in the walls of the loft then air movement will be across the loft. This essentially constitutes a draught. The design of the successful loft should be such as to avoid draughts. Lofts with wall vents are extremely temperature sensitive, the temperature essentially being controlled by the wind outside the loft. The air in the loft should be heated by the birds' bodies and rise. This warmth can be used to advantage to create air exchange without creating a draught. As the air rises, it will carry moisture, dust and unwanted gases with it. This rising warm air must, however, be given an opportunity to escape. In its simplest form, this can be

achieved by sloping the roof (usually to the front of the loft) above a false ceiling and having wire between the highest point of the roof and the top of the wall. Alternatively, the roof can be gabled with a capping vent at its highest point. Gabled roofs can be extended beyond the walls so as to create an eave through which fresh air can enter. Any vent in the wall should be just below the roof and well above any areas that the birds might sit. Otherwise, the top perching birds (and these often seem to be the better birds) will be in a draught. "Chef's hat vents" can be set into the roof, however, as these are wind-driven, the ventilation they offer is variable. Corrugated iron is not a good roofing material as it enables no ventilation and has poor temperature insulation properties. The ideal is a gabled tiled roof where there is considerable tile overlap and vertical space between the tiles that enable free loss of stale air.

We have now created a situation where stale air can escape without exposing the birds to draughts. A loft this closed in, however, would run the risk of being too hot in hot weather. Openings can then be created in the walls until the loft becomes comfortable on a warm day. Permanent openings, however, will mean that the loft is overly temperature sensitive and will become cold when the weather is cold. The answer to this problem is to have these openings adjustable. Louvres, hinged or sliding panels can be used to advantage here. The

advantage of adjustable openings is that on cold or windy days the loft can be closed. Conversely, on hot days the loft can be opened, always aiming to provide an ideal environment for the birds, all the time making maximal use of the birds' own body heat to aid in temperature control in the loft. Excessive use of glass should be avoided as this has poor insulation properties. In very windy areas, even with solid walls, if the ventilation and temperature fluctuation is too high, sliding panels can be inserted below the roof to allow further air movement control. For years, the Australian idea of a good loft has been one that has plenty of air. To assess a loft purely on this point is a relic of the past. A resting race bird in a loft that is not overcrowded (ie less than 25 birds per 6 x 6-foot section) is never going to be short of oxygen where all venting is through the ceiling.

### **HUMIDITY**

The relative humidity refers to the amount of moisture or dampness in the air itself. As air warms, its ability to carry moisture increases. If moisture is available, it will evaporate into and be carried by this warmed air. Air at a particular temperature can only carry so much moisture. If there are still things in the environment that contain moisture, for example in the loft droppings, they will remain damp. If the air temperature changes, its ability to carry moisture also changes. If it decreases, the moisture it contains

will precipitate out, wetting things in the environment. The air in a pigeon loft should not be moisture-laden, it should not have a high humidity. Moisture-laden air must be given an opportunity to escape, otherwise the loft will be too humid. For fanciers who provide their birds with salt blocks, they can be used to monitor the humidity in the loft. When the humidity is high, they will absorb moisture from the air and become wet. We all know that in order for its inmates to be healthy, a loft must be kept dry, so therefore humidity must be controlled. The ideal humidity within the pigeon loft is 50-60%. European writers tell us that, with a humidity greater than 70%, there is clearly a decrease in performance. Over 80%, hardly any birds are in the winning lists, and once over 90%, no prizes are won.

Humidity can be either loft-based or environmental. Although it is not always possible to entirely separate the two of these, as they can both affect each other, it can be a useful way of looking at the control of humidity within the loft. In loft-based humidity, the dampness comes from the birds themselves. Exhaled air and droppings contain moisture. Loft-based humidity is controlled by two factors: the number of birds in the loft and the amount of ventilation. These in turn affect the temperature in the loft. As the number of birds increases, the temperature within the loft will increase and the ventilation must similarly increase otherwise the humidity may become too high. If

loft humidity is high, either the number of birds must decrease or the rate of air exchange must increase. The answer is opening the loft and, as discussed earlier, being able to do this in an adjustable way so that when the weather becomes cold, the loft does not become too cold.

Environmental humidity is associated with the loft's physical location. In a number of situations the loft can be placed where it is persistently or intermittently damp. As one moves further north in Australia, the weather becomes progressively more and more humid. Lofts near the coast may experience night-time fogs. Lofts near swimming pools are exposed to ongoing humidity. Lofts facing south or in shade from trees will stay damp even into a sunny day.

#### **MATCHING LOFT DESIGN TO CLIMATE**

One aim with loft design is to ensure that the loft does not become damp. Dampness in the loft can occur in both low and high humidity areas. In cold areas, the air cannot carry very much moisture, so lofts holding too many birds for the level of ventilation will become damp as moisture in the air condenses onto loft surfaces or fails to evaporate from droppings. In hot areas, the warm air may already be saturated with moisture. Dampness is controlled when the air is warm and dry. This occurs when the number of birds and ventilation is correct. A dry loft can be achieved by different methods in different

parts of Australia. Areas within Australia can be divided into three categories:

**1. cold nights and cold days.**

Here the persistently cold air cannot carry much moisture and so the droppings will remain damp all day unless removed. Unless adequately ventilated, exhaled air will condense on the walls and the underside of the roof. The answer is to remove the droppings daily and sufficiently enclose the loft so that the loft becomes warm through the birds' own body heat. The warm air will rise and must be given an opportunity to escape through the roof or high wall vents. It may be necessary to retain lost heat through sliding roof panels. Low wall vents will mean the loft is impossible to heat and the birds always being cold will not become superhealthy. In extremely cold areas, heat pads or heaters may be necessary. The provision of heat pads must, however, be accompanied by appropriate ventilation otherwise the increase in temperature can lead to increased humidity, leading to a greenhouse-type climate.

**2. cold nights and warm days.**

During the night, the above essentially applies. The loft should be enclosed so that the birds can keep themselves warm. At night, there should be just enough opening in the roof for rising stale air to escape. As the day temperature rises, the droppings will dry, increasing the humidity in the loft. The sun will increase the temperature in the loft and this combined with the birds' body heat will create a hot humid loft.

The loft here must have the facility to open wall vents during the day. Practical things that are commonly used here are louvres and panels that can be hinged and clipped open or slid open. Just how open these need to be depends on the temperature and also the wind. If it is windy, the loft will be better ventilated and the panels will not need to be as open to provide adequate air exchange. Often with these weather conditions, particular care must be taken in lofts near water. This can include those near the coast but also near back yard swimming pools. Water retains the heat it collects through the day and continues to evaporate into the cool of the evening. I draw the analogy of the way a kettle continues to steam after the stove has been turned off. Lofts built in these areas and also those in areas prone to night time fogs and frosts for other reasons are prone to night time humidity. Such lofts to be successful need to be closed off at night so that the birds can keep themselves warm and are not sleeping in dampness.

**3. warm nights and warm days.**

In this situation, quite open lofts can be successful and indeed in some areas the temperatures are so extreme that they need to be open to be successful. Birds cool themselves by evaporation of moisture from their airsacs. When hot, a lot of moisture is lost from their system this way and unless adequately ventilated an extremely stuffy humid environment is created. Provided the loft is sufficiently enclosed to protect the birds from the wind and promote a

feeling of security under these conditions, quite open lofts can work. In persistently warm and humid areas, it is here that the attainment of superform becomes a real challenge. Pigeons did not evolve in a humid environment and so their response mechanisms to humidity are poor. As a result, with persistently high humidity, they become vulnerable to disease. It is possible still, however, to keep them healthy, however, their management has to be adjusted to cope with this.

#### **HUMIDITY AND TEMPERATURE-RELATED DISEASE**

Failing to control large temperature swings or keep the humidity low places stress on the birds that initiates the disease cascade, which has been dealt with in earlier articles. Typically droppings received at Knox from lofts with ongoing humidity problems contain large numbers of *E. coli* and yeasts and also fungal branches and coccidia. If these are not controlled, the birds break down and go on to develop wet canker and respiratory infection.

Coccidia levels rise in response to stress and once passed in the droppings into a humid environment become infective quicker. Ongoing hygiene is important to minimise exposure. Coccidia can be cleared by a 2-day course of Baycox (1 ml to 2 litres of water). As Baycox (the drug of choice) does not interfere with the developing immunity of the youngster and does not accumulate in the

system, it can be used regularly and is best given for 2 days when coccidia are detected or alternatively for 2 days every 4 weeks until the humidity lowers.

Fungi, however, are the biggest problem in humid areas. They not only contaminate the seed but will grow (often microscopically) in the loft itself. In the seed, they decrease its nutritional value and some produce toxins that make the birds sick. In the loft, they produce spores that when inhaled lead to respiratory disease. Mouldy droppings are a give-away sign that there is a problem with the loft humidity. Every effort must be made to decrease exposure to fungi. To achieve this, it is necessary to include measures in the routine management of the birds that are often not necessary in the lower-humidity southern areas of the country. Lofts should be sprayed regularly (usually weekly) with Chloramine. Chloramine is a non-toxic general disinfectant that is effective against fungi. Birds are moved out of the section, which is then scraped clean. The Chloramine is misted onto the scraped surface and when the loft is dry, in usually about half an hour, the birds are allowed back into the section. Good seed can be protected from fungal invasion through mixing with monomeric propionic acid (Monoprop, Protonic, etc).

Because the nose and mouth are continuous in pigeons through the slot (or choana) in the roof of the

mouth, inhaled as well as swallowed fungal spores will end up in the droppings. These can be detected in the droppings microscopically and are one of the handy ways that I can detect fungal and therefore humidity problems within a loft without seeing the loft.

Grid floors in particular can be a bit of a no-no in high humidity areas because the accumulation of droppings beneath them remains damp and provides an ideal base for fungal growth. The droppings should be regularly removed and the area beneath the loft sprayed with Chloramine. Grid floors also provide problems with loft ventilation and temperature control. I feel also that they are not conducive to a feeling of security in the birds. They often lead to excessive air movement, leading to a cold and draughty loft. Straw can also be risky in humid lofts. Although a good floor covering in many areas, in high-humidity areas droppings within it remain damp. Once contaminated it cannot be cleaned and provides a base for fungal growth.

E. coli and yeast levels rise and fall depending on what stresses the birds are under. With the clearing of coccidia and fungi, their level will usually decrease. However, if they remain high, the birds will develop green and watery droppings. On days when significant numbers of these are observed, the birds will benefit from treatment with avian probiotics (Probac, 1/2 teaspoon to 2 litres).

These are continued until the droppings normalise. With ongoing stress, probiotics can be used as the need dictates, however, a failure to respond suggests that wet canker or respiratory infection may already be involved.

**Program for lofts with humidity problem or in humid areas:**

1. *Weekly spray with Chloramine*
2. *2-days Baycox every 4 weeks*
3. *Probac on days when significant numbers of green and watery droppings noticed*
4. *Monitor for signs of wet canker and respiratory infection*
5. *Review factors that increase loft-based humidity, ie fewer number of birds per section, increased ventilation, regular removal of droppings, insulation in roof to keep loft cooler, close loft at night in areas prone to cold nights, etc, etc.*
6. *Consider treating seed with probiotic acid*

Although medication can control any health problems, the longer-term answer is often to modify the loft design or alter the number of birds kept to improve the loft's temperature and humidity levels so that the birds are under less stress, with the result that the need for medication falls away.