

Sex Determination in Birds

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Sex Determination. Because the reproductive organs of birds are internal and few species of pet birds have sexually dimorphic coloration, sex determination is often difficult and mistakes are frequently made. Eclectus parrots are one of the few pet birds in which sex can easily be determined by coloration: Males are green and females are red. In most of the other pet birds with sexually dimorphic coloration, color differences are subtle, making sex determination more difficult. In birds that don't have sexually dimorphic coloration, there are no easy guidelines for sex determination.

With a few of the common pet bird species, a reasonable guesstimate as to sex can be made. As noted earlier, the cere of the male budgie is generally deep blue, whereas it is generally pale blue to brown in the female. In addition, the naris of the female budgie is usually encircled by a pale rim; the naris of the male lacks the rim and is blue. The males also tend to be more vocal and are more likely to talk.

The sex of a gray cockatiel can be distinguished after the bird has undergone its first molt at about 8 months of age. Prior to this point of reaching sexual maturity, both sexes have identical feathering. At the time of the first molt, as the new feathers grow in, the head of the male becomes more yellow, the orange spots by the ears become brighter, the bars (or stripes or spots, depending on one's perspective) on the underside of the flight feathers disappear, and the speckled tail feathers are replaced by solid gray feathers. In the female, there is little change at the first molt; the colors may become somewhat brighter, but the bars on the underside of the flight feathers are retained, as is the speckling on the tail feathers. In cockatiels with color mutations, sex is difficult to determine. Quite often, breeders determine the sex of very young cockatiels by behavioral differences (the males tend to be more vocal and rambunctious than the females). Breeders may also make reasonable guesses due to their knowledge of the genetic backgrounds of their breeding pairs and the varieties of offspring they produce.

The sex of canaries can sometimes be visually determined. In males, the vent region protrudes somewhat; in females, it is more flush with the surrounding skin. The difference is subtle but can usually be observed with experience.

In cockatoos, eye color can be, but is not always, an indicator of sex. Females that have become sexually mature develop a red coloration to their irises, which is very distinct from the deep brown color of the male iris. Not all females develop this color change, however. Thus, whereas all cockatoos with red irises are definitely female, cockatoos with brown irises may be males, immature females, or mature females that have not undergone the eye color change.

Numerous other techniques are used to determine the sex of pet birds, but most of them are quite questionable. One such method is pelvic sexing, where the bird's pelvic bones are palpated on the ventral abdomen to determine the amount of space between them. According to proponents of this method, males have very little space between the pelvic bones whereas females have widely spaced bones. Anyone with extensive experience with birds of known sex, however, realizes that wide variations exist between the sexes in pelvic spacing, making this technique highly unreliable. Head shape, eye shape, size, beak width, and other subtleties have also been used, but the accuracy of sex determination with these measures greatly depends on the skill of the evaluator; even for skilled persons, the differences can be difficult to discern.

The sex of most parrots cannot be distinguished externally. In these and other birds that are not sexually dimorphic, the veterinarian can make an accurate determination of sex through endoscopy or DNA analysis of a blood sample.

Surgical sexing by endoscopy is usually performed for breeders who want like verification of the sex of a bird as well as an evaluation of the condition of the gonads and other organs. The bird is placed under anesthesia, an opening is made into the body wall so a laparoscope can be introduced (very small diameter, obviously) and then the sex organs can be visualized. It has to be done this way as the sex organs are internal and are located near the front portion of the kidney. They are placed right side down for this procedure as when the incision is made on the left side it will be much easier to locate the ovary as birds have only a left ovary. Males have two testicles so the procedure could theoretically be done on either side (but if you knew it was a male for sure you would not be doing the procedure, right?)

Risks exist with surgical sexing, however, and the results are very much dependant on the skill of the veterinarian performing the procedure. Obviously anesthesia is always a risk, but precautions are taken. Internal organs could be possibly damaged by the introduction of the scope, especially the proventriculus (first portion of the stomach) which, if full, may lie over the kidney/gonad making visualization difficult or may have the potential to be perforated. That is why it is safest to have a fasting period before the procedure is carried out. Additionally, in very young birds, an immature ovary may be difficult to distinguish from an immature testicle, especially with an inexperienced veterinarian performing the procedure.

Following the determination of sex by laparoscopy, the bird is then tattooed to designate the bird had been sexed. The area used is the wing web, a flap of skin running from the shoulder to the wrist and connecting the forearm bones, elbow and humerus. It increases the surface area of the wing as an aid in flying. However, as it is a flap of skin, India ink (used in tattooing) is placed between the layers of skin as a small bleb, which will spread a bit. This way when someone spreads out the wing and looks at the wing web, they will be able to determine that the bird was surgically sexed. The tattoo is permanent. Which wing web tattooed will serve to indicate the sex of the bird. By convention, the female is tattooed in the left wing web (as she has a left ovary!) and the male is tattooed in the right wing web.

This was the only technique that was available to determine the sex of birds for many years. As mentioned, the reliability of the technique is totally dependent upon the person who is performing the procedure. There are some phenomenally skilled veterinarians who regularly perform this procedure and do an outstanding job.

Over the past several years DNA blood sexing has moved to the forefront and has proven to be a safe and effective technique for sexing birds. This technique is performed by commercial laboratories, and is widely used. In a nutshell, the DNA from the blood is analyzed to determine if it was from a male or female, which sounds simple but it is truly involved genetics which sometimes people take for granted. In the formative stages of the technique, blood feathers needed to be submitted so that the pulp of the feather could be analyzed for the DNA. It needed to be sent by overnight mail, so the DNA was still viable. Unfortunately, all too often the sample would not produce the necessary DNA or there were delays in shipment. The lab was good about having another sample sent to them for free, but the overnight mail fees were incurred once again, which became frustrating.

A tremendous development in the blood sexing technique was when it could be conducted on a dried blood sample. So now a blood sample was collected, placed on a card, which was then mailed. No worries about overnight delivery and resultant problems. It has made this technique very desirable to use and what we use for almost all our sexings now.

However, when it really boils down to it, except for breeding purposes, there really is no need to know the sex of a bird. Nonetheless, bird owners do want to know the sex of their bird (out of curiosity or especially for naming purposes) and as there is no risk in obtaining the sample it is a perfectly fine reason to do so. Surgical sexing can be done to verify a blood sexing if someone feels the result was erroneous or a breeder wants to see why a breeding pair is not producing. The ovary or testes could be visualized to see if there is an obvious physical reason why there is a problem.