

## Avian Sexing Technical Notes

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Laboratory techniques for Avian Sexing use the Polymerase Chain Reaction (PCR). The technique amplifies a small section of the avian sex chromosomes. Male birds are ZZ and produce 1 product, female birds are ZW and produce 2. The number of products is checked at the end of the reaction by running them out on a gel matrix that separates them by size. It is important to note that not all bird species can at present be sexed by the available methods. While most raptors and psittacines can be tested there are a few species that can not be done because they have a different method of determining sex or where the male and female ZW products can not be individually identified by size.

We believe that the PCR sexing technique when applied to suitable species is 98-99% accurate. It must always be remembered that no test system is perfect. Possible sources of error include:

- **Sampling error:** great care must be taken in collection and identification of each sample submitted to the laboratory. While we can take responsibility for testing a sample accurately, we can not control sample collection. Where the laboratory repeatedly gives the same result for an original submitted sample this result is accurate whether or not it corresponds to the final sex of the bird judged by appearances or subsequent testing.
- **Contamination:** if a sample is contaminated with material from other birds or mammals (including human) incorrect results may be obtained.
- **Sample from unsuitable species submitted:** an up to date list of species that we know can be tested is available. If a species can not be tested all individuals of that species may test as male or female no matter what the actual sex of the bird.
- **Individual variation:** the sexing technique relies on the precise DNA sequence of the individual bird. Even in a species that can normally be sexed we sometimes identify genetic lines where the sexing tests do not work or require slightly different conditions.
- **Laboratory error:** At Biobest we take great care to test every sample carefully and have controls and checks in every test. However no laboratory test is perfect and occasionally an operator may make a mistake or read a sample result incorrectly.

Many of the sources of error in sexing tests can be minimised by careful attention to detail at all stages of the process from sampling to reporting of results. We work with raptor breeders to obtain the best possible level of accuracy but would not recommend that it is relied on as a sole measure to determine sex when birds are being sold. Where a result provided appears not to correspond with the apparent sex of the bird as it grows we will always test a repeat sample from the same bird free of charge to resolve the issue.

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13 Mar 07