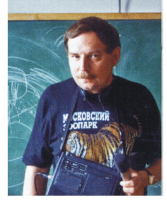


SEXING OF FOUR MONOMORPHIC *DENDROCYGNA* WHISTLING DUCK SPECIES BY THEIR LOUD WHISTLES

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INTRODUCTION

For monomorphic birds: cranes, geese, crakes, doves, owls, storks, penguins, goatsuckers and whistling ducks of the genus *Dendrocygna*, visual sexing is impossible. The commonly applied approaches are DNA and cloacal sexing; both of them are invasive and need capturing birds.

METHODS

Subjects: 59 adult whistling ducks of four species, marked with individual sets of color leg rings.

Sites of work: Moscow Zoo, Tierpark Berlin.

Three methods of sexing: DNA PCR analysis (control), cloacal analysis, bioacoustical analysis.

Call samples: up to 10 loud whistles per bird, in total 200 calls for the WF; 89 calls for the FU; 63 calls for the CU; and 52 calls for the RB.

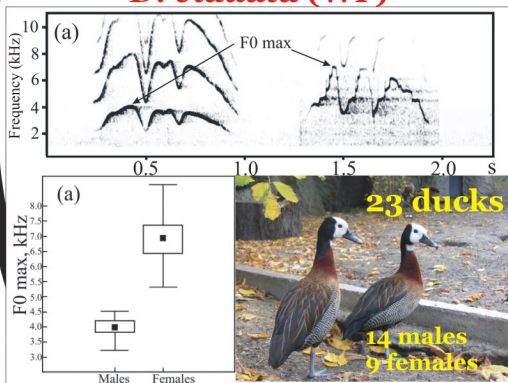
Measured acoustic parameters: the *maximum fundamental frequency* (fo max) in the WF, FU and CU; the *mean syllable duration* of the end trill part of a loud whistle in the RB.

Software: Avisoft SASLab Pro v. 4.3.

RESULTS

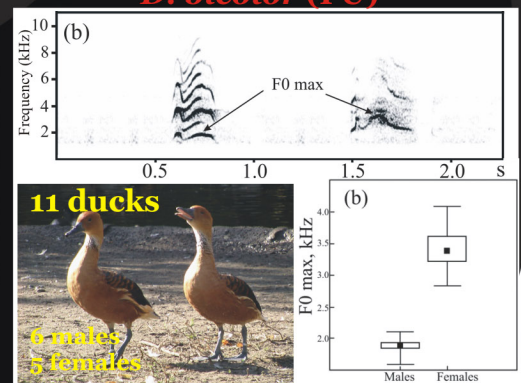
In all the four species, the values of the measured acoustic parameters **did not overlap** between sexes, so sex of all the 59 examined birds, could be determined with **100%** probability. The acoustic-based sexing showed **100%** accordance to the DNA PCR analysis, while the cloacal inspection only **89.8%** accuracy (6 males were mistakenly determined as females)

White-faced whistling duck *D. viduata* (WF)

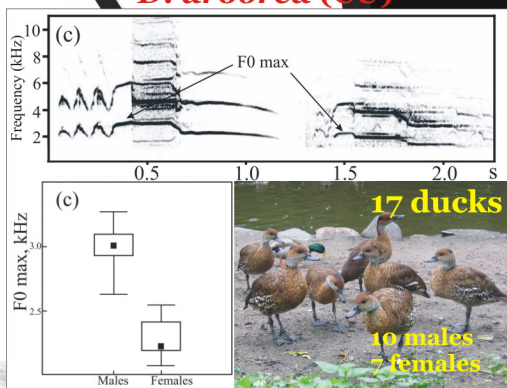


In the **WF** and **FU**, the *maximum fundamental frequency* of the loud whistles was always much lower in males than in females.

Fulvous whistling duck *D. bicolor* (FU)

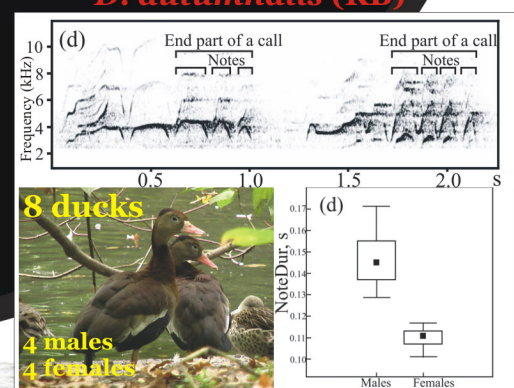


Cuban whistling duck *D. arborea* (CU)



In the **CU**, the *maximum fundamental frequency* of males was always higher than in females.

Red-billed whistling duck *D. autumnalis* (RB)



In the **RB**, the *mean duration of notes* of the end trill of a loud whistle was always longer in males than in females.

CONCLUSION

With its 100% accordance to the DNA PCR analysis, the bioacoustic method represents a highly reliable tool for noninvasive distant sexing of whistling ducks both in captivity and in the field.