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BANCO ESPÍRITO SANTO

Sexing of four monomorphic *Dendrocygna* whistling duck species by their loud whistles

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We present an acoustic approach for the reliable sexing in four whistling ducks from the genus *Dendrocygna* and compare it with molecular and cloacal inspection techniques. In the four examined species: the white-faced whistling duck *D. viduata* (WF), fulvous whistling duck *D. bicolor* (FU), Cuban whistling duck *D. arborea* (CU) and red-billed whistling duck *D. autumnalis* (RB), visual sexing is impossible, excepting the observations of copulation. However all the four species show strong sexual differences in the structure of their species-specific loud whistles. In the WF and FU, the maximum fundamental frequency of the loud whistles was always much lower in males than in females. In contrast, in the CU, the maximum fundamental frequency of males was always higher than in females. In the RB, the mean duration of notes of the end trill of a loud whistle was always longer in males than in females. In all the four species, the values of the measured acoustic parameters did not overlap between sexes. For the 59 examined birds, an acoustic-based sexing showed 100% accordance to the DNA PCR analysis, while the cloacal inspection showed only 89.8% accuracy (in six cases, males were mistakenly determined as females). The results demonstrate that the acoustic sexing represent a feasible alternative to the two traditional methods as a noninvasive tool for the distant sexing of the four whistling duck species both in captivity and in the wild.

Notes
