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PHENOTYPIC STATUS OF THE NAMIBIAN VIOLET WOODHOOPOE PHOENICULUS DAMARENSIS AS DETERMINED BY MASS

Author's Name: M. I. Cooper

Affiliation: Department of Botany and Zoology, University of Stellenbosch, Matieland 7602, South Africa

E-Mail: cm.i@aol.com

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Abstract

Phenotypic status of the Namibian Violet Woodhoopoe Phoeniculus damarensis *was determined by live mass differences (t=2.68, d.f.=1090, p<0.01) with the Green Woodhoopoe* P. purpureus *when culmen, tail, tarsi, and wing were kept constant. Live mass from* P. purpureus *adult males (84.8±8.45g; n=139) and adult females (72.9±11.0g, n=128) were different (U=2129, z=10.7, p<0.01). Live mass from* P. damarensis *adult males (91.3±8.84g, n=5) and adult females (77.6±11.2g, n=6) were different (t=2.22, n=5, 6, p=0.03). Live mass from* P. purpureus *adult males and* P. damarensis *adult males were different (t=-1.69, p=0.05). Live mass from* P. purpureus *adult females and* P. damarensis *adult females were different (U=295, z=10.7, p<0.00001).*

Keywords: *female, male, mensural, size, weight*

INTRODUCTION

The Namibian Violet Woodhoopoe *P. damarensis* has an uncertain taxonomic status [4]. It is closely related to the Green Woodhoopoe *Phoeniculus purpureus* [4]. I provide some resolution to the phenotypic status of *P. damarensis* in comparison with the *P. purpureus*, using morphological details of body size i. e. mass [2]. The null hypothesis is *P. damarensis* is no difference in body mass compared with *P. purpureus* when wing, culmen, tail, and tarsi are kept constant. *P. damarensis* also may not have a significantly longer tail although the "tail [is] about 100 mm shorter than that of Violet Woodhoopoe" in *P. purpureus* (http://www.flickr.com/photos/barnardpaul/6742452723).

MATERIALS AND METHODS

Adult body mass (g), wing (mm), culmen (mm), tail (mm), and tarsi (mm) measurements were extracted from SAFRING database for southern African birds for samples of netted live *P. d. damarensis* and compared with *P. purpureus*. Means and standard deviations were calculated (https://www.socscistatistics.com/descriptive/variance/). Data were tested for normality using a Kolmogorov-Smirnov calculator (http://www.socscistatistics.com/tests/kolmogorov/default.aspx). Comparisons beween non-normal data were made using a Mann-Whitney U-test (https://www.socscistatistics.com/tests/mannwhitney/default2.aspx). Comparisons between normal data were made using a t-test calculator for two independent means (https://www.socscistatistics.com/tests/studenttest/default2.aspx). Coefficients of variation were calculated (http://www.socscistatistics.com/descriptive/coefficientvariation/default.aspx).

RESULTS

Body mass measurements from *P. purpureus* adult males (D=0.10478, n=139, p=0.08983), *P. damarensis* adult males (D=0.33526, n=6, p=0.52541) and *P. damarensis* adult females (D=0.18016, n=5, p=0.96876) were normally distributed. Body mass measurements from *P. purpureus* adult females were not normally distributed (D=0.14677, n=128, p=0.00717). Mass from *P. purpureus* adult males (84.7826087±8.44898g; n=139) and adult females (72.8890625±11.04753g, n=128)

were different (U=2129, z=10.69122, p<0.00001). Mass from *P. damarensis* adult males (91.3±8.84308g, n=5) and adult females (77.583±11.15534g, n=6) were different (t=2.2242, n=5, 6, p=0.026676). Mass from *P. purpureus* adult males and *P. damarensis* adult males were different (t=-1.69215, p=0.046413). Mass from *P. purpureus* adult females and *P. damarensis* adult females were different (U=294.5, z=10.69122, p<0.00001. Adult mass was more variable in females (CV=15.15664%) than males (CV=9.68574%) in *P. purpureus* (F=0.41383, p<0.00001). Adult mass was not more variable in females (CV=9.68574%) than in males (CV=14.37853%) in *P. damarensis* (F=0.45770, p=0.41388). Female variance (122.04791) was higher than male variance (71.38524) in *P. purpureus*. Female variance (124.44167) appeared higher than male variance (78.2) in *P. damarensis.*

DISCUSSION

The comparative morphology of *P. damarensis* and *P. purpureus* showed species were different in adult body mass. Identification of birds as *P. damarensis* had a difference of approximately 5 g indicating these are separate entities when culmen, tarsi, tail, and wing are no different. Differences between adult body mass suggest green and violet woodhoopoes can be distinguished from one another in addition to differences in mantle feathers [5-6]. Furthermore, there was sexual dimorphism in *P. damarensis* adult body mass where males were heavier than females; similar to *P. purpureus* [7]. Examination and comparison of tail feather measurements from *P. damarensis* and *P. purpureus* indicated no differences between tail lengths meaning *P. purpureus* cannot be distinguished from *P. damarensis* except for adult mass and mantle feathers [5-6]. Two putative differences between *P. damarensis* and *P. purpureus* (adult mass and tail lengths) are contingent upon adult body mass [1]. Because there are too few tail length measurements an allometric test is not possible. The normal distribution of adult body mass measurements suggests *P. damarensis* is a bigger, less variable sexually dimorphic species.

CONCLUSION

The Namibian Violet Woodhoopoe *P. purpureus* is a ligher more variable species than the Violet Woodhoopoe *P. damarensis* based on adult body mass.

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