

NUTRIENT COMPOSITION OF SELECT NATIVE PLANTS CONSUMED BY ATTWATER'S PRAIRIE CHICKENS (*TYMPANUCHUS CUPIDO ATTWATERI*) DURING THE BREEDING SEASON IN TEXAS

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Abstract

Based on feeding observations as well as stomach and fecal content analyses (Lehmann, 1941; Cogar, 1980) a diverse variety of plant materials (seeds, pods, leaves, and stems) comprise the main diet of adult Attwater's prairie chickens (*Tympanuchus cupido attwateri*) throughout the year, although insects are also consumed when available. Prior to and during the breeding season (mid-March–May), diets consist predominantly of green forages and forb flowers and/or foliage. In order to better understand nutrient intakes of free-ranging prairie chickens, preferred native plant species ($n = 10$) were sampled during late April/early May to determine nutrient profiles including crude protein and fat, carbohydrates (simple sugars, starch, fiber fractions), select minerals as well as vitamin E (measured as α -tocopherol; α -toc) and primary carotenoids/esters (α - and β -carotene, lutein, zeaxanthin). Overall, plants contained $80.4 \pm 5.0\%$ water; on a dry matter (DM) basis, food samples averaged $18.3 \pm 5.9\%$ crude protein, $11.2 \pm 7.6\%$ simple sugars, $4.9 \pm 3.6\%$ starch, $3.9 \pm 1.3\%$ crude fat and $8.9 \pm 3.0\%$ ash. Neutral detergent fiber values ranged from 20.9 to 66.8%, whereas non-fiber carbohydrates ranged from 10.6 to 50.1%. Mineral content varied widely (macrominerals: Ca 0.8 ± 0.8 , K 2.2 ± 1.0 , Mg 0.3 ± 0.1 , P 0.4 ± 0.1 , Na 0.05 ± 0.03 %DM, respectively); (trace minerals: Cu 8.3 ± 2.4 , Fe 181.1 ± 72.1 , Mn 97.3 ± 58.2 , Zn 47.1 ± 15.0 mg/kg DM). Calculated vitamin E values (1 mg α -toc = 1.49 IU) for the various forages ranged from 0.4 (*Rumex* spp.) to 96.1 (*Agrostis hyemans*) IU/kg on an as-is (wet) basis, whereas total carotenoids ranged from 10.3 (*Brazoria* spp.) to 402.4 (*A. hyemans*) $\mu\text{g/g}$. While proximate and mineral ranges fell within expected values for poultry species in general, native prairie chicken foodstuffs contained higher fiber levels than typically fed to galliforms and may contribute importantly to cecal development, dietary fermentation potential, gastrointestinal microbiome, and overall health for this species. More importantly perhaps, five of the ten plant samples analyzed with total carotenoid concentrations >70 $\mu\text{g/g}$ – higher than typically incorporated into manufactured feedstuffs, with even plants containing the lowest carotenoid concentrations displaying diverse pigment profiles. Given the previously reported lower carotenoid levels in eggs of captive versus free-range prairie chickens (Morrow *et al.*, 2019), these results may be important to overall reproductive outputs and health. Breeding and Headstart programs are components of the conservation management plans for this endangered species. As such, data from natural feedstuffs can be applied to inform/improve diets for prairie chickens under managed care.

Literature Cited

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