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Source: Journal of Wildlife Diseases, 14(3) : 355-357

Published By: Wildlife Disease Association

URL: <https://doi.org/10.7589/0090-3558-14.3.355>

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CROP IMPACTIONS IN BOBWHITE QUAIL IN LOUISIANA

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Abstract: Crop impactions (solid, hard masses of seeds) caused by seeds of clammy weed (*Cuphea carthagenensis*) were found in bobwhite quail (*Colinus virginianus*) killed during the 1965-71 hunting seasons in Louisiana. Emaciation and weakened condition were associated with the presence of crop impactions in two quail, suggesting that physical obstruction of the crop by impactions may be of significant pathologic consequence.

CASE REPORT

The author examined crops collected from bobwhite quail (*Colinus virginianus*) in the 1965-66 Louisiana quail hunting season and found several to contain rather large impactions of seeds. Crop impactions were found in subsequent years, up to 1971, when the author left Louisiana. Quail with impactions were killed near Ponchatoula, Hammond, Tickfaw, Independence, and Kentwood in Tangipahoa Parish and Mt. Hermon in Washington Parish.

Although a survey of hunter-killed quail was not undertaken, during each hunting season the author kept some quail crops for later examination of contents. To determine the species of seed causing the impactions, several impactions were mailed to Patuxent Wildlife Research Center for examination by Francis Uhler. Impactions also were sent to Dr. Shirley Graham, Department of Biological Sciences, Kent State University, and Dr. Sidney McDaniel, Botany Department, Mississippi State University, so that the seeds could be definitely identified. The author collected plants of the species suspected of causing the impactions in areas where quail with impactions were shot. The plants were identified by Dr. McDaniel. Thorough necropsies were not performed on the quail.

The frequency of occurrence of crop impactions was not recorded. However,

of 40 crops saved during the 1967-68 hunting season, eight contained crop impactions. One crop contained two impactions.

The crop impactions were light brown, solid, hard and oblong to circular (Fig. 1). The largest was $34 \times 32 \times 18$ mm and weighed 8.84 g and the smallest was $22 \times 17 \times 12$ mm and weighed 6.05 g, air-dry weight. Uhler (pers. comm., Patuxent Wildlife Research Center) determined that the impactions were caused by the seeds of clammy weed (*Cuphea* sp.). The impactions contained seeds of many other plants normally eaten by quail, but did not contain a "nucleus" around which the impaction was formed. Quail had eaten many clammy weed seeds which agglutinated or "cemented" all ingested material into a solid mass. Clammy weed plants collected in areas where quail had been shot and contained impactions were identified as *Cuphea carthagenensis*. The clammy weed seeds in the impactions were definitely identified as *C. carthagenensis*.

Two cases of apparent ill-effects due to crop impactions were found by the author. The quail with the largest impaction was shot in November, 1971. This quail had no body fat, and a greenish, mucus-like material surrounded the impaction. Another quail hunter flushed a covey of quail in December, 1971, and noted that one bird had not flown. The quail was easily captured by hand and died in captivity that night. The bird was



FIGURE 1. Crop impaction in bobwhite quail.

very emaciated and the pectoral muscles were severely atrophied. The crop impaction was $36 \times 22 \times 14$ mm. There was no evidence of trauma but a thorough necropsy was not performed. Most of the impactions occupied at least half of the crop volume. The impactions rested or lodged in the ventral part of the crop and, therefore, covered the entrance to the lower esophagus.

Clammy weed seeds are flat, oblong-obovoid, yellowish-brown, 1.5-1.7 mm long, narrowly winged, with viscid pubescence.⁵ The seeds of *C. carthagenensis* have unique, spirally grooved, inverted hairs in the epidermal layer of the seed coat. Upon contact with water, the hairs emerge, uncoil and are mucilaginous.¹ When quail eat clammy weed seeds, apparently the moisture in the crop causes the seeds to "cement" together all material consumed so it is retained in the crop.

C. carthagenensis is a recently introduced species from South America. The earliest recorded collection in the United States was in North Carolina in 1923 and later, in 1925, in Florida. *C. carthagenensis* is now common in the coastal plain from North Carolina to Texas.² The earliest recorded collection in Louisiana was 8 km southeast of Baton Rouge in 1938, while the first record for Tangipahoa Parish was in 1965. However, this date does not represent the first occurrence of *C. carthagenensis* in Tangipahoa Parish, but rather reflects plant collecting effort in the parish. *C. carthagenensis* frequently has been misidentified as *C. petiolata* (pers. comm., Dr. Shirley A. Graham, Department of Biological Sciences, Kent State University, Kent, Ohio).

A study of 183 quail crops from cut-over longleaf pine forests of Rapides and Evangeline Parishes, Louisiana, did not mention *Cuphea* sp. or the old generic name *Parsonsia* sp.⁶ However, another species, *C. petiolata*, comprised 35% of the summer (July-September) diet and 12% of the annual diet of bobwhite quail in the south Georgia flatwoods.³ *C. petiolata* also was mentioned as a minor quail food in two other papers.⁴

C. carthagenensis was common in fence rows and other similar plant communities in Tangipahoa Parish. Plants collected on 23 August 1973 had mature seed in the capsules. Quail could begin eating clammy weed seeds at least by late August. The possible deleterious effects of crop impactions on individual quail and to quail populations on the lower coastal plain are speculative at this point, and a study of this potentially significant problem should be conducted.

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Received for publication 11 October 1977
