

Additional records of Gnathostomes in North American hosts

by

Bert B. Babero*, Jacqueline R. Shepperson**, and Teofila C. Sicay***

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Since the original description of the nematode genus *Gnathostoma* Owen, 1836 which was based upon material collected from a stomach nodule of a tiger that died after being imported into the London Zoological Garden, the endemic occurrence of members of the group has been observed principally in southern Asia, Africa, Philippines, Australia, China, and Japan. Species of the genus, either as larva or adult, parasitize a variety of hosts, including arthropods, fishes, amphibia, reptiles, birds, and mammals. Of the latter, such carnivores as Felidae, Canidae, and Mustelidae most often have been reported infected, although infrequent reports of infections in cattle, pigs, rodents, and man have appeared in the literature.

Records of adult gnathostomes in North American mammals have been limited, and few investigations have been accomplished relative to the etiology of the parasites in animals of this country. *Gnathostoma spinigerum* Owen, 1836, was reported from *Mustela vison* by Hanson (cited by ERICKSON, 8) in 1932, and by CHANDLER and MELVIN (6); and from *Procyon lotor* by BABERO and SHEPPERSON (1, 2). CHANDLER (4) reported *G. didelphis* Chandler, 1933 from *Didelphis virginiana*. The latter species was reported also from *Philander laniger pallidum* in Panama by FOSTER (9). *G. procyonis* Chandler, 1942 was recovered

* Department of Biology, Southern University, Baton Rouge, Louisiana.

** Department of Zoology, Fort Valley State College, Georgia.

*** 714th. Medical Company (Preventive Medicine) Fort Stewart, Georgia.

from *P. lotor* by CHANDLER (5) and BABERO and SHEPPERSON (1), *G. turgidum* Stossick, 1902 reported by DIKMANS (7) from an opossum in Louisiana was considered by CHANDLER to be co-specific with *G. didelphis* and distinct from the former species which was reported from *D. azaræ* in Argentina and *D. aurita* in Brazil by TRAVASSOS (11).

Further investigations by the present writers have revealed that certain areas within the state of Georgia are endemic for parasites of the genus *Gnathostoma*. To date, we have recovered *Gnathostoma* spp. from 22 raccoons (stomach), 14 opossums (stomach and liver), 2 skunks (stomach), and 1 snake (larval stage; parietal peritoneum), collected over widely separated localities (Fort Valley, Dublin, Darien, and Fort Stewart).

Infections ranged from four to eleven worms per host. Species identification of the gnathostomes from the stomach of the opossum and the skunk has not yet been made; however, to our knowledge the present report is the first published record of the parasite in skunks and from the stomach of the opossum. There is some doubt in our minds concerning the validity of the names of the species reported from raccoons and opossums, since our studies have revealed certain common characteristics between the forms, which could indicate the existence of only one species, *G. spinigerum*, in North American hosts. The stomach gnathostomes collected from the opossum measured over 50 mm in length, longer than reported from any other mammal of this country. Although detailed studies of these worms have not been made, superficially they appear to resemble *G. spinigerum*. It is interesting to note that this species was reported from *Didelphis marsupialis tabascensis* Allen, collected in Mexico by CABALLERO (3). It is our opinion that the characters employed by CHANDLER (4) for *G. procyonis* are not sufficient to distinguish it from *G. spinigerum*.

The pathogenicity of *Gnathostoma spinigerum* in *Procyon lotor* was reported by BABER● and SHEPPERSON (2). Although histological sections from additional hosts have not yet been studied, certain pathological conditions associated with gnathostome infections have been observed and recorded. Complete perforation of the stomach wall by the parasite was observed in two raccoons and three opossums. In each case, there was obvious fibrosis associated with infection. The significance of these observations is that the nematode can show a highly pathogenic nature in these hosts, since peritonitis and ultimate death of these animals could ensue. Gnathostomes have been recovered more frequently from the liver of opossums. Although many worms were actually taken from within the liver, others were seen to extend from its surface, either head-first, or with only a portion of the body showing. Many "gnathostome-scars" were observed on the liver surface of infected animals, which suggested the presence of the parasite. General macroscopic observations of liver infection in the opossum indicated that the worms possibly migrated through diaphragm to the liver. Direct observations concerning this point were not accomplished. It is interesting to note, however, that OLDS (10) in reporting his observations of gnathostomiasis in a naturally infected cat stated, "Three immature *G. spinigerum* were lying coiled in the

diaphragm and a further two were actively burrowing therein". The part that gnathostomiasis may play in decimating the numbers of certain mammalian species in North America needs further investigation.

RESUMEN

Se anota en este trabajo la presencia de *Gnathostoma* spp. en animales coleccionados en varias localidades de Georgia, E.U.A. Los nemátodos fueron encontrados, en número de cuatro a once por hospedero, en 22 mapaches (estómago), 14 zarigüeyas (estómago e hígado), 2 mofetas (estómago) y 1 serpiente (forma larvaria en el peritoneo parietal). Se hace notar la patogenicidad de los gnatostómidos en el mapache y la necesidad de investigar su posible efecto sobre la población de mamíferos en Norte América. Los autores dudan de la validez de algunas especies descritas de esta región, que no parecen distinguirse satisfactoriamente de *G. spinigerum*.

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