

*Glaucomys volans goldmani* (Rodentia: Sciuridae) in Central Mexico

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15-18 total. Color of living specimens: from dark green to olive or brown, fading to pale pinkish yellow when excited. Distinguishing coloration: 6-8 dark, wedge shaped bars on body; black opercular spot; vertical fins with dark crenulations; black spot on base of anterior soft dorsal rays; lower parts cherry red or dark blood-red. Behavior: upon arrival at the laboratory, four individuals ranging from 125 to 165 mm were placed in a 55 gallon aquarium. The fish immediately exhibited intense aggressive behavior, which together with the wedge barred body coloration separate it from a very similar species, *T. guineensi* (G. Sterba., Fresh Water Fishes of the World. Viking Press, N.Y. 1959; G. A. Boulenger., Brit. Mus. Nat. Hist. III: 133-267, 1915).

The *T. zilli* and the *S. mossambicus* are very abundant in the spring passing through the San Antonio Zoo, from which they have free access to the San Antonio River. Noteworthy is that of the eight *T. zilli* examined, all were free of fungal infestation, while all the *S. mossambicus* collected (50 specimens) were heavily covered with fungal patches.

Among some of the exotic fishes recorded as established in the San Antonio River are *S. mossambicus*, *Cichlasoma cyanoguttatum* (W. H. Brown, Texas J. Sci. 13:352-354, 1961) and *Placostoma* species (C. Hubbs; Personal comm., 1977). Their origin has been discussed by the previously cited authors. Yet the origin of the San Antonio *T. zilli* is unknown at present. Further taxonomic work is in progress, including a study of the protein electrophoresis of *T. zilli* and other African cichlids established in Texas.

I would like to thank Dr. Merrill H. Sweet of Texas A&M Univ. for his advice and review of this report, and the staff of the San Antonio Zoo for their kind cooperation.—MAURIZIO A. MANGINI, *Univ. of South Florida, Dept. of Marine Science, 140 Seventh Avenue South, St. Petersburg, FL 33701.*

**GLAUCOMYS VOLANS GOLDMANI (RODENTIA; SCIURIDAE) IN CENTRAL MEXICO.**—Information on the distribution of the southern flying squirrel (*Glaucomys volans*) in Mexico and Central America suggest that its distribution is scattered. Until recently the status of the subspecies in the area was uncertain; however, with the review by Diersing (Southwestern Nat., 25:157-172, 1980) of the systematics of the populations of Mexico and Central America four subspecies were recognized.

On March 1980 a lactating female was collected in central Mexico at location, 1 km E Hacienda Tepozan, Municipio Almoloya 2800 m (19° 14' 1 at N, 98° 44' long W) in the state of Hidalgo. The nearest localities where this species has previously been recorded are as follows: Santa Barbarita, San Luis Potosi, 300 km to the north; Los Pescados, Veracruz, 120 km to the northeast; Omilteme, Guerrero, 200 km to the southwest. The external and cranial measurements (mm) for this new specimen are as follows: total length 250, length of the tail 123; length of the hind foot 32; length of the ear 19; greatest skull length 35.4 maxillary tooththrow 6.4; zygomatic breadth 22.06; nasal length 10.8; condylobasal length 35.3.

Although this specimen is from a relatively isolated area, it is assigned to the subspecies *Glaucomys volans goldmani*, based upon its large external and cranial features and the coloration of the body (Diersing, op cit.). The specimen was collected on La Muela, a mountain on the border between the states of Hidalgo and Puebla. The area is covered by pine-oak-fir forest, which contains pure stands of each genus. The most common trees are fir (*Abies*), pine (*Pinus*), oak (*Quercus*), alder (*Alnus*) and madroño (*Arbutus*). The nest of the squirrel was found in an old dead fir (*Abies religiosa*) of approximately 3 m height and 60 cm DBH. It was located in a woodpecker hole at 2.5 m height from the ground. The entrance was elliptical and measured 12 cm × 9 cm. The interior was covered with lichens, mosses and a few places of bark. Diersing mentioned that all the records of flying squirrels in Mexico and Central America are from pine-oak forests. However, this specimen comes from a mixed pine-fir-oak forest and local people have said it is common in pure stands of fir.

Recently, on August 1982, three flying squirrels were collected at 8 km SW Pinal de Amoles, 2650 m (21° 06' lat N, 99° 38' long W) in the state of Querétaro. This locality is approximately 240 km to the Northwest from Hacienda Tepozan, Hidalgo. The external and cranial measurements are as follows: total length 228, length of the tail 102; length of the hind foot 28; length of the ear 18; greatest skull length 35.4; maxillary tooththrow 6.4; zygomatic breadth 20.5; nasal length 9.2; condylobasal length 31.6.

Previously, flying squirrels were recorded in Querétaro by Howell (N. Amer. Fauna 44:1-64, 1918) based upon a sight record from Pinal de Amoles. Diersing (op. cit) assigned tentatively flying squirrels of this area to the subspecies *G.v. goldmani* based on geographic considerations. The characteristics of the specimen examined seem to confirm it because of both its cranial and external measurements. Comparison between the specimen from Hidalgo and Querétaro showed that the specimen from Querétaro is darker but smaller. In Querétaro flying squirrels were collected in a very mature oak forest. Two of them were caught alive in its nest and the other one was shoot in another nest. Both nests were

found in oak trees (*Quercus*) separated 20 m from each other, and approximately 20 m height — 2.1 m DBH and 30 m height — 3 m DBH respectively. The nests were located in natural holes, at 1 m and 6 m height from the ground. The interiors were covered exclusively by mosses. It is important to mention that the forest in which the squirrels were collected is very old, with some trees of more than 100 years old.

On the basis of collected specimens, and on our own observations we believe that the flying squirrel is a threatened species in Mexico, because of the rapid rate of deforestation, and thus disappearance of suitable habitats. We are grateful to Dr. Hugh H. Genoways for critical review of an early draft of the manuscript, Dr. José Ramírez Pulido for logistical aid and the Instituto de Ecología (México, D.F.) for financial support.—GERARDO CEBALLOS and CARLOS GALINDO, *Instituto de Ecología, Apdo. Postal 18-845, MÉXICO* 18 D.F. MÉXICO. (Present address, *San Marciano 123, PLZ. San Buenaventura, Toluca Méx., CP 50110 MÉXICO*).

**FOODS OF THE TEXAS SPOTTED WHIPTAIL LIZARD (*CNEMIDOPHORUS GULARIS*) IN NEW MEXICO.**—The Texas spotted whiptail lizard (*Cnemidophorus gularis*) reaches the western extreme of its range in southeastern New Mexico (Stebbins, A field guide to western reptiles and amphibians, Houghton Mifflin Co., Boston, 1966). Aside from locality records presented by Wright (Southwestern Nat., 8:56, 1963) and Tanner (Stu. Nat. Sci., Portales, NM, 2:1-39+20 maps, 1975), nothing is known of the biology of *C. gularis* in New Mexico. The food habits of *C. gularis* have been reliably studied only by Scudday and Dixon (Southwestern Nat., 18:279-289, 1973) in Trans-Pecos Texas. Accounts presented by Milstead (Texas J. Sci., 9:410-447, 1957; Texas J. Sci., 10:443-446, 1958) under the name *C. sacki* presumably included *C. gularis* and *C. exanguis*, and thus are of limited value. The paucity of food habit data for *C. gularis*, its limited distribution in New Mexico, and its association with other teiid species make it especially worthy of study. Here we present data on the food habits of *C. gularis* and associated lizard species in New Mexico.

On 17 and 18 July 1979, we collected 89 Texas spotted whiptail lizard (58 ♂ and 31 ♀), five western whiptail lizards (*C. tigris*), one side-blotched lizard (*Uta stansburiana*), and one Texas horned lizard (*Phrynosoma cornutum*) from the southern half of Section 1, T29S, R30E, Eddy Co., New Mexico (ca. 35 km E Carlsbad). Specimens were sexed, preserved in formalin, and stomachs later removed for analyses. Specimens and stomach contents are deposited in the Natural History Museum, Eastern New Mexico University, Portales. Dominant plants on the study site and mean densities per hectare in July 1979 were: snakeweed (*Xanthocephalum texanum*), 135,500; Fendler bladderpod (*Lesquerella fendleri*), 12,250; black grama grass (*Bouteloua eriopoda*), 5,750; buckwheat (*Eriogonum* sp.), 5,250; creosote bush (*Larrea tridentata*), 838; mesquite (*Prosopis glandulosa*), 650; dropseed (*Sporobolus* sp.), 500; and surge (*Euphorbia* sp.), 250.

The kinds and numbers of food items found in the stomachs are listed in Table 1, as well as the percentage of specimens containing each type of food. In addition, the specimen of *U. stansburiana* contained one Hemiptera (Lygaeidae), and the *P. cornutum* had eaten several Coleoptera (four Carabidae and three Tenebrionidae) and 64 Hymenoptera (Formicidae). Grasshoppers (Acrididae) were eaten by 81% of the *C. gularis* and by all of the *C. tigris*. Second in abundance for *C. gularis* were the termites (Isoptera) found in nearly half the specimens, and spiders (Araneae) were second for *C. tigris*. More than one-third of the *C. gularis* had eaten spiders (Araneae). Although there were several food categories that differed between species (probably related to sample size), the relatively large number of tenebrionid beetles in *C. gularis* compared to none found in *C. tigris* may be an important food difference.

Four categories, represented by the largest number of food items and greatest frequency of occurrence, show no apparent sexual differences in food habits for *C. gularis*, i.e., Acrididae, Isoptera, Tenebrionidae, and Araneae. Of the 32 food categories listed in Table 1, 20 are common to both sexes. The 12 differences are all categories with only one or two food items.

In summary, the differences between items eaten by *C. tigris* and *C. gularis* may indicate some differences in use of the available food resources, but the sample size for *C. tigris* is small. There is no apparent evidence of sexual differences in *C. gularis* feeding habits.

We are grateful for the assistance provided by various sources. J. Schaffner of Texas A&M University identified the stomach contents, and W. C. Martin of the University of New Mexico determined the plant densities. Our identification of *C. gularis* was verified by A. L. Gennaro and J. W. Wright. F. H. Best and F. H. Bennett helped collect the specimens, J. M. Walker, D. J. Hafner, and A. L. Gennaro critically evaluated the manuscript, and Sandia National Laboratories in Albuquerque partially funded the project under contract 13-2097.—TROY L. BEST and PAUL J. POLECHLA, *Llano Estacado Center for Advanced Professional Studies and Research, Natural History Museum, Eastern New Mexico Univ.*,