# Variation in the Lower Incisors of the Mexican Freetail Bat, *Tadarida mexicana* (Saussure)[1]

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Within the genus *Tadarida* the number of lower incisors is variable, being three in some species, and two in others. Miller (3) in his diagnosis of the genus *Nyctinomus* (=*Tadarida*) stated—"Lower incisors equal, bifid, their crowns in contact with each other and with canine, and usually somewhat imbricated, the cutting edge about on level with cingulum of canine; third incisor, when present—less than half the size of the others, its crown scarcely bifid; ....." Burt (1) gave the incisive formula of *Tadarida mexicana* and *T. cynocephala* as 1/3, and of *T. macrotis* and *T. femorosacca* as ½. These four are the only species of the genus occurring in the United States.

The writer's attention was first drawn to this variable condition while preparing a key to the skulls of North America mammals (2). Casual examination of several *T. mexicana* skulls in the Oklahoma A. and M. College collection revealed that within this species, some specimens seemingly with only two lower incisors were found; and many more were found with the third lower incisor (in all cases the variable one) present but of atypical shape.

To make a further study of this condition, a total of 105 skulls were cleaned and examined under a binocular dissecting microscope. Of these 23, or 21.8 per cent possessed both right and left third incisors resembling those described by Miller (Figure 1). Twenty-eight more possessed such a tooth on one side only, with the corresponding tooth on the opposite side differing in some respect from its partner. Of the remaining 54, the right and left third lower incisors were both atypical.

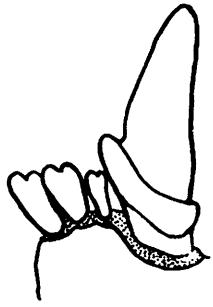

*FIGURE 1. Lower Right Incisors and Canine of Tadarida mexicana. (Drawn by camera lucida.)*

From this sample of 105 individuals, there were therefore 136 of a total of 210 third lower incisors (counting left and right teeth separately) that were abnormal in one way or another. In nine of the 136 cases, the tooth was entirely absent. In five of the nine, an alveolus indicated that the tooth had been present, and one other showed evidence of a former abcess of the root, which must have accounted for loss of the tooth. The remaining three examples showed no evidence of teeth, the alveoli being entirely absent. Two of the three were in the left and right rami from the same individual. The three were the only examples in the entire sample in which the occurrence of third lower incisors could not be demonstrated.

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They may be real exceptions, or they may represent individuals in which the entire teeth were lost at an early age, with subsequent filling of the alveolus with bone. Neither alternative can be verified.

In the remaining 127 of the 136 mentioned above, teeth were present, but failed to conform in shape to the normal third incisor as described by Miller (3). In many cases only the embedded root was present, but in 29 of them, the tooth projected to approximately one-half the height of the adjacent second incisor. In all but 11 of these, the teeth were obviously broken, and showed either a jagged end, or the exposed pulp cavity. In 11 no detectable sign of fracture was noted, although they too may have been fractures of long standing in which abrasion had removed the evidence of injury.

From the above data, it seems that in *Tadarida mexicana* the formation of three lower incisors is the rule. Of the sample examined, only 21.9 per cent possessed normal third lower incisors on each side; 25.4 per cent had a normal third incisor on one side and a defective one on the other; 52.4 per cent had the third incisors defective on both sides. All but 8 per cent of the defective teeth examined are positively attributable to dental fracture.

As may be seen from the illustration, the third lower incisor is susceptible to fracture because of its small size, and because it does not appreciably overlap the adjacent second incisor. It does frequently project out as if to overlap its neighbor, but because of its small size this only renders it more exposed to unusual stresses than if it were properly aligned. The writer believes that this misalignment is responsible for all of the atypical or lost teeth noted in this study. If this assumption is correct, these data indicate that *Tadarida mexicana* normally has three lower incisors, but that up to 75 per cent of a population may be expected to experience mechanical damage of one kind or another to the third lower incisor.

As a practical matter, this is important for purposes of identification. Genetically it is significant that the lower incisors are three in number, as it places *T. mexicana* in the more primitive species group, wherein the full complement of lower incisor teeth is retained.

## Literature Cited

1. Burt, W. H. 1952. A field guide to the mammals. Boston: Houghton Mifflin Co.

2. Glass, B. P. 1951. A key to the skulls of North American mammals. Minneapolis: Burgess Publ. Co.

3. Miller, G. S. Jr. 1907. The families and genera of bats. U. S. Nat. Museum Bull. 57:1-282.