

LITTLE BROWN BATS WITH ABNORMAL DENTITION*

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The most common bat in Alberta is the Little Brown Bat (*Myotis lucifugus*). Although it is widely distributed and occurs in fairly large colonies, very little is known about the biology of this bat in the province. Recently, while studying cranial variation in this species, I came across individuals that exhibited a series of dental anomalies. There are teeth missing in some, a phenomenon that has been reported from other areas in North America,^{1 2 4 5} and, in others extra teeth, or teeth that are so crowded as to appear fused, (Table 1). Dental abnormalities have not previously been reported for this bat species in Canada.

During the course of this investigation 235 skulls were examined. All specimens are in the natural history collections of the Provincial Museum of Alberta. The majority of these specimens were collected by members of the Alberta Fish and Wildlife Branch and donated to the museum through the courtesy of Mr. David Schowalter.

The dental formula for permanent teeth in *Myotis lucifugus* is $1\frac{2}{3}$, C $1\frac{1}{3}$, $\frac{3}{3}$, M $\frac{3}{3}$ for a full complement of teeth. In the upper jaw, the incisors are small, the canine and molars are large, and the premolars are variable size. The fourth premolar is large, but much smaller than the molars. Premolars two and three are small and in some specimens are extremely crowded. It has been suggested that with these teeth may be non-functional⁴. There is less crowding and variation in the teeth of the lower jaw.

Fenton³ has described the replacement of the deciduous dentition by the permanent teeth in *Myotis lucifugus*. The sequence of eruption

of the permanent upper premolars is P⁴, P², P³. P³ is the last permanent tooth to erupt. In bats, the first premolar is always missing⁶, so that the premolars that remain are numbered P², P³, P⁴. Frum⁵ reported that in *Myotis lucifugus* in eastern North America, P³ is sometimes missing. Fenton³ found that tooth eruption is correlated to total length of the animal. For example, P³ is always present by the time these bats have reached adult size: 80 - 100 mm in length. The length of the bats examined for this paper ranged from 82 - 93 mm. These bats are considered to be adults by the lack of cartilage in the finger joints¹.

In a sample of bats studied by Findlay and Jones⁴ and Barbour and Davis², it was found that in some individuals premolars were missing in the lower jaw. In the sample of bats examined during this study two specimens have missing premolars in the lower jaw. In one specimen (Z76.60.11), P₂ and P₃ are missing from both sides of the jaw. The other specimen (Z76.116.5) has P₃ missing from the right side. However, as the alveolus is present this loss is probably accidental.

In examining the literature I have been unable to find any reference to supernumary teeth in *Myotis lucifugus*. One specimen (Z76.60.5) from a sample of 21 taken at Champion, Alberta, has an extra upper left premolar. The upper right side has the normal number of premolars. There is severe crowding of teeth on the left side, but little, if any, crowding on the right side. In another specimen (Z74.106.6) from Cadomin, the left upper P³ has two cusps of about equal size. It is not possible to determine whether this extra cusp is a supernumary tooth that has been severely crowded and fused to its neighbour or whether the P³ is an ab-

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Table 1: DENTAL ANOMALIES IN *MYOTIS LUCIFUGUS*

Museum No.	Tooth Anomaly	Sex	Age	Location
Z69.59.1	upper p ³ missing on both sides	Female	Adult	Edmonton
Z74.106.6	lower right p ³ has 2 cusps, appears as if two teeth fused, anterior cusp larger than posterior cusp, upper left p ³ has 2 cusps of equal size, P ² present-normal size	Female	Adult	Cadomin
Z75.59.3	left upper p ³ missing	Female	Adult	Hinton
Z75.93.7	left upper p ³ missing, right upper p ³ extremely small	Female	Adult	Hinton
Z75.105.1	upper p ³ missing on both sides	Female	Adult	Warner
Z75.105.7	upper p ³ missing on both sides	Female	Adult	Warner
Z76.59.2	upper premolars small and crowded together, appear as one tooth, anterior cusp larger than posterior cusp	Female	Adult	Skiff
Z76.60.5	upper premolars, 3 left side, 2 right side	Female	Adult	Champion
Z76.60.11	lower premolars p ² and p ³	Female	Adult	Champion
Z76.60.18	upper premolars p ³ missing from both sides	Female	Adult	Champion
Z76.116.1	right upper p ³ missing, left upper p ³ very small	Female	Adult	Hinton
Z76.116.5	right lower p ³ missing, alevolus present	Male	Immature	Hinton

normal tooth with two cusps. In the lower right jaw of this specimen P³ has two cusps with the anterior cusp slightly larger than the posterior cusp.

During the course of this study a note was made on the size of the small premolars. They were recorded as being normal size, or smaller than normal size. A note was also made on the spacing of P², P³, P⁴, and the canine. If there is no space between the teeth this was considered as crowding. In some cases the crowding is severe enough to cause the premolars to be out of alignment. Of the 235 skulls examined, 129 (54.9%) show some degree of crowding in the upper jaw. The teeth in the lower jaw show little crowding, and only one specimen (Z76.60.18) is considered to have mandibular teeth that are crowded. In 80 (34.0%) of the specimens examined, the upper premolars are considered to be smaller than average. The mandibular premolars are more consistent in size, and only one specimen (Z74.106.10) is considered to have premolars that are

noticeably smaller.

In bats from Alberta, it is not clear the anomalies of the premolars is a genetic trait as a result of an evolutionary process. The bats come from widely separated geographic areas in the province. The sample from Warner is the only one that has more than one bat with premolars missing in the upper jaw. The sample from Champion has three bats with dental abnormalities. In one case (Z76.60.5) there is a supernumerary premolar, in another (Z76.60.18) there are missing upper premolars, and the third (Z76.60.11) the premolars are missing from the lower jaw. This seems to be some pressure exerted on the small premolars, as evidenced by the number of animals that have these teeth missing and by the number that show a trend to reduce the size of the premolars.

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⁵FRUM, W. G. 1946. Abnormality in
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⁶VAUGHAN, T. A. 1970. The skeletal
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ped Skunk

Lorne Scott