

A NEW SUBSPECIES OF LITTLE BROWN BAT FOR ALBERTA

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During a survey of colonies of little brown bat *Myotis lucifugus* in Alberta it was observed that bats from colonies in southern Alberta differed in color and probably size from bats from colonies in central Alberta. As a result of these observations museum collections were made in order to compare bats from the two regions.

Table 1 lists the locations of colonies from which the collections were made which were used in this study. Specimens are deposited in the Provincial Museum of Alberta.

When compared in a series, bats from colonies in the south are lighter in pelage colouration than those bats from northern colonies. The dorsal pelage of southern bats ranges in colour from light brown (almost blond) to medium brown, a few very dark individuals have been observed in colonies, however, none of these are represented in the collections. The northern bats are darker, ranging from reddish brown to dark brown. The pelage of the southern bats appears flatter and without the sheen that characterizes many northern bats. Flight membranes on the southern bats are also lighter in colour. There is frequently a white margin on the trailing edge of the flight membrane that is not evident on bats from colonies in central Alberta.

Table 2 compares some measurements of adult female bats. The sample for each colony was at least six bats. The initial impression of smaller size of southern bats is not supported by measurements of tail

length and head/body length however, they are smaller in forearm length and greatest skull length.

Direct comparison of weights of bats from central and southern Alberta are difficult as weight varies greatly during the summer, however it is evident that the southern population tends to weigh less than bats farther to the north (Fig. 1). The two populations also differ in timing of birth. In central Alberta parturition is largely concentrated in late June (unpublished data, Alberta Fish and Wildlife Division). Captures of bats at a large bat colony at Warner indicated that parturition was only just over half completed by 12 July 1975 and still not complete on 21 July 1975. N. Previsich (pers. comm.) has observed colonies near Lethbridge in which most of the young were born in the latter part of July. On the other hand pregnancies of bats and development of juveniles in a colony near Brooks observed in late June were similar to that of bats in central Alberta. O'Farrell and Studier relate concentration of the time of parturition of *Myotis*, such as seen in central Alberta, to adult females having left hibernacula at approximately the same time, whereas a longer, variable period of parturition, as is seen in southern Alberta, is considered indicative of female bats leaving the hibernacula over a greater period of time.⁷ If this is the case with little brown bats in Alberta the areas of hibernation of the central and southern populations would be expected to be different in

climate and be relatively distant from one another.

Sex and reproductive structure of at least some colonies in southern Alberta appear to differ from that of colonies known elsewhere. Of 51 adult bats captured at Warner 12 July 1977, 17 were pregnant or lactating females, 24 were dry females and 10 were adult males. Dry females and adult males seldom make up a significant proportion of individuals in little brown bat nursery colonies and their occurrence at Warner warrants further investigation.⁵ Collections of adults at other colonies in southern Alberta during the summer and at Warner in early summer are made up largely of reproductively active females, although preliminary data indicates that adult males are found more frequently in maternity colonies than in central Alberta.

Anderson,¹ Hall and Kelson,⁴ and Soper⁹ report three subspecies of *Myotis lucifugus* in Alberta; Banfield² reports two. *Myotis lucifugus lucifugus*, the most widely distributed subspecies, generally is considered to occur over most of the non-mountainous portion of Alberta. It is a medium sized *Myotis* approximately 97 mm in total length with a dull brown pelage and brownish flight membranes.⁹ *M. l. blascensis* is reported to occur in the southwestern mountains. It is darker in pelage and flight membrane colouration but similar in size to *M. l. lucifugus*.⁸ Banfield does not consider this subspecies to occur in the province.² *M. l. pernox* is known from the mountains from Hinton-Entrance west to the Jasper area. It is reported to have a larger skull than *M. l. lucifugus* and to have blacker flight membranes.⁸ ⁹ It appears unlikely that the population found in southern Alberta can be assigned to any of these subspecies.

Table 1. LOCATIONS AND NUMBER OF SPECIMENS OF LITTLE BROWN BATS COLLECTED IN ALBERTA.

Location	No. Specimens
Atmore	17
Champion	21
High River	10
Lac La Biche	7
New Norway	10
Pigeon Lake	10
Schuler	9
Stony Plain	6
Vilna	8
Warner	21

In their review of *Myotis*, Miller and Allen indicate that the subspecies *M. l. carissima* has a paler colour than *M. l. lucifugus* and that the "edges of the interfemoral membrane and parts of the posterior edge of the wing membrane may be whitish, sometimes forming a distinct border."⁶ In view of this description of *M. l. carissima*, the similarity of measurements (Table 3), and the proximity to known occurrences of the subspecies (Fig. 2), we believe the little brown bats from the plains region of southern Alberta to be *M. l. carissima*. The reported Canadian distribution of *M. l. carissima* is the Okanagan area of southern British Columbia.³ Hall and Kelson show the northern range of the subspecies as terminating at the international boundary in Montana (Fig. 2).⁴ The extent of the distribution of the subspecies in Saskatchewan was examined by inspection of rabies-suspect bats from that province. None of these specimens are preserved in museums, and collections are needed to verify these results. Based on bats available to us we believe that *M. l. carissima* occurs over the non-mountainous portions of southern Alberta and southwestern Saskatchewan (Fig. 2).

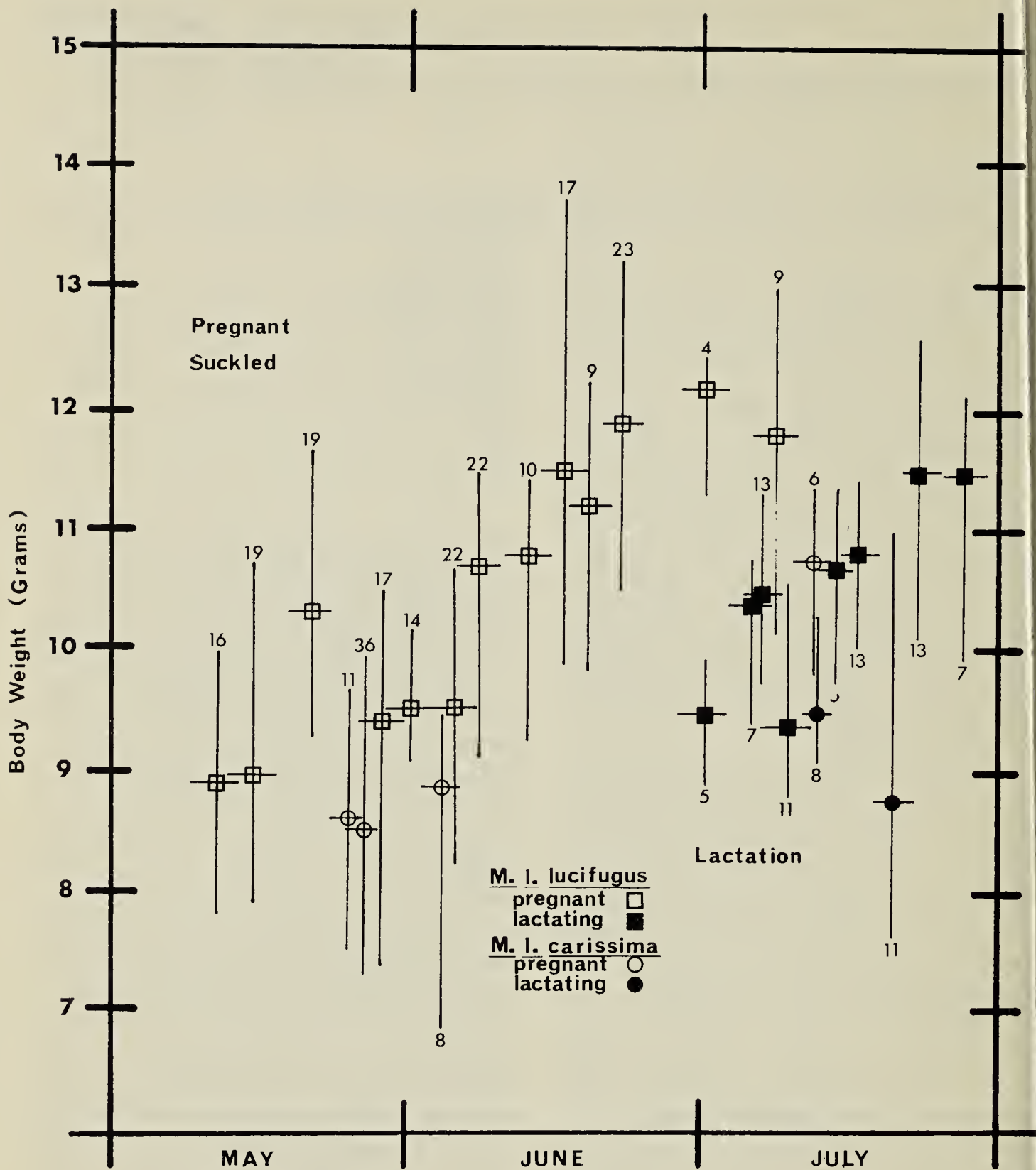


Figure 1. Summer weights of female *Myotis lucifugus*.

Table 2. SELECTED MEASUREMENTS OF ADULT FEMALE LITTLE BROWN BATS.

	Northern Colonies (n=8)		Southern Colonies (n=3)	
	Range	Mean	Range	Mean
Tail	33-46	37.7	32-44	38.4
Head and Body	47-61	51.4	46.57	51.4
Dried Forearm	36.1-41.2	38.08	34.7-39.1	36.9
Greatest Skull Length	14.04-15.78	15.05	14.21-15.47	14.83



Myotis lucifugus lucifugus
 ● Sample colony
 ○ Rabies suspect

Myotis lucifugus carissima
 ▲ Sample colony
 △ Rabies suspect

Figure 2: Range of *Myotis lucifugus carissima*. Solid line as per Hall and Kelson (1959). Broken line as proposed by the authors.

The Agriculture Canada Animal Diseases Research Institute (Western) gave us access to rabies suspect bats from Saskatchewan. Dick Previsich's continued interest in bats and generosity with data have been outstanding. The Alberta Fish

and Wildlife Division bat research program is funded through the Veterinary Services Division of the Alberta Department of Agriculture. The continued interest and support of H. Vance and G. Whenham is greatly appreciated.

Table 3. COMPARISON OF SELECTED MEASUREMENTS OF *MYOTIS LUCIFUGUS CARISSIMA* FROM NORTHERN UNITED STATES AND FROM SOUTHERN ALBERTA.

	<i>M.l. carissima</i> *	<i>M. lucifugus</i> from southern Alberta
tail	38.4	38.4
head/Body	49.1	51.4
humerus	37.7	36.9
greatest Skull Length	14.95	14.83

(Miller and Allen, 1928)

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Little Brown Bat *M. l. carissima* at Warner, Alberta.

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