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Audiogram of the big brown bat (*Eptesicus fuscus*)

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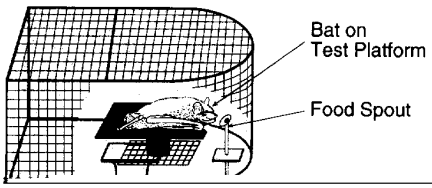
Abstract

limit is 0.2 kHz — over 4 octaves lower than that found by Dalland (1965a).

bat is of theoretical interest for three reasons. First, field observations have suggested that this bat uses the relatively low-frequency sounds of katydids (3.5–6 kHz) and frogs (3.2–4.5 kHz) as cues to areas containing prey (Buchler and Childs, 1981). However, the big

2.1. Subjects

fuscus) were used. The animals were individually housed with free access to water (supplemented with vitamins) and received a meal worm food paste during their daily test session. Additional supplements of meal worms were given as needed to maintain adequate body



occupied by the animal's head and pointing it directly toward the loudspeaker (0° incidence). Care was taken to produce a homogeneous sound field (within ±1 dB) in the area occupied by the animal's head and ears when it was in contact with the spout. In addition, the linearity of the attenuator was checked by examin-

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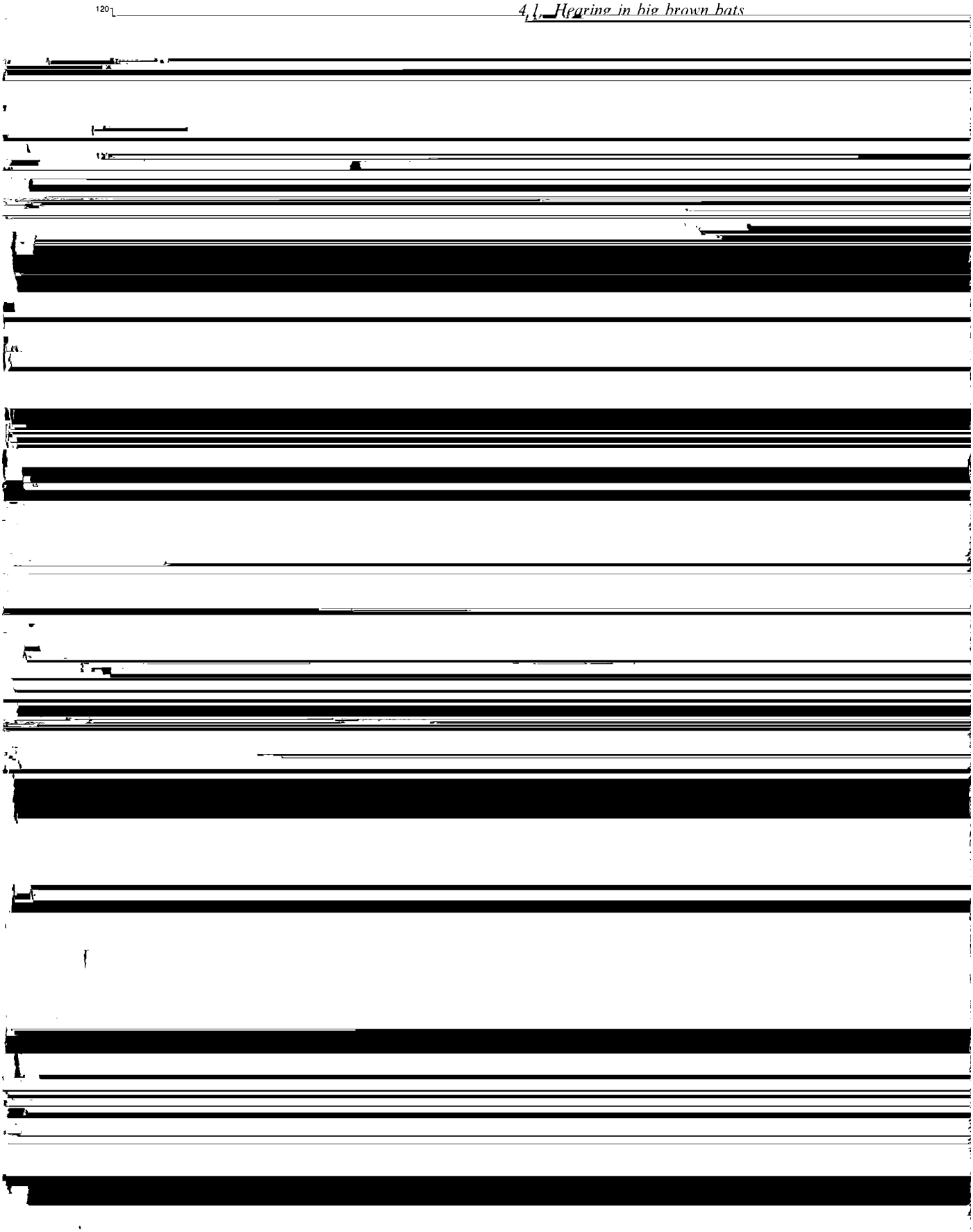
sisted throughout testing and occurred during retesting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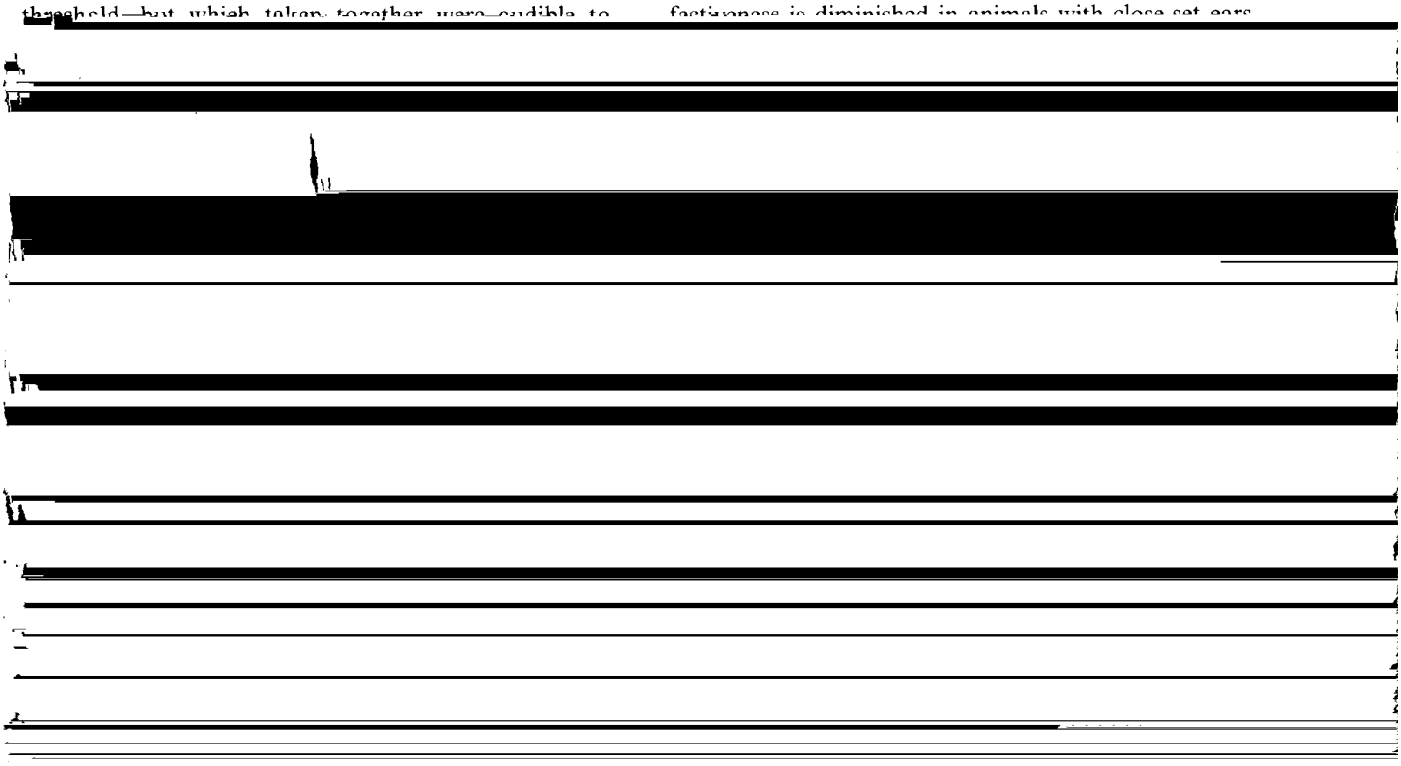
4.1. Hearing in big brown bats

Poussin and Simmons checked for the possibility of overtones, their results may have been affected by overtones which, individually, may have been just below threshold—but which, taken together, were audible to

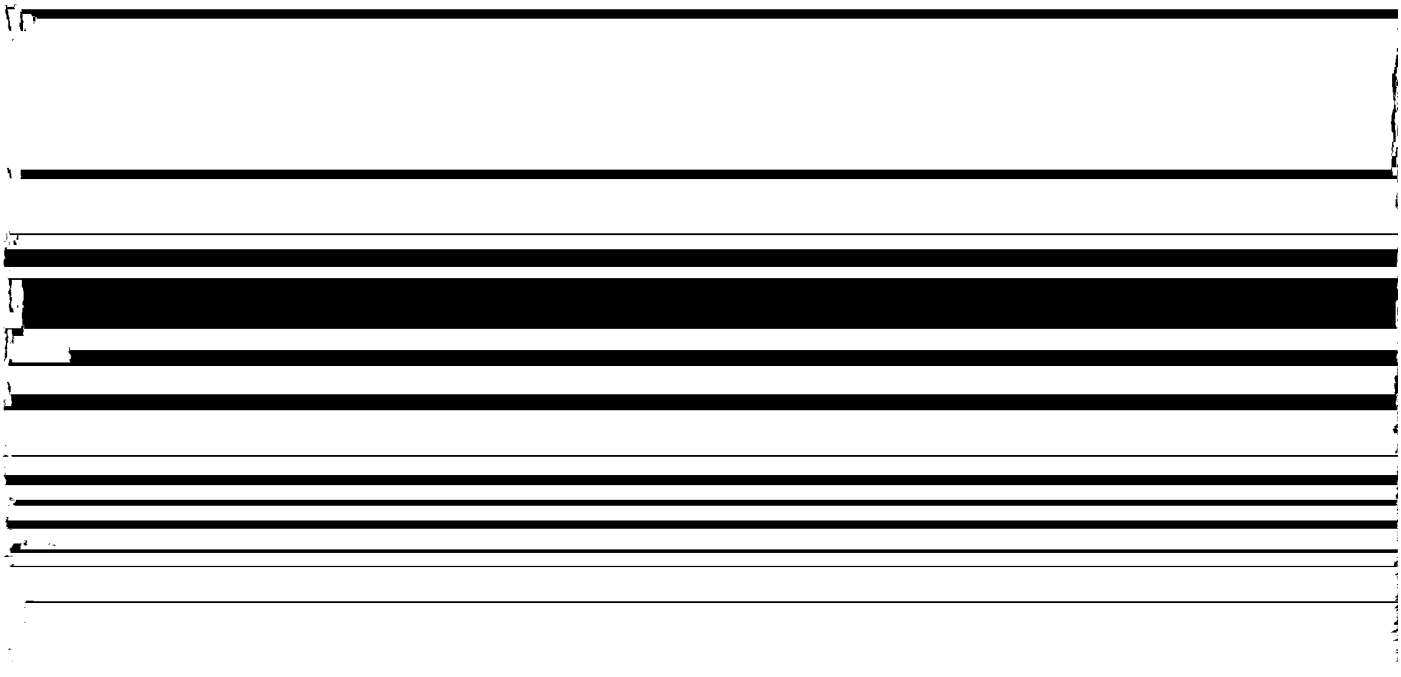


their animals. Whether or not that was the case, our ability to avoid such a problem is due largely to recent technical advances in spectrum analysis.

In conclusion, the big brown bat does not appear to

be the time and spectral differences in the sound reaching the two ears. Although both binaural locus cues are readily available to animals with large heads, their effectiveness is diminished in animals with close set ears.

However, a small animal can increase the magnitude of the spectral difference cue available to it if it is able to hear frequencies that are high enough to be effectively shadowed by its head and pinnae. Thus, the smaller an



scribed nearly 30 years ago (Masterton et al., 1969) and

and subterranean rodents, species that are adapted to

Wenstrup, 1984). If such dips in sensitivity are related

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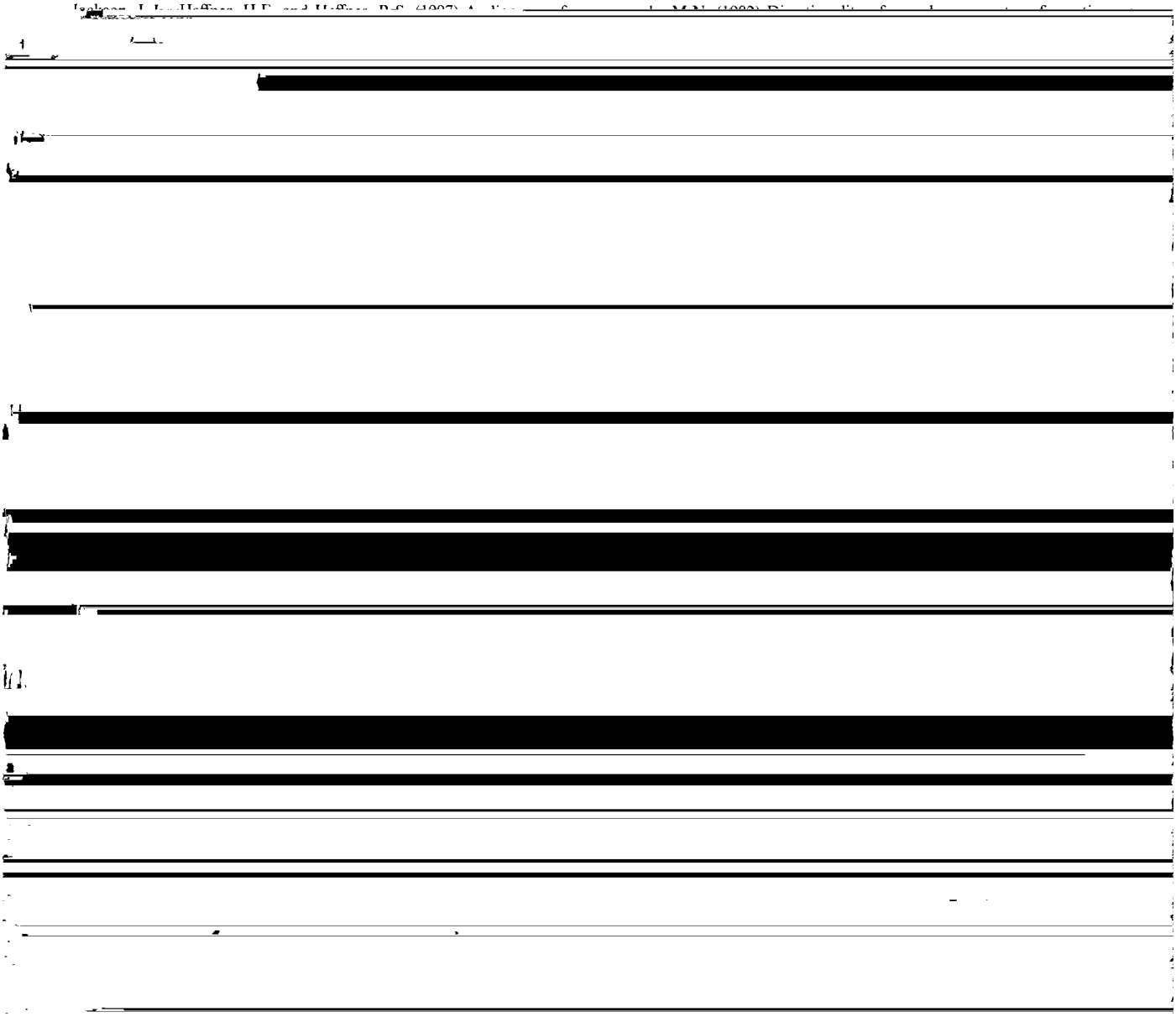

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