

B" and "western-northern" athabasca, the fundamental frequency of "eastern A" being about 204 Hz while those of "eastern B" and "western-northern" averaged about 462 and 407 Hz respectively. To improve reception, especially at the low frequencies, the simpler system described in the first paragraph was adopted.

The difference between the courtship sounds of "eastern A" and the other two is clearly audible in the amplified recordings. Males of "eastern A" produce a low-pitched "grunting, croaking" sound that does not appear to be limited to discrete pulses but which, as the sonagram shows, consists of elements (i.e. short bursts of sound consisting of fundamental and harmonics) spaced about 25 msec and produced in rather irregular "runs". Because of unavoidable background noise that accompanied all recordings it was often difficult to determine the fundamental frequency of "eastern A" by measuring the elevation of the lowest marking in the sonagram; however, this value appears regularly to be in the neighborhood of 200 Hz. Both "eastern B" and "western-northern" athabasca males produce discrete pulses of sound with a "buzzing, whining" quality. The level of the fundamental frequency, indicated by arrows in the figure, seems similar in these two kinds, usually in the 450-500 range, and their values overlap. Although the spacing of pulses appears different in the examples in the figure (about 450 msec for "eastern B", 400 msec for "western-northern"), other sonagrams show overlapping of these values too. As shown in the figure, these pulses may be produced in groups of three, the last a little longer than the others. Although these two songs are not easily distinguishable by ear (though some persons might be able to do so), the sonagrams clearly show different patterns of harmonics, fairly widely spaced ones (about 500 Hz intervals) for "eastern B" and closely spaced ones (about 125 Hz intervals) for "western-northern".

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University of Texas, Austin. The heterochromatic chromosome of *D. nasutoides*.

(Figure 1). Giemsa staining revealed a distinctive banding pattern along the arms of the large V. The entire Y-chromosome stained darkly, as well, but, except for appearing slightly



Fig. 1.



Fig. 2.

The karyotype of *D. nasutoides* Okada (UT stock 3035.2) was found to be the following: sex chromosomes - a short rod-shaped X and a J-shaped Y; autosomes - a pair of short rods, a pair of small V's, and a pair of very large V's

(Figure 1). Giemsa staining revealed a distinctive banding pattern along the arms of the large V. The entire Y-chromosome stained darkly, as well, but, except for appearing slightly darker in the centromere region, it showed no banding pattern. Centromeric regions of the other chromosomes stained darkly (Figure 2). The staining technique applied was essentially that of Hsu (1971). However, we denatured the ganglion preparations for 1-2 minutes in 0.035 or 0.007 M NaOH dissolved in Demerec's *Drosophila* Ringers'; the concentration of Na<sup>+</sup> ions was adjusted to be the same as for the original Ringers' by varying the amount of NaCl. Overnight incubation was carried out in 2X- rather than 6X- SSC.

*D. nasutoides*, a member of the hypocausta subgroup of the immigrans species group, appears to be an isolated endemic whose distribution is limited to the islands of Samoa. No closely related species have been recognized (M.R. Wheeler, personal communication). However, the possibility of variation among local populations should be investigated.

The molecular structure of the *D. nasutoides* chromosomes is currently being investigated by C.S. Lee and M. Cordeiro in this department.

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References: Hsu, T.C. 1971, *J. Hered.* 62:285-287.