

1989: The Midge Classification Problem

Two species of midges, Af and Apf, have been identified by biologists Grogan and Wirth [1981] on the basis of antenna and wing length. (See **Figure 1**.) Each of nine Af midges is denoted by “□”, and each of six Apf midges is denoted by “○”. It is important to be able to classify a specimen as Af or Apf, given the antenna and wing length.

1. Given a midge that you know is species Af or Apf, how would you go about classifying it?
2. Apply your method to three specimens with (antenna, wing) lengths (1.24, 1.80), (1.28, 1.84), (1.40, 2.04).
3. Assume that species Af is a valuable pollinator and species Apf is a carrier of a debilitating disease. Would you modify your classification scheme and if so, how?

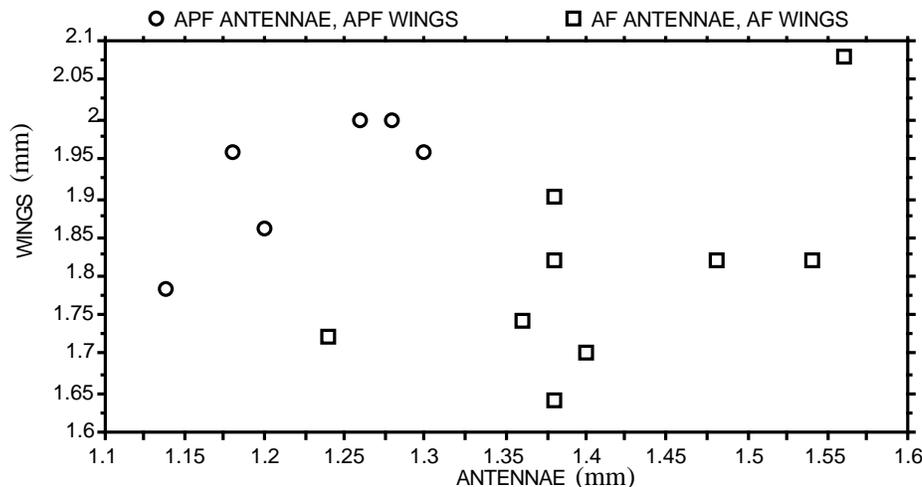


Figure 1. Display of data collected by Grogan and Wirth [1981].

Comments by the Contest Director

The problem was based on Grogan and Wirth [1981, 1285].

Reference

Grogan, William L., Jr., and Willis W. Wirth. 1981. A new American genus of predaceous midges related to *Palpomyia* and *Bezzia* (Diptera: Ceratopogonidae). *Proceedings of the Biological Society of Washington* 94 (4): 1279–1305.