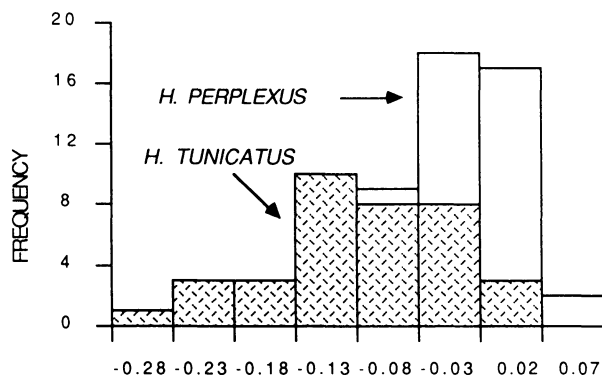DISCRIMINANT FUNCTION SCORES FOR FIVE VARIABLES

DISCRIMINANT FUNCTION SCORES FOR THREE VARIABLES

FIGURE 13—Histograms of discriminant function scores for *Halysio-crinus tunicatus* and *H. perplexus*.

The cup shapes of *H. perplexus* from Button Mould Knob (27 specimens) and *H. tunicatus* from Indian Creek, Indiana (37 crinoids), measured for this paper were compared with discriminant functions for two sets of data, both of which were transformed to logarithms. All five primary variables (cup height, cup width at the arms, cup width at the hinge, hinge width and hinge depth) were employed for the first set of calculations. A Chi-square value of 79.3 with five degrees of freedom was obtained. This figure is significant at any reasonable probability level and denotes that it is extremely unlikely that the two multivariate means could have been drawn from a single statistical or biological population. The difference between the means of the two samples is statistically significant. The discriminant-function coefficients and correlation coefficients between the discriminant-function scores and the original data suggest that most of the distinction is provided by the hinge depth with smaller contributions from the cup widths (Table 8). Specimens of *H. perplexus* exhibit deeper hinges and wider dorsal cups than specimens of *H. tunicatus* with similar cup heights. The differences in the cup widths are also shown by the regression lines in Figures 8 and 9. The samples of the two species are almost completely separated and only one specimen of *H. tunicatus* was misclassified into the *H. perplexus* group by the discriminant function (Figure 13).

A second analysis was performed retaining only the cup height and the two cup widths. The resulting Chi-square value of 31.0 with three degrees of freedom is also significant at the 0.01 probability level. The cup widths are the best discriminators (Table 8). More overlap exists between the two samples in this analysis and the discriminant function only assigns 81.2 percent of the specimens (52 of 64) correctly (Figure 13). The misclassifications are independent of size because both large and small individuals are assigned to the wrong group.

Because of the differences discussed here, I conclude that *H. tunicatus* and *H. perplexus* should be retained as separate species.

ANNOUNCEMENT

Recent Opinions published by the International Commission on Zoological Nomenculture in the *Bulletin of Zoological Nomenclature* (29 September 1989, vol. 46, pt. 3) included the following:

Opinion 1561—*Climacograptus manitoulinensis* Caley, 1936 (currently *Paraclimacograptus manitoulinensis*: Graptolithina): specific name conserved.

Opinion 1566—*Megaloceros* Brookes, 1828 (Mammalia, Artiodactyla): original spelling emended.