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The Reconstitution of Dehydrated Museum Specimens II

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The evaporation of preservatives and subsequent dehydration of specimens is a major problem in many zoological collections. Vogt (1991) reviewed existing methods and proposed a method of reconstituting specimens based on acetic acids and low pH treatments. The low pH (between 3 and 4) is not the most desirable conditions and can lead to damaging some specimens or characteristics that are of taxonomic importance. This paper describes a new method, which operates at a higher pH and is gentler on specimens.

Methods

A wet-weight of twenty specimens of salmon fry and sac-fry was taken to the nearest milligram on a Metler analytical balance. Wet weights of four frogs and three perch were taken on a Metler balance to the nearest hundredth of a gram. Specimens were air dried in a fume hood for four days and then weighed. The specimens were placed in individual containers containing a 10% solution (volume to volume) of an enzymatic drain cleaner-build up remover. The pH of the solution was 6.5. The brand names were "Drano-Max" and "Liquid Plumber Buildup Remover." Specimens were weighed at one-week intervals. Specimens were kept in the solution for a three-week period. A Kruskal-Wallis test (Conover, 1980) was used to compare the weight gains of salmon fry from the Vogt (1991) technique and the technique reported here.

Results

The salmon fry and sac-fry revealed an average gain of 85% in wet weight and retained 97% of their wet weight after 6 months in 70% ethanol. Fins on the fry were malleable. The yolk sac on the sac-fry did not rehydrate to its original condition. A similar result was observed in the

Vogt (1991) technique. Weight gains in the fry were significantly higher ($P=0.045$) than in the Vogt (1991) technique.

Larger specimens, the frogs and perch, were not as consistent in their response to the technique. The recovery of weight in the frogs ranged from 30-48%. The jaws, appendages, and digits were malleable in all specimens. The frogs never recovered the girth that was present in the abdomen in the original specimens. The recovery in the three perch specimens ranged from 58-71% of the original specimen weight.

Discussion

The pH of the enzymatic solution used in this technique lends itself to use with a variety of specimens. The solution does not require special storage procedures that acetic acid would. Specimens have been stored for approximately one year with no adverse effects. The enzymatic solutions are more readily available and cost less than acetic acid.

A technique using a vacuum chamber was developed but gave inconsistent results and the specimens of juvenile fish were of little use for systematic studies (B. Urbain, University of Washington, pers. comm.). The inconsistent results and the need for expensive equipment (vacuum chamber) that is not available to many museum collections lead to the abandonment of this technique.

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Literature Cited

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