

STREAM MACROINVERTEBRATE COMMUNITIES IN WATERSHEDS WITH DIFFERENT LAND USE CHARACTERISTICS IN THE APALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN

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ABSTRACT

Benthic macroinvertebrate communities are being assessed as indicators of water-quality in the Apalachicola-Chattahoochee-Flint River basin of Florida, Alabama, and Georgia as part of the National Water Quality Program. Non-point source influences on water-quality in 20 watersheds representing silviculture, poultry agriculture, row-crop agriculture, suburban and urban land uses are being studied in the Apalachicola-Chattahoochee-Flint River basin. Four watersheds are associated with each of these land use categories. The watersheds, which range in size from 15 to 86 square miles, do not have permitted point source discharges. Benthic invertebrate communities were sampled to assess the cumulative effect of upstream influences on water-quality in each of these basins. It is hypothesized that species richness and diversity (1) are similar among watersheds within land use categories, and (2) decrease with increasing land disturbance and urbanization. Qualitative samples of benthic macroinvertebrates were collected in each watershed in June 1993 using a 210 um aquatic net, and composited from all habitat types present within a stream reach of at least 150 m in length. Dissolved oxygen concentration, pH, alkalinity, specific conductance, water temperature, and discharge were measured at the time of sample collection. In addition, water samples were collected to determine the concentrations of ammonia, nitrite, nitrate, orthophosphate, total phosphorus, dissolved and suspended organic carbon, and suspended sediment. In-stream (depth, velocity, substrate characteristics) and riparian habitat assessments were also conducted. Sampling was repeated in June 1994 and will be repeated in June 1995 to assess short-term trends in benthic invertebrate communities.