Chapter 1

A baseline water quality assessment of the Kutari and Sipaliwini Rivers

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SUMMARY

We sampled water quality at 23 sites on the Kutari, Sipaliwini, and Aramatau Rivers. The oxygen content and pH of the Kutari River were lower than those of the Sipaliwini River, probably due to the lack of rapids and the input of organic material from the surrounding forest, particularly after heavy rains, which occurred frequently at the Kutari site. All sites had clear water except the Wioemi Creek, which was very turbid. The parameters measured in the field revealed undisturbed river ecosystems with few negative human impacts. However, high mercury levels were found in both sediment and piscivorous fishes from all sites. Further research is needed to clarify the origin of mercury in the rivers of southwest Suriname. Suggestions are given for a water quality monitoring program that can be implemented by the residents of Kwamalasamutu.

INTRODUCTION

Water is important for all living creatures. The type and quality of water determines which organisms will be found in certain habitats. Assessment of water quality is needed to identify species-habitat relationships and possible sources of pollution or disturbance within the ecosystem. For this reason, it is necessary to gather baseline data on basic environmental parameters (pH, dissolved oxygen, conductivity, turbidity) as well as levels of nutrients (as indicators of nutrient cycling in the surrounding ecosystem) and metals (as indicators of pollution or erosion from underlying bedrock).

Human disturbance was not expected in the area assessed by the Kwamalasamutu RAP survey, but previous studies have discovered mercury pollution in otherwise pristine areas of Suriname. It has been hypothesized that mercury might be transported by the northeast trade winds from gold mining sites in eastern Suriname to the southwestern region of the country (Landburg 2005, P.E. Ouboter *unpubl. data*), or, alternatively, that mountain ranges in central Suriname serve as a barrier, resulting in mercury deposition on the windward side of the mountain ranges and no deposition on the leeward side. A primary goal of this study was to provide baseline information on mercury levels in southwest Suriname to further evaluate these hypotheses.

STUDY SITES AND METHODS

Twenty-three sites were sampled intensively in three major areas: the Kutari River, and two areas of the Sipaliwini River (Fig. 1). The Kutari River can be characterized as a clear water river without major rapids at the time of sampling. The river extends into the forest when the water level increases, resulting in major floodplains in the area. Big creeks flowing into the Kutari River have steep banks and smaller floodplains. The two sampled areas of the Sipaliwini