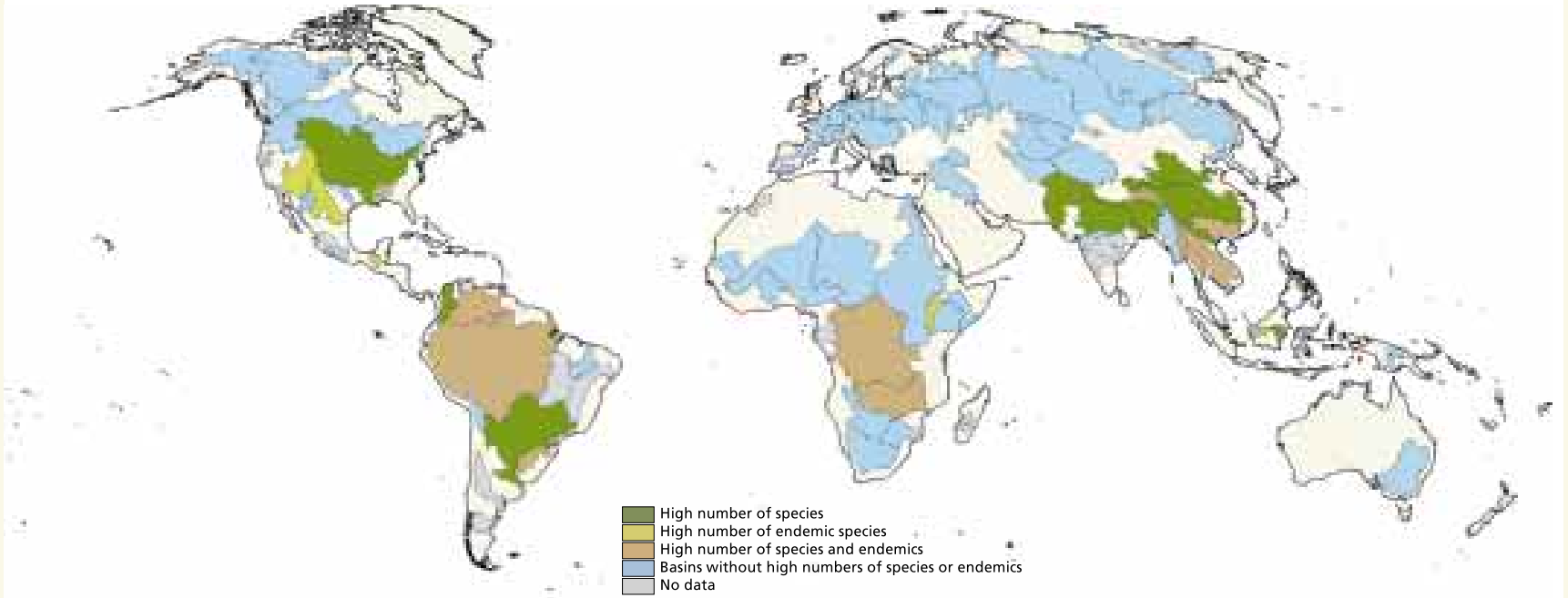
Box 2.28 Biodiversity in Freshwater Systems

Despite their small area, compared with other ecosystems, freshwater systems are relatively rich in the number of species they support. Although 12 percent of all animal species live in freshwater systems (Abramovitz 1996:7), many more depend on them for survival. Physical alterations, habitat loss and degradation, water withdrawal, overexploitation, and introduction of nonnative species all contribute to declines in freshwater species. Globally, more than 20 percent of the world's freshwater fish species have become extinct, threatened, or endangered in recent decades (Moyle and Leidy 1992:127).

Freshwater biodiversity is not uniformly distributed around the world; some regions are particularly important because they contain large numbers of species or many endemic species (species occurring only in a restricted area). Endemism tends to correlate with overall species richness. Most of the highest concentrations of both endemism and species diversity are found in the tropics, particularly the Amazon, Congo, and Mekong watersheds.

Fish Species Richness and Endemism, by Watershed



Sources: Revenga et al. [PAGE] 2000. The map is based on Revenga et al. (1998). Because there is a correlation between number of species and total area sampled, large watersheds tend to have more fish species than smaller ones (Oberdorff 1995). To reduce bias in size differences, basins were categorized as large (more than 1.5 million km^2), medium (400,000 to 1.5 million km^2), and small (less than 400,000 km^2). The map shows large basins with more than 230 fish species, medium basins with more than 143 species, and small basins with more than 112 species. For endemics, the map shows large basins with more than 166 species, medium basins with more than 29 species, and small basins with more than 15 species. Cut-off points for each category were determined by selecting the upper two-thirds within each range.