*Schistosoma mansoni,* the parasite responsible for causing human intestinal schistosomiasis, is closely related to *Schistosoma rodhaini,* a parasite of rodents and carnivorous mammals. *S. rodhaini* was discovered in Kenya for the first time in the early 1960's in the wild rodents and domestic dogs obtained from a locality near the town of Kisumu on the shores of Lake Victoria, western Kenya. *Schistosoma mansoni* and *schistosoma rodhaini* at cercariae level are closely related morphologically. As a result it is difficult to differentiate them at cercariae level which may lead to misdiagnosing where the two parasites are endemic underscoring the need for an alternative diagnostic tool The presence of *S. rodhaini* in an area known to be endemic for *S. mansoni* such as western Kenya could potentially complicate the epidemiological picture or control of human intestinal schistosomiasis in the area. Consequently, sampling of snail populations collected from field locations to gather basic epidemiological information on human schistosomiasis for a particular area may not provide reliable results under such circumstances. In the present study, a polymerase chain reaction (PCR) based technique was developed to help the identification of cercariae or adults of *S. mansoni* and *S. rodhaini* towards improved diagnosis. Three isolates of *S. rodhaini* were recovered from naturally infected *Biomphalaria sudanica* collected from habitats present along the Lake Victoria shore in western Kenya. From the three isolates a portion of the 16S-12S region of the mitochondrial DNA was amplified by PCR in schistosome genomic DNA, and the resulting product (750bp in size) was incubated with restriction enzyme *BamHI* or AccI for 4 hr at 37°C. Species-specific restriction fragment length polymorphism (RFLP) band patterns revealed on agarose gel by electrophoresis and ethidium bromide staining differentiated between the two related schistosome species. The enzyme *BamHI* cut the amplified product in *S. rodhaini* DNA into 2 smaller fragments (153bp and 604bp in size) but not *S. mansoni* DNA. Similarly, the enzyme AccI cut the *S. mansoni* PCR product into 2 fragments of 110bp and 649bp in size but not that of *S. rodhaini,* producing species-specific RFLP band patterns on agarose gel. These results demonstrate technique reliably identified both the adults' worms and cercariae of *S. mansoni* or *S. rodhaini,* and it may be useful in accurately identifying and monitoring *S. mansoni* transmission sites, and other epidemiological studies on S. *mansoni* or *S. rodhaini.* The technique requires further evaluation to determine its usefulness in identifying *S. mansoni* group species as it has the potential for providing new information. This technique may be useful in accurately identifying and monitoring *S. mansoni* transmission sites and also the technique is useful in other epidemiological studies on *S. mansoni* or *S. rodhaini* where both parasites are present sympatrically.