Cyperus rotundus L. represents a complex of taxa whose relationships are not fully determined. The aim of the research was to revise the taxonomy of this complex, based on the overall similarity and avoiding intuitive use of one or few characters. Variation within and between the taxa of the complex represented in East Africa was investigated using field observations and preserved specimens. Morphometric data on gross morphology and pollen were collected and analysed using cluster analysis and principal components analysis. Data on distribution patterns were gathered from specimen labels, literature and during field collection, and analysed using GIS by ARC view technique to identify where various taxa within the complex are located within East Africa. Based on the habitat, the weediness data were analysed by descriptive analysis. The phenetic results in cluster analysis showed that all the taxa studied have some character variations based on the different clusters, however, one cluster represents over 86% of the OTUs studied. The OTUs showed high level of continuity. In PCA, the results accounted for 37.51% of the total character variation. The PCA did not separate the OTUs in the *Cyperus rotundus* complex and therefore there are no distinct species. Variations exhibited from the results were found most particularly in respect of colour, size, and shape of nutlets and glumes. Based on the results of this work, I conclude that *Cyperus rotundus* consists of one variable species with several infraspecific taxa. The taxa could eventually be assigned varietal rank based on the following criteria: 1) Overlapping morphology, 2) lack of geographical separation and 3) observed ecological preferences. The distribution patterns of the taxa within *Cyperus rotundus* L. complex are apparently based on the ecological preferences as the results showed. The subsp. *rotundus is* more widespread in East African region than the rest at an elevation from sea level to about 1780m, while subsp. *tuberosus* and var. *taylorii* show preference for areas of low elevation from sea level to about 900 and between 128m to 197 respectively. However, var. *taylorii is* known only from Rabai. Subspecies *merkeri* has preference to maintaining average altitude across the complex's elevation gradient for the taxa ranging between 370m to 1785m above sea level. Results for the weediness revealed that, all the taxa within *Cyperus rotundus* complex are potential weeds. However, some are weedier than others. Variety *taylorii is* found in cultivated land. Subspecies *rotundus* and *merkeri* are weedier than subsp. *tuberosus.* Subspecies *tuberosus is* predominantly problem weed in coastal lowlands while subsp. *rotundus is* a weed problem in the whole of East African region and subsp. *merkeri is* a likely weed problem at higher altitudes.