

(27)

**The Efficacy of Uprooting Method to Control *Prosopis juliflora* in Bundala National Park of Sri Lanka****Rathnayake C.<sup>1</sup>, Ranaweera B.<sup>1\*</sup>, Ratnayake R.H.M.K.<sup>1</sup>, Suraweera P.A.C.N.B.<sup>2</sup>**<sup>1</sup>Wayamba University, Makandura, Sri Lanka<sup>2</sup>Czech University of Life Sciences, Prague, Czech Republic

\*branaweera@gmail.com

**Abstract**

Invasive alien species (IAS) are species whose introduction and/or spread outside their natural past or present distribution threaten the biological diversity. *Prosopis juliflora* (Kalapu Andara; Family Fabaceae) is an invasive plant species spread in the Bundala National Park (BNP) of Sri Lanka, which has become a serious threat to the very existence of the park by restricting the growth of feeding plants for wild animals. The BNP has been declared a RAMSAR site and is well-known for water birds and in particular, migratory shorebirds. At present, its water bodies have been contaminated by extensive spreading of *P. juliflora*. Chemical and conventional methods of weed control are not permitted in national parks. Therefore, uprooting has been adopted to control the spread of *P. juliflora* within BNP. However, the success of uprooting method was not assessed. The present study investigated the growth behaviour of native flora in BNP following uprooting of *P. juliflora*. Data were collected from three ecosystems in BNP; ecosystem 1,2 and 3 where *P. juliflora* has been removed by uprooting less than 1 year ago, 1-3 years ago and more than 3 years ago, respectively. Three transects of 100 m size were taken for each category to collect data on populations of *P. juliflora* and other plant species. Plant biodiversity indexes were calculated for the three eco-systems. Margalef's Species Richness Index was not significantly different among three ecosystems indicating that the value of richness had not changed within the three year period following uprooting. A significant difference was found in Shannon's Diversity Index and therefore, all three ecosystems had different community composition during the 3-year period after uprooting. According to the mean comparison of ecological indices, there was no significant difference in Margalef's Richness Index between E2 and E3, although it was significantly lower than E1. The analysis of mean values of Evenness Index indicated a significant difference in E1 from E2 and E3. Both Simpson Dominance Index and Evenness Index had approached closer to 1 at E1 ecosystem. Uprooting did not have a sustainable effect to reduce *P. juliflora* population and / or to improve biodiversity in BNP. There is a high risk of reinvasion by *P. juliflora* from the third year onwards after uprooting. It was suggested to control the risk by complete removal of all vegetative parts of *P. juliflora* and suppression of emerging *P. juliflora* seedlings using suitable native plant species.

**Keywords:** Biodiversity indices, Bundala National Park, *Prosopis Juliflora*, Species diversity, Uprooting