

Use of remote sensing to estimate the biomass of *Prosopis juliflora* (Sw.) DC. in the Bundala Lagoon area of Sri Lanka

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Alien invasive species are known to even cause species extinctions, among their other impacts. *Prosopis juliflora* (Sw.) DC. has been introduced to the coastal area in the Hambantota District (Southern Province) of Sri Lanka during the early 1950's, to rehabilitate salt-affected soils and for firewood purposes. This species has started to show aggressive growing patterns, colonizing the first Ramsar site in Sri Lanka, Bundala National Park (BNP), and currently covers almost all semi-arid areas including the north-western coast of Sri Lanka.

This study attempted to identify the spatial distribution and estimate the above ground biomass of *P. juliflora* in the BNP of Sri Lanka using Landsat 8 OLI (2015) images. The existing distribution of this invasive species was determined using object-oriented classification techniques, with visual interpretation of high-resolution Google Earth images. The spectral reflectance pattern of *P. juliflora* was derived by using spectral signature curves from Landsat 8 OLI images to identify its spatial distribution. The biomass expansion allometric NDVI model was applied to estimate the above ground biomass of *P. juliflora* and associated vegetation in the BNP. The study highlighted the potential of identification of *P. juliflora* using the spectral reflectance pattern of Landsat OLI images, using remote sensing techniques. The average above ground biomass estimated from the satellite image extrapolation techniques was 14.6 MT/ha. A potential thus exists to use this invasive alien plant as a fuel wood tree to support biomass energy component of Sri Lanka's energy requirements, while minimizing the invasive spreading pattern.

Key words: Invasive species, remote sensing, satellite images, biomass, spatial distribution