# COLONIZATION DYNAMICS OF MANGROVES IN TO ABANDONED SHRIMP PONDS, CHILAW, SRI LANKA

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Some of long abandoned shrimp ponds in the Northwestern Sri Lanka are being colonized by mangroves under varying patterns which need to be studied for understanding their colonization successes. At Chilaw, Sri Lanka (07°33' N and 79°48' E), four mangrove colonization patterns seen in abandoned ponds (center to periphery, from a water pit to periphery, from sluice gate to middle, and from dyke to middle) were studied with three replicate ponds for each pattern. All the ponds were selected within the same hydrographic region from the Dutch Canal to minimize confounding variables. Mangrove coverage in the ponds were extracted using Google Earth satellite images and Geographic Information Systems (GIS) for the years 2011, 2013, 2014, 2016 and the % mangrove cover (for each month) and the mean colonization speed (% increment of cover per month) were calculated for each pond. All four colonization patterns showed positive increment of % mangrove cover over time (Regression tests: $p < 0.05$, $R^2 > 80\%$) for all replicate ponds indicating continues colonization of mangroves over the past. By January 2016, the % mangrove cover (mean $\pm$ SD) finally showed 76.67 $\pm$ 12.3, 44.01 $\pm$ 11.78, 50.06 $\pm$ 16.63 and 73.09 $\pm$ 16.43 for center to periphery, water pit to periphery, sluice gate to middle and dyke to middle colonization patterns respectively, center to periphery pattern being the most successful. Mean colonization speed of mangroves (% increment of cover per month) at November 2011 to December 2013, December 2013 to August 2014, August 2014 to November 2014 and November 2014 to January 2016 time periods were 0.53, 0.55, 0.85, 0.93 for center to periphery colonization, 0.4, 0.49, 0.9, 0.89 for water to pit to periphery colonization 0.62, 0.09, 0.14, 0.91 for sluice gate to middle colonization and 0.7, 0.45, 0.32, 1.05 for dyke to middle colonization respectively. The mean colonization speeds of mangroves for these periods were not significantly different ($p > 0.05$; Two way ANOVA test) between the colonization patterns or between replicate ponds. Irrespective of the colonization pattern, mangroves have continuously colonized in to all studied abandoned ponds at rather similar colonization speeds.

***Keywords:*** *Mangrove colonization, Satellite images, GIS, Chilaw*