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Low Hatching Success of Leatherback Turtle Nests Caused by the Impact of Root Invasion at Wermon Nesting Beach, Bird's Head Seascape, Papua - Indonesia

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INTRODUCTION

- Wermon beach (Figure 1), located in the Bird's Head Seascape, Papua Barat, Indonesia (Figure 2), is one of the primary nesting beaches for the leatherback (*Dermochelys coriacea*) sea turtle in the Western Pacific.
- Leatherback nesting at Wermon occurs in two seasons: Austral Summer (October to March) and Boreal Summer (April-September).
- During the Austral Summer nesting season, the beach is steep and narrow. Additionally, the tide and the waves often reach the vegetation line along the length of the beach (Figure 3).
- However, new problems have recently been encountered during both nesting seasons: the spread of grass (*Ipomoea sp.*) has resulted in coverage of almost the entire area of Wermon nesting beach (90%).



Figure 1: Wermon beach. Arrows indicate *Ipomoea sp.* plants. Egg hatchery circled.



Figure 4: Nest invaded by *Ipomoea sp.* roots. No eggs hatched.



Figure 5: Female leatherback nesting during the Boreal Summer nesting season. *Ipomoea sp.* plants are visible in the background.



Figure 2: Google Earth image of Wermon Beach. Inset shows the Bird's Head Peninsula. Arrow indicates Wermon Beach along the Bird's Head beaches.

METHODS

- Prior to hatchery construction high-intensity, aboveground mechanical removal of *Ipomoea sp.* plants and roots was implemented before nests were re-located.
- Removal process was continued twice per week during incubation period.
- Nests were re-located to a 6m x 6m hatchery (accommodating approximately 36 nests) (Figure 1) during the Austral Summer 2016.

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RESULTS

In nests re-located without mechanical removal of *Ipomoea sp.* plants and roots:

- Hatching success was low, ranging from 0 to 24.19%.
- Mean hatching success was $4.13 \pm 8.93\%$ (\pm SD; $n = 13$).
- No successful emergence from the nests was recorded.

In nests re-located with mechanical removal of *Ipomoea sp.* plants and roots:

- Hatching success was higher, ranging from 0 to 90.14%.
- Mean hatching success was $49.54 \pm 28.65\%$ (\pm SD; $n = 36$).

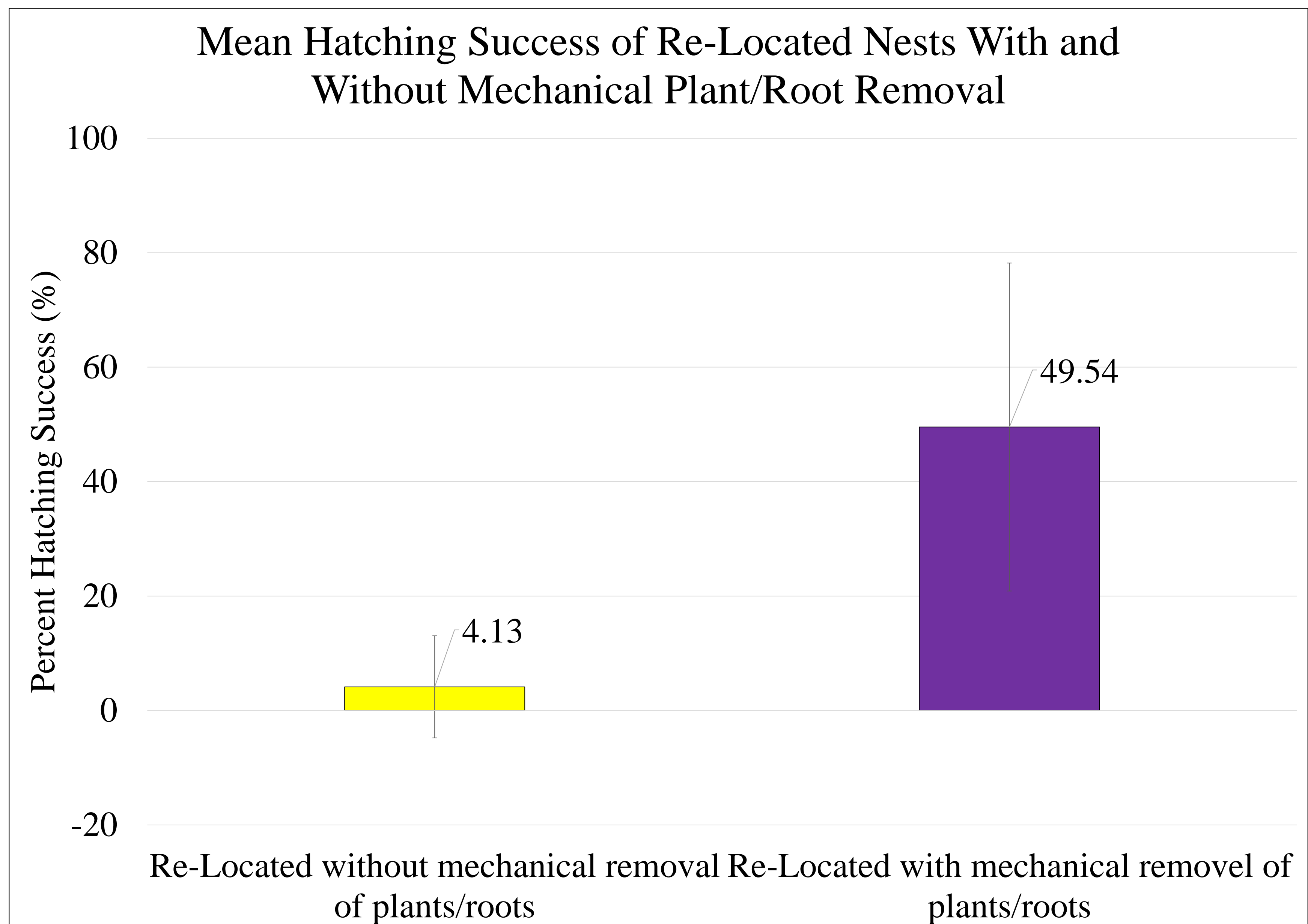


Figure 6: Mean Hatching Success of Re-Located Nests With and Without Mechanical Plant/Root Removal.

CONCLUSIONS

- After aboveground mechanical removal of roots was applied, nests had a hatching success ranging from 0 to 90.14%.
- Low hatching success (0 to 24.19%) and no emergence from re-located nests without mechanical removal of *Ipomoea sp.* plants and roots suggests the low rate of hatching and emergence may primarily be due to the aggressive invasion of the nest by the roots of the *Ipomoea sp.* plants.
- The results of this study suggest this process (the aboveground mechanical removal of *Ipomoea sp.* plants and roots) improves hatching success and hatchling emergence success at Wermon beach.
- The results of this study have major implications for hatching success, one of the limiting factors in the recovery of the Western Pacific leatherback.



Figure 3: Tidal inundation during the Austral Summer. The stake indicates a leatherback nest.