

Rapid Long Plot report

State of the Simpsons Creek mangrove sites (surveys in December 2023)

General health and diversity

The mean health score in the surveyed areas appeared to **decrease** with increasing distance from the river mouth (**See map on page 2 for reference**). Site 1 (closest to the river mouth) presented the highest health score, and site 3 (furthest away from the river mouth), the lowest. Site 3 also presented the largest difference between the Mean Health and Live health scores, given the high percentage of dead trees found at the site. Interestingly, the highest diversity of mangrove species was also found at this site (4 species).

Grey Mangrove - *Avicennia marina* (present in all sites)

River Mangrove - *Aegiceras corniculatum* (present in sites 2 and 3)

Red Mangrove - *Rhizophora stylosa* (present in site 3)

Orange Mangrove - *Bruguiera gymnorhiza* (present in site 3)

Biomass and Carbon storage

The area presented an average biomass of 502.09 tonnes/ha, with an estimated 24% being stored below ground. The proportion of biomass stored below ground **decreased** with increasing distance from the river mouth as follows:

Site 1 - 31.25% biomass stored below ground

Site 2 - 27.25% biomass stored below ground

Site 3 - 18.55% biomass stored below ground

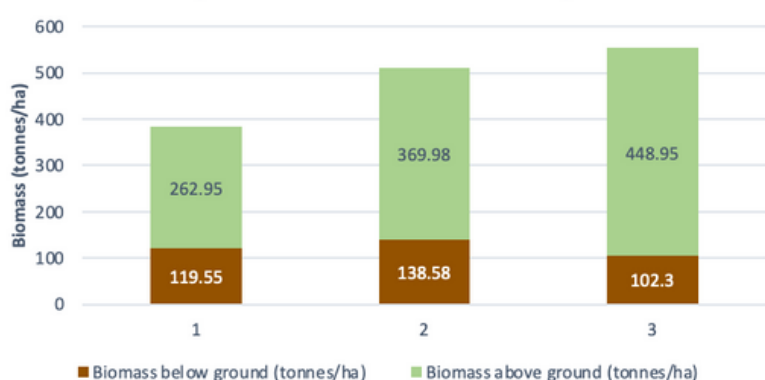
Conversely, the overall abundance of biomass -and therefore carbon storage- **increased** with increasing distance from the river mouth.

In this regard, site 3 presented:

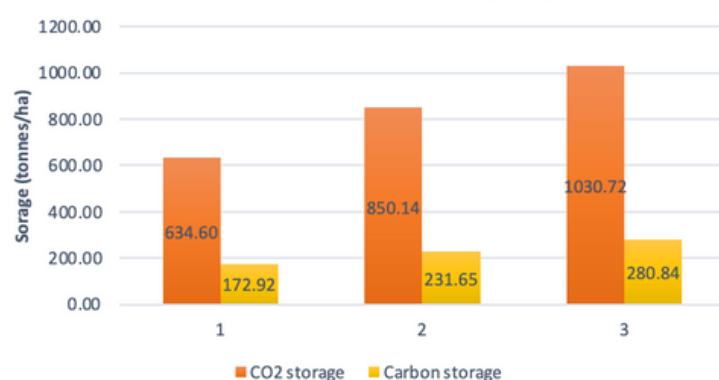
- 60.84% more biomass and 62.41% higher carbon storage than site 1
- 20.97% more biomass and 21.23% higher carbon storage than site 2

(**See summary table on page 3 for reference**)

Comparative Biomass Stocks by Site



Estimated CO2 and C storage by Site



Map of Sampling Sites



Tree Health Score Key



Mangrove Forests Summary



Carbon Storage

CARBON STOCK	Site 1	Site 2	Site 3	Overall (AVERAGE)
Mean Health score (1 - 5)	3.04	2.83	2.42	2.76
Live Health score (1 - 5)	3.09	2.98	2.66	2.91
% Dead biomass	1.33 %	0.26%	6.36%	3.37%
Total biomass (tonnes/ha)	382.49	508.56	615.21	502.09
Biomass above ground (tonnes/ha)	262.95	369.98	448.95	360.62
Biomass below ground (tonnes/ha)	119.55	138.58	102.30	120.14
Carbon store (tonnes C/ha)	172.92	231.65	280.84	228.47
Estimated CO2 (tonnes CO2/ha)	634.60	850.14	1030.72	838.49
Species diversity	1	2	4	2.33

Takeaways / conclusions

The highest diversity of mangrove species, biomass, and carbon stores were found upriver. However, this area also showed the lowest health score and the largest proportion of dead trees.

Continued research in this area would provide a deeper understanding of the health and resilience of this forest.