TABLE S1 Mantel modeling tests performed with asymmetric matrices: Between Recent migration rates (RMR) and dispersal inferred by Oceanographic modeling. Pearson correlation values *(r)*. Significance values *(p)*, showed in bold for $p < 0.05$. Molecular marker: SNP or Msat (microsatellite) and Reference of data source are shown. [1] Atlantic Ocean Basin; [2] Pacific Ocean Basin. The information was not shown when at least one of the matrices presented all values equal to zero.

Mantel RMR Oceanography *r* (*p*)	Marker	Reference
a) *Avicennia germinans*		
-0.13 (0.84)	Msat	Hodel et al., 2016
-0.17 (0.89)	Msat	Kennedy et al., 2020
0.97 (<10^{-5})	Msat	Mori et al., 2015
-0.13 (0.85)	Msat	Ochoa-Zavala et al., 2019[1]
0.24 (0.78)	SNP	Cruz et al., 2020
b) *Laguncularia racemosa*		
-0.17 (0.41)	SNP	Hodel et al.,2018
c) *Rhizophora mangle*		
0.14 (0.50)	Msat	Cisneros de la Cruz et al., 2018
-0.30 (0.50)	Msat	Francisco et al., 2018
0.95 (0.03)	Msat	Hodel et al., 2016
-0.11 (0.56)	Msat	Hodel et al., 2017
0.23 (0.45)	Msat	Kennedy et al., 2016
-0.17 (0.73)	Msat	Kennedy et al., 2017
0.99 (<10^{-5})	Msat	Takayama et al., 2013[1]
0.42 (0.14)	Msat	Takayama et al., 2013[2]
-0.13 (0.88)	SNP	Hodel et al., 2017
0.13 (0.42)	SNP	Hodel et al., 2018
-0.25 (0.50)	SNP	Madeira et al., 2023

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