# Beach morphodynamics as regulator of population dynamics of *Impages cinerea* (Born, 1778)

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Sandy beaches are dynamic environments and their structure is defined by three factors: sand particle size, wave energy and tide regime [1]. The combination of these factors produces different morphodynamic states, which range from reflective to dissipative, influencing communities and populations patterns. The Habitat Harshness Hypothesis (HHH) [2, 3] is considered a paradigm to community features, but for population it is still contraditory. Therefore, the present project aims to test the HHH in nine beachs of the coast of São Paulo State using the gastropod *Impages cinerea* as a model.

**REFERÊNCIAS:** [1] Defeo, O. & McLachlan, A. (2013). *Global patterns in sandy beach macrofauna: Species richness, abundance, biomass and body size*. Geomorphology 199, 106–114. [2] Defeo, O., Gomez, J. & Lercari, D. (2001). *Testing the swash exclusion hypothesis in sandy beach populations: The mole crab Emerita brasiliensis in Uruguay*. Marine Ecology Progress Series 212, 159–170. [3] Defeo, O., Lercari, D. & Gómez, J. (2003). *The role of morphodynamics in structuring sandy beach populations and communities: What should be expected?*. Journal of Coastal Research 35, 352–362. [4] Alonso, M., Marigo, J., Bertozzi, C., C De, M., Taniguchi, S. & Montone, R. (2010). *Occurrence of chlorinated pesticides and polychlorinated biphenyls (PCBs) in Guiana dolphins (Sotalia guianensis) from Ubatuba and Baixada Santista, São Paulo, Brazil.* Latin American Journal of Aquatic Mammals 8, 123–130.

## Study area

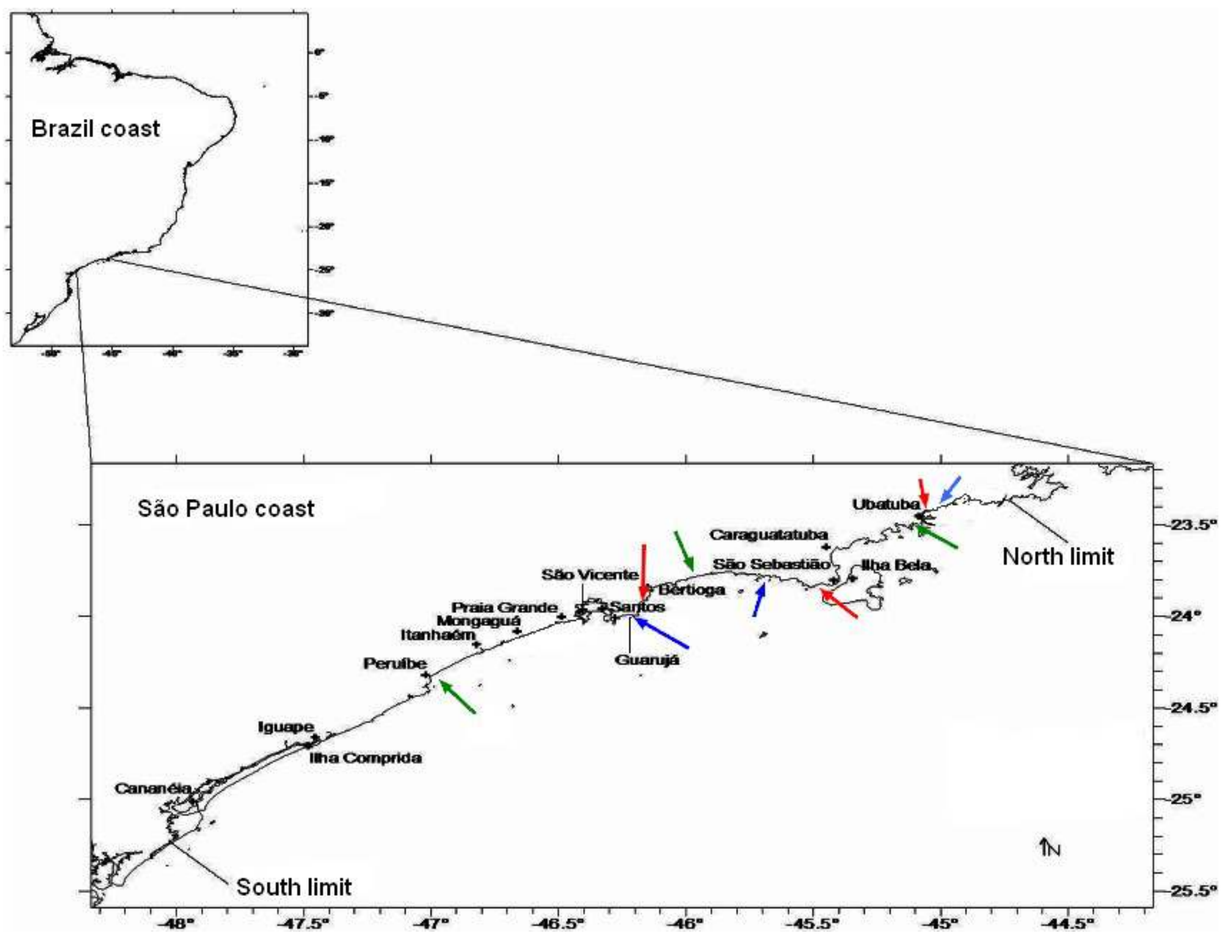
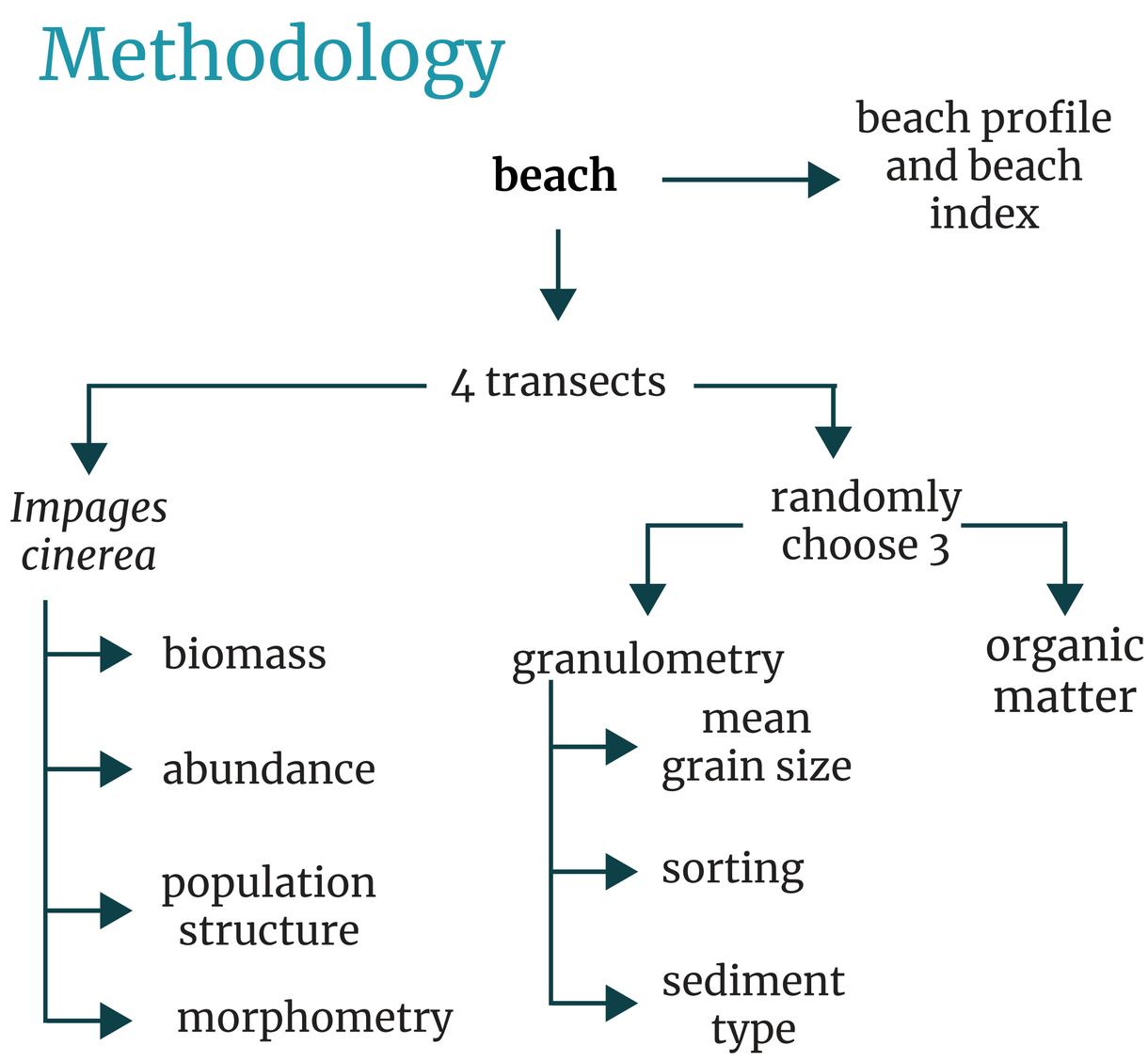



**Figure 1.** **Map of the coast of São Paulo state showing sampling areas. Lines in green indicates dissipatives beaches, in blue are the intermediates and in red are the intermediates tending to reflective. Map adapted from Alonso *et al.* [4].**


**Figure 2.** Dissipative beaches: (a) Enseada; (b) Boracéia; (c) Peruíbe; intermediate: (d) Praia Grande, (e) Baleia, (f) Pitangueiras; intermediate tending to reflective: (g) Toninhas; (h) Guaecá; (i) Pernambuco.

## Methodology



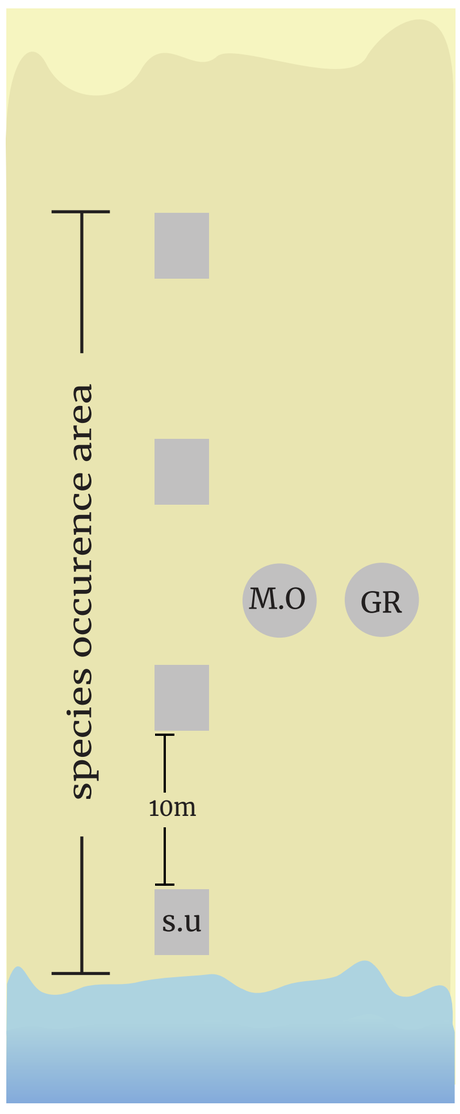




**Figure 3.** Sampling scheme of *I. cinerea* and sediment. (S.U = sample unit; gr = granulometry; O.M = organic matter)

**HHH:** Predicts that fetures of community (lower species richness, diversity and abundance) and population (decrease in abundance, growth, fecundity, reproductive success and higher mortality rates ) changes from dissipative to reflective beaches. [2, 3]

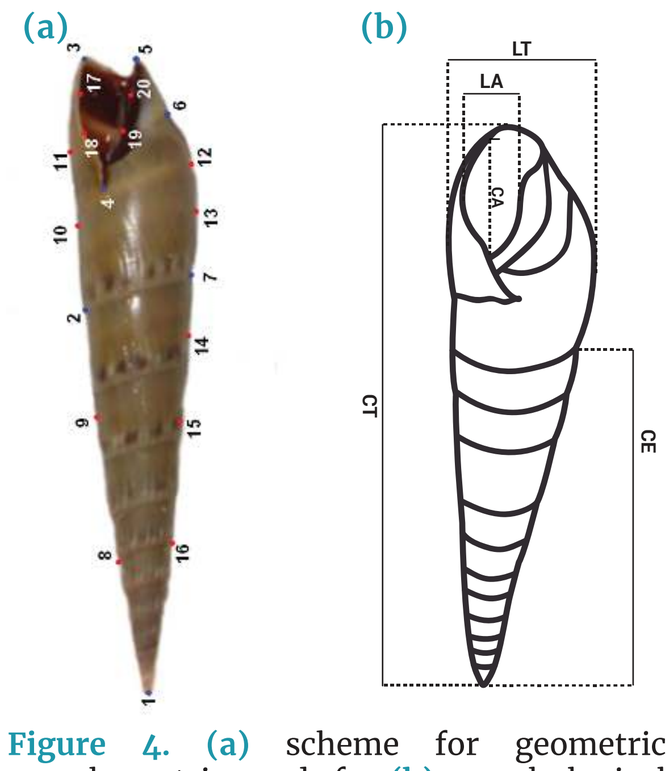



**Figure 4.** **(a)** scheme for geometric morphometrics and for **(b)** morphological measurements