**Appendix 1**

Table 1. Research components, specific aims and metrics for monitoring of the Long Term Ecological Research Costa dos Corais Alagoas.

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| **Research component** | **Number** | **Aim** | * + - * 1. **Metric for monitoring**
 |
| Ecosystem Structure | 1.1 | To describe physical-chemical water conditions and extension of coastal/marine ecosystems (estuaries, mangroves, coral reefs and sandy beaches) and management zoning | Physical/chemical variables (e.g. seawater temperature, salinity, pH, turbidity, dissolved oxygen, dissolved organic nitrogen, radon, nitrite, nitrate, phosphate, silicate, calcium carbonate, chlorophyll a). Microbiological variables (total coliforms, *Escherichia coli* and enterococci abundance, and *Bacillus, Staphylococcus* and *Clostridium* presence/absence using phylochip DNA microarray). Area (km2) of the systems using remote sensing. |
| Ecosystem Structure | 1.2 | To describe taxonomic diversity and assemblages structure | Abundance, richness, and functional diversity(microorganisms, corals, algae, octocorals, fish, sea turtles, manatees, birds and plants). |
| Ecosystem function | 2.1 | To monitor key populational process of emblematic species (e.g. manatees and sea turtles) important to social and economic issues (e.g. genetic isolation of fish) | Manatees and sea turtles abundance using drones, molecular/genetic identification of *Mugil* spp.a commercially relevant estuarine fish species. |
| Ecosystem function | 2.2 | To assess reef condition inside and outside no take zones specially coral bleaching and mortality | % Bleaching, % mortality, % disease and % healthy in coral community.  |
| Ecosystem function | 2.3 | To monitor dynamics of fluxes in river-estuary-reef systems  | Invertebrates and fish biomass/abundance in different habitats in estuarine system. |
| Ecosystem function | 2.4 | To monitor herbivory process, investigation relationships between algae, reef fish, sea turtles and manatees. | Algae, sea grass and herbivores abundances, herbivore fish bite rates, algae biomass in gut contents of sea turtles and manatees. |
| Threats | 3.1 | To identify tourism magnitude. | Tourist number in coral reefs, sandy beaches and manatee conservation zone.  |
| Threats | 3.2 | To monitor marine and estuarine pollution investigating water quality. | Seawater temperature, salinity, pH, turbidity, dissolved oxygen, dissolved organic nitrogen, radon, nitrite, nitrate, phosphate, silicate, calcium carbonate. Total coliforms, *Escherichia coli* and enterococci abundance, and *Bacillus, Staphylococcus* and *Clostridium* presence/absence using phylochip DNA microarray. Hybridization degree of target species for artisanal fishing (*Mugil* spp.). |
| Threats | 3.3 | To investigate socioeconomic fishing activities. | Artisanal fishermen socioeconomic description and fishing activities production.  |
| Threats | 3.4 | To monitor fishing and tourism impacts. | Fish structure stocks for fishing target species. Coral reef communities condition inside and outside Tourism Zones, and tourist number. |
| Threats | 3.5 | Mapping landscape activities such as agriculture, shrimp farms and urban areas. | A map integrating land, coastal and marine areas of APACC interest. |
| Threats | 3.6 | To evaluate climate change effects on marine systems. |  % Bleaching, % mortality, % disease and % healthy associated to episodes of seawater temperature anomalies. Sedimentation rates and river flows. |
| Governance/Management | 4.1 | To identify attitudes, behaviours and perceptions of the residents, fishermen, teachers about the coastal/marine ecosystem importance for themselves life quality. | Attitudes, behaviours and perceptions of the people. |
| Governance/Management | 4.2 | To describe the Cultural Ecosystem Services. | Aesthetic values, recreation, spiritual values, inspirations.  |
| Governance/Management | 4.3 | To assess efficiency of no-take areas integrating biological, social and economic metrics aiming establish adaptative/participative police. | Condition, abundance and richness of reef species as corals, urchins, algae, octocorals, fish inside and outside no-take zones. Cultural Ecosystem Services. |
| Governance/Management | 5.1 | Training local people and students focusing on tropical biodiversity conservation with multidisciplinary approach. | Number of people and students trained. |
| Governance/Management | 5.2 | To create and share long term socioecological database. | A online database. |