Table S1. Rationale for selection of indicators for each of the ten integrated island management principles (Jupiter *et al.* 2014), based on the coastal zone management and common-pool resources theory literature but focused on relevance for island systems. (P) – principle related to planning; (I) – principle related to implementation. \* - denotes indicator specific to ILSM projects.

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| **Principle** | **Indicator** | **Rationale for indicator selection** |
| 1. Adopt a long-term, integrated approach to ecosystem management(P) | a. Explicit time frame of implementation stated (including overall timescale and review frequency) | Plans should set long-term objectives with short-term benchmarks (Tear *et al.* 2005) to allow for sufficient time to detect management responses above natural variability, while accounting time lags in responses of social-ecological systems to management actions (e.g., Meals *et al.* 2010).Management should integrate and coordinate decision-making for multiple objectives across land and sea sectors contributing to cumulative impacts, those affected by impacts and actors who have the mandate and capacity to reduce impact (Álvarez-Romero *et al.* 2011). ILSM will not be effective under highly fragmented legal and policy systems in the absence of coordination mechanisms (Christie 2005).Because small and/or developing island nations are often under-resourced, integrating and coordinating management implementation across ministries and sectors can lead to more efficient spending and achievement of overlapping objectives (Aston 1999; Lane 2008).  |
| b. Proportion of linked ecosystems incorporated in plan\* |
| c. Presence of coordination body or mechanism to integrate sectors (e.g., public versus private; land versus sea mandates)\* |
| d. Accounting for cumulative impact of multiple threats to the coastal zone\* |
| e. Accounting for lag time for impacts to be realized and benefits from management to accrue across realms\* |
| f. Objectives integrate ecological, social, economic and cultural issues and feedbacks that account for connectivity between land and sea realms\* |
| 2. Use clearly defined boundaries for ecological and governance systems (P) | a. Degree to which spatial boundaries of the management zone matches boundaries of watersheds and linked coastal areas\* | Management effectiveness relies on the ability of decision-makers to have clearly defined and recognized authority to make rules at appropriate scales that are communicated and understood by resource users (Ehler 2003). |
| b. Management boundaries represent scale of ecological processes and threats for priority features relevant to ILSM\* |
| c. Resource users are aware of management boundaries |
| d. Decision-makers and decision-making processes clearly identified |
| 3. Maintain and restore connectivity between complex social and ecological systems (P) | a. Appropriate strategies proposed and management actions identified to minimize land-based threats to downstream systems relative to number of issues\* | The well-being of island people is intimately tied to strong connections between natural systems to provide critical ecosystem services (e.g., water and food provisioning, natural hazard reduction, disease regulation) and social systems that exchange knowledge and resources (Ruddle *et al.* 1992). |
| b. Appropriate strategies proposed and management actions identified to restore connectivity processes relative to number of issues\* |
| c. Strength of social networks that connect people using land and sea resources\* |
| 4. Incorporate stakeholders through participatory governance with collective choice arrangements that consider gender and social equity outcomes (P) | a. Proportion of population who access and use land and sea resources in the management area able to participate in management planning and implementation\* | Broad stakeholder involvement in management increases ownership of and compliance with decisions (Kearney *et al.* 2007). Top down imposition of rules without local stakeholder input may be perceived as less legitimate (McCay & Jentoft 1996).Frequent changes in leadership and mandate of decision-making authority are likely to result in changes to management priorities, impacting achievement of long-term goals (Ehler 2003; Christie 2005). |
| b. Proportion of different sectors and stakeholder groups across land and sea realms participating relative to presence in area\* |
| c. Opportunities for input from marginalized sectors of communities in affected areas |
| d. Consistency of mandate through changes in political leadership |
| 5. Ensure that management rules reflect/incorporate local values and conditions (P) | a. Management objectives reflect local concerns and issues related to cross-system threats and processes\* | Management buy-in hinges on whether local actors feel that they receive benefits that match their objectives and how fairly benefits are distributed within the context of existing social structures (Christie 2005; Pollnac & Pomeroy 2005). |
| b. Local perception that benefits of management outweigh costs |
| c. Equity in distribution of management costs and benefits across land and sea resource users\* |
| 6. Ensure recognition of rights to organize and develop management rules (I) | a. Level (formal or informal) of recognition of management authority | Although community-based management is the foundation for many ILSM programs, rules and rights must be recognized and supported by external institutions to ensure sustainability of implementation (Ostrom 1990; Christie & White 1997). |
| b. Clearly defined and demarcated ownership of both land and sea and use rights of land and sea resources\* |
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| 7. Develop appropriate sanctions for users who violate rules (I) | a. Frequency and effectiveness of monitoring, control and surveillance integrated across land and sea realms\* | The nature of sanctions must fit the scale of the offense, be perceived as legitimate by the offenders, and serve as a deterrent (Ostrom 1990). |
| b. Proportion of offenses that are adequately punished across both land and sea\* |
| 8. Identify appropriate, efficient and cost-effective conflict resolution mechanisms (I) | a. Existence of forum or means to settle disputes | As the objective of most ILSM projects is to simultaneously achieve multiple objectives for resource use across the land-sea interface, coordination and mediation mechanisms are essential to balance multiple, often conflicting stakeholder interests (Christie 2005). Conflict resolution mechanisms and processes need to be efficient, cost-effective and perceived as legitimate and fair within the local social contexts (Cox *et al.* 2010). |
| b. Perception that conflict resolution is handled fairly and in culturally appropriate way |
| 9. Implement adaptive management where regular monitoring, evaluation and review in the face of uncertainty lead to evidence-based decision-making (I) | a. Monitoring information relevant to the spatial scale of impacts of human activities on linked ecosystems and responses of linked ecosystems to management interventions is communicated to decision-makers\* | ILSM should be an iterative process of fine-tuning rules and regulations based on monitoring and review (Olsen *et al.* 1998), and should consider how the tight feedbacks in island systems respond to present and future changes. |
| b. Decision-makers use relevant information to adapt management measures\* |
| c. Adaptions to rules consider present and future uncertainty regarding cross-realm threats and processes\* |
| 10. Nest management layers across sectors, social systems and habitats (P,I) | a. Management actions/monitoring is carried out by individuals across land and sea realms who report to coordinating body\* | Smaller groups with strong mutual trust may be able to better organize collectively to design and implement locally-appropriate rules (Ostrom 1990), but need to be coordinated to manage across the spatial scale of threats and resource use on island systems to achieve higher order objectives, particularly across highly dispersed island archipelagos. |
| b. Frequency and consistency of communication between lower to higher scales of nested systems (upward and downward communication) |
| c. Consistency in goals and motivations between nested levels in achieving ILSM outcomes\* |

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