

## Understanding adaptive capacity of marine protected area management to environmental change

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Managing marine protected areas (MPAs) towards resilience requires adaptability. Co-management of MPAs have been associated with greater social capital and adaptability. The proposition of social capital theory is that relational networks formed in co-management grant access to resources, especially information benefits that improve the response capacity of organizations to environmental change. This paper investigates whether MPA organizations that are embedded in institutionalized co-management systems have a greater adaptability than those in more conventional top-down systems. Relative adaptability is evaluated by comparing two MPA organizations operating in varying institutional arrangements across a suite of attributes drawn from social capital theory: bonding and linkage social capital. Subjects for evaluation are two selected MPA organizations: the Kenya Wildlife Service (KWS) which operates in a conventional centralized system and the Marine Parks and Reserve Unit (MPRU) of Tanzania which operates in a co-management system. An ego-centric network analysis is used as a methodological approach to understand the structure, function and composition of network ties around the MPA organizations. Results show that MPRU is embedded in a denser local network structure signalling cohesive sub-group at the local level which gives it advantage to access tacit and local knowledge. KWS operates in a network where organizations are not tightly connected and plays a higher bridging role than MPRU, giving it access to explicit non-redundant information. KWS is also likely to have a greater diversity of information than MPRU given the high heterogeneity of its network. Thus the prospects for the creation of network social capital to build adaptive capacity of MPA organizations, may not rely entirely on institutionalized co-management systems.