

NRF-SAIAB Seminar Series 2026

Thursday 30 April 2026, 10:30pm (SAST)

Venue:

Lecture Room

Teams link:

<https://events.teams.microsoft.com/event/be98a1e6-6a3c-4993-b2e0-c209c441407e@30878ba0-2f66-4b77-8fde-8dfc1652ff39>

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Small-scale processes, convergent outcomes: reef fish functional vulnerability in the mesophotic zone

Despite the long history of human pressures in marine environments, the mesophotic zone remains as a major knowledge gap that hinders evidence-based decision-making and the development of targeted conservation strategies. In this scenario, understanding how functional diversity transitions along depth at a broad scale is essential for disentangling the ecological processes shaping mesophotic communities and clarifying the pace and magnitude at which human impacts affect these ecosystems. Here, through an extensive dataset, we show that different ecological processes associated with depth and isolation promote different regionalized patterns of vertical transition of reef fish functional diversity but converge toward widespread patterns of functional vulnerability in mesophotic depths. In some regions, mesophotic assemblages exhibit functional saturation but also increasing susceptibility to disturbance due to low species richness and convergence in resource-use strategies. Our findings highlight the urgent need to explicitly incorporate mesophotic specific dynamics into conservation frameworks under accelerating environmental change.