

**CURRENT AND POTENTIAL DUGONG MANAGEMENT TOOLS IN EASTERN
INDIAN OCEAN AND PACIFIC SUBREGION (CMP objectives 1, 3, 5, 7, 8)**

Impact	Current management tools	Potential management tools or needs
Incidental capture in fishing gear		<ul style="list-style-type: none"> Information: dugong distribution & abundance Social/economic impact Alternate incentives/livelihood Optimal mesh size: fish vs dugong capture rate Fisher education: significance of impact
<ul style="list-style-type: none"> Gill nets 	<ul style="list-style-type: none"> Area closures (Australia, Myanmar, Papua New Guinea) Time closures (Australia, Myanmar, Papua New Guinea) Gear modification (Australia, Myanmar) Acoustic alarms/pingers (Australia) Fisher education (Australia, Myanmar, Thailand) Net attendant rules (Australia) 	
<ul style="list-style-type: none"> Beach seine nets 	<ul style="list-style-type: none"> Method of fishing (Myanmar, Pakistan) Gear specification, e.g., mesh size (Pakistan) 	
<ul style="list-style-type: none"> Purse seine nets 	<ul style="list-style-type: none"> Similar to beach seine nets 	
<ul style="list-style-type: none"> Stake traps 	<ul style="list-style-type: none"> Rescue stranded dugongs (Thailand) Regulate new traps 	
<ul style="list-style-type: none"> Longlines for stingrays 	<ul style="list-style-type: none"> Legislate to reduce gear (Thailand) 	
<ul style="list-style-type: none"> Trawl nets 		<ul style="list-style-type: none"> Use of turtle excluder devices (Thailand, Pakistan, Myanmar, Australia)
<ul style="list-style-type: none"> Crab pot lines 	<ul style="list-style-type: none"> Fisher education (Australia) Gear modification: straight tight lines 	
Marine debris	<ul style="list-style-type: none"> Fisher education: significance of impact (Australia) Underwater clean-ups (Thailand) Capacity & resources 	<ul style="list-style-type: none"> Reporting of lost gear Reducing use of gear in key dugong areas
<ul style="list-style-type: none"> Fishing line and hooks 		
<ul style="list-style-type: none"> Ghost nets 		
Habitat destruction	<ul style="list-style-type: none"> Environmental impact assessment/guidelines Regulations, restrictions & rehabilitation requirements (SPREP, New Caledonia) Public education & extension (Thailand, Pakistan, Myanmar) 	<ul style="list-style-type: none"> Environmental offsets/mitigation? investments in conservation
<ul style="list-style-type: none"> Reclamation 		
<ul style="list-style-type: none"> Climate change 		<ul style="list-style-type: none"> Mapping of habitats Maximizing resilience of ecosystem Minimizing impacts
<ul style="list-style-type: none"> Water quality (e.g., agricultural, land & mining run-off) 		
<ul style="list-style-type: none"> Coastal 		

Impact	Current management tools	Potential management tools or needs
development		
Boat strike	<ul style="list-style-type: none"> • No go or go slow zones (Palau, Australia) • Reduction of number of boats (Thailand) • Change of travel paths (Thailand) • Education & awareness (Palau, Australia) 	<ul style="list-style-type: none"> • Information: dugong distribution & abundance and use of habitat • Social & economic impacts to fishers
Disturbance, e.g., noise, increased boat activity, vibration, construction activities, dredging	<ul style="list-style-type: none"> • Same as boat strike 	<ul style="list-style-type: none"> • Information: dugong distribution & abundance and use of habitat
Pollutants in the animals		<ul style="list-style-type: none"> • Monitoring of dugong tissues • Monitoring of environment, e.g., Sediments, seagrass, water quality • Enforcement of restrictions and reducing use of pollutants
Unsustainable hunting	<ul style="list-style-type: none"> • Increased community capacity & resources to manage • Sharing of experiences & skills • Education & awareness • Addressing socio-economic impacts, well-being • Informing/influencing policy • Monitoring of catch rates • Monitoring of population size • Use of traditional knowledge & traditional practices for management 	<ul style="list-style-type: none"> • Understanding social, cultural, economic and ecological drivers/impacts • Long-term incentives • Long-term interventions • One size does not fit all communities • Need to be pragmatic • Identification of a box of tools which can be used
Poaching (illegal hunting)	<ul style="list-style-type: none"> • Enforcement of legislation (New Caledonia, Australia) • Education: existing legislation, biological information, impacts on dugongs, need for conservation (New Caledonia, SPREP, Australia) • Enforcement using traditional knowledge & practices (New Caledonia, SPREP, Australia) 	<ul style="list-style-type: none"> • Lack of resources for enforcement