Workshop: Adapting to ecosystem change in the Shark Bay World Heritage Site

Brainstorming will be used to move quickly through the exercise. Brainstorming allows for getting all views and ideas quickly, without judgement and discussion. Basically, we will suspend value judgements and separate ideas creation from evaluation.

Rules of Brainstorming:

- respond to the question
- do not criticize, evaluate or censor contributions
- allow everyone to contribute
- build on each others' ideas where possible
- there will be time given at end of the exercise to clarify any suggestions.

(1) Assessing gaps in our knowledge of the cause-effect pathways in action in Shark Bay

Prompt: *What are the **gaps** in our knowledge/understanding of (a) the Shark Bay marine ecosystem and (b) how it responds (or will respond to) to anthropogenic and climate change-related stressors (both currently and under future scenarios)?*

Types of gaps include (as per the UN Convention for Biological Diversity):

- ***Representation gaps*:** either no representations of a particular species or ecosystem in any managed fishery or protected area (Marine Park) in the World Heritage Site and region, or not enough individuals of the species or examples of the ecosystem represented to ensure long-term sustainable use and protection.
- ***Ecological gaps*:** while the species or ecosystem occurs in the fishery or protected area system, occurrence is either of inadequate ecological condition, or management fails to address species'' movements or specific ecological conditions needed for long-term survival of those species or ecosystem functioning.
- ***Management gaps*:** fisheries and marine park exist but management regimes (management objectives, governance types, or management effectiveness) do not provide full security for particular species or ecosystems given present and future local conditions.

For example, an ecological gap example would be "to assess whether temperate seagrasses will be lost in Shark Bay, we need to understand whether there has been local adaptation to high salinity and high temperatures in those meadows in metahaline environments" (present gap). A fisheries example would be "to understand future risks to the pink snapper fisheries we need to know whether shark depredation is going to increase or decrease with climate change and increased bycatch" (future gap).

We will be utilizing a FISHBONE diagram (figure a) to assess our present understanding of the cause-effect pathways in action in Shark Bay that may influence the system's ecological, social and economic future. Write on the present understanding and gaps onto the FISHBONE figure.

Also write the gaps onto coloured stickies so we can group and rank these gaps in relation to their importance when the whole group gets together for afternoon tea.

(2) Managing for Shark Bay's future

Prompt: *How would we manage the Shark Bay World Heritage Site under extreme events and climate change? Is our current management framework still appropriate (including monitoring, assessment and management tools)?*

In this exercise, we will assess the main gaps identified in our first exercise and determine whether we collectively can do something to address them.

We will assess the importance of each gap by comparing the consequences of either 'taking action' to 'doing nothing'.

Social – Ecological Gap	**Taking action: How can we address the gaps?**	**Doing nothing: Will there be a consequence?**

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