TO:	**PIRSA FISHERIES AND AQUACULTURE (PROF. GAVIN BEGG – EXECUTIVE DIRECTOR)**
FROM:	**SARDI AQUATIC AND LIVESTOCK SCIENCES**
SUBJECT:	**SCIENTIFIC ADVICE TO SUPPORT DEVELOPMENT OF THE SNAPPER REBUILDING PLAN – SPATIAL CLOSURES**
DATE:	**14 JANUARY 2026**

KEY POINTS

- The Snapper Rebuilding Plan is being developed by PIRSA Fisheries and Aquaculture to support the recovery of the Spencer Gulf / West Coast (SG/WC) and Gulf St Vincent (GSV) Snapper stocks.
- PIRSA F&A have requested additional advice on the spatial and temporal extent of potential spatial closures associated with key aggregation sites for Snapper in Spencer Gulf and Gulf St Vincent.
- Acoustic telemetry studies to investigate the movement behaviour of Snapper in northern Gulf St Vincent have shown that aggregations can demonstrate strong site fidelity and are generally within 1 km of an aggregation site.
- Snapper demonstrate seasonal changes in movement behaviour, with evidence of site fidelity throughout the year which was strongest during winter.

BACKGROUND

There are three recognised stocks of Snapper throughout the coastal waters of South Australia (SA): the Spencer Gulf / West Coast (SG/WC) stock, the Gulf St Vincent (GSV) stock, and the Western Victoria Stock that extends into the South-East Region of SA (Fowler et al. 2017a, Bertram et al. 2023). The SG/WC and GSV stocks experienced significant declines in fishable biomass during the 2010s that related to extended periods of poor juvenile recruitment and the concurrent exploitation of the remaining population (Fowler 2025). The declines in biomass and stock status for the SG/WC and GSV stocks prompted a suite of management actions from 2012 that culminated in the complete closure of the two stocks to commercial and recreational fishing on 1 November 2019. The most recent stock assessment was delivered in November 2022 which indicated that the closures had arrested the decline in biomass for the two stocks, but there was not yet sufficient evidence of recovery (Drew et al. 2022). Consequently, the fishery closures were extended to 30 June 2026.

The Snapper Rebuilding Plan is being developed by PIRSA Fisheries and Aquaculture to support the recovery of the SG/WC and GSV Snapper stocks.

SARDI provided three Advice Notes in mid-2025 to inform development of the Snapper Rebuilding Plan, one of which included information on the locations of potential spatial closures in each gulf (SARDI Advice Note, 21 July 2025). Following discussions at the Marine Scalefish Fishery Management Advisory Committee (MSFMAC), F&A have requested additional advice on the spatial and temporal extent of potential spatial closures associated with key aggregation sites for Snapper in Spencer Gulf and Gulf St Vincent.

This Advice Note provides additional scientific information regarding the proposed spatial closures for the Snapper Rebuilding Plan, including:

- The minimum size of the spatial closures that would provide adequate protection of Snapper aggregations, and
- The most important time for the spatial closures to be in effect.

RESULTS / DISCUSSION

Potential size of spatial closures

Snapper is a schooling species that has the capacity to form large aggregations, which can result in the localised concentration of fish that is predictable in time and space (Wakefield 2006, 2010). In Spencer Gulf and Gulf St Vincent, recognised aggregation sites for Snapper are typically characterised by high relief structures including large banks, natural hard substrates (e.g., limestone ledges, rock piles), and artificial structures (e.g., shipwrecks), although aggregations of Snapper are transient and can occur across a range of habitats.

The proximity of Snapper to key aggregation sites was informed by two studies in northern Gulf St Vincent that used acoustic telemetry to monitor fish movement (Fowler et al. 2017b, Rogers et al. in review). This involved each fish being fitted with an acoustic transmitter that emits a unique identifier which was recorded on an acoustic receiver anchored to the seabed. The first study was completed over three years from May 2011 and monitored 54 Snapper throughout a large-scale acoustic array deployed in northern Gulf St Vincent. One acoustic receiver located near the shipwreck of the *Zanoni* accounted for 67.8% of all detections, which were primarily recorded during winter when fish were most sedentary and demonstrated the strongest site fidelity (FRDC Project No. 2012-020, Fowler et al. 2017b).

The second study was completed over three months from November 2020 to monitor the fine-scale movement of Snapper and estimate post-release mortality (FRDC Project No. 2019-044, Rogers et al. in review). Localised arrays of acoustic receivers were deployed at three aggregation sites in northern Gulf St Vincent, with a total of 61 Snapper fitted with acoustic transmitters. Some fish remained in the vicinity of the aggregation site where they were captured and released for up to three months. For both studies, the maximum detection range of the acoustic receivers was up to approximately 900 m, meaning that a fish must have been within 900 m of a receiver for a detection to be recorded.

Further information regarding the proximity of Snapper to aggregation sites was collected from hydroacoustic surveys in Gulf St Vincent in summer 2023-24 and 2024-25. Hydroacoustic surveys used underwater sound signals and concurrent underwater imagery to estimate the abundance and composition of fish aggregations (FRDC Project No. 2023-091, Scoulding et al. in prep.). Aggregations that were primarily composed of Snapper (i.e., > 50%) were

generally detected within 300 m of the aggregation site, although some aggregations were detected up to 500 m away.

Based on these data, the most appropriate size of the potential spatial closures to provide adequate protection for Snapper aggregations is to have the boundary at least 1 km from the aggregation site.

Potential timing of spatial closures

The multi-year acoustic telemetry study completed in northern Gulf St Vincent identified a strong seasonal influence on the movement behaviour of Snapper (Fowler et al. 2017b). During winter, fish across the size range formed several large aggregations that were sedentary, as they stayed in the same location for up to several months. During spring and into summer, the large aggregations broke into smaller schools, some of which remained sedentary but others were more mobile and dispersed throughout the region (e.g., over spatial scales of up to 100 km) (Fowler et al. 2017b). This movement behaviour is consistent with previous studies that documented Snapper aggregations occur year-round and were most frequently encountered prior to and during the summer spawning period (McGlennon 2003, Saunders 2009).

Consequently, the most appropriate timing of the potential spatial closures to provide adequate protection for Snapper aggregations is year-round.

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