CCSBT-ESC/2610/13
(ESC Agenda item 12.1)

Australia's National
Science Agency

Gene-tagging proposal 2027-2029

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CCSBT-ESC/2608/13

Prepared for the Thirty-First Meeting of the Extended Scientific Committee

August 2026, Brussels, Belgium

Citation

Preece AL and Eveson JP. (2026) Gene-tagging proposal 2027-2029. Prepared for the Thirty-First Meeting of the Extended Scientific Committee. August 2026, Brussels, Belgium. CCSBT-ESC/2608/13

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Abstract

The CCSBT gene-tagging program provides an annual estimate of absolute abundance of juvenile SBT for use in the Cape Town Management Procedure, stock assessment, operating models and review of indicators. When the aerial survey of relative abundance of 2-4 yr olds ceased, the 2015 ESC reviewed the need and options for recruitment indices and advised that recruitment monitoring was essential and that gene-tagging was the best monitoring method. The gene-tagging program was specifically designed to provide fishery independent information on recruitment for the new management procedure and MSE work conducted 2016-2019. The ESC has noted that recruitment information is essential for managing a long-lived and late-maturing species, because it provides an early warning of future spawning stock declines, which is especially important given uncertainties related to impacts of climate change. The gene-tagging program has been running successfully since the pilot project in 2016 until present. This paper outlines the proposed research plan and budget for the gene-tagging program for the next 3 years.

1 Background

The ESC has noted that recruitment information is essential for managing a long-lived and late-maturing species because it provides an early warning of poor recruitment that may affect the future spawning stock, which is especially important given uncertainties related to impacts of climate change (Anon, 2025).

At its 2015 meeting the Extended Commission agreed to implement gene-tagging as a new recruitment-monitoring program, as a replacement for the scientific aerial survey (Anon, 2016). Alternative recruitment indices were reviewed at the 2015 ESC, and the gene-tagging program was selected as the best method for providing recruitment information for development of a new management procedure (MP) (Anon, 2015). Development of a new MP was triggered by cessation of the aerial survey relative abundance index used in the Bali Procedure.

The CCSBT gene-tagging program provides an annual, fishery independent, estimate of absolute abundance of juvenile SBT for use in the Cape Town Management Procedure, stock assessment, operating models and review of indicators.

This paper outlines the proposed research plan and budget for the gene-tagging program for the next 3 years.

2 Project outline

The CCSBT gene-tagging program has provided an estimate of absolute abundance of juvenile SBT (the age-2 cohort) since it commenced in 2016.

The design study specified sample sizes that would be required to give an abundance estimate with a pre-specified level of precision (Preece et. al., 2015). The ESC agreed on the target CV of 0.25. The estimates for samples sizes were based on the range of recent, 10 year, estimates of cohort size from the 2014 stock assessment. As the population appears to be rebuilding, higher estimates of cohort size have been factored into the sample size calculation, and the target number of harvest samples to collect has increased from 10,000 to 13,000.

The gene-tagging program works on a cycle that takes 2 years from start to completion:

- In the first year (in March, start of year 1) the field work team will tag (i.e. tissue sample) and release ~5000 age 2 juvenile SBT.
- In the second year (~May-August, start of year 2) ~ 13,000 tissue samples are collected from age 3 fish during the harvest processing in Port Lincoln.
- All samples undergo DNA extraction, genotyping and detection of matching genotypes, to obtain an estimate of absolute abundance which is provided to the CCSBT data exchange (April, end of year 2).

In the years 2027-2029 we are seeking the following funds from the CCSBT (Table 1).

Table 1 Request for funding from CCSBT for each year of the next 3 years.

	2027	2028	2029
Request for CCSBT funding	$785,000	$800,000	$815,000

This will provide for project components (in white) outlined in Table 2. Components of the program shaded in grey are funded by either the previous CCSBT projects (GT 2025-2026) or will be covered in subsequent projects (GT 2030 – onwards).

Table 2 Program of work and deliverables to key ESC activities across years. Stages and deliverables that are not funded by the 2027-2029 proposed program of work are shaded in grey.

Cohort	Year of Tagging field work	Year of Harvest sampling	Year for delivery to CCSBT data exchange and key ESC activity
2025 age 2 cohort	Completed 2025	Completed 2026	2027 (data exchange and review of indicators)
2026 age 2 cohort	Completed 2026	2027	2028 (available for running the MP in 2028)
2027 age 2 cohort	2027	2028	2029 (available for the 2029 stock assessment)
2028 age 2 cohort	2028	2029	2030 (data exchange and review of indicators)
2029 age 2 cohort	2029	2030 (to be funded in next project)	2031 (available for running the MP in 2031)

References

Anon. 2015. Report of the Twentieth Meeting of the Scientific Committee. 5 September 2015, Incheon, Korea.

Anon. 2016. Report of the Seventh Operating Model and Management Procedure Technical Meeting. 3-4 September 2016, Kaohsiung, Taiwan.

Anon. 2025. Report of the Thirtieth Meeting of the Scientific Committee. 30 August 2025, online.

Preece A, Eveson JP, Davies C, Grewe P, Hillary R and Bravington M. 2015. Report on gene-tagging design study. CCSBT-ESC/1509/18

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