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Workplan and budget for close-kin mark recapture and Indonesian length/age monitoring

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Abstract

The Close-Kin Mark-Recapture (CKMR) and Indonesian length/age monitoring program provides essential data for SBT stock assessments and the Cape Town Management Procedure used to set global TACs. Supported by CCSBT since 2014/15, the program collects tissue samples from adult SBT in Indonesia and juveniles in Australia for CKMR analyses, and otoliths from the Indonesian fishery for age determination. Following reduced sampling from 2020/21 in Indonesia, monitoring capacity was successfully rebuilt, with more than 5,000 tissue and 3,000 otolith samples collected in Indonesia in 2025/26, largely addressing previous data gaps. CSIRO and BRIN are progressing a Material Transfer Agreement to enable the samples to be transported to Hobart for analysis.

This proposal outlines the 2027-2029 work plans and budget requirements for the CKMR and Indonesian length/age monitoring programs. The CKMR component includes tissue sampling, DNA genotyping, and kinship analyses, while the length/age component includes otolith collection and ageing to provide age composition data. The 2027-2029 budget represent the CCSBT-funded component, with additional co-investment from CSIRO. Funding has previously been provided annually but could be consolidated into a three-year project. Continued support will ensure the provision of essential monitoring data required for effective assessment and management of the SBT stock.

Introduction

The Close-Kin Mark Recapture (CKMR) and Indonesian length/age monitoring program provides essential data on the adult SBT population for stock assessments and the Cape Town Management Procedure used to set global TACs.

Funded by CCSBT since 2014/15, the project involves annual tissue sampling and DNA genotyping of adults from Indonesia and juvenile from Australia to identify parent-offspring and half-sibling pairs. The program also includes otolith collection and ageing from the Indonesian longline fishery to estimate the age structure of the catch. In 2022, the project was designated as an ongoing monitoring program under the 2023–2027 Scientific Research Program (SRP) (Anon, 2022, ESC report Attachment 8). Note that CKMR and gene-tagging activities are not listed as SRP priority research areas because they are considered ongoing monitoring programs that provide core data for stock assessment and the Cape Town Procedure, rather than new research proposals requiring prioritisation.

As reported previously, in 2020/21, the Indonesian component of the monitoring program was disrupted, resulting in reduced sampling of both tissue and otoliths (Farley et al., 2022) (Table 1). In response, the CCSBT initiated a review of the program and supported a collaborative project to restore and strengthen monitoring capacity (Farley et al., 2025). This rebuilding effort was successful, with more than 5,000 tissue and 3,000 otolith samples collected in Indonesia during 2025/26 (Farley et al., 2026a, 2026b). This increased sampling largely compensates for the low sampling coverage in the previous four years. CSIRO and BRIN are progressing a Material Transfer Agreement to enable the tissue and otolith samples to be transported to Hobart for analysis.

Table 1. Number of muscle tissue and otolith samples collected from adult SBT in Indonesia by sampling (spawning) season since 2014/15.

Sampling season	Muscles tissue (Indonesia)	Muscle tissue (Australia)	Otoliths (Indonesia)
2014/15	1500	1600	1346
2015/16	1500	1600	2000
2016/17	1500	1600	1499
2017/18	1500	1600	1500
2018/19	1500	1600	1500
2019/20	1500	1600	1500
2020/21	1500	1600	1500
2021/22	0	1600	0
2022/23	148	1600	148
2023/24	236	1600	21
2024/25	1148	1600	865
2025/26	5306	1600	3051

Annual CKMR work plan 2027-2029

The CKMR monitoring program runs on a 3 year cycle:

Year 1: Collect tissue samples from juvenile SBT in Australia and adult SBT in Indonesia in year 1. Note that adult sampling spans two calendar years (e.g., 2025/26 spawning season).

Year 2: Archive tissue samples, extract DNA, and genotype the DNA samples in year 2.

Year 3: Analyse genotype data to identify parent-offspring pairs (POPs) and half-sibling pairs (HSPs). Kins data are provided to the CCSBT scientific data exchange in year 3.

Recent annual variation in the availability of adult samples for DNA extraction and genotyping (Table 1) has resulted in adjustments to the 2027 and 2028 workplan (Table 2), with corresponding changes to proposed annual budgets. The current (2026) project includes funding for DNA extraction and genotyping of 1,500 adult tissue samples collected in the 2022/23 to 2024/25 seasons, upon their arrival in Hobart. This leaves 5,300 samples collected in 2025/26 to be incorporated in the 2027 workplan (Table 2).

We propose to sample 2,200 adults for CKMR in 2025/26 to fully compensate for the low sampling coverage during 2021/22–2024/25.

Table 2. Annual planned tissue sampling and genotyping, and CCSBT budget request, for the CKMR component of the project

Project year	Sampling			Genotyping			Budget request (AUD)
	Season	Juvenile samples	Adult samples	Season	Juvenile samples	Adult samples	
2027	2026/27	1,600	2,200	2025/26	1,600	5,300	$364,000
2028	2027/28	1,600	1,500	2026/27	1,600	2,200	$251,000[2]
2029	2028/29	1,600	1,500	2027/28	1,600	1,500	$231,000[2]

[2] Indicative budget

Annual Indonesian length/age work plan 2027-2029

The Indonesian otolith collection and ageing program operates on a 2-year cycle:

Year 1: Measure the length and collect otoliths from adult SBT in Indonesia. Note that adult sampling spans two calendar years (e.g., 2025/26 spawning season).

Year 2: Archive and age otoliths. The SBT length and age data are provided to the CCSBT's scientific data exchange.

Table 3 presents the annual planned otolith sample numbers, age estimates, and CCSBT budget allocations for this component of the project.

Table 3. Annual planned otolith sampling and ageing, and CCSBT budget request, for the Indonesian age component of the project by year.

Project year	Otolith sampling	Otolith ageing	Budget (AUD)
2027	1500	500	42,700
2028	1500	500	44,600
2029	1500	500	46,400

References

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