UNIVERSITY of TASMANIA | IMAS INSTITUTE FOR MARINE & ANTARCTIC STUDIES

TASMANIAN ROCK LOBSTER FISHERY - 2024/25

Klaas Hartmann, Karlie McDonald, Ruth Sharples and Kate Stark

This assessment is produced by the Institute for Marine and Antarctic Studies (IMAS) and includes data obtained from the Department of Natural Resources and Environment, Tasmania (NRE Tas) Fisheries Integrated Licensing and Management System (FILMS) database.

The authors do not warrant that the information in this document is free from errors or omissions. The authors do not accept any form of liability, be it contractual, tortious, or otherwise, for the contents of this document or for any consequences arising from its use or any reliance placed upon it. The information, opinions and advice contained in this document may not relate, or be relevant, to a reader's particular circumstance. Opinions expressed by the authors are the individual opinions expressed by those persons and are not necessarily those of the Institute for Marine and Antarctic Studies (IMAS) or the University of Tasmania (UTAS).

IMAS Fisheries and Aquaculture
Private Bag 49
Hobart TAS 7001
Australia

E-mail : klaas.hartmann@utas.edu.au

Table 1: Version History

Version	**Date**	**Comments**
1.0	2026-05-20	Digital document release

Contents

Illustration©R.Swainston/anima.fish

Stock Status	**SUSTAINABLE**
Stock	Tasmanian Southern Rock Lobster Fishery
Indicators	Percentage of egg production relative to unfished level (limit RP). Percentage of biomass relative to unfished level (limit and target RPs).

1 Executive Summary

The southern rock lobster commercial TACC has been 1050.7t for the last eleven years, preceded by three years at 1103.24t. Over the last decade, CPUE has risen substantially, primarily through two significant recruitment events in 2016-2017 and 2021-2022. In 2022-23, catch per unit effort (CPUE; kg per potlift) reached a multi-decadal high. It was the highest nominal CPUE since the early 1980s and the highest standardized CPUE since the introduction of consistent logbooks in 2000. CPUE fell in the 2023/24 and 2024/25 seasons but remains high. The reduction in CPUE has been most significant in West coast areas.

Stock assessment modeling indicates that statewide egg production is at 45% which is well above the 30% limit reference point. This reference point has been set at a level below which subsequent recruitment may be impacted, hence is a critical limit reference point for ensuring sustainability.

An interim biomass target reference point had been set at 25% of the unfished biomass, this has been achieved with biomass currently estimated at 30%. The target reference point is reflective of the stock state desired by stakeholders for outcomes including sustainability, maximising economic rent and recreational amenity. The 25% target reference point is an extremely low value for a target relative to those used in most fisheries and was proposed as an interim target along a rebuild pathway. Now that it has been reached, a new target is being developed as part of the harvest strategy review that is currently underway and for which consultation is being undertaken. It should be noted that this report does not evaluate the performance of the fishery against proposed reference points in the draft harvest strategy. It also does not utilise the proposed new assessment areas. These will be incorporated in future assessments once the harvest strategy has been finalised and adopted.

Due to the long pelagic larval period (up to two years), egg production in different areas of the fishery is not closely linked to future recruitment in that region. Recruitment is affected by patterns in larval dispersal and the most important regions for larval sources are thought to vary from year to year. The appropriate management response to this is to ensure that healthy egg production of at least 20% of the unfished level is maintained in all areas. This is currently the case in all Tasmanian assessment areas. In recent years the only area falling under this had been Area 5 (the North-Eastern area including King Island) but this was addressed through the increase in size limit.

Increasing CPUE has reduced the effort required to catch the TACC and hence the gap between lease price and beach price has narrowed. Consequently, competition for leased quota by fishers has increased, leading to a steady ongoing reduction in vessel numbers (down to 137 in 2024/25).

From 2019 onward, the Tasmanian Southern Rock Lobster assessment has been provided as an online interactive assessment report. This is the first year in which reporting has returned to a traditional document. The harvest strategy is in the process of being adopted and updated including new spatial areas. A new assessment approach and model are being developed to incorporate these changes. The next assessment report (for the 2025/26 season) will be more comprehensive and significantly updated to reflect these changes.

2 Fishery History

First Custodians

Aboriginals arrived in Tasmania from the then-connected mainland over 40,000 years ago (O'Connell and Allen 2012) and archaeological records indicate that Tasmanian coastal marine resources were exploited as far back as 8,000–11,000 years ago (Attenbrow 2012; Johnson and McFarlane 2015). Any evidence predating this period is now submerged (Attenbrow 2012; O'Connell, Allen, and Hawkes 2010). The earliest middens were dominated by inter-tidal mollusc shells, mostly mussels and oysters, as well as scalefish. From around 3,500 years ago there appears to have been a change in foraging strategy towards the exploitation of sub-littoral resources, with abalone and rock lobster dominating coastal midden deposits around Tasmania (Johnson and McFarlane 2015; Ranson 2020).

Early Exploration and Settlement

Early explorers of Tasmania's coastline noted the great abundance of rock lobster on inshore reefs (Frijlink and Lyle 2013). The quartermaster from the expedition led by French explorer d'Entrecasteaux recorded in 1793 the capture of rock lobsters in the waters of Recherché Bay: "*At one place about a hundred Rock Lobsters were taken by means of a kind of net made up of three circles and some rods, the whole thing being in the form of a barrel. The fish entered the two ends, and by this method they could be captured and later removed*" (Plomley and Piard-Bernier 1993). He also described catching rock lobster using baited lines for fish over rocky reef "*From the moment our fishermen began to catch these Rock Lobsters with their lines, they had no chance of catching all other species of fish, for they hadn't time to take the bait*" (Plomley and Piard-Bernier 1993).

The subsequent establishment of the British colony from 1803 was supported by the abundant marine resources available (Howeler-Coy 1966). The Reverend Robert Knopwood, the first Chaplain in Tasmania, kept a diary in which he recorded hunting and fishing trips in the early days of the colony, including the first written record of Rock Lobster being taken in 1805: "*. . . at 11 I went out afishing and caught a very large Crayfish, the first that was taken in this Colony which I gave to His Honor the Lt. Gov. on my return home to dinner late in the eve rain and wind*" (Knopwood 1946). While the size was not recorded, in later entries (between 1805 and 1808) he recorded catching rock lobsters of – "*6 lb and 7 lb*" and on a further 4 occasions wrote of gifting rock lobster he had caught to the Lieutenant-Governor, Colonel David Collins; indicating it was somewhat of a prized catch even then (Knopwood 1946, 1947).

Hunting and harvesting became vital to the colony when supply ships failed to meet demand, leading to strict rationing of provisions (Fenton 2011). Rev. Knopwood wrote in October 1806 of food availability and prices being "*very bad*" and that "*little can be obtained. No work is done- the poor people go out fishing*" (Howeler-Coy 1966).

The arrival of British settlers and their occupation of coastal areas significantly restricted Tasmanian Aboriginal peoples' access to shoreline harvesting. Beyond limiting access, the settlers brought disease, instigated forced relocations, and engaged in conflict (Byard and Maxwell-Stewart 2024).

Establishment of Commercial Fisheries

The commercial fishery for rock lobster in Tasmania began in the 1830s, with lobsters being collected by hand or using hoop nets in shallow waters near settlements (Harrison 2008). However, there are few references to the supply and demand of rock lobster during the early decades of the commercial fishery. One notable mention, an article published in The Cornwall Chronicle on July 6, 1861, states, "*The Hobart Fish Market is plentifully supplied with the best crayfish*" (Frijlink and Lyle 2013). Additionally, rock lobster appeared in what is considered Australia's first cookbook, The English and Australian Cookery by Tasmanian Edward Abbott, in 1864. Abbott wrote of "crayfish" in Tasmania, stating, "*Very fine. Sold in immense quantities and a favourite from high to low...*" (Abbott 1864).

From the 1870s, rock lobster was exported to mainland states, where it fetched significantly higher prices than in the local Hobart market (Frijlink and Lyle 2013). By 1882, there were growing concerns over over-fishing and the Tasmanian Government appointed a Royal Commission to, "*inquire into the Fisheries of the Colony, the Laws relating to the preservation of Fish, and to what extent the Fisheries of the Colony have been or are injuriously affected by sea fishing within Tasmanian waters by vessels from other Colonies*" (Harrison 2006).

The Royal Commission described the rock lobster fishery as, "*... perhaps, one of the most important of our marine products, being not only esteemed for its quality, but for its great commercial value from its wonderful abundance, especially around our eastern coasts*" (Parliament 1882). It estimated that over 280 tonnes of lobster were brought to market annually, with nearly a third exported, primarily to Victoria. It was reported to the commission that the Hobart market was satisfied by about 200 fish a day and Launceston 360 a week (Parliament 1882). The average weight of a mature crayfish was reported as being between 6 and 7 lbs. (around 3kg), although those brought to market were often smaller, on average 4 lbs. (1.8kg)- "*Fishermen can sell them of any size, and large quantities of undersized crayfish are at times brought for sale*" (Parliament 1882).

In addition to the rock lobsters landed by Tasmanian fishermen, an unspecified quantity was harvested by Victorian vessels fishing in Tasmanian waters and transported directly to Victorian ports, causing considerable discontent among local fishermen (Parliament 1882). The commission also noted that rock lobster was a preferred bait for the 'real' trumpeter (*Latris lineata*) fishery and was used as feed for trumpeters held in pens prior to sale (Parliament 1882).

The Royal Commission expressed serious concern about the state of rock lobster stocks. Numerous witnesses, mainly commercial fishermen, highlighted issues such as harvesting small and berried females and localized stock depletion. One witness stated, "*There has been a great falling off in the supply. I have known a place called the Friars, where hundreds of scores a week have been caught, and now none are to be had; this is attributable to the causes already stated and to over fishing*" (Parliament 1882). The Commission concluded, "*The destruction of crayfish is stated to be carried on at a rate exceeding the natural increase. This seems to be so serious in some localities as to threaten extermination at no distant date. It is recommended that the sale or possession of crayfish under a length of 10 inches, and any spawn-carrying female fish, should be prohibited*" (Parliament 1882).

The Commission also suggested seasonal closures, stating, "*Generally speaking, the fish are soft and unfit for food between December and February; and for this reason, and for greater protection, it is considered by many experienced fishermen that there should be a close season*

for the crayfish at this time" (Parliament 1882).

Objections to Victorian vessels fishing in Tasmanian waters with lobster pots featured prominently throughout the Commission report. Concerns were raised about localized stock depletion, the capture of undersized lobsters, and by-catch mortality (Parliament 1882). Despite these objections, the Commission ultimately concluded: "*With respect to the reported injury to the fishing industry of Tasmania by boats from other Colonies, we have shown from enquiries that, although their practice of capturing crayfish by so-called lobster-pots is perhaps objectionable, yet in other respects the only injury done is confined to competition for the Victorian market, wherein our own fishermen and exporters certainly suffer a loss to some extent*" (Parliament 1882).

Crayfish Act 1885 and Great Craypot Debate 1885-1925

Following the 1882 Royal Commission, the first legislation to regulate the harvest of rock lobster was implemented through the Crayfish Protection Act (1885). This act prohibited the sale or possession of any rock lobster under 10 inches in length, any soft-shelled rock lobster, or any egg-bearing female. In the same year, a Board of Commissioners was established to manage the fishery.

Between the mid-1880s and the 1920s, the 23 Commissioners of the Fisheries Board debated numerous issues, including the merits of different gear types, in particular the use of craypots (hemispherical or baited hoop), and how best to manage conflicts between Victorian and Tasmanian fishers. During this period, the fishery rapidly expanded in terms of fishing areas, the capacity of boats, and the number of rock lobster fishers. Many scalefishers abandoned their trade in favor of rock lobster fishing due to the higher prices obtainable, especially in interstate markets. Whether Tasmanian fishermen should be allowed to use pots was fiercely debated (Frijlink and Lyle 2013). Despite two inquiries and a second Royal Commission in 1916 recommending the legalisation of lobster craypots to modernise and develop Tasmania's fisheries, the Fisheries Board resisted the pressure, repeatedly describing them as "engines of destruction" (Frijlink and Lyle 2013).

In 1925, the board of Fisheries Commissioners was replaced by the Sea Fisheries Board, which introduced sweeping reforms to fisheries regulations, including the legalisation of craypots for Tasmanian fishers. New management strategies introduced alongside pot legalisation included restrictions on the number of pots per vessel, minimum legal lengths, and a prohibition on the capture and sale of soft-shelled juveniles (Harrison 2008).

The use of pots enabled fishers to expand their fishing to include waters of greater depth, habitats previously avoided (e.g. kelp beds) and locations which limit the operation of hoop nets (e.g. those with strong currents or tidal flow) (Frijlink and Lyle 2013). Despite these improvements, adoption of pots was initially slow. By 1939, only 37% of the fleet was licensed to use pots—likely due to high licence fees, skepticism about the 'new technology', and limited deck space on vessels (Winstanley 1973).

In addition to the legalisation of pots, fishing efficiency improved significantly due to advancements such as diesel engines, onboard refrigeration, and the establishment of regular steamer services to Melbourne and Sydney. These developments drove dramatic increases in statewide catches, rising from 39 tonnes in 1925 to 1,080 tonnes by 1939 (Frijlink and Lyle 2013).

During the Second World War, production in the fishery declined due to crew shortages and

the requisitioning of fishing vessels (Frijlink and Lyle 2013). However, post-war reconstruction programs, supported by low-interest loans, encouraged new operators to enter the fishery. From 1945 to 1948, the number of registered boats and pots more than doubled, leading to a rapid increase in statewide catches (Frijlink and Lyle 2013). From 1947, legal size was measured by carapace length and fluctuated between 4 1/6 – 4 1/2 inches until 1966, when a lower size limit for females was introduced.

Continued expansion into previously unfished areas, combined with advancements in fishing efficiency, drove further increases in catch. However, catch rates per pot began to decline. Between 1951 and 1966, total catches doubled, but the catch per pot was reduced by half (Winstanley 1973). By 1962, the CSIRO determined that few new fishing grounds remained to be discovered and that almost all rock lobster stocks within the fished areas were already under exploitation (Frijlink and Lyle 2013).

In 1967, the fishery became a limited-entry system, with the number of licences capped at 420. While this was promoted as a stock management measure, it was more likely driven by a desire to protect the income of established operators and reduce competition from new entrants (Phillips, Kriwoken, and Hay 2002). In 1972, the number of pots was capped at 10,507, and the number of licences in the fleet gradually declined as operators retired and pots were consolidated into fewer, larger holdings. The minimum legal length was also converted to metric units at 105 mm for females and 110 mm for males. Nonetheless, fishing effort and efficiency continued to grow as licensed fishers invested in larger and better-equipped vessels (Phillips, Kriwoken, and Hay 2002).

TACC/ITQ implementation

Declining catch rates prompted a government review of the rock lobster fishery in 1992. In 1996, the management strategy shifted to include output controls (e.g., total catch quotas). Input controls, such as limits of the number of pots and licenses, and seasonal closures, also remained in place.

In 1998, the Tasmanian rock lobster fishery adopted an Individual Transferable Quota (ITQ) management system. Under this system, commercial licence holders were allocated a specific proportion of the total catch quota. This change encouraged a shift in fishing strategies, moving away from a competitive "race-to-catch" approach early in the season to a profit-maximisation model. Fishers began focusing on increasing economic returns by targeting periods with higher market prices and greater catchability (Frusher, Eaton, and Bradshaw 2003).

The Total Allowable Commercial Catch (TACC) was initially set at 1,502 tonnes, requiring a reduction in landings that had previously averaged over 1,700 tonnes annually during the preceding decade. Subsequently, in the two years following ITQ implementation, both catch and fishing effort (measured in vessel days) decreased by 17% and 28%, respectively (Ford 2001). Fishers also altered their behaviour, with a notable increase in winter catches when beach prices were higher (Frusher, Eaton, and Bradshaw 2003).

The introduction of ITQs also brought significant changes to the fleet. The number of vessels declined from almost 300 in 1996 to 136 by 2023, as quota ownership became increasingly consolidated among larger operators and vessels capable of generating higher profits. While this consolidation improved economic efficiency, it also led to reduced employment and regional economic activity.

The TACC was slightly increased to 1,523 tonnes in 2002, and maintained at that level until 2008. However significant CPUE declines prompted a progressive reduction in the TACC, which was lowered to 1,050.7 tonnes between 2009 and 2014. The CPUE decline is linked to an extended period of poor recruitment which was experienced across the entire Australian stock (Linnane et al. 2010). Productivity has generally remained at a lower level since that time (Linnane et al. 2019) and consequently the TACC has remained at this level through to the 2024/25 season.

3 Current Fishery Management

The Tasmanian Department of Natural Resources & Environment (NRE) manages the fishery under the Rock Lobster Fishery Management Plan, as outlined in the Fisheries (Rock Lobster) Rules 2022, and governed by the Living Marine Resources Management Act (1995).

Until 2023, the management of the rock lobster fishery was guided by the Tasmanian Crustacean Fisheries Advisory Committee (CFAC). This committee consisted of industry representatives, a community representative and scientific advisors who collaborated to provide recommendations to the Tasmanian Minister for Natural Resources & Environment regarding management controls for the rock lobster fishery. Following a review of Tasmanian Fisheries Advisory Committees (FACs), this process has been superseded by a new fisheries core group.

The management of rock lobster fisheries is overseen by NRE using a combination of input and output controls. Input controls include entry restrictions, spatial and temporal closures. Output controls consist of gear restrictions, bag limits, size limits, regional catch caps, total allowable commercial catch (TACC), total allowable recreational catch (TARC), and individual transferable quotas (ITQs).

In the past decade, the fishery has transitioned towards regionally focused management (e.g. Green et al. 2011, Bradshaw et al. 2024). This has been driven by significant differences in biological traits (most noticeably growth), varying levels of exploitation due to differences in accessibility and population distribution and minimal movement of adults between regions.

Comprehensive details on the current management controls for the Tasmanian Rock Lobster Fishery are available on the Department of Natural Resources & Environment (NRE) website at: https://fishing.tas.gov.au/commercial-fishing/commercial-fisheries/rock-lobster-fishery/

Rock Lobster Translocation Program

The growth and development of rock lobsters, as well as their catchability, vary significantly across Tasmania's fishing grounds. In the southwest, lobsters from deep-water regions tend to be pale greenish in colour and grow slowly within high-density populations, often suffering significant natural mortality before reaching legal size (Gardner et al. 2006; Punt, Kennedy, and Frusher 1997). In contrast, lobsters from shallow-water or northern regions exhibit more rapid growth and develop a vibrant reddish hue (Chandrapavan et al. 2009a).

With the introduction of quota management, commercial fishers focused on catching lobsters that command the highest market prices (Bradshaw 2004). Shallow water lobsters are favoured due to their deeper red colour, preferred by consumers in Asian markets, and their higher survival rates during overseas shipments (Ford 2001). This preference has led to a concentration of fishing effort, with depleted areas continuing to being targeted despite higher

catch rates being available elsewhere (Bradshaw 2004).

Translocation involves capturing slow-growing lobsters below the minimum legal size and moving them to regions where they exhibit faster growth and develop a reddish hue after one to two moults (Chandrapavan, Gardner, and Green 2010; Gardner et al. 2006). In 2004, the Tasmanian Government approved translocation trials after assessing negligible risks of disease transfer or genetic impacts and conducting a preliminary feasibility study that demonstrated significant profit gains (Gardner and Van Putten 2008).

Pilot-scale operations began in 2005, translocating 30,000 lobsters to eight sites in Tasmania and two in South Australia over three years. All lobsters were tagged, and biological and ecological changes were monitored for five years. Key findings from the trials revealed that slow-growing lobsters moved to inshore areas:

- Changed colour within a year (Chandrapavan et al. 2009a);
- Improved growth rates to match their new site (Chandrapavan, Gardner, and Green 2010);
- Survived successfully in their new location (Green and Gardner 2009);
- Increased egg production (Green et al. 2010);
- Improved their condition and body chemistry (Chandrapavan, Gardner, and Green 2011; Chandrapavan et al. 2009b);
- Developed higher-valued body morphology (Chandrapavan et al. 2011); and
- Remained at their release site (Green, Pederson, and Gardner 2013).

Bioeconomic modelling (Gardner and Van Putten 2008) demonstrated that commercial-scale translocation operations could improve total biomass and egg production to levels comparable to what would otherwise require a 4.5% reduction in catch. Increased catch rates due to higher density reduced fishing costs and led to greater future rents, with the Net Present Value (NPV) of the fishery estimated to increase by 7.4% (Gardner and Van Putten 2008).

The Rock Lobster Translocation Program was officially launched in 2011. From 2014, translocations began in the Northwest, West Coast, and South Coast, funded by the commercial rock lobster industry. In 2015, the program became part of the Tasmanian Government's East Coast Stock Rebuilding Strategy (ECSRS). Since 2022, all translocation efforts have focused on the East Coast and are jointly funded by the Government and the rock lobster industry.

To date, the program has translocated approximately 800,000 lobsters to the South and West Coasts, and over 500,000 to the East Coast (Natural Resources and Tasmania n.d.). The program is managed by a governance committee comprising representatives from NRE, IMAS, the Tasmanian Association for Recreational Fishing (TARFish), and the Tasmanian Rock Lobster Council (TRLC). All on-water translocation is carried out by commercial rock lobster fishers and coordinated by the TRLC with IMAS observers onboard.

Recent work (Bradshaw et al. 2026) has re-analysed the translocation program. This re-analysis confirms the growth benefits and demonstrates robust economic benefits across a range of market conditions.

4 Cultural Fishing

Rock lobster are culturally important to the Indigenous community and have been traditionally harvested for thousands of years. Rock lobsters continue to be taken for Indigenous cultural activities and by individuals for personal consumption. Indigenous cultural fishing is distinct from recreational and commercial fishing, though Indigenous Tasmanians actively participate in all three, and access is granted through permits issued by NRE Tasmania. The number of unique identification codes (UIC) required for marking gear issued to the Indigenous sector provides an indicator of participation, with NRE estimating more than 1000 Indigenous persons participate in rock lobster fishing using pots, rings, and diving per year in Tasmania (Twiname et al. 2022).

Currently, data on catch and effort from cultural fishing is unavailable. Target biomass reference points for optimizing cultural fishing have not yet been defined but are presumed to require higher stock abundance than those set for recreational or commercial fishing. Consequently, any stocks below biomass target reference points for recreational or commercial fisheries can also be assumed to be below optimal levels for cultural fishing.

5 Recreational Fishery

Rock lobsters have long been an essential food source for the local Aboriginal population and are highly valued by recreational fishers in Tasmania. Southern Rock Lobster (*Jasus edwardsii*) and occasionally Eastern Rock Lobster (*Sagmariasus verreauxi*) are harvested using potting, ring net fishing, and dive collection.

Recreational Fishery Management

The recreational fishery for Rock Lobster is managed through licensing, minimum size limits, daily bag and possession limits, closed seasons, and a prohibition on harvesting egg-bearing females, referred to as being "in berry." Current licensing and fishery limits are available on the Tasmanian Government's website: https://fishing.tas.gov.au/recreational-fishing.

Recreational fishing licenses for rock lobster were first introduced in Tasmania in the late 1970s. Initially method-based, these licenses included pot and general dive licenses, the latter permitting the capture of lobster, abalone, and scallops while diving. In 1995, the licensing system was revised, splitting the general dive license into separate lobster dive, scallop dive, and abalone dive licenses. A lobster ring license was later introduced in 1998. Recreational pot fishers are permitted one pot, ring fishers may use up to four rings, and divers can employ artificial breathing apparatus, such as scuba or surface air supply (commonly referred to as hookah). Licenses are issued annually, covering November 1 to October 31 of the following year, and recreational fishers may hold any combination of pot, ring, or dive licenses.

A recreational TAC (TARC) is assigned each year as 170t or 10% of the TAC, whichever is greater. The recreational fishery has always remained below the TARC. Regional spatial restrictions have been applied to address localised stock issues, particularly on the East Coast. More details regarding these arrangements is provided in NRE's harvest strategy and website. IMAS conducts an annual recreational survey which is detailed in the annual "Tasmanian recreational rock lobster and abalone report", this provides spatially delineated catch estimates that form a key input to the assessment model.

For brevity, management arrangement details and recreational catch results are not reported here and the reader is referred to the mentioned NRE and IMAS resources.

6 Commercial Fishery

Southern Rock Lobster is one of Australia's most valuable commercial fisheries species. It has a long history of commercial exploitation in Tasmania, supporting a major fishery with recent catches in the order of 1,050 tonnes per annum. The direct value of the landed catch has varied between $46 and $90 million in recent years (Rust and Ogier 2023).

The fishery primarily targets southern rock lobster (*Jasus edwardsii*), with small quantities of eastern rock lobster (*Jasus verreauxi*) comprising less than 1% of the total catch. Commercial fishers use baited pots to harvest lobsters across Tasmania, including waters surrounding the state's major islands.

The Tasmanian Department of Natural Resources & Environment (NRE Tas) oversees the fishery under the Rock Lobster Fishery Management Plan, as outlined in the Fisheries (Rock Lobster) Rules 2022 and governed by the Living Marine Resources Management Act (1995). This plan regulates both commercial and non-commercial catches.

The commercial sector operates under a combination of input and output controls, including a quota management system introduced in 1998 Hartmann et al. 2019. Key controls include:

- Limited entry (vessel licences);
- Restricted seasons - spawning closure;
- Gear restrictions - lobster pots with a limited number per vessel;
- A total allowable catch (TAC);
- Individual transferable quota units (ITQs);
- Regional catch caps;
- Minimum size limits;
- Spatial closures.

Some areas are permanently closed to rock lobster fishing, including marine reserves (State and Commonwealth), research areas, and designated no-potting zones.

The TAC is set annually for the fishing season, which runs from 1 March to the end of February the following year. A portion of the TAC is allocated to the commercial sector as the total allowable commercial catch (TACC), which is divided equally among the 10,506 issued quota units.

Comprehensive details of current management arrangements are available on the Tasmanian Government's website: https://fishing.tas.gov.au/commercial-fishing/commercial-fisheries/rock-lobster-fishery.

Pre-1998

Following the Second World War, a brief period of declining rock lobster catches and catch rates gave way to a surge of new entrants into the fishery. The establishment of an export market for tinned rock lobster tails in the United States boosted demand and drove up prices in Australian markets. Consequently, statewide rock lobster catches doubled during the 1950s

and 1960s (Figure 1). The increase in catch was driven primarily by technological advancements and expansion into previously unfished grounds off the west and southwest coasts. While annual catches in these new fishing areas increased, catches in traditional areas off the east and southeast coasts remained static despite a threefold rise in fishing effort between 1946 and 1970 (Winstanley 1973). However while statewide annual catch increased, catch rates (catch per pot) steadily decreased (Figure 1).

The widespread adoption of depth sounding technology played a key role in the discovery of previously unfished rock lobster habitat. The expansion of effort into deeper water and slow growth areas off the west and south west coasts from 1957 to 1966 led to greater landings of smaller rock lobster. This was reflected in changes in the average size, which shifted from around 1 kg to between 0.8 to 0.9 kg (Frijlink and Lyle 2013). In the early 1960s, CSIRO determined that most exploitable grounds had been discovered, leading to a restriction on the number of fishing licences by the mid-1960s. The impact on annual catches was dramatic: from 1967 to 1974, annual catches fell by 35%. The fishery then stabilised, and for the next eleven years, both catches and catch rates rose jointly.

Post-1998 Overview

The introduction of the quota management system in 1996 followed a continuous decline in catch per unit effort (CPUE) from the mid 1980s (Figure **??**, Hartmann et al. 2019). The Individual Transferable Quota (ITQ) system was established in 1998, with the Total Allowable Commercial Catch (TACC) set at 1,502.5 tonnes. This required a reduction in landings that had previously averaged over 1,700 tonnes annually during the preceding decade. Subsequently, in the two years following ITQ implementation, both catch and fishing effort (measured in vessel days) decreased by 17% and 28%, respectively (Ford 2001). Fishers also altered their behaviour, with a notable increase in winter catches when beach prices were higher (Frusher, Eaton, and Bradshaw 2003). The TACC was increased slightly to 1,523.5 tonnes in 2002 and retained at this level until 2008.

In the late 2000s, stock levels declined dramatically, which has been linked to a stock wide reduction in recruitment (Linnane et al. 2010, Linnane et al. 2019), necessitating significant reductions in TAC. The TACC was lowered to 1470.98 t in 2009, 1323.9 t in 2010 and 1103.24 t in 2011 (Hartmann et al. 2019). In 2014, the TACC was further lowered to 1050.7 t, where it has remained to the current year.

The following sections provide a closer examination of changes in catch, effort and CPUE over the last fifteen years.

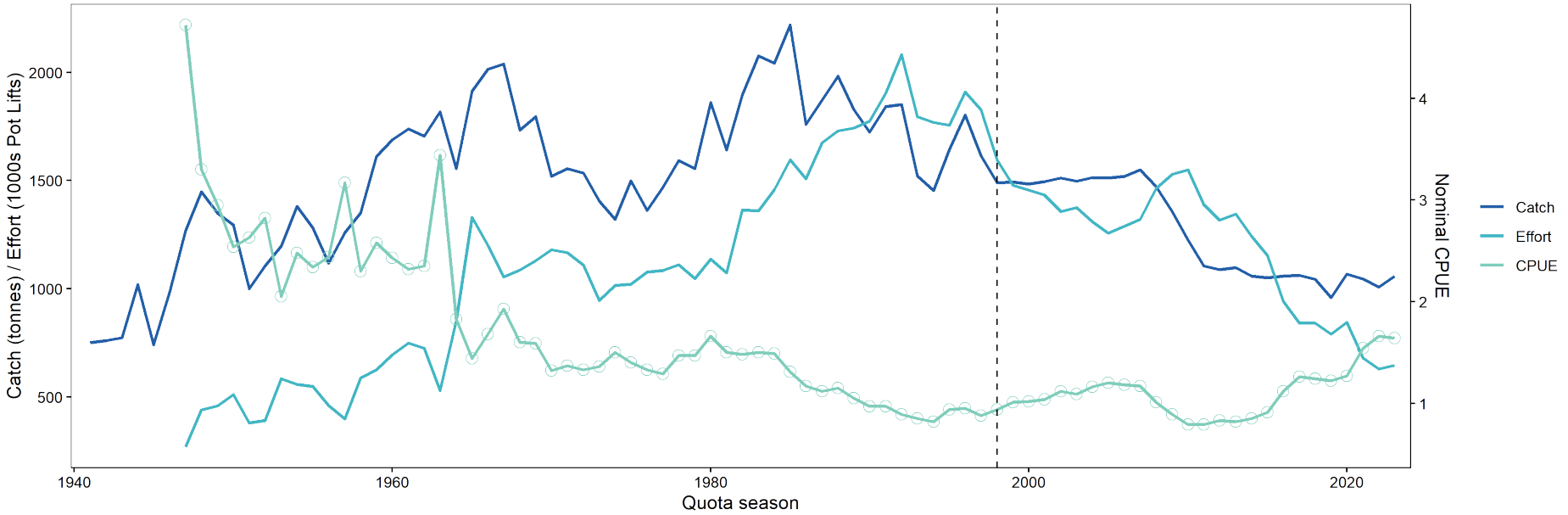

Figure 1: Long-term annual catch (tonnes) and effort (thousands of pot lifts) and CPUE (kg per pot lift; secondary axis) in the Tasmanian Rock Lobster fishery. Vertical black line indicates the year that ITQ system implemented (1998).

6.1 Statewide Catch and Effort

The Tasmanian TACC has been stable at 1051t since the period of TACC reductions from 2008/09 to 2014/15. During this time the TACC has been almost entirely caught (typically 98-99%). The one exception were the 2019/20 and 2020/21 quota years due to COVID and export market disruptions. In response, a measure was introduced to allow quota to be carried over from one season to the next.

Effort reached a recent high of 1.55 million potlifts in the 2010/11 season where CPUE had declined significantly and the TACC had not yet been fully reduced. Since that time effort has continually decreased as the stock has rebuilt, reaching a recent low of 628,000 potlifts in 2022/23 (when CPUE peaked). In the last two years effort has risen slightly, corresponding to a CPUE decrease with an unchanged TACC.

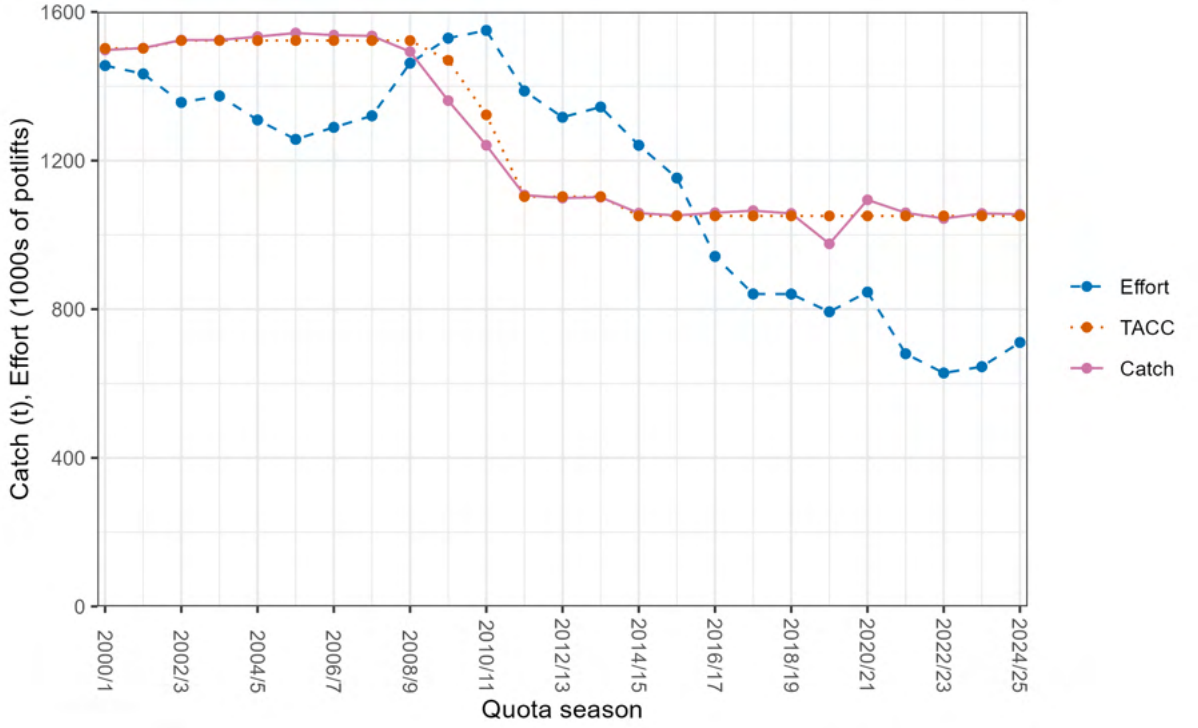

Figure 2: Tasmanian commercial catch (t), TACC (t) and effort (1000s of potlifts).

6.2 Statewide CPUE

Catch per unit effort (CPUE) is measured in kg of lobster per potlift in the Southern Rock Lobster fishery. CPUE is used as index of abundance and for Southern Rock Lobster the relationship between CPUE and abundance is strong – significant factors contributing to this are that pots are passive gear and rock lobster are non-schooling. Consequently changes in CPUE are considered to closely reflect changes in the abundance of legal sized rock lobster.

Factors unrelated to abundance can impact CPUE, this includes aspect such as weather, the fishing location and the time of year that fishing is conducted. At times these factors might change for a large proportion of the fishing fleet. Examples include new seasonal closures due to catch caps or harmful algal blooms, or targeting of specific lobster sizes to maximise beach price. A process known as CPUE standardisation is applied to account for such changes and produce a CPUE index that is as reflective of changes in the underlying biomass as possible. This is a standard approach widely used in fisheries around the world when sufficient information is available. In this fishery assessment, the factors used for standardisation are month, depth, moon phase, area and vessel. This standardisation is applied to data from 2000 onward – the start date for the standardisation is aligned with the availability of more comprehensive logbook data.

A rapid decline in CPUE was observed in the late 2000s (see figure 3) which was driven by the previously discussed reduction in recruitment (Linnane et al. 2019). Following the significant TACC reductions that took place (primarily from 2008 to 2011), CPUE slowly increased through to 2015/16 before two significant recruitment events elevated it to the highest levels experienced since the start of the standardised CPUE time series in 2000. In 2022-23, catch per unit effort (CPUE; kg per potlift) reached a multi-decadal high. It was the highest nominal CPUE since the early 1980s and the highest standardized CPUE since the introduction of consistent logbooks in 2000. CPUE fell in the 2023/24 and 2024/25 seasons but remains high.

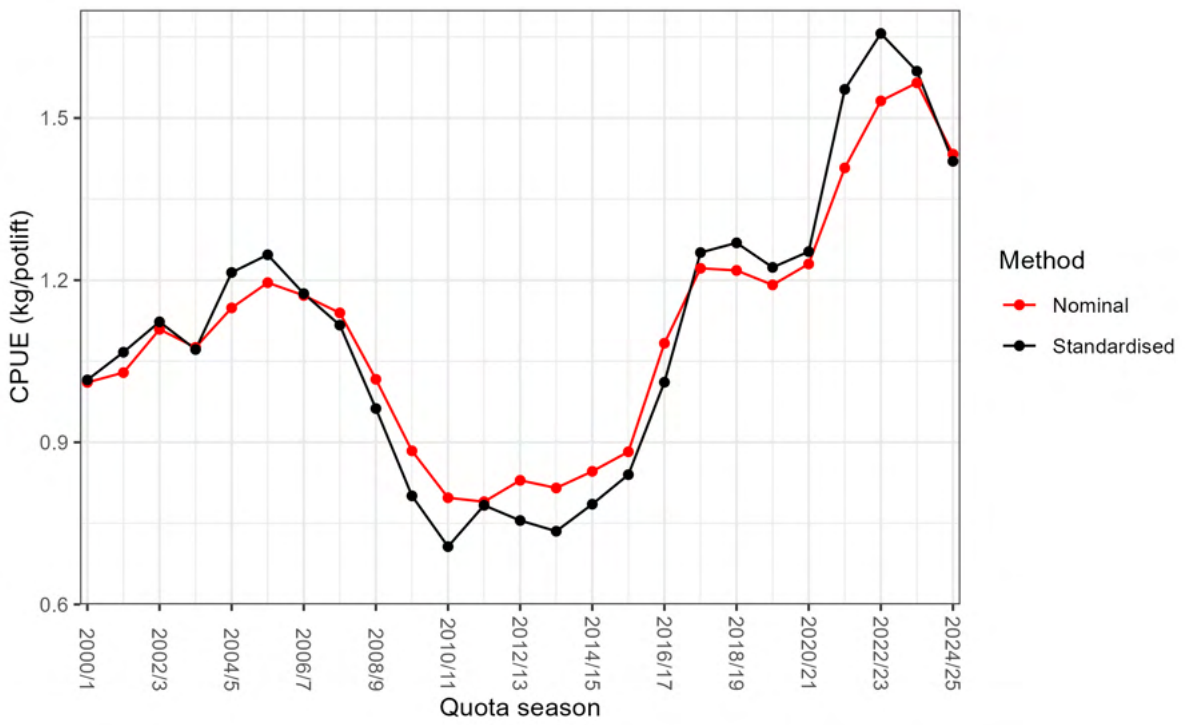

Figure 3: Nominal (unstandardised) and standardised CPUE for the Tasmanian SRL fishery. The time series commences in 2000 with the introduction of more comprehensive and consistent logbook reporting.

6.3 Regional Catch, Effort and CPUE

Following the substantial decline in CPUE and reductions in TACC, the catch declined in all areas (see Figures 4 and 5). In some areas this was initially driven by low CPUE (e.g. area 2), whilst in other areas that had retained higher CPUE, the catch reduction occurred as the TACC declined (e.g. area 5). In the years following the catch reduction, all areas saw minimal increases in CPUE until the first of the larger recruitment events occurred in 2016. The two large recruitment events that have occurred since then resulted in significant CPUE increases in all assessment areas.

The last significant recruitment event occurred in 2021/22 to 2022/23. Since then CPUE has been decreasing, this has been evident in all areas, although most notably in areas 7 and 8.

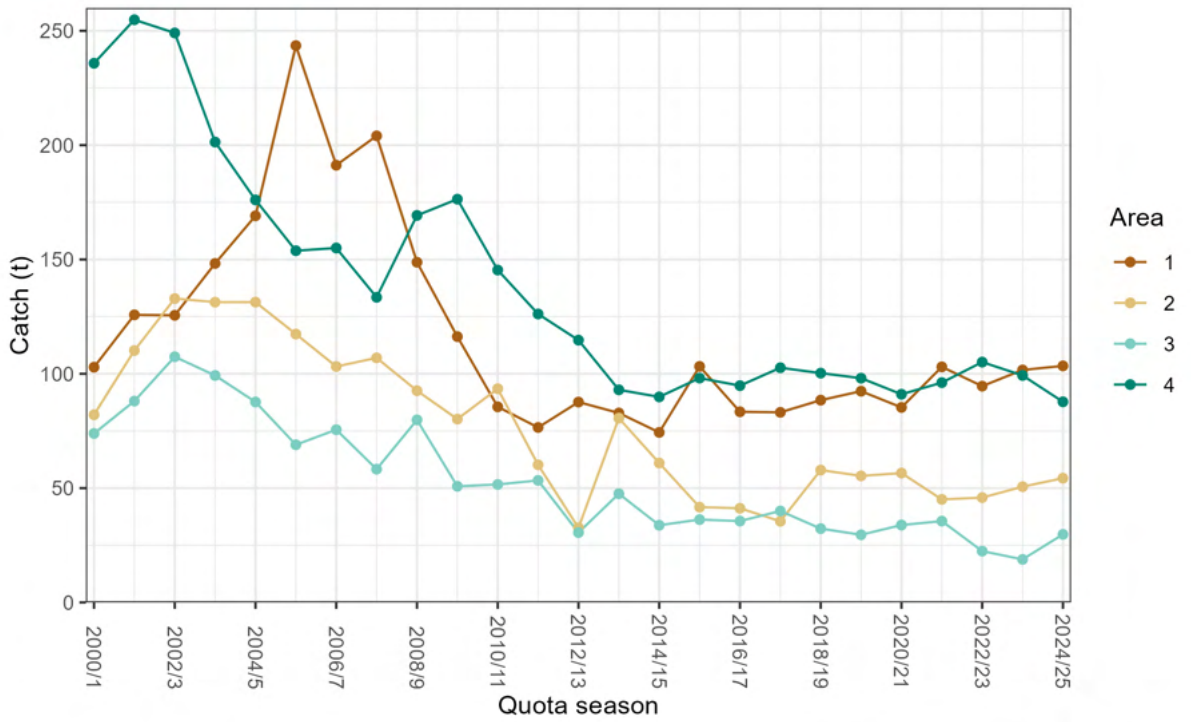

Figure 4: Commercial catch (t) in each fishing season for the eastern assessment areas.

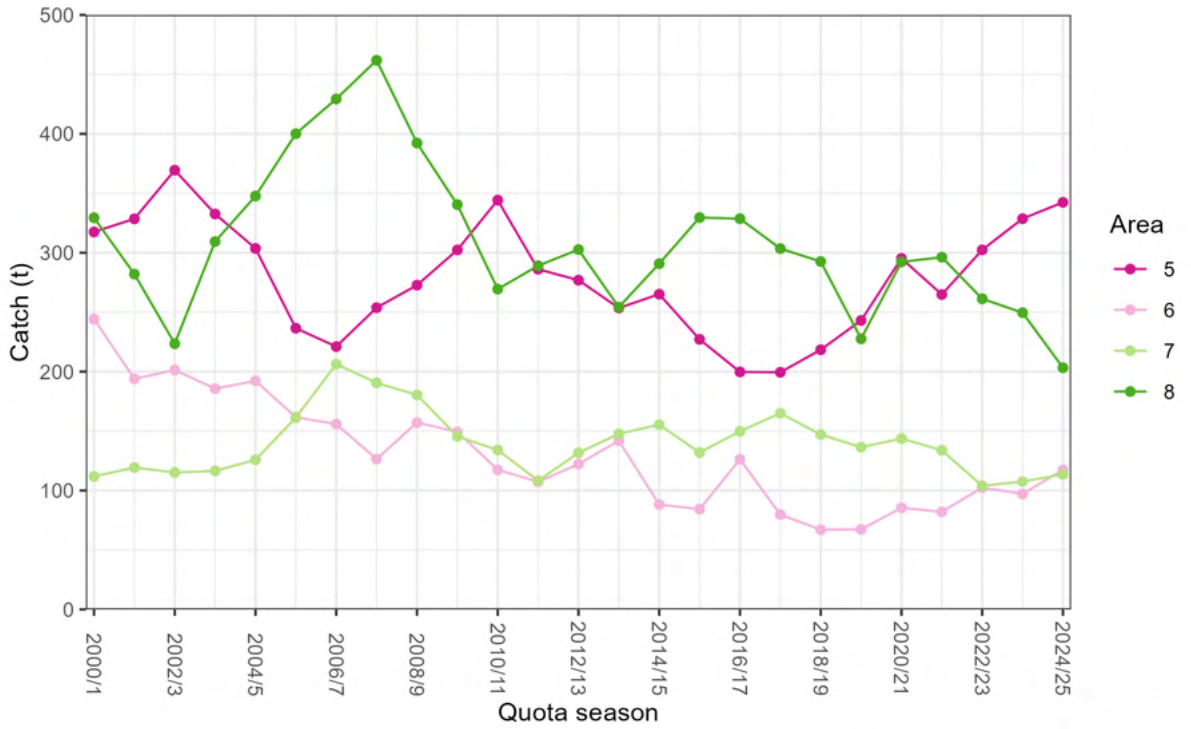

Figure 5: Commercial catch (t) in each fishing season for the western assessment areas.

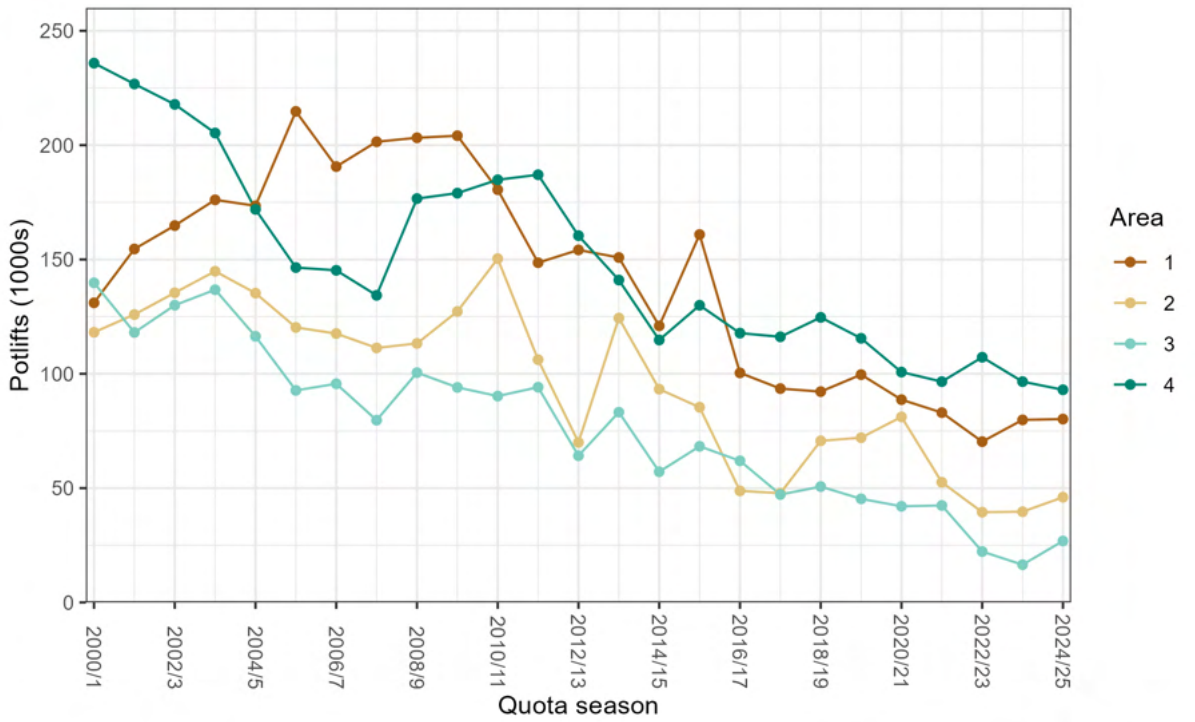

Figure 6: Commercial effort (1000s of potlifts) in each fishing season for the eastern assessment areas.

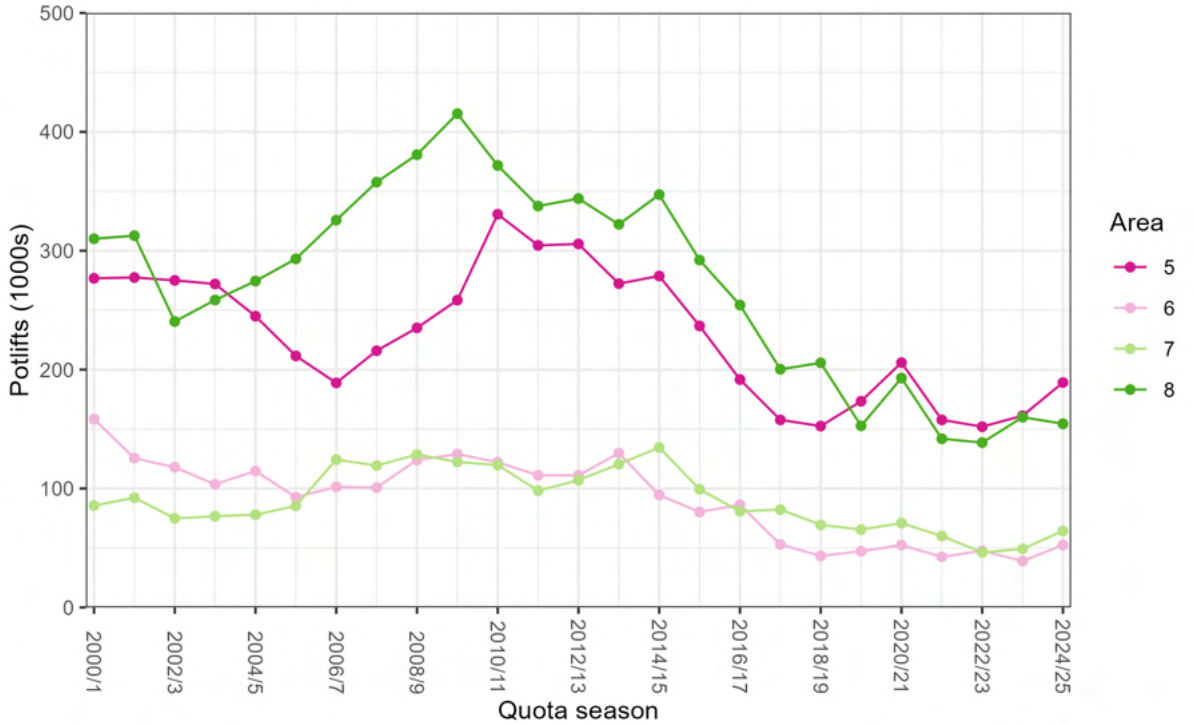

Figure 7: Commercial effort (1000s of potlifts) in each fishing season for the western assessment areas.

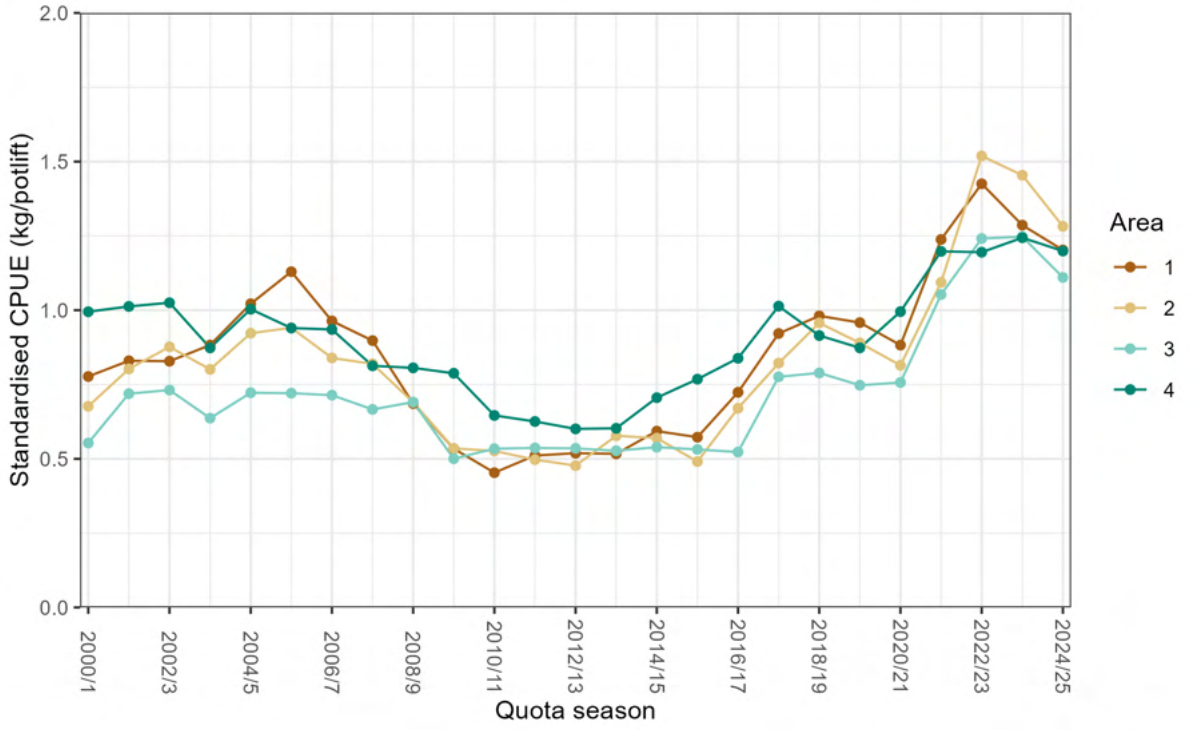

Figure 8: Standardised commercial CPUE (kg/potlift) in each fishing season for the eastern assessment areas.

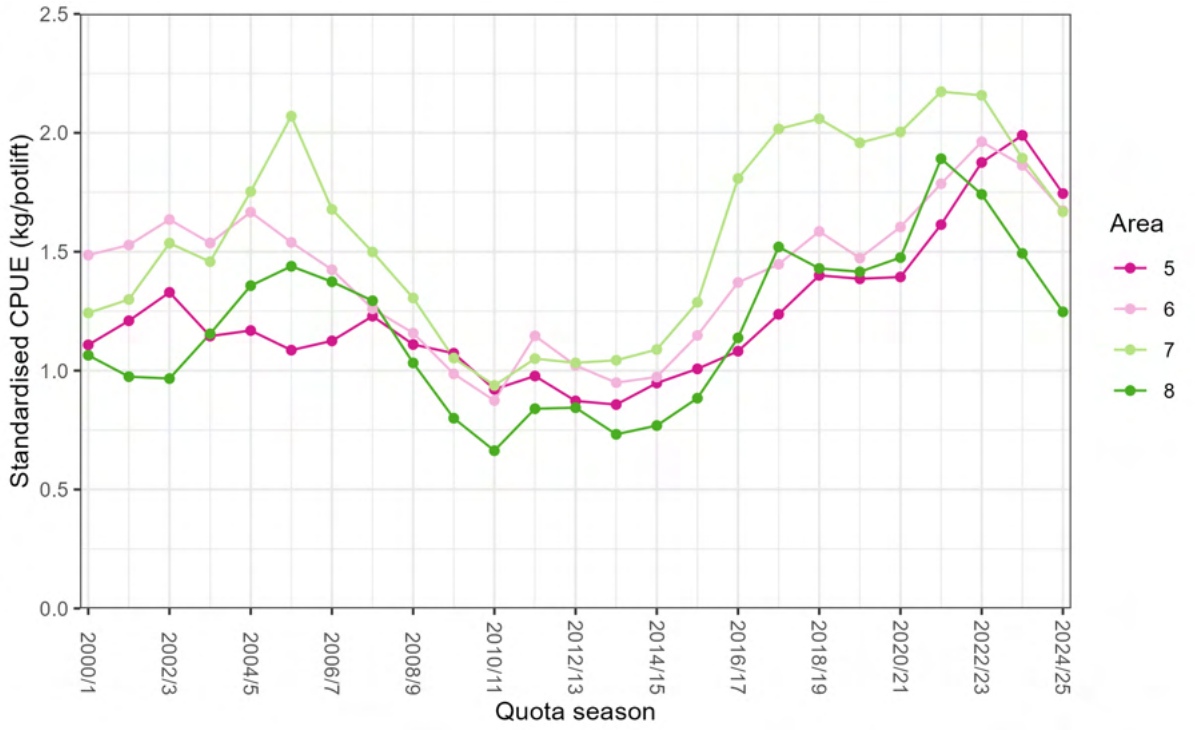

Figure 9: Standardised commercial CPUE (kg/potlift) in each fishing season for the western assessment areas.

Fleet Dynamics

Prior to the introduction of the ITQ system the Tasmanian rock lobster fishery had nearly 300 active vessels. The combined effects of the introduction of the ITQ system, stock rebuilding and changes to vessel pot limits led a sharp decline in the number of active vessels and employment. This cut in employment was an expected outcome of the ITQ system. A limit reference point of 220 vessels was in place reflecting initial concerns about fleet size. The limit reference point was breached in the 2006/7 season at which point industry and management decided to continue on the path to increased profitability and discontinued the limit reference point rather than changing rules to maintain the fleet size above 220 vessels.

Low recruitment and falling CPUE in 2009-10 resulted in low quota lease prices – more vessel days were required to take the TACC and costs rose. Vessels opportunistically joined the commercial rock lobster fleet leading to a short spike in employment. This period demonstrated that new entrants existed and were ready to join the industry when opportunities emerged. The long-term decline in the number of commercial operators over the last 20 years is not for lack of willing and able new entrants, rather, this trend is an outcome of the policies designed to increase economic efficiency and thereby reduce the fleet size.

From 2011/12 onward, the fleet has declined due the combined effects of stock rebuilding (higher CPUE), a lower TACC, and greater effort per vessel. The current stock rebuilding trajectory is expected to drive an ongoing decline in vessel number and employment. A mechanism slowing this decline is a limitation that prevents any operator benefiting from more than 200 units of quota (20t with the current TACC). Various changes to input controls (e.g. increasing or decreasing pot limits) which would affect the rate of fleet consolidation have been proposed. However there is a lack of clarity around fishery objectives to guide decisions on these aspects.

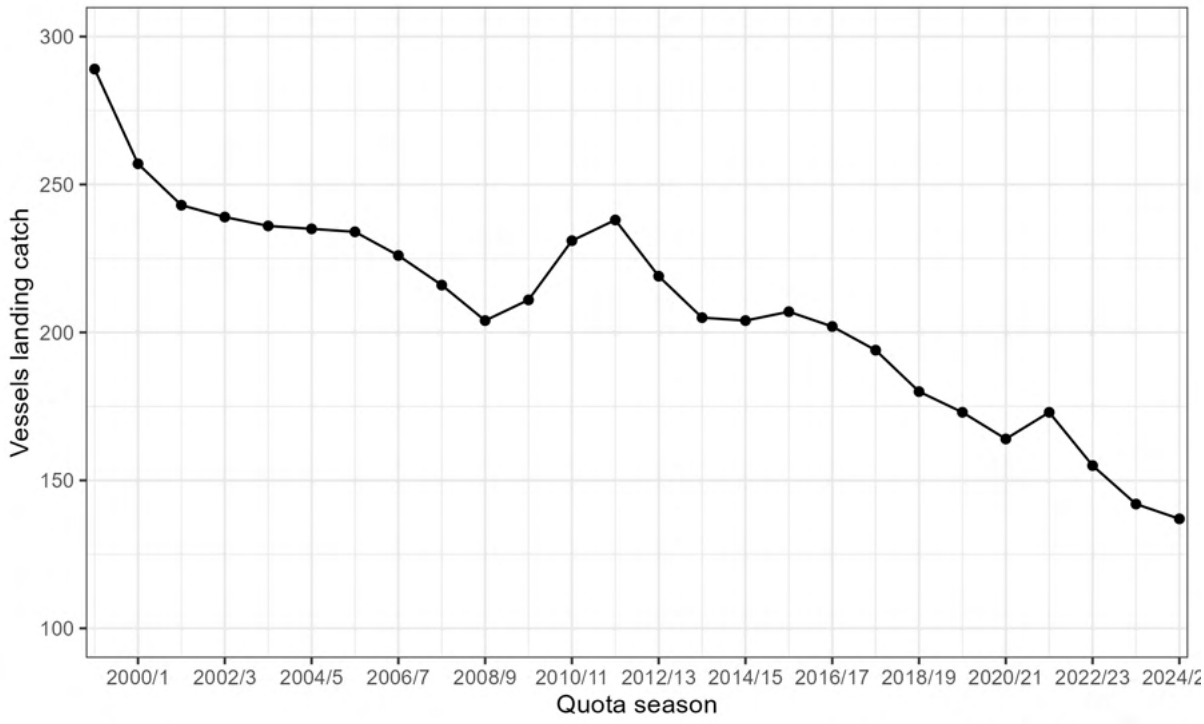

Figure 10: Total number of active vessels in the Tasmanian rock lobster fishery.

7 Assessment Model

Model background

The stock assessment model is an integrated length-based assessment (Gardner et al. 2015) which is applied on an annual basis. The assessment is spatially structured with eight areas around Tasmania, three of which are further divided into shallow and deep model areas. The assessment model uses biological information to inform the structure of the model and data to which the model is fitted.

Biological information on which the model is based includes:

- Spatially delineated growth (estimated outside of the model from mark-recapture data)
- Natural mortality
- Fecundity by length
- Sexual maturity by size (based on observer data)
- Movement probability (based on mark-recapture data)

Data to which the model is fitted includes:

- Standardised CPUE data
- Commercial catch
- Recreational catch
- Length frequency data (observer, fixed site and research pots)

A separate projection model is used to examine the potential outcomes of different management actions. A stock-recruitment relationship has not been established and future recruitment (defined as new 60mm+ lobsters) is based on the period from 2000 to the most recent reliable recruitment estimate (typically 3-4 years prior to the current assessment year). This period is dominated by the period following a marked downturn in recruitment that occurred across Australia in the mid 2000s (Linnane et al. 2019). The projection model uses the above data, biological parameters and outputs from the assessment model. It also incorporates a fleet dynamics model to predict the future spatial distribution of commercial catch.

Results from the long established stock assessment model are presented here. Work is currently underway to adapt the model to the assessment/management areas proposed in the draft harvest strategy. In parallel, a new assessment model framework being developed by DPIRD (Western Australia) is also being applied by IMAS to the new assessment areas. This will provide two assessment approaches that will be compared and contrasted in future work. These approaches will also utilise the reference levels in the new harvest strategy. In this assessment report the current levels continue to be reported against.

Statewide results indicate that egg production is at 45% which is well above the 30% limit reference point. This reference point has been set at a level below which subsequent recruitment may be impacted, hence is a critical limit reference point for ensuring sustainability. Furthermore the results indicate a high degree of certainty ($>$99%) that egg production exceeds the limit reference point. This is higher than the 90% level of certainty required.

An interim biomass target reference point had been set at 25% of the unfished biomass, this has been achieved with biomass currently estimated at 30%. The target reference point is reflective of the stock state desired by stakeholders for outcomes including sustainability, maximising economic rent and recreational amenity. The 25% target reference point is an extremely low value for a target when compared with those used in most fisheries; it was proposed as an interim target along a rebuild pathway. Now that it has been reached, a new target is being developed as part of the harvest strategy review that is currently underway and for which consultation is being undertaken.

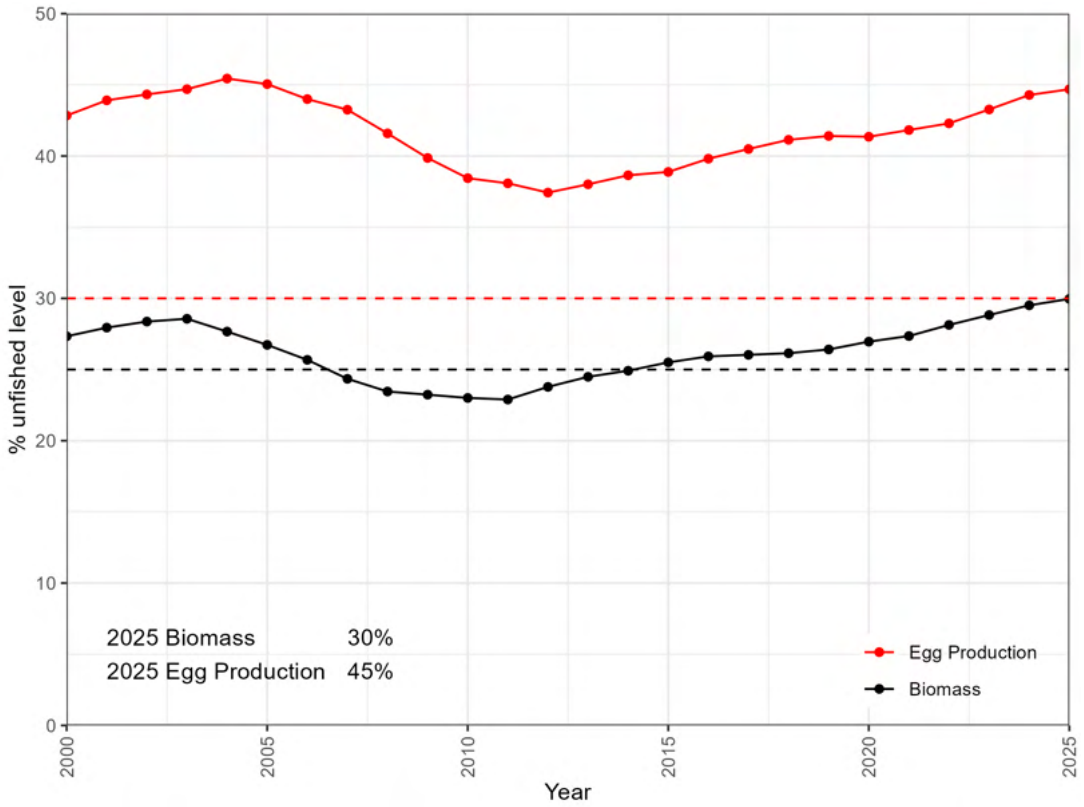

Figure 11: Statewide egg production (red) and biomass (black) as compared to the unfished level. Median values estimated for 2025 are shown in text. The red dashed line shows the 30% egg production limit reference point. The black dashed line shows the 25% interim target reference point for biomass.

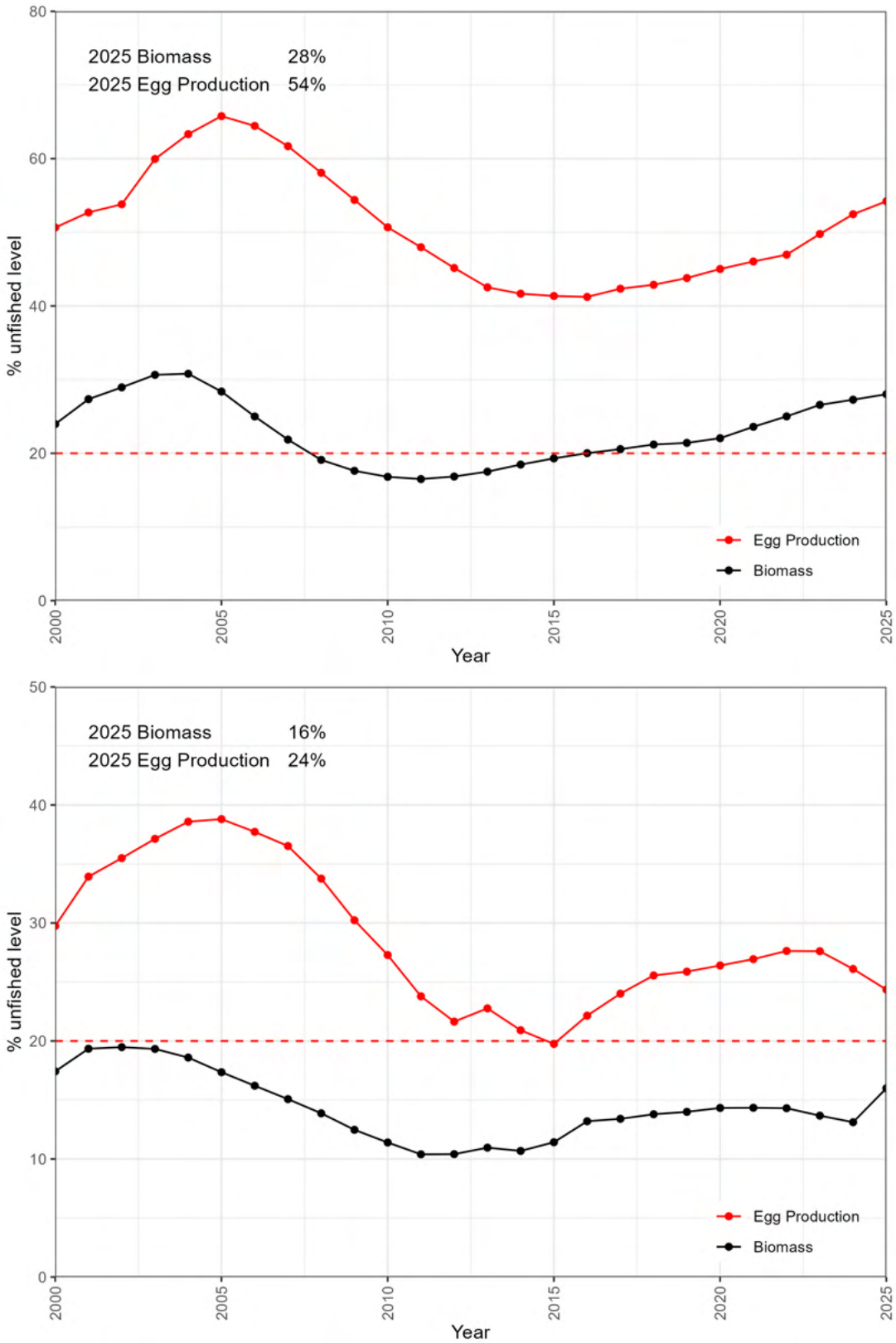

Figure 12: Area 1 (top) and Area 2 (bottom) egg production (red) and biomass (black) as compared to the unfished level. Median values estimated for 2025 are shown in text. The red dashed line shows the 20% level which has been used as an egg production reference level for individual areas.

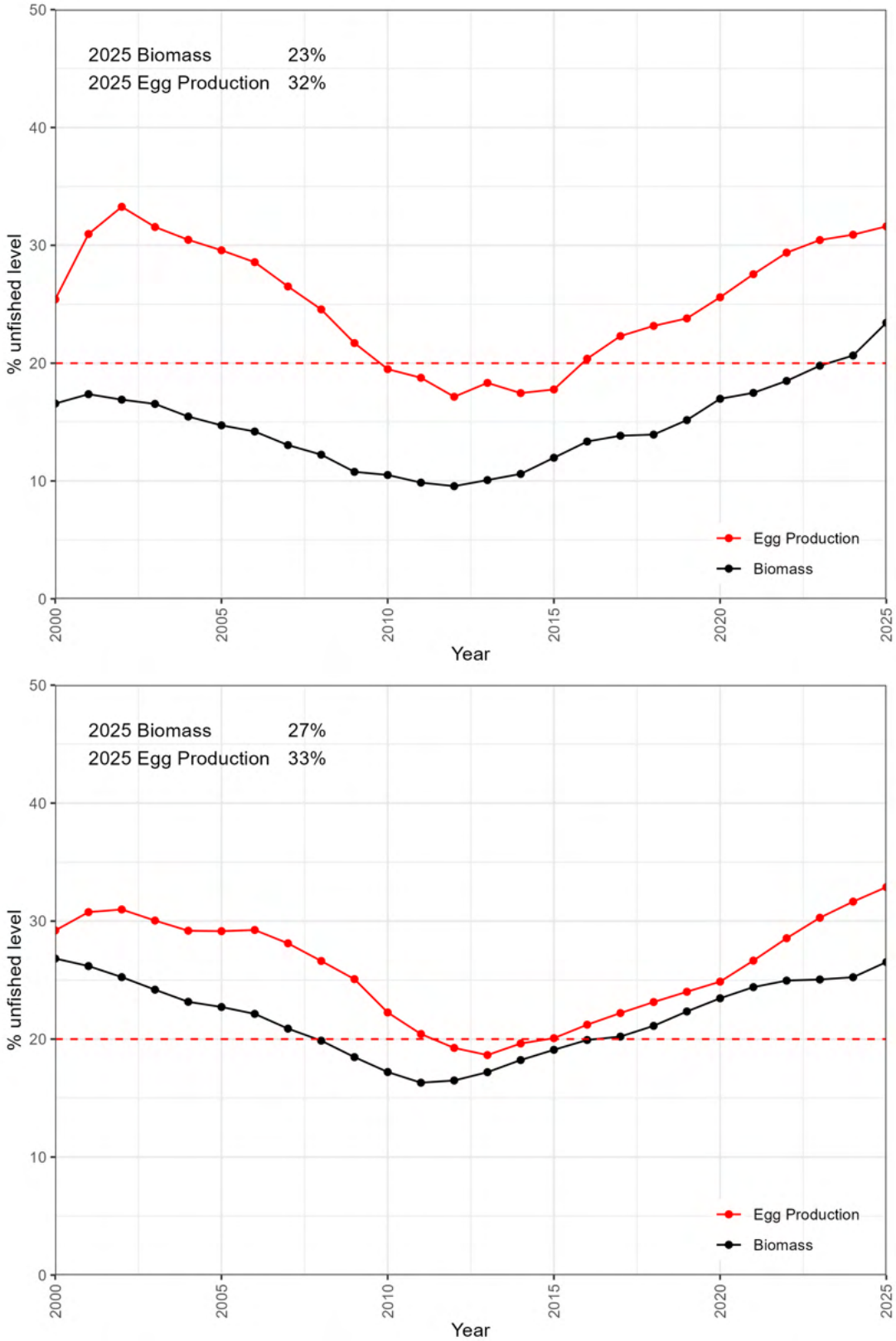

Figure 13: Area 3 (top) and Area 4 (bottom) egg production (red) and biomass (black) as compared to the unfished level. Median values estimated for 2025 are shown in text. The red dashed line shows the 20% level which has been used as an egg production reference level for individual areas.

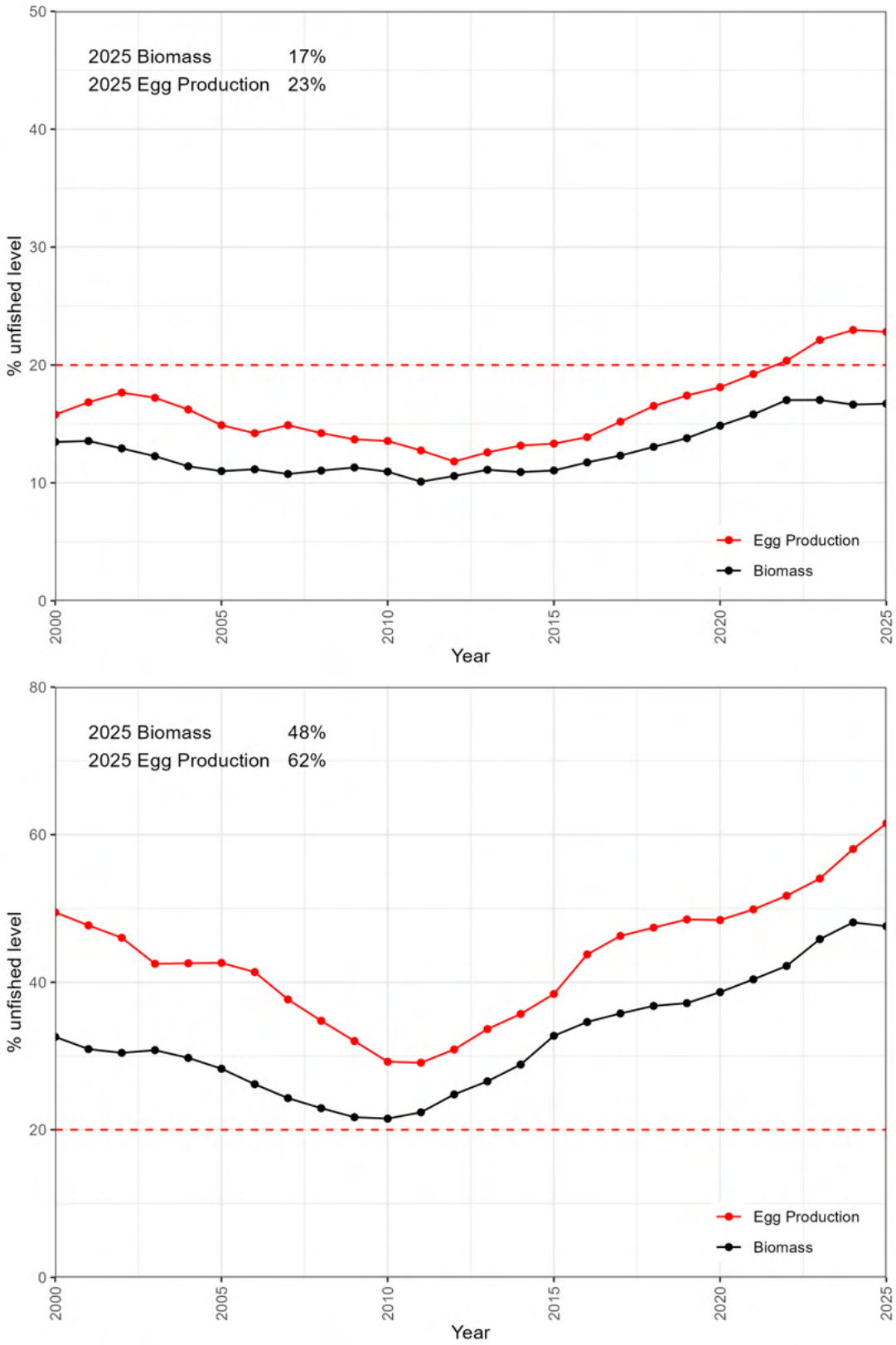

Figure 14: Area 5 (top) and Area 6 (bottom) egg production (red) and biomass (black) as compared to the unfished level. Median values estimated for 2025 are shown in text. The red dashed line shows the 20% level which has been used as an egg production reference level for individual areas.

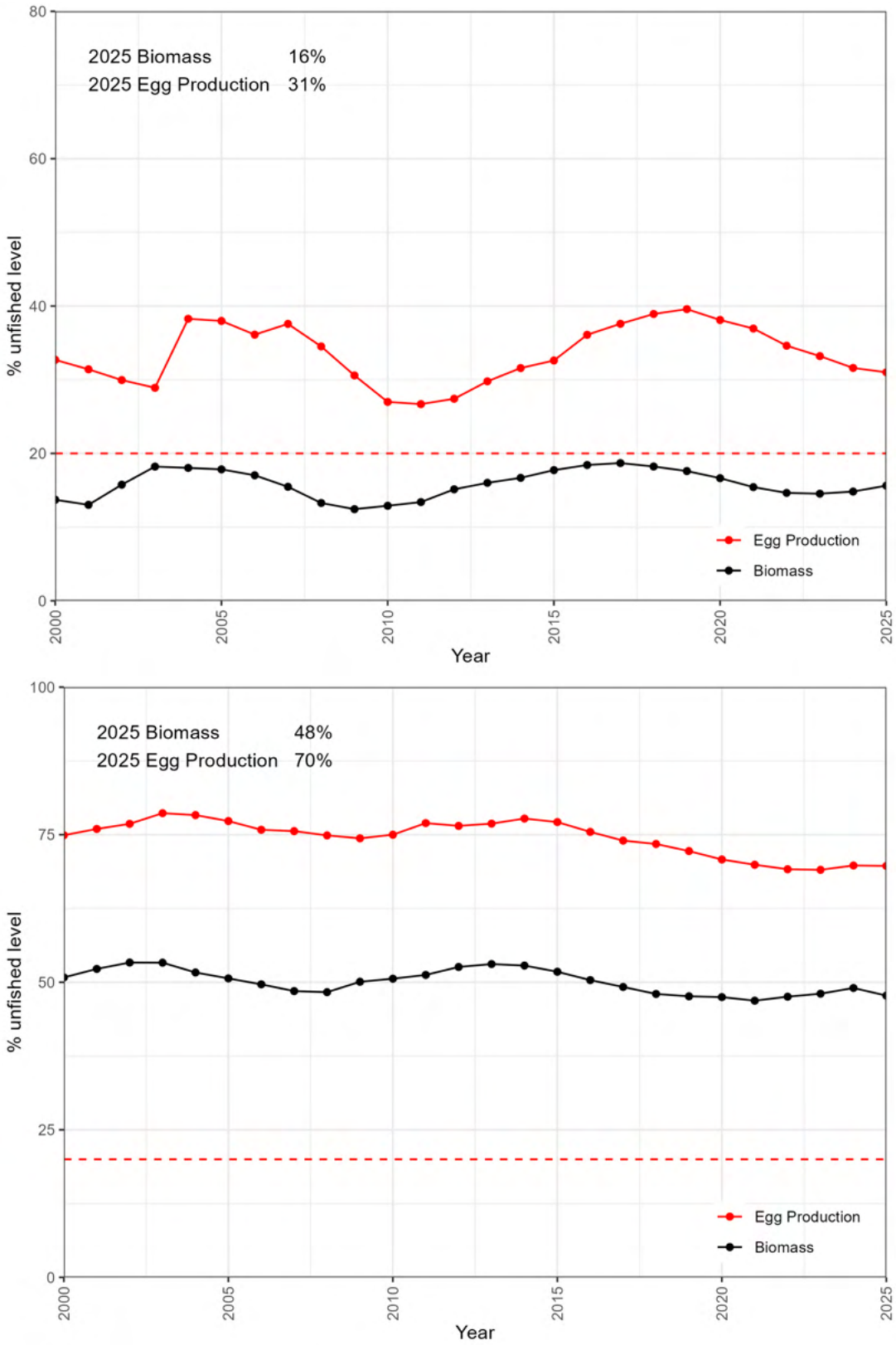

Figure 15: Area 7 (top) and Area 8 (bottom) egg production (red) and biomass (black) as compared to the unfished level. Median values estimated for 2025 are shown in text. The red dashed line shows the 20% level which has been used as an egg production reference level for individual areas.

8 Future Work

Since 2019 the Tasmanian Southern Rock Lobster assessment has been provided as an online interactive assessment report. This is the first year in which the interactive assessment report is accompanied by a traditional assessment report. This report has focussed on the target species and current management arrangements. The written report will continue to be provided in future years and will be expanded on significantly. Key changes and additions planned for the next few years are listed here.

- An ecological risk assessment (ERA) is planned for 2026 (to be incorporated in the 2026/27 assessment report). This will incorporate new information on bycatch and habitat impacts, including results from the potBOT camera system that is currently being deployed.
- Following the ERA, regular bycatch, byproduct and potBOT reporting will be included in the assessment report.
- The harvest strategy is in the final stages of development. Once finalised it is likely to define new assessment areas and reference points. Future fishery assessments will report against the revised areas and evaluate fishery performance against the harvest control rule. This is likely to be in place for the 2025/26 or 2026/27 assessment report).
- A new assessment model is being developed for application to the new assessment areas and harvest strategy, this will be adopted over the next 2-3 years with updates provided in the assessment reports.
- As part of the shift to a new assessment model, comprehensive model diagnostics and outputs are planned for inclusion as an appendix in future assessment reports.
- The process of adapting the model to the new harvest strategy requires a review of all biological parameters and data inputs, these will be clearly detailed in future assessment reports.

9 References

References

Abbott, E (1864). *The English & Australian Cookery Book*. Culinary Historians of Tasmania.

Attenbrow, V (2012). "The Aboriginal prehistory and archaeology of Royal National Park and environs: a review". In: *Proceedings of the Linnean Society of New South Wales*. Vol. 134.

Bradshaw, M (2004). "A combination of state and market through ITQs in the Tasmanian commercial rock lobster fishery: the tail wagging the dog?" In: *Fisheries Research* 67.2, pp. 99–109.

Bradshaw, Stephen, Klaas Hartmann, Katherine Cresswell, Caleb Gardner, Rafael León, and Samantha Twiname (2026). "Benefits of Lobster Translocation to Fishery Productivity and Economics in Tasmania". In: *Fisheries Management and Ecology* 33.2, pp. 271–281. DOI: https://doi.org/10.1111/fme.70022. eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/fme.70022. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/fme.70022.

Bradshaw, Stephen, Klaas Hartmann, Caleb Gardner, Katie Cresswell, and Denham Parker (2024). "Are we overthinking management zoning for the Tasmanian southern rock lobster fishery? A size of maturity approach". In: *Fisheries Research* 274, p. 106997. ISSN: 0165-7836. DOI: https://doi.org/10.1016/j.fishres.2024.106997. URL: https://www.sciencedirect.com/science/article/pii/S0165783624000614.

Byard, R and H Maxwell-Stewart (2024). "Estimating early contact-era populations for lutruwita (Tasmania)". In: *Asia-Pacific Economic History Review* 64.1, pp. 72–93.

Chandrapavan, A, C Gardner, and BS Green (2010). "Growth rate of adult rock lobsters Jasus edwardsii increased through translocation". In: *Fisheries Research* 105.3, pp. 244–247.

— (2011). "Haemolymph condition of deep-water southern rock lobsters (Jasus edwardsii) translocated to inshore reefs". In: *Marine and Freshwater Behaviour and Physiology* 44.1, pp. 21–32.

Chandrapavan, A, C Gardner, BS Green, A Linnane, and D Hobday (2011). "Improving marketability through translocation: a lobster case study from southern Australia". In: *ICES Journal of Marine Science* 68.9, pp. 1842–1851.

Chandrapavan, A, C Gardner, A Linnane, and D Hobday (2009a). "Colour variation in the southern rock lobster Jasus edwardsii and its economic impact on the commercial industry". In: *New Zealand Journal of Marine and Freshwater Research* 43.1, pp. 537–545.

Chandrapavan, A, MA Guest, PD Nichols, and C Gardner (2009b). "Translocating southern rock lobsters (Jasus edwardsii) from deep-water to shallow inshore water enhances nutritional condition through omega-3 long-chain polyunsaturated fatty acid content". In: *Journal of Experimental Marine Biology and Ecology* 375.1-2, pp. 9–15.

Fenton, J (2011). *A History of Tasmania: From Its Discovery in 1642 to the Present Time*. Cambridge University Press.

Ford, W (2001). "The effects of the introduction of individual transferable quotas in the Tasmanian rock lobster fishery". In: *FAO Fisheries Technical Paper*, pp. 112–123.

Frijlink, SD and JM Lyle (2013). *Establishing historical baselines for key recreational and commercial fish stocks in Tasmania*. University of Tasmania.

Frusher, S, L Eaton, and MB Bradshaw (2003). *Impact of management change to an ITQ system in the Tasmanian rock lobster fishery*.

Gardner, C, SD Frusher, N Barrett, M Haddon, and C Buxton (2006). *Spatial variation in size at onset of maturity of female southern rock lobster Jasus edwardsii around Tasmania, Australia*. University of Tasmania.

Gardner, C and EI Van Putten (2008). "The economic feasibility of translocating rock lobsters to increase yield". In: *Reviews in Fisheries Science* 16.1-3, pp. 154–163.

Gardner, Caleb, Klaas Hartmann, André E. Punt, and Sarah Jennings (2015). "In pursuit of maximum economic yield in an ITQ managed lobster fishery". In: *Fisheries Research* 161, pp. 285–292. ISSN: 0165-7836. DOI: https://doi.org/10.1016/j.fishres.2014.08.015. URL: https://www.sciencedirect.com/science/article/pii/S0165783614002604.

Green, B, C Gardner, AJ Linnane, D Hobday, A Chandrapavan, AE Punt, R McGarvey, K Hartmann, R Treloggen, H Revill, M Hoare, and P hawthorne (2011). *Spatial management of southern rock lobster fisheries to improve yield, value and sustainability*. University of Tasmania.

Green, BS and C Gardner (2009). "Surviving a sea-change: survival of southern rock lobster (Jasus edwardsii) translocated to a site of fast growth". In: *ICES Journal of Marine Science* 66.4, pp. 656–664.

Green, BS, C Gardner, A Linnane, and PJ Hawthorne (2010). "The good, the bad and the recovery in an assisted migration". In: *PloS One* 5.11, e14160.

Green, BS, H Pederson, and C Gardner (2013). "Overlap of home ranges of resident and introduced southern rock lobster after translocation". In: *Reviews in Fisheries Science* 21.3-4, pp. 258–266.

Harrison, AJ (2006). "To inquire into the fisheries of the colony". In: *Papers and Proceedings: Tasmanian Historical Research Association*. Vol. 53. 3, pp. 138–157.

— (2008). *The development and management of the Tasmanian Spiny Rock Lobster Fishery 1803 -1985 (formerly known as the Crayfishery)*. English. Periodical; Periodical/Journal, magazine, other. URL: https://nla.gov.au/nla.obj-1837795614.

Hartmann, K, C Gardner, R Leon, and J Rizzari (2019). "Fishery Assessment Report-Tasmanian Rock Lobster Fishery 2017/18". In: *Institute for Marine and Antarctic Studies, Fishery Assessment Report, 29p*.

Howeler-Coy, JF (1966). *An account of food and drink in Tasmania, 1800-1900*. University Of Tasmania.

Johnson, M and I McFarlane (2015). *Van Diemen's land: an aboriginal history*. UNSW Press.

Knopwood, R (1946). *The diary of the Rev. Robert Knopwood, 1805-1808. pt. 1*. University of Tasmania.

— (1947). *The Diary of the Rev. Robert Knopwood, 1805-1808, pt. 2-Continued from the Papers and Proceedings of the Royal Society of Tasmania, 1946, p. 124*. University Of Tasmania.

Linnane, A, C Gardner, D Hobday, A Punt, R McGarvey, J Feenstra, J Matthews, and B Green (2010). "Evidence of large-scale spatial declines in recruitment patterns of southern rock lobster Jasus edwardsii, across south-eastern Australia". In: *Fisheries Research* 105.3, pp. 163–171.

Linnane, Adrian, Anthony D.M. Smith, Richard McGarvey, John E. Feenstra, Janet M. Matthews, Klaas Hartmann, and Caleb Gardner (2019). "Trends in productivity of Southern Rock Lobster Jasus edwardsii, across south-eastern Australia: Evidence of a regime shift?" In: *Fisheries Research* 219, p. 105308. ISSN: 0165-7836. DOI: https://doi.org/10.1016/j.fishres.2019.105308. URL: https://www.sciencedirect.com/science/article/pii/S0165783619301559.

Natural Resources, Department of and Environment Tasmania (n.d.). *MS Windows NT Kernel Description*. https://fishing.tas.gov.au/community/fisheries-management/rock-lobster-stock-rebuilding/rock-lobster-translocation. Accessed: 2025-03-25.

O'Connell, JF and J Allen (2012). "Forum The Restaurant At The End Of The Universe: Modelling the colonisation of Sahul". In: *Australian Archaeology* 74.1, pp. 5–31.

O'Connell, JF, J Allen, and K Hawkes (2010). "Pleistocene Sahul and the origins of seafaring". In: *The global origins and development of seafaring*, pp. 57–68.

Parliament, Tasmania (1882). "Royal Commission on the fisheries of Tasmania: report of the Commissioners". In: *House of Assembly Journals, vol XLIII, no 132*.

Phillips, G, L Kriwoken, and P Hay (2002). "Private property and public interest in fisheries management: the Tasmanian rock lobster fishery". In: *Marine Policy* 26.6, pp. 459–469.

Plomley, NJB and J Piard-Bernier (1993). "The General: the visits of the expedition led by Bruny d'Entrecasteaux to Tasmanian waters in 1792 and 1793". In: *(No Title)*.

Punt, AE, RB Kennedy, and SD Frusher (1997). "Estimating the size-transition matrix for Tasmanian rock lobster, Jasus edwardsii". In: *Marine and Freshwater Research* 48.8, pp. 981–992.

Ranson, DM (2020). "Frontier of space, frontier of mind: the British invasion of Loonwonnylowe". PhD thesis. University Of Tasmania.

Rust, S and E Ogier (2023). *Tasmanian Fisheries and Aquaculture Industry 2020/21: Economic Contributions Technical Report*. Institute for Marine and Antarctic Studies, University Of Tasmania.

Twiname, S, JM Lyle, R Pearn, SR Tracey, K Hartmann, and NC Krueck (2022). *Options to effectively monitor and regulate recreational catch in the Tasmanian rock lobster fishery*. University of Tasmania.

Winstanley, R (1973). "Rock lobster fishing in Tasmania, 1904-1972". In: *Tasmanian Fisheries Research* 7.1, pp. 1–23.