NSW GOVERNMENT
Industry & Investment

HATCHERY PRODUCTION OF THE SYDNEY COCKLE, *Anadara trapezia*

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Anadara trapezia

1. BACKGROUND & NEED

Why This Research Matters

Despite over 20 years of research interest, the early ontogeny and hatchery production techniques for the Sydney cockle (*Anadara trapezia*) have not been comprehensively documented. We synthesised observations from four hatchery production attempts conducted between 1992 and 2025 to establish baseline protocols for future commercial aquaculture and stock restoration programs.


Broodstock conditioning

PRODUCTION PIPELINE

Broodstock Conditioning
Healthy adults conditioned and spawned

Spawning & Fertilisation
High quality eggs produced

Larval Rearing
Larval development in controlled conditions

Settlement
Optimal settlement substrates used

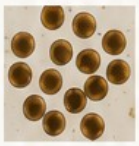
Juvenile Culture
Grow-out of attached juveniles

Restocking & Restoration
Support restoration of depleted populations

2. FINDINGS – EARLY DEVELOPMENT

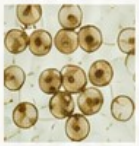
The early development of *A. trapezia* follows patterns typical of other arcid bivalves.

0 h



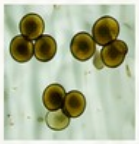
Eggs (62 µm)
Females produced over 2 million eggs.

24 h



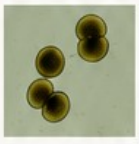
D-stage veligers
Developed within 24 hours post-fertilisation.

Day 6



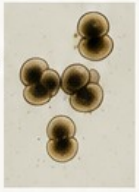
Umbonate larvae
Umbonate larvae appeared by day 6.

Day 14



Eyed larvae (220 µm)
Observed as early as day 14.

Day 16–20



Metamorphosis
Occurred over day 16–20 after which juveniles formed persistent byssal attachments to settlement substrates.

Post metamorphosis



Juvenile attachment
Juveniles form persistent byssal attachments to substrate.

KEY PRODUCTION OUTCOMES

SURVIVAL
64%
Survival to the eyed larval stage in optimal conditions.

METAMORPHOSIS
~50%
Of eyed larvae successfully metamorphosed.

BEST SETTLEMENT SUBSTRATES
- Downwelling screens
- Plastic mesh

Most suitable for commercial applications.

All observations based on four hatchery production attempts conducted between 1992 and 2025.

3. OUTCOMES & IMPACT

PRACTICAL OUTCOMES

All production runs utilized standard equipment and feeding protocols developed for commercial oyster culture, requiring no specialized infrastructure.

REAL-WORLD APPLICATION

This technology is now being used to restock depleted cockle populations in New South Wales, Australia.



SUPPORTING A SUSTAINABLE FUTURE

Restoration of depleted Sydney cockle populations in NSW estuaries.

Provides baseline protocols for commercial aquaculture of *A. trapezia*.

Enables Indigenous and community participation in shellfish restoration.

Supports biodiversity, ecosystem health and sustainable fisheries.

From hatchery to habitat – restoring our native shellfish for future generations.

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Science-based hatchery techniques supporting restoration and sustainable aquaculture.