

Farming the Sydney rock oyster

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The 120-year-old Sydney rock oyster industry in NSW and southern Queensland is one of the oldest aquaculture industries in Australia. Sydney rock oysters, *Saccostrea glomerata* (formerly known as *S. commercialis*) are farmed in estuarine areas and rivers north (lat. 37°S) up to Hervey Bay Queensland (lat. 24°S), from the Victoria/New South Wales (NSW) border and at Albany in Western Australia (lat. 35°S). However, the natural distribution of Sydney rock oysters continues on further north from Hervey Bay Queensland, through subtropical Queensland, across the tropical north and down the west coast as far south as Shark Bay (lat. 25°S) in Western Australia. The Sydney rock oyster industry in NSW directly employed 590 fulltime and 410 part-time people in 2002/03, more than any other form of aquaculture in NSW. The total NSW and southern Queensland Sydney rock oyster production for 2002/3003 was 7,793,390 dozen with a reported farm gate value of \$33.2 million. Production has been fairly stable at this level since 1989/90.

The oyster industry in New South Wales continues to restructure, with the number of people with permits to farm oysters falling from 474 in 1994/95 to 391 in 2002/03. This fall in numbers has been attributed to producers with little or no production leaving the industry largely as a result of increasing fees and charges. In Queensland there were 32 Sydney rock oyster farmers in 2002/03. This recent decline in the number of producers has had minimal impact on production.

Farming methods

The Sydney rock oyster industry in NSW and Queensland is largely dependent on natural spatfall, which has always been abundant and reliable. It takes the Sydney

rock oyster on average 3½ years to reach Plate size (50 g whole weight) the most desirable size grade. Traditionally, the larvae of wild Sydney rock oysters were caught on tarred hardwood sticks. Oysters are knocked off these sticks at 0.5 – 3.0 years of age for growing intertidally on timber frame trays (1.8 x 0.9 m) with plastic mesh bottoms, which are placed on timber racks. Alternative growing systems such as baskets and tumblers are also being used, and some oysters are grown subtidally on rafts or on floating culture. To reduce the amount of tarred timber used in the construction of oyster racks, high-density polyethylene (HDPE) plastic systems are being developed and used. One example is the intertidal post supported longline system, with horizontally suspended plastic tubes of 41 x 91 cm, developed by South Australian oyster farmers.

Because of reliable natural spatfall, this industry had not used hatchery technology before 2003. At this time however results from NSW Department of Primary Industries' breeding program using mass selection techniques showed an 11 months reduction in time to grow oysters to a market size of 50 g whole weight. This encouraged industry to consider hatchery technology.

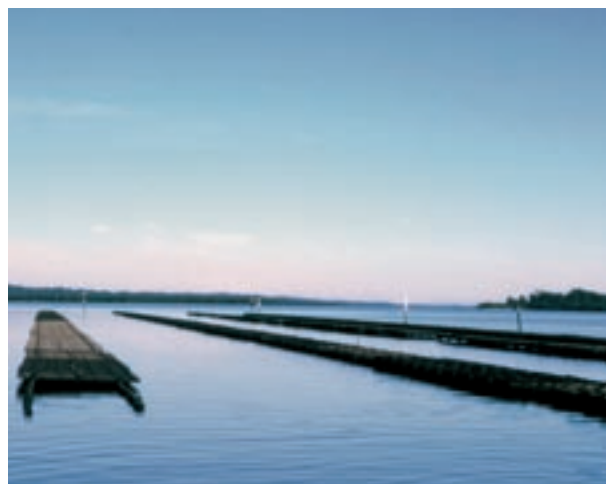


Figure 1: Timber trays in Cromarty Bay, Port Stephens, NSW

Harvesting and marketing

The NSW Shellfish Program (NSWSP) is modelled on the Australian Shellfish Quality Assurance Program (ASQAP) and requires that shellfish harvest areas be classified on the basis of a sanitary survey and the results of an ongoing strategic water-sampling program. The NSW program also requires that all oysters harvested in that state be purified for 36 hours before marketing for human consumption. With the implementation of the ASQAP, the requirement for depuration is determined by the classification of a harvest area. This ensures that the quality of marketed oysters in NSW is very high. Live Sydney rock oysters are best stored at 8-10°C and at this temperature can be kept alive in an excellent condition for 2 weeks. Opened oysters, however should be refrigerated at 4°C and have a typical shell life of 7-10 days. The Sydney rock oyster is a gourmet oyster and is best eaten fresh on the half-shell.



Figure 2: A plate of Sydney rock oysters on the half-shell.
Photograph: Ray Alley.

Currently there are no uniform oyster grade specifications for Sydney rock oysters, however common sizes for Sydney rock oysters are: Plate, Bistro and Bottle grade oysters with an average whole weight of 50, 45 and 35 g respectively, which equates to an approximate shell length of around 77, 73 and 66 mm, respectively. There has been a gradual decline in the proportion of Plate grade oysters sold by farmers from 50% in 1994/95 down to 25% in 2002/03, in favour of smaller Bistro and Bottle grades. While this trend is to some extent a result of market forces and disease management strategies, it is to a large extent determined by a need to maintain cash flow in this capital and labour intensive industry.

Oysters in Australia are produced for the half-shell market. Exports of the Sydney rock oysters are still relatively small and account for <1% of the value of oysters produced. However, the industry is keen to expand markets through export. It is thought that this will have the added advantage of improving the price of oysters on the local market. The implementation of the NSW Shellfish Program will facilitate the development of new export markets in Asia.

Research

Research for the Sydney rock oyster industry is guided by the 2003-2007 R&D Strategic Plan, which set priorities. Ecological sustainability is vital for the future of the industry. Studies of carrying capacities of NSW estuaries will assist the industry to optimise the stocking of oysters on leases. Research into diseases affecting oysters has developed better detection methods to assist the industry and assists NSW DPI to regulate the movement of oysters between estuaries. It should be noted that people are not affected by oyster diseases. Research is also being undertaken into the effect of research studies include the effect of the environment on the oyster's immune system.

The trend away from Plate size oysters to smaller grades such as Bistro and Bottle grade oysters is a concern for the industry, as it may reduce profitability. The industry is currently developing uniform size grades to help address this problem, aiming to increase sales in the local market and to promote exports. Biofouling of oysters and overcatch (young oysters settling on older oysters) is still a problem for the industry. Currently, this problem is dealt with by a mix of methods, such as leaving oysters out of water for up to 7-10 days to kill overcatch, dipping oysters in around 85°C hot water for 2-3 seconds, immediately followed by cooling in cold water, or culling oysters by hand. All these methods are costly and time consuming. The industry needs a simple and affordable management tool to overcome this difficult problem which would allow the industry to restock currently under-utilised growing areas that are subject to some overcatch.

Oyster breeding and hatchery production

NSW DPI established a breeding program in 1990 in Port Stephens and the Georges River with the aim of selecting Sydney rock oysters for faster growth. This program was later expanded to include selection for resistance to the two major diseases, winter mortality and QX. Mass selection techniques have been used and oysters selected for five generations in Port Stephens, NSW, now reach a market size (50 g whole weight) 11 months earlier than the average time to market of 3½ years. The program has also been developing oysters that are resistant to QX disease (*Marteilia sydneyi*) and winter mortality (*Bonamia roughleyi*). QX disease may kill over 80% of all oysters in the upper reaches of seriously affected estuaries annually.

Unfortunately, while large batches of several million Sydney rock oyster spat have been produced in hatcheries in NSW, the techniques have not been sufficiently reliable for commercial adoption. This has prevented industry from having reliable access to improved oysters. Overcoming the constraints to commercial scale hatchery and nursery production is the research priority in a three-year project supported by NSW DPI, NSW Oysters Farmers and the Fisheries Research and Development Corporation that commenced in July 2003. By July 2004, significant improvements had been made in hatchery and nursery rearing that demonstrated that repeated commercial-scale production Sydney rock oyster spat is possible. Over 10 million spat or 8% of the Sydney rock oyster industry annual requirement were purchased by the industry in 2003/04. These spat

were produced from one of NSW DPI's fast growth breeding lines from Port Stephens.



Figure 3: Floating culture in Wallis Lake, NSW

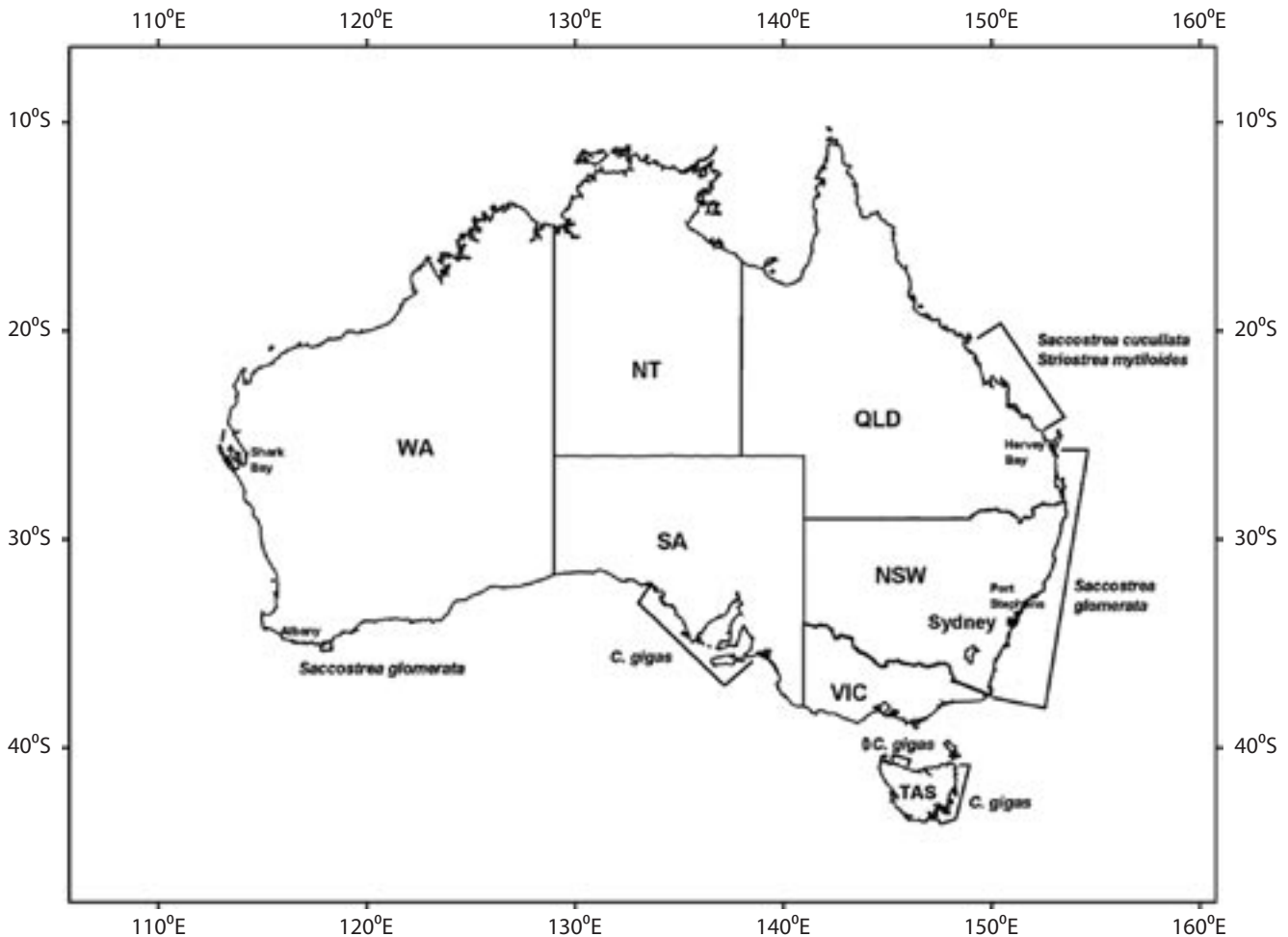


Figure 4: Oyster growing areas in Australia
Map: Francis Dorman

Other oyster fishnotes

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Relevant websites

NSW Department of Primary Industries
www.dpi.nsw.gov.au

Fisheries Research and Development Corporation
www.frdc.com.au

NSW Farmers' Association
www.nswfarmers.org.au

Oyster Farmers' Association of NSW Ltd
www.oysterfarmers.asn.au

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