Oyster Advisory Publications

Farming

Debrosse, G.A., Allen, S.K., Jr., 1993. Control of overset on cultured oysters using brine solutions. Journal of Shellfish Research 12, 29-33.

Overcatch of spat (<0.5 mm shell height), was killed off by dipping eastern oysters Crassostrea virginica in 200‰ brine for 5 - 10 minutes, followed by 6 hours aerial exposure.

Cookson, L.J., 1999. Twenty year marine trial of single and double preservative treated timber specimens in Australia. Material und Organismen 33, 65-79.

Double treatment of both hardwood and softwood with Tanalith C followed by high temperature creosote ensured that timber lasted for at least 20 years.

Heasman, M., Lyall, I., 2000. Proceeding of the workshop held on 3 March 2000 at the Sydney Fish Markets: Problems of producing and marketing the flat oyster *Ostrea angasi* in NSW. Fisheries Report Series: 6, NSW Fisheries Fisheries Research Institute, Cronulla NSW, 54 pp

Hatchery, nursery, farming and post-harvest handling techniques used to produce flat oysters in cental and southern NSW over the past three years and in Port Philip Bay, Victoria between 1986 and 1992, were reviewed in some detail.

Holliday, J.E., Allan, G.L., Frances, J., Diver, L.A., 1993. Evaluation of commercially-used collectors for Sydney rock, *Saccostrea commercialis* and Pacific oysters, *Crassostrea gigas*. Aquaculture Engineering 12, 63-79.

Density at settlement and retention of Sydney rock and Pacific oyster spat on most PVC collectors was higher than on traditionally used tarred sticks.

Holliday, J.E., 1996. Effects of surface orientation and slurry coating on settlement of Sydney rock, *Saccostrea commercialis*, oysters on PVC slats in a hatchery. Aquaculture Engineering 15, 159-168.

Both non-coated and lime and cement slurry coated PVC slats were suitable for settlement of Sydney rock oyster larvae in hatcheries.

Holliday, J.E., Allan, G.L., Nell, J.A., 1993. Effects stocking density on juvenile Sydney rock oysters, *Saccostrea commercialis*, in cylinders. Aquaculture 109, 13-26.

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Biomass gain of 0.2 and 0.4 g spat was optimised by stocking at densities of 2.0 and 3.0 L of oysters/cylinder respectively.

Holliday, J.E., Maguire, G.B., Nell, J.A., 1988. Alternative cultivation methods for the Sydney rock oyster (*Saccostrea commercialis*). In: L.H. Evans, D. O'Sullivan (Editors), Proceedings of the First Shellfish Aquaculture Conference, Curtin University of Technology, Perth, WA, pp. 234-265.

The traditional intertidal stick and tray farming system, subtidal culture and single seed farming systems were described.

Holliday, J.E., Maguire, G.B., Nell, J.A., 1991. Optimum stocking density for nursery culture of Sydney rock oysters (*Saccostrea commercialis*). Aquaculture 96, 7-16.

Growth rates of spat declined with increasing stocking densities.

Jakob, G.S., Wang, J-K., 1994. The effect of manual handling on oyster growth in land-based cultivation. Journal of Shellfish Research 13, 183-186.

Frequent handling increased oyster growth rate.

Mason, C.J., Reid, D.D. and Nell, J.A., 1998. Growth characteristics of Sydney rock oysters *Saccostrea commercialis* in relation to size and temperature. Journal of Experimental Marine Biology and Ecology 227, 155-168.

Comparison of growth rates of oysters of different sizes may be misleading.

Nell, J.A., 1993. Farming the Sydney rock oyster (*Saccostrea commercialis*) in Australia. Reviews in Fisheries Science 1, 97-120.

The state of the oyster industry in 1993 was described.

Nell, J.A., 2001. The history of oyster farming in Australia. Marine Fisheries Review 63 (3), 14-25.

The history of oyster farming in Australia was described.

Nell, J.A. and Chvojka, R., 1992. The effect of bis-tributyltin oxide (TBTO) and copper on the growth of juvenile Sydney rock oysters *Saccostrea commercialis* (Iredale & Roughley) and Pacific oysters *Crassostrea gigas* Thunberg. Science of the Total Environment 125, 193-201.

Growth rates of spat were reduced by as little as 5 ng TBTO /L or 5 ppt (part per trillion).

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NSW DPI takes no responsibility for the accuracy of the information in any of these references. Farmers who adopt or test any of the recommendations in this list of Oyster Advisory Publications do so at their own risk.

Paterson, K.J., Schreider, M.J., Zimmerman, K.D., 2003. Anthropogenic effects on seston quality and quantity and the growth and survival of Sydney rock oyster (*Saccostrea glomerata*) in two estuaries in NSW, Australia. Aquaculture 221, 407-426.

Growth rates are higher and survival of oysters is lower in developed parts of estuaries.

Potter, M.A., 1983. Growth rates of cultivated Sydney rock oysters, *Saccostrea* (*Crassostrea*) *commercialis*, in two estuaries in subtropical southern Queensland. Queensland Journal of Agricultural and Animal Sciences 40, 137-140.

The Southport Broadwater, Ningi Creek in Moreton Bay were suitable for tray cultivation.

Potter, M.A., Hill, B.J., 1982. Heat mortality in the Sydney rock oysters, *Saccostrea* (*Crassostrea*) *commercialis* and the effectiveness of some control methods. Aquaculture 29, 101-108.

The effectiveness of oyster shade cloth and water spraying, which were used to counteract heat kill in the industry, were investigated. Shade cloth at high temperatures (35-45^{o}C) reduced tissue temperatures between 2-4^{o}C. The temperature of oysters sprayed with water did not exceed the temperature of the sprayed water. Both methods provided effective protection, but continuous spraying appears to be preferable while hot, potentially lethal, temperatures prevail. There was no temperature difference between clean and muddy oysters.

Skeel, M., 1975. Vice of the mudworm. Australian Fisheries 34(12), 24.

There are about 100 species of the two common types of Australian mudworms, called Polydora and Boccardia, but only four of these have been found in Sydney rock oysters.

Skeel, M., 1977. Further investigations on mudworm in oysters. Australian Fisheries 36(2), 22-23.

Washing oysters and raising growing height may control Mudworm.

Skeel, M.E., 1979. Shell-boring worms (Spinodae: *Polychaeta*) infecting cultivated bivalve molluscs in Australia. Proceeding of the World Mariculture Society 10, 529-533.

Polydora websteri is the most damaging mudworm in NSW.

Wolf, P., 1972. Status of the current research programme on oysters. The Fisherman 4(4), 1-2.

Many oysters carrying winter mortality ulcerations survive.

Wolf, P., 1975. Results of pathology projects. Australian Fisheries 34(12), 25-26.

Winter mortality kill is largely eliminated by raising growing height 300 mm above normal rack height.

Smith, I.R., Nell, J.A., Adlard, R.D., 2000. The effect of growing height and growing method on winter mortality in diploid and triploid Sydney rock oysters *Saccostrea glomerata* (Gould, 1850). Aquaculture 185, 197-205.

Single seed oysters were not more susceptible to winter mortality than stick oysters.

Genetics and breeding

Allen, S.K., Jr., 1998. Commercial applications of bivalve genetics: not a solo effort. World Aquaculture 29(1), 38-43.

The current status and future of polyploidy and selective breeding in oysters was reviewed.

Hand, R.E., Nell, J.A., Thompson, P.A., 2004. Studies on triploid oysters in Australia. XIII. Performance of diploid and triploid Sydney rock oysters, *Saccostrea glomerata* (Gould, 1850) progeny from a third generation breeding line. Aquaculture 233, 93-107.

The faster growth achieved with triploidy is fully additive to that achieved with selective breeding, time to market in triploids produced from fast growing breeding lines is reduced by an additional 3 months

Haskin, H.H., Ford, S. E., 1979. Development of resistance to *Minchinia nelsoni* (MSX) mortality in laboratory-reared and native oyster stocks in Delaware Bay. Marine Fisheries Review 41, 54-63.

Survival for MSX resistance was improved by 14% per generation, when mortality for controls was around 90%.

Naciri-Gravin, Y., Martin. A.G., Baud, J.P., Renault, T. and Gérard, A., 1998. Selecting the flat oyster *Ostrea edulis* (L.) for survival when infected with the parasite *Bonamia ostreae*. Journal of Experimental Marine Biology and Ecology 224, 91-97.

Disclaimer

A 15% improvement in survival/generation was recorded over three generations of selective breeding for resistance against Bonamia ostreae. No improvement in resistance in wild oysters was observed. This might have been the result of the early sale of resistant oysters.

Nell, J.A., Hand, R.E., 2003. Evaluation of the progeny of second-generation Sydney rock oyster *Saccostrea glomerata* (Gould, 1850) breeding lines for resistance to QX disease *Martelia sydneyi*. Aquaculture 228, 27-35.

Selection for resistance to QX disease was successful.

Nell, J.A., Perkins, B., 2005. Evaluation of progeny of fourth generation Sydney rock oyster *Saccostrea glomerata* (Gould, 1850) breeding lines. Aquaculture Research 36, 753-757.

The average reduction in time to market size for oysters of all four breeding lines was 12.5 months.

Nell, J.A., Smith, I.R., McPhee, C.C., 2000. The Sydney rock oyster *Saccostrea glomerata* (Gould 1850) breeding programme: progress and goals. Aquaculture Research 31, 45-49.

The history of the Sydney rock oyster-breeding program for 1990 to 2000 was described.

Nell, J.A., Smith, I.R., Sheridan, A.K., 1998. Third generation evaluation of Sydney rock oyster *Saccostrea commercialis* (Iredale and Roughley) breeding lines. Aquaculture 170, 195-203.

Time to market (40-60 g) was after 2 generations of selective breeding was reduced by 3 months out of the usual 3½ years.

Newton, K., Peters, R. and Raftos, D.A., 2004. Phenoloxidase and QX disease resistance in Sydney rock oysters (*Saccostrea glomerata*). Developmental and Comparative Immunology 28, 565-569.

The QX disease resistant breeding lines produced by NSW Fisheries have enhanced phenoloxidase activities.

Sheridan, A.K., 1997. Genetic improvement of oyster production-a critique. Aquaculture 153, 165-179.

Although, heritability estimates for oyster production were extremely variable, it was encouraging that all of the oyster selection experiments were successful in altering the selected trait in the direction of selection.

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Ward, R.D., English, L.J. McGoldrick, D.J., Maguire, G.B., Nell, J.A., Thompson, P.A., 2000. Genetic improvement of the Pacific oyster *Crassostrea gigas* (Thunberg) in Australia. Aquaculture Research 31, 35-44.

This review described the Pacific oyster-breeding program in Tasmania, which was commenced in 1997/97. Mass, family and marked assisted selection were discussed.

Nell, J.A., Perkins, B., 2006. Evaluation of the progeny of third generation Sydney rock oyster *Saccostrea glomerata* (Gould, 1850) breeding lines for resistance to QX disease *Martelia sydneyi* and winter mortality *Bonamia roughleyi*. Aquaculture Research 37, 693-700.

Dual resistance to QX disease and winter mortality was achieved.

Nell, J., 2006. Manual for mass selection of Sydney rock oysters for fast growth and disease resistance. NSW Department of Primary Industries – Fisheries Research Report Series: 13, New South Wales Department of Primary Industries, Cronulla, NSW, 53 pp + 110 pp. Appendices.

This review described the methods used for selection for fast growth and disease resistance in Sydney rock oysters from 1990 – 1996.

Depuration

Azanza, M.P.V., 1995. Uptake, elimination and survival of *Vibrio vulnificus* in Sydney rock oyster, *Saccostrea commercialis*. PhD Thesis, University of New South Wales, Kensington, NSW, 209 pp.

Findings on Vibrio vulnificus uptake, depuration as persistence in oysters during storage were reported. Clearance of the bacterium during depuration was more effective at 25 than at 20^{o}C. Low temperature (<10^{o}C) storage of oyster meats reduced bacterial numbers whereas storage at 20 and 30^{o}C increased them.

Bird, P., Arnold, G., Holliday, J., 1990. Purification of Pacific oysters (*Crassostrea gigas*) and Sydney rock oysters (*Saccostrea commercialis*). NSW Department of Health Publication, Sydney, NSW, 22 pp.

Preliminary research indicated that Pacific oysters can be purified under the same conditions as prescribed for Sydney rock oysters.

Brady, L.M., Concannon, A.J., 1984. *Vibrio vulnificus* septicaemia. Medical Journal of Australia 140, 22-23.

Disclaimer

A patient, who had been receiving treatment for refractory anaemia with excess myeloblasts for three years, developed septic shock due to Vibrio vulnificus septicaemia. The infection was believed to have been introduced with the ingestion of raw oysters.

Buisson, D.H., Fletcher, G.C., Begg, C.W., 1981. Bacterial depuration of the Pacific oyster (*Crassostrea gigas*) in New Zealand. New Zealand Journal of Science 24, 253-262.

The following conclusions were drawn form depuration studies on Pacific oysters in New Zealand:

- The closed system using UV sterilisation was effective.
- A flow of 2½ cycles of water per hour is effective for depuration.
- Depuration may be carried out between 5 and 24^{o}C.
- Depuration may be carried out at densities of up to 3 oysters/L of seawater.
- One day of depuration is sufficient.

Eyles, M.J., Davey, G.R., 1984. Microbiology of commercial depuration of the Sydney rock oyster, *Crassostrea commercialis*. Journal of Food Protection 47 (9), 703-706.

The purification had little impact on the incidence or concentration of Vibro parahaemolyticus.

Jackson, K.L., Ogburn, D.M., 1999. Review of depuration and its role in shellfish quality assurance. Final Report to Fisheries Research and Development Corporation (FRDC), NSW Fisheries Final Report Series, Report No. 13, NSW Fisheries, Pyrmont, 77 pp.

A summary of current "state of the art" and limitations of purification technology and recommendations for further research.

Richards, G.P., 1988. Microbial purification of shellfish: a review of depuration and relaying. Journal of Food Protection 51 (3), 218-251.

A review of the literature revealed wide diversity in microbial uptake and elimination among shellfish species for different microorganisms. Thus optimal time, temperatures and salinities for effective depuration vary among shellfish species.

Rowse, A.J., Fleet, G.H., 1984. Effects of water temperature and salinity on elimination of Salmonella charity and *Escherichia coli* from Sydney rock oysters. Applied Environmental Microbiology 48, 1061-1063.

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Bacterial purification in Sydney rock oysters was most effective at temperatures from 18-22^{o}C.

Scotti, P.D., Fletcher, G.C., Buisson, D.H., Fredericksen, S., 1983. Virus depuration of the Pacific oyster (*Crassostrea gigas*) in New Zealand. New Zealand Journal of Science 26, 9-13.

Viral and bacterial depuration rates were unrelated.

Storage and keeping quality

Bird, P., Arnold, G., Holliday, J., 1991. Storage life of purified unopened Pacific oysters (*Crassostrea gigas*) and Sydney rock oysters (*Saccostrea commercialis*). NSW Department of Health Publication, Sydney, NSW, 18 pp.

Pacific oysters had a longer shelf life after refrigeration than those stored at ambient temperature. Pacific oysters stored at ambient temperatures were found to be gaping or dead from day 4 with more than 50% similarly affected by day 8. Whereas 14% of those stored under refrigeration were found to be gaping or dead at day 11 with 75% similarly affected by day 14. Sydney rock oyster remained sound for longer periods than Pacific oysters.

Bird, P.D., Arnold, G.J., Holliday, J., Boronowsky, A., 1995. Effect of storage on the quality of purified live Pacific and Sydney rock oysters. In: Poggi, R. and Le Gall, J-Y. (Editors), Second International Conference on Shellfish Depuration, April 1992. IFREMER, Rennes, France, pp. 315-322.

At 5^{o}C, Pacific oysters survived up to 14 days, whereas at ambient temperature (23^{o}C), they started to gape and die after 4-8 days.

Boyd, N.S., Wilson, N.D.C., Hall, B.I., 1980. Storage of live Pacific oysters out of water. New Zealand Journal of Science 23, 171-176.

The useful shelf life of Pacific oysters at ambient temperatures is 5.5 days. Storage at 2-3 and 0^{o}C extends shelf life to 13 and 17 days respectively.

Holliday, J., Bird, P., Arnold, G., 1991. Purification and storage of Pacific and Sydney rock oysters in New South Wales. Austasia Aquaculture 5 (11), 38-40.

Studies on purification of Pacific oysters in Port Stephens, NSW were reviewed.

Nell, J.A., O'Riordan, P.J., Ogburn, D.M., 2006. Consumer evaluation of diploid and triploid Pacific oysters subjected to high pressure treatment. Journal of Shellfish Research 25, 1101-1104.

Disclaimer

No difference in consumer preference between diploids and triploids, however HP treated oysters were preferred over "normal" oysters.

Qadri, 1976. How to keep the 'oomph' in stored oysters. Australian Fisheries 35 (12), 19.

Glazed Sydney rock oysters should be stored at –23^{o}, live ones at 10^{o}C and oyster meats at 0-2^{o}C.

Qadri, R.B., Buckle, K.A., Edwards, R.A., 1976. Bacteriological changes during storage of live and shucked oysters. Food Technology in Australia 28, 283-287.

Counts of coliforms and faecal coliforms in live oysters did not increase in storage conditions of 10^{o}C for 3 weeks.

Qadri, R.B., Buckle, K.A., Edwards, R.A., 1976. Quality changes during frozen storage of Sydney rock oysters. Proceedings of International Conference on Food Science & Refrigeration, Joint Meeting of Commissions C2, D1, D2, D3, E1. Melbourne, Vic. 6-10 September 1976, pp. 205-210.

The taste of oyster meats was preserved for up to 402, 204 and 87 days at storage temperatures of –23.3, -15 and –6.7^{o}C.

Diseases

Anderson, T.J., Wesche, S., Lester, R.J.G., 1994. Are outbreaks of *Marteilia sydneyi* in Sydney rock oysters, *Saccostrea commercialis*, triggered by a drop in environmental Ph? Australian Journal of Marine and Freshwater Research 45, 1285-1287.

Outbreaks of QX disease were not related to the pH of water.

Adlard, R.D., Ernst, I., 1995. Extended range of the oyster pathogen *Marteilia sydneyi*. Bulletin of the European Association of Fish Pathologists 15, 119-121.

QX appeared in Georges River in 1994.

Adlard, R.D., Lester, R.J.G., 1995. Development of a diagnostic test for *Mikrocytos roughleyi*, the aetiological agent of winter mortality of the commercial rock oyster, *Saccostrea commercialis*. Journal of Fish Diseases 18, 609-614.

A diagnostic test assay using polymerase chain reaction (PCR) amplification of the DNA of M. roughleyi was able to detect a single organism in 400 hosts cell.

Disclaimer

Handley, S.J., 1995. Spionid polychaetes in Pacific oysters, *Crassostrea gigas* (Thunberg) from Admiralty Bay, Marlborough Sounds, New Zealand. New Zealand journal of Marine and Freshwater Research 29, 305-309.

Mudworm were extracted by placing live Pacific oysters in 0.05% phenol in seawater overnight.

Handley, S.J., 1997. Optimizing subtidal oyster production, Marlborough Sounds, New Zealand: Spionid polychaete infestations, water depth, and spat stunting. Journal of Shellfish Research 16, 143-150.

An annual crop rotation was suggested for Pacific oysters for areas prone to mudworm in New Zealand. Stunting of spat followed by compensatory growth was used to optimise subtidal growth and condition, thus optimising the growout time and avoiding fouling and mudworm infestations.

Handley, S.J., 2002. Optimizing intertidal Pacific oyster (Thunberg) culture, Houhora Harbour, northern New Zealand. Aquaculture Research 33, 1019-1030.

Extreme low water neap (ELWN) was the optimum growing level for the back of the farm, and 0.25 m above ELWN was the optimum for the front of the farm.

Handley, S.J., Berquist, P.R., 1997. Spionid polychaete infestations of intertidal Pacific oysters *Crassostrea gigas* (Thunberg), Mahurangi Harbour, northern New Zealand. Aquaculture 153, 191-205.

Mudworm infestation in Pacific oysters in New Zealand was reduced by growing oysters above extreme low water neap and 0.5 m above the mud level.

Jennings, K.A., Newman, L.J., 1996. Four new stylochid flatworms (platyhelminthes: polycladida) associated with commercial oysters from Moreton Bay, southeast Queensland, Australia. The Raffles Bulletin of Zoology 44, 493-508.

One species of flatworm Imogine Mcgrathi, was observed to directly feed on oyster tissue and could therefore pose a threat to the oyster industry in southeast Queensland.

Kleeman, S.N., Adlard, R.D., Lester, R.J.G., 2002. Detection of the initial infective stages of the protozoan parasite *Marteilia sydneyi in Sacccostrea glomerata* and their development through to sporogenesis. International Journal for Parasitology 32, 767-784.

Developemt of a DNA probe for QX disease.

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Mackenzie, C.L., Shearer, L.W., 1959. Chemical control of *Polydora websteri* and other annelids inhabiting oyster shells. Proceedings of the National Shellfisheries Association 50, 105-111.

Immersion in a saturated salt solution for 10 to 15 min followed by 15 min of drying in the air or a dip for 1 min followed by air drying for at least 2 h kills >80% of mudworm.

Nell, J., 2001. Diseases of Sydney rock oysters. Fishnote, NSW Fisheries, Port Stephens Fisheries Centre, Taylors Beach, NSW, 4 pp.

Farm management techniques for controlling diseases of Sydney rock oysters were described.

Nell, J., 2003. Controlling mudworm in oysters. Fishnote, NSW Fisheries, Port Stephens Fisheries Centre, Nelson Bay, NSW, 4 pp.

Farm management techniques for controlling mudworm in oysters were described.

Nell, J.A., Smith, I.R., 1988. Management, production and disease interactions in oyster culture. In: D.I. Bryden (Editor), Fish Diseases. Refresher Course for Veterinarians, Sydney, 1988. Proceedings 106, Post Graduate Committee in Veterinary Science. University of Sydney, NSW, pp. 127-133.

The management of pests and diseases in the NSW oyster industry were reviewed.

Peters, R., Raftos, D.A., 2003. The role of phenoloxidase suppression in QX disease outbreaks among Sydney rock oysters (*Saccostrea glomerata*). Aquaculture 223, 29-39.

Phenoloxidase confers disease resistance in oysters.

Triploidy

Honkoop, P.J., 2003. Physiological cost of reproduction in the Sydney rock oysters *Saccostrea glomerata*. Oecologia 135, 176-183.

It was estimated that if diploids did not reproduce, they could gain 64% more somatic weight.

Hand, R.E., Nell, J.A., Thompson, P.A., 2004. Studies on triploid oysters in Australia. XIII. Performance of diploid and triploid Sydney rock oysters, *Saccostrea glomerata* (Gould, 1850) progeny from a third generation breeding line. Aquaculture 233, 93-107.

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The faster growth achieved with triploidy is fully additive to that achieved with selective breeding, time to market in triploids produced from fast growing breeding lines is reduced by an additional 3 months

Nell, J.A., 2002. Farming triploid oysters. Aquaculture 210, 69-88.

An overview of triploid oyster farming and the use of tetraploid oysters around the world.

Nell, J.A., Cox, E., Smith, I.R., Maguire, G.B., 1994. Studies on triploid oysters in Australia. I. The farming potential of triploid Sydney Rock oysters *Saccostrea commercialis* (Iredale and Roughley). Aquaculture 126, 243-255.

Triploid Sydney rock oysters reached market size 6 months earlier than diploids, maintained better meat condition without increased risk of winter mortality.

Nell, J.A., Hand, R.E., Goard, L.J., McAdam, S.P., Maguire, G.B. 1996. Studies on triploid oysters in Australia: Evaluation of cytochalasin B and 6-dimethylaminopurine for triploidy induction in Sydney rock oysters *Saccostrea commercialis* (Iredale and Roughley). Aquaculture Research 27, 689-698.

CB (0.75-1.5 mg/L) produced higher triploidy levels than 6-DMAP.

Cox, E., Smith, M.S.R., Nell, J.A., Maguire, G.B., 1996. Studies on triploid oysters in Australia. VI. Gonad development in diploid and triploid Sydney rock oysters *Saccostrea commercialis* (Iredale and Roughley). Journal of Experimental Marine Biology and Ecology 197, 101-120.

Retardation of gametogenesis in triploid Sydney rock oysters was more severe than in triploid Pacific oysters.

Korac, S., Nell, J.A., Prescott, J., 1996. Studies on triploid oysters in Australia. VIII. Sensory evaluation of Sydney rock oysters *Saccostrea commercialis*. Asian Fisheries Science 9, 61-68.

In 2 out of 3 taste tests triploids were equally acceptable to diploids and in 1 test they were less acceptable.

Hand, R.E., Nell, J.A., Reid, D.D., Smith, I.R., Maguire, G.B., 1999. Studies on triploid oysters in Australia: effect of initial size on growth of diploid and triploid Sydney rock oysters *Saccostrea commercialis* (Iredale & Roughley). Aquaculture Research 30, 35-42.

Initial size grade had a large effect on final weight for both diploids and triploids.

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Triploids grew faster than diploids and were 49% heavier by 3.2 years. Most of the growth difference occurred after oysters reached 2 years of age.

Pacific oysters

Mason, C.J., Nell, J.A., 1995. Condition indices and chemical composition of meats of Sydney rock oysters (*Saccostrea commercialis*) and Pacific oysters (*Crassostrea gigas*) at four sites in Port Stephens, NSW. Marine and Freshwater Research 46, 873-881.

In Port Stephens, NSW Pacific oysters matured and first spawned in October, 2 months earlier than Sydney rock oysters, which first spawned in December/January. Sydney rock oysters did not lose as much condition after spawning as Pacific oysters.

McBride, R.L., Nell, J.A., Easton, K.M., 1988. Acceptability of the Sydney rock and Pacific oyster. Food Technology in Australia 40, 287-290.

Raw Sydney rock oysters tasted slightly better that Pacific oysters, however there were no detectable differences between species after cooking.

Nell, J.A., Perkins, B., 2005. Studies on triploid oysters in Australia: farming potential of all-triploid Pacific oysters, *Crassostrea gigas* (Thunberg), in Port Stephens, New South Wales, Australia. Aquaculture Research 36, 530-536.

Triploid Pacific oysters farmed in Port Stephens, NSW had an exceptionally fast growth rate. However, because of discolouration, time of marketing was restricted to April – September.

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Websites

Associations

NSW Farmers
http://www.nswfarmers.org.au/

Pacific Coast Shellfish Growers Association
http://www.pcsga.org/

South Australian Oyster Growers
http://oysa.com.au/

British Columbia Shellfish Growers Association
http://www.island.net/~bcsga/bcsgirs/main/sgmain.htm

Alternative Farming methods

British Columbia Shellfish Growers Association
http://www.island.net/~bcsga/bcsgirs/main/sgmain.htm

Government

NSW Fisheries
http://www.dpi.nsw.gov.au

Queensland Fisheries
http://www.dpi.qld.gov.au/fishweb/aquaculture/oysters.html

Marketing

South Australian Oyster Growers
http://oysa.com.au/

General

Shellfish Related Web Resources
http://www.shellfish.org/res-web.htm

Diseases

Maryland Sea Grant Research
http://www.mdsg.umd.edu/Research/OysterDisease.html

Fisheries and Oceans Canada
http://www.pac.dfo-mpo.gc.ca/sci/shelldis/

Genetics

University of California Davis
http://www-bml.ucdavis.edu/imc/oyster.html

Molluscan Broodstock Program
http://hmsc.oregonstate.edu/projects/mbp/

John Nell
January 2007

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