

Gascoyne Coast Bioregion

REGIONAL MANAGEMENT OVERVIEW

The Gascoyne coast bioregion includes the areas of inner Shark Bay (Denham), outer Shark Bay (Carnarvon), and Exmouth Gulf. Whilst the production of pearls and pearl oysters remains the primary coastal aquaculture activity within this bioregion, there has been recent development in the production of a range of aquaculture species.

Hatchery production of *Pinctada maxima* pearl oysters is of critical importance in this region, where recruitment of oysters in the wild is irregular and unable to be relied upon for commercial operations. Two hatcheries, one in Carnarvon and one in Exmouth, are producing significant quantities of spat to supply pearl farms in Exmouth Gulf and the Montebello Islands. Similarly, the production of black lip pearl oyster *Pinctada margaritifera* at several hatcheries continues to supply juveniles selected from high-quality broodstock and provides an entirely sustainable production base for this growing industry.

Black pearl production through culture of *P. margaritifera* has expanded during 2001/02, with farms increasing carrying capacity and also holding greater numbers of 'seedable' shell. Culture of *Pinctada albina* in Shark Bay and *Pteria penguin* in the far north-west of this region provides a diverse production base to the 'non-*maxima*' pearl industry in Western Australia. Pearl growers are improving production systems and decreasing costs through implementation of best practice methods, utilising more advanced equipment and more experienced staff.

Culture of high-value marine crustaceans has advanced in the north-west of the region with the further development of innovative and highly productive raceway culture systems for the nursery culture of prawns. These experimental techniques have provided alternative culture methods for the intensive production of brown tiger prawns (*Penaeus esculentus*) and should increase future productivity of black tiger prawns (*Penaeus monodon*). Other species being examined for potential aquaculture production include two species of tropical rock lobsters, the painted, *Panulirus ornatus*, and the green, *Panulirus versicolor*.

Research and development of techniques for the aquaculture production of serranid finfish such as estuary cod (*Epinephelus coioides*) in the Gascoyne have made considerable progress this year with the production of hatchery-reared juveniles for the first time in Western Australia.

Inland aquaculture on pastoral rangeland stations is a growing sector of the regional aquaculture profile. The Gascoyne Inland Aquaculture Group increased in membership this year and production of ornamental aquarium fish in artesian bore water on pastoral leases has advanced with the licensing of several growers. Additionally, marine ornamental finfish culture has progressed with the production of juvenile clown fish this year.

One aquaculture product of high value on the export market is beta carotene which is extracted from the cultured microalgae, *Dunaliella salina*. The pilot production plant on Lake MacLeod has constructed ponds and is developing

management protocols for the growth of algae biomass under optimal conditions.

Management activities during 2001/02 included the processing of a number of licence applications for licences for coastal water pearl farm sites and the development of a process to permit the assessment of applications for aquaculture leases in coastal waters.

Gascoyne Coast Aquaculture Figure 1 shows the major licensed aquaculture and pearl farming sites in this bioregion.

REGIONAL DEVELOPMENT AND COMPLIANCE OVERVIEW

Development and extension activities during 2001/02 included the facilitation of meetings, the development of grower groups and the completion of extension material regarding the culture of non-*maxima* pearl oysters. Aquaculture licensing advice, and assessment of applications for licences or variations to licences, remained important responsibilities in the Gascoyne region. Liaison with existing and prospective aquaculturists and the provision of information, advice and assistance continued through field visits and remote communication.

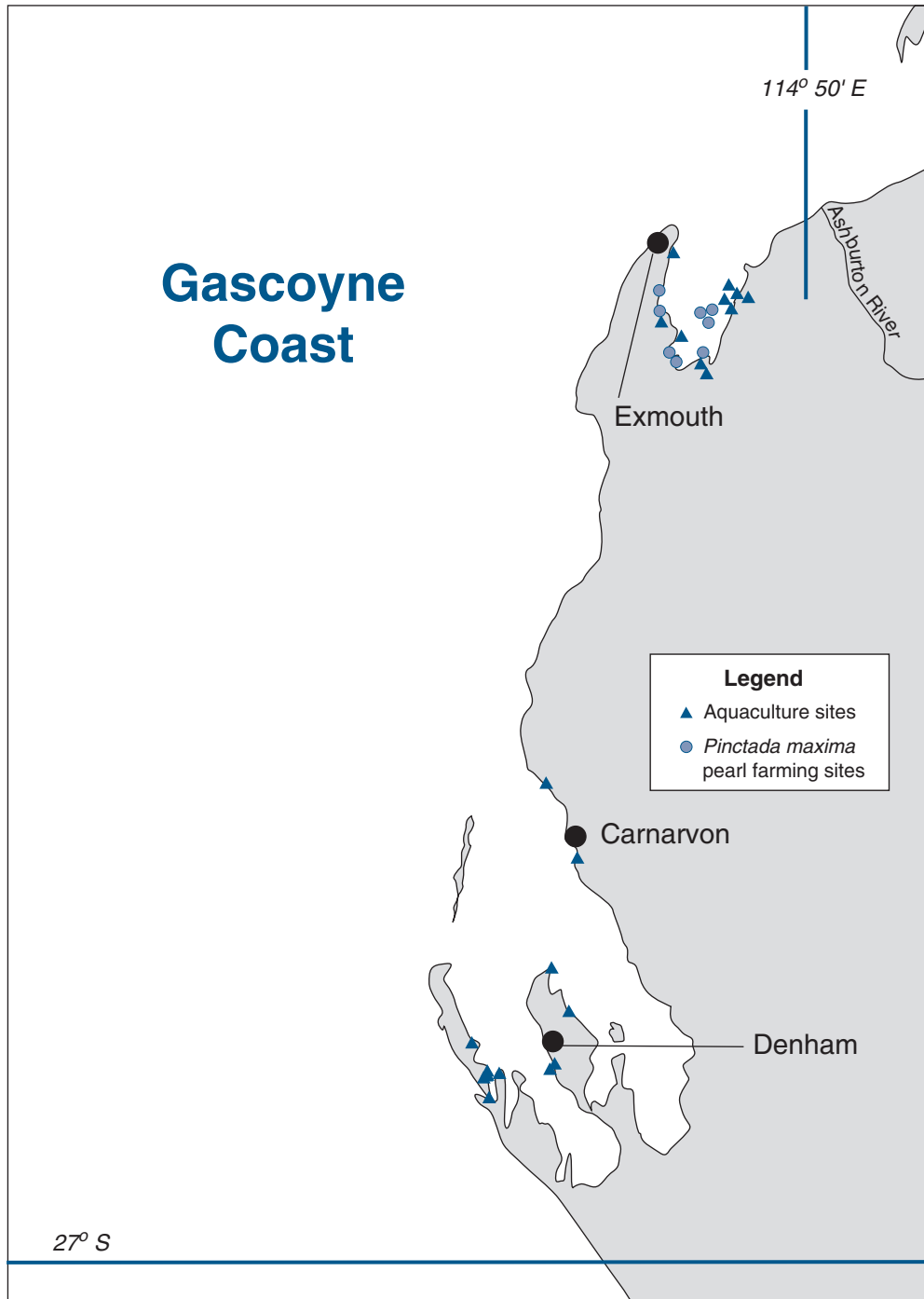
Extension work included assistance in relation to the identification of several sites for pearl production in Shark Bay and Exmouth Gulf and site selection and systems design on inland stations.

During 2001/02, compliance staff in the bioregion completed audits of aquaculture sites and facilities, including inspections of lease sites, facilities, authorisations and product both at sea and on land. Compliance activities included implementing the new Aquaculture Compliance Checklist during the site inspections and audits. While focusing on the non-*maxima* pearl farms in the region, the field testing of this process led to the efficient delivery of the compliance program over the region in a consistent manner.

The Aquaculture Program supported the implementation of the compliance plan by providing specific training to Fisheries Officers in several technical fields of the aquaculture industry, together with field guides and species identification keys. It is expected that in the future there will be an increased demand for the training of compliance staff in aquaculture principles and husbandry techniques to 'keep up' with this rapidly developing industry.

REGIONAL RESEARCH OVERVIEW

Very large-scale, land-based coastal sites with considerable potential for aquaculture were identified in the Gascoyne and other bioregions in a major site identification study undertaken by the Department of Fisheries for the Aquaculture Development Council. These sites could be used for marine prawn or finfish farming.



GASCOYNE COAST AQUACULTURE FIGURE 1

Map showing the major licensed aquaculture and pearl farming sites of the Gascoyne coast bioregion. Note that aquaculture operations may also encompass the culture of non-*Pinctada maxima* pearl oysters.