ENHANCEMENT OF PAUA STOCKS IN NEW ZEALAND

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The first trials of the out-planting of paua juveniles were carried out on the Chatham Islands in the early 1990's. While these trials showed potential, nothing more was done until 2001. Out-planting projects are now running in most of our quota management areas – Pau3, Pau4, Pau5A, Pau5B, Pau5D and Pau7 (Figure 1). The paua from the first of these projects (Pau5B) are just starting to enter the fishery and commercial harvesting is expected to start on these fish by the start of the new fishing season (October 1).

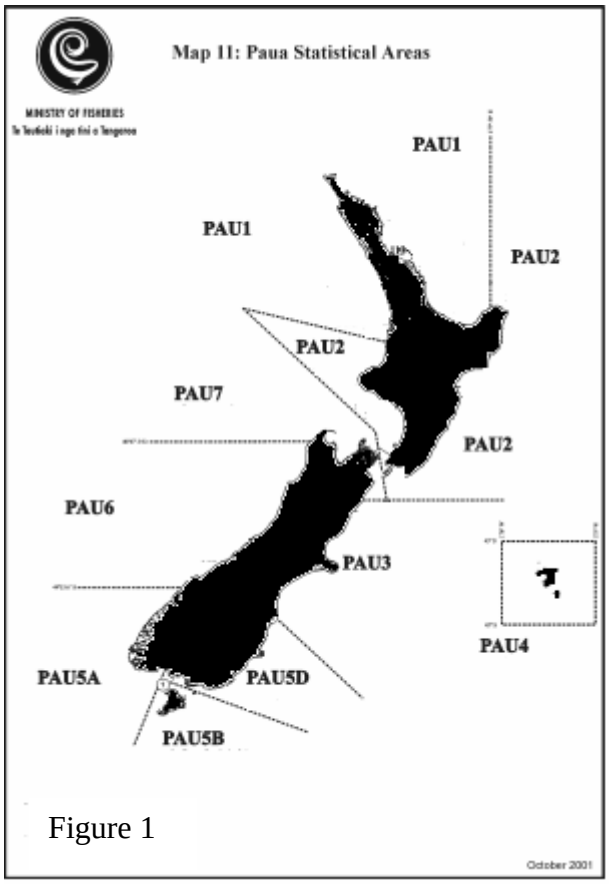

Figure 1

We have learned many lessons over the last 5 years and are about to vote on increasing reseeding in some Quota Management Areas to a commercial scale (i.e. quota owners paying $1000 per tonne of quota they own towards reseeding each year).

Brood stock – Although there is no requirement within our legislative framework we have a voluntary agreement with the Government that we will only use brood stock from the area where the juveniles are being out planted. There are two DNA profiling projects running which will become the basis of future decisions about which brood stock can be used to produce juveniles for different parts of New Zealand.

Juvenile rearing - We have made progress in the rearing of juveniles. We grow them to 3 to 5 mm in land-based hatcheries and then transfer them to sea-based marine farms where suitable structures have been developed. Here they are grown to 15 to 20 mm. Mortality is around 2% and the cost is half what land based hatcheries charge (2 cents vs 4 cents per mm).

Disease testing - All juveniles are required to be tested for pathogens prior to leaving the land based hatcheries – to date no diseases or pests have been found.

Transfer to a substrate - In some regions, we find it best to transfer the juveniles on broken paua shell. It is easier to out-plant paua shell with up to 30 juveniles on it than trying to get individual juveniles under rocks etc.

Size and density of juveniles at out-planting - We have had a graduate student complete a paper on the optimum size and density to release juveniles. This work concluded that seeds out-planted at 15 to 20 mm and 50 seeds per m^2 showed the best growth.

Out-planting - In Pau7 considerable effort has gone into identifying the best habitat to out-plant. The results showed that out-planting into the zone that was no more than a metre deep at low water and which has a boulder on boulder habitat with an available food source is the best. Survival rates in these types of sites have been averaging 20% from the best 3 sites (in a survey conducted 18 to 24 months after out-planting).

Growth rates - The variance in growth rates between sites surprised everyone and once again highlights that importance of choosing location and habitat. Growth rates in the best sites continually match growth rates expected in land based grow-out facilities.

Survival at harvest - Using the 18 to 24 month survey results it is possible to predict that 15% of the juveniles originally out-planted will survive to reach 125 mm (the commercial minimum legal size).

Accessibility to other stakeholders - Under the 1996 Fisheries Act, once the paua reach 125 mm they can be captured in all sectors of the fishery.

The future - Growing juveniles on to 20 to 25 mm so that they can be tagged is showing potential as it could be that if ownership can be proven then we could harvest these fish at a smaller size than what is prescribed in our Fisheries Act. Harvesting at 100 mm (as opposed to 125 mm) would increase the economic return as paua meat of this size receives a premium in the market place.

As we learn more about the out-planting of paua juveniles it is anticipated that we will achieve consistent survival rates of around 20% (out-planting to commercial harvest) which is twice our original expectation and than economically viable.