

INITIAL ALLOCATION OF HARVESTING RIGHTS IN THE FISHERIES OF SOUTH AUSTRALIA

G.R. Morgan
 106 Barton Tce. West, North Adelaide, SA 5006, Australia
 <garymorg@ozemail.com.au>

1. INTRODUCTION

South Australia has three important quota-managed fisheries – those for southern rock lobster (*Jasus edwardsii*), abalone (*Haliotis laevis* and *H. rubra*) and pilchards (*Sardinops neopilchardis*).

Of the input-controlled fisheries in South Australia, the fishery for southern rock lobster is probably unique in that it has both an input-controlled zone and an output-controlled zone which enables direct comparison of performance of the two management regimes within an identical stock and socio-economic environment.

The South Australian Rock Lobster Fishery began in the early 1870s as a hoop net fishery. The first commercial lobster pots were used in 1889 and around the turn of the century small industries began to emerge in different parts of the state. In the late 1940s a thriving lobster-tail export market to America had been developed based on the processing and export of rock lobster-tails.

The industry then developed rapidly with vessels becoming more sophisticated and catches increasing. The development of alternative markets in South East Asia and more recently in Europe, together with the development of products such as whole-cooked and live lobsters, maintained the development momentum of the industry and resulted in increasing profitability for operators. The industry is now a significant and expanding industry in South Australia generating a business turnover of more than \$A230 million and supporting over 2200 jobs (EconSearch 1999a, b).

About 95% of the annual commercial catch of 2600t is sold live through Asian markets, with a landed value of almost \$A80 million and which brings more than \$A100 million into the state. The catch has remained relatively stable in the past decade (Table 1) as both fishers and managers have taken steps to ensure the long-term sustainability of the resource.

Table 1
 SA Rock Lobster Catch and Value of Catch, 1990/91 - 1998/99

Year	Southern zone		Northern zone		South Australia	
	(t)	(\$Am)	(t)	(\$Am)	(t)	(\$Am)
1990/91	1562	26.7	1104	18.2	2666	44.9
1991/92	1940	36.3	1222	21.4	3162	57.8
1992/93	1754	34.8	1064	20.5	2818	55.3
1993/94	1669	43.2	930	23.4	2599	66.6
1994/95	1720	48.6	891	25.5	2611	74.0
1995/96	1684	44.6	903	23.8	2587	68.4
1996/97	1635	47.0	893	24.4	2528	71.4
1997/98	1680	50.9	942	27.7	2622	78.6
1998/99p	1713	47.2	1016	26.7	2729	73.9

Fishing is carried out in the waters off South Australia's entire coastline with the exception of Marine Park exclusion zones. The fishery is divided into Southern and Northern Zones. The Southern Zone extends from the Victorian/South Australia State border to the Murray River mouth, south of Adelaide, and the Northern Zone covers the area from the Murray River mouth to the Western Australian Border. While geographically smaller, the Southern Zone is more significant in terms of commercial vessel

numbers. There are currently 183 boats operating in the Southern Zone, compared with 71 in the Northern Zone. The total annual catch in the Southern Zone averages around 1700t, compared to around 900t in the Northern Zone (Table 1).

The Rock Lobster season runs from 1 October to 31 April in the Southern Zone, and from 1 November to 30 May in the Northern Zone. All commercial fishers must be licensed and their activities are controlled through input-controls and quotas in the South, and management of fishing-time and pot-lifts in the North.

Fishers record the catch every day and participate in voluntary pot sampling. Economic performance of the fishery is monitored through surveys and independent economic analyses.

There are currently 254 licence holders in both zones of the rock lobster fishery with the numbers of licences having declined slowly over recent years as amalgamation of pot entitlements and structural adjustment of the industry has taken place. This aspect will be further discussed below. Table 2 shows the number of licensees and the average number of pots per licence holder for the period 1989-1998.

Table 2
Licence numbers and average pot holdings
in SA Rock Lobster Fisheries

Year	Southern zone		Northern zone	
	Licence number	Av. pots/licence	Licence number	Av. pots/licence
1989	190		82	
1990	192		82	
1991	191		83	
1992	192	62.1	80	49.4
1993	189	63.1	79	50.0
1994	187	63.8	78	50.6
1995	186	64.1	77	51.3
1996	186	64.1	75	52.7
1997	183	65.2	73	54.1
1998	183	65.2	71	55.6

fishery being valued at approximately \$A30 million based on producer prices. Table 3 gives the recent catch history of the fishery.

Although the catch has remained relatively stable, the value of the fishery (Table 3) has increased markedly as the demand for the wild-caught product continues to outstrip supply. Average prices increased by 104% in nominal terms within the decade starting with the 1990/91 fishing season.

Access to both the rock lobster and abalone stocks is open to the public for recreational purposes with daily bag limits and size limits applying. In the case of recreational fishing for rock lobsters, there are also restrictions on the number of recreational licences issued and the number of pots (currently 2) that can be used by a recreational fisherman. The recreational catch of both rock lobsters and abalone is thought to be around 6% of the total catch although no ongoing catch monitoring is undertaken. Illegal catches, particularly of abalone, are an important but unmeasured component of the total catch of both rock lobsters and abalone with informal estimates of the illegal catch of abalone being as high as 40% of the commercial TAC.

The pilchard fishery in South Australia, like other *Sardinops* fisheries, exhibits large annual variations in abundance. This has been magnified in recent years by major fish kills in 1995 and 1998, which have been linked to a herpes-like virus infection among pilchard. It has been estimated that these fish kills resulted in the loss of up to 60% of the total adult population, although juvenile fish were not affected.

Despite these large fluctuations in abundance, the pilchard fishery is managed using a TAC which is set each year in response to estimates of abundance based on annual egg and larval surveys. The current quota of 3600t is divided equally between the 23 licence holders to produce an annual ITQ with daily monitoring of individual quotas taking place. There are further restrictions on areas permitted to be fished, which are designed to separate larger and smaller operators between offshore and inshore waters.

Annual TACs in the pilchard fishery have ranged from 3600t to over 11 000t during the period 1997-2000, with the vast majority of the fish being utilized locally as feed for the burgeoning tuna aquaculture industry. The fishery nevertheless, supplies only about 20% of the tuna aquaculture industry's feed needs.

2. THE NATURE OF THE HARVESTING RIGHTS

The southern zone of the rock lobster fishery is managed through a system of ITQs with the annual TAC being set each year by a joint industry/Government management advisory body (see below). The TAC has not changed in recent years in response to steady (or slightly increasing) indices of both overall stock abundance and breeding stock levels. Although the southern zone of the rock lobster fishery has been managed by such

The abalone and pilchard industries in South Australia operate within an ITQ system without significant additional (input) controls. In both fisheries, there are some restrictions on areas fished and size limits are in place for the abalone fishery.

The abalone industry in South Australia began in the 1960s in response to the emerging market for abalone in South East Asia. In 1971, the number of licences was restricted and the fishery was divided into three management zones, which remain the basis of management of the fishery. The number of licences in 1971 was more than 100, but this was reduced over the years by a policy of non-transferability. There are currently 35 licences on issue. The 1999/00 total catch of abalone in South Australia was approximately 832t whole weight with the

Table 3
South Australian abalone catch and value,
1990/91-1999/00

Year	Catch (t)	Value (\$A million)
1990/91	863	14.0
1991/92	885	15.1
1992/93	869	23.7
1993/94	802	27.2
1994/95	851	22.8
1995/96	902	22.5
1996/97	903	25.2
1997/98	812	26.9
1998/99	860	27.4
1999/00	832*	30.4*

* Estimate

output controls for a number of years, various elements of input control still remain. The industry, in fact, has been fiercely protective of its management arrangements and cites stock-sustainability and socio-economic issues as reasons for not moving to greater deregulation of the fishery.

The fishery has been a limited-entry fishery for some 30 years although licences are freely transferable. The value of the access-right to participate in the fishery has increased substantially as a result of this limited entry, the profitability of the fishery and the certainty of the management structure.

In the Southern Zone a 15% pot reduction (1984) and an industry-funded buy back, which removed 41 licences (1987), were implemented and on 1 October 1994 individual transferable quotas (ITQs) were introduced. The current management arrangements include:

- i. total allowable catch of 1720t allocated at 144kg/pot
- ii. pots limited to a total of 11 900
- iii. limited-entry
- iv. legal minimum size of 98.5mm
- v. closed season from May 1 to September 30
- vi. minimum mesh diameter on pots of 50mm
- vii. maximum of 100 pots per licence with 80 allowed to be worked and
- viii. prohibition on taking berried females.

The northern zone of the fishery is managed exclusively by input controls that are often different to the input controls that exist in the southern zone of the fishery. The northern zone also operates in a limited-entry environment which has been in place for more than 30 years.

In the Northern Zone a 10% pot-reduction was implemented in 1985 and again in 1992. These measures were followed by a shortening of the season by one week in 1993 as a real time management system was used for the first time. The season was shortened by another week in 1993 and again in 1994. Current management arrangements include:

- i. limited-entry
- ii. legal minimum size of 102mm
- iii. closed season from 1 June to 31 October
- iv. 21 days time-closure within a 210 day season
- v. minimum mesh diameter on pots of 50mm
- vi. maximum of 60 pots per licence
- vii. no double pulling of pots within a 24 hour period
- viii. prohibition on taking berried females and
- ix. restriction on boat size to 18 meters and engine capacity of 1200hp.

Again, the limited-entry nature of the fishery and its profitability has resulted in the access-right to participate in the fishery acquiring considerable value on transfer. But, despite these high values, the return to capital (including the access-right value) has been around 4.4% in recent years.

The Rock Lobster Industry, like other commercial fisheries in South Australia, operates on a full cost-recovery basis and finances its own management, research and resource protection.

The abalone fishery is also a limited-entry fishery and, like the rock lobster fishery, the transferable harvesting right has acquired considerable value with the most recent estimates being around \$A4 million. However, no licences have changed hands for several years and hence the actual market value may be higher than this.

Quota management has been in place since the late 1980s (the timing of the introduction of annual TAC system being slightly different for the three zones). A separate TAC is set for the two species of abalone (*H. laevis* and *H. rubra*) in the three management zones and an ITQ established as equal shares of these TACs. The minor exception to this is for one part of the Western Zone fishery where a combined (all species) quota of 600kg meat weight per diver is allocated. The TAC is set annually by a joint industry/Government management advisory body (which provides advice to the Minister for Primary Industries) although, as for other South Australian fisheries, the final decision on the TAC lies with the Minister for Primary Industries.

Some input-controls remain in the fishery, particularly a size limit that is currently 130mm for blacklip abalone (*H. rubra*) in the western and central zones, and 125mm in the southern zone. The size limit for greenlip abalone (*H. laevis*) is 145mm in the western zone, and 130mm in the central and southern zones. There is also a restriction of two divers per licence with only one diver being able to operate on any one day.

Although full licenses are freely tradeable, permanent transfer of quota is not permitted, although transfer for a single fishing season is allowed. This restriction on quota-transfer has effectively prevented amalgamation

of quota holdings and has also most likely impacted negatively on the value of the access-right. To retain local ownership and control, no more than 15% of any licence may be held by a foreign citizen or Company.

The harvesting right in the pilchard fishery is, like the abalone and southern zone rock lobster fisheries, an equal share of the annually established TAC. As indicated above, there are also some input-control measures in the fishery that principally relate to restrictions on areas fished.

3. THE METHOD OF ALLOCATION

3.1 Policy objectives

In all cases (rock lobsters, abalone and pilchards) the primary policy objective for quota-management was the long-term sustainability of the respective stocks. Although all three quota-controlled fisheries were managed by limited-entry and had a range of input-controls in place, fishing effort was increasing within the constraints of the management system. These increases in fishing effort were principally a result of improving technology and increasing prices. Concerns were expressed in all three fisheries at various times about apparent declines in stock abundance and catch rates.

In the abalone fishery, as in the other fisheries, attempts were made to further strengthen the input-controls and licences were also made non-transferable in 1971. This situation lasted until 1980 and resulted in the number of licences being reduced from over 100 in 1971 to 30 in 1976 when an additional 5 licences were issued.

Economic issues received little attention as a defined policy objective in the initial allocation, although annual monitoring of economic performance is now undertaken for each fishery.

3.2 Process used in determining the allocation

The primary debate in the allocation process was one surrounding the appropriate TAC, while a major secondary issue was how the allocation of the TAC was to be made to existing licence holders. Since all three fisheries were already limited-entry fisheries, the question of allowing additional entrants into the fishery did not arise.

Scientific and biological advice was heavily relied upon in the initial setting of the TAC while economic, social or financial data were not considered. The current system for TAC-setting, which is through joint Government/Industry Fisheries Management Committees, enables the broader economic and social issues to be included in the TAC setting process, although the biological issues of ensuring long-term sustainability remain paramount.

The allocation of the TAC into ITQs for the rock lobster fishery generated considerable debate and a number of allocation models were discussed with existing licence-holders. These included allocation of the TAC in accordance with the average of the last 3-years' catches, allocation according to pot entitlement, *etc.* Finally, a process known as the "adjusted preferred method" was selected.

The allocation of the TAC in both the abalone fishery and the pilchard fishery was done on an equal basis among all existing licence-holders. Since both fisheries were relatively homogenous in terms of gear used, the initial allocation issue was relatively easily resolved.

Licensees were required to choose the basis upon which they would like the allocation based. The choices were limited to a number of canvassed options such as on the basis of average catch over the past 3 years, on the basis of current pot entitlement, *etc.* Each licensee obviously chose the option that would give them the most advantage in terms of the greatest proportion of the TAC. The choices were then summed to give a total catch under the licensee's preferred options. The individual choices were then scaled back to the TAC by dividing each licensee's choice by the fraction (total expected quota under the licensees preferred options)/TAC. The resultant quota was the individual's ITQ.

4. DATA REQUIREMENTS AND COMPUTATIONAL PROCESS

Biological and stock-assessment data used in the allocation process were to determine the TAC, and data from rock lobster licence-holders as to their preferred method of allocation. The latter data was collected as a specific exercise while the data to determine the TAC for the rock lobster, abalone and pilchard fisheries were available as part of ongoing research programmes. Information on past year's catches, effort, pot entitlements, *etc.* which were used during the consultation process with licence-holders, were available as part of ongoing data-collection programmes conducted by the South Australian Government.

5. APPEALS PROCESS

Great care was taken during the allocation process to involve the relevant industry sector at an early stage in consultations regarding the method of allocation and the TAC-setting process. Such close industry/government dialogue is a well established feature of the management of fisheries in South Australia and was crucial to the success of the allocation procedure. Because of such close consultation, appeals were few and involved mainly the initial allocation of ITQs in the rock lobster fishery. The appeal process was not a formal process established for the purpose of the allocation procedure but rather the usual, commonly available process of appeal to the South Australian Minister for Primary Industries.

6. ADMINISTRATION OF THE ALLOCATION PROCESS

The entire process was handled by existing staff within the South Australian Government, with the exception of the development of the model for allocation in the rock lobster fishery (the “adjusted preferred method”) which was developed by a resource economist under a specific contract for that purpose. Apart from consultant fees, there were no additional funds made available for the allocation process.

7. EVALUATION OF THE INITIAL ALLOCATION PROCESS

7.1 Success in achieving initial policy objectives

All fisheries have been maintained as productive fisheries and annual assessments of stock status have indicated that the primary policy objective of ensuring long-term biological sustainability was met.

7.2 Satisfaction of rights holders with the process

The allocation process began a long-term debate on the issue of fisheries property rights in South Australia which is still progressing. Satisfaction levels were not specifically measured after the allocation procedure but anecdotal evidence indicates that initial scepticism was replaced after several years with a general satisfaction as to the results of the allocation procedures. However, as the debate over the nature of property rights, and the practical issue of providing security for loans, *etc.* has evolved, there is growing dissatisfaction that the process is not yet complete. Industry groups are lobbying strongly for a clearer definition of the nature of the property right embodied in, and initiated with, the allocation process and are wanting to move towards greater industry control over the management of that property right within a Government stewardship context. Government has, however, been reluctant to agree to moving in this direction and has maintained tight control over day-to-day management of the fishery. The debate has been sharpened by the large asset-values which the property rights now have and the desire of industry to maximize both the value and the return on that asset. It is therefore significant that the continuing debate over the evolution of property rights in South Australia is most advanced in those fisheries (abalone and rock lobster) where the asset-values of the access-right are largest.

As a result, the current industry view is one of general satisfaction with the results of the initial allocation process from a stock-sustainability point of view but a growing frustration that additional economic benefits from the access right are not being realized. As an example, although the access right to all quota-managed fisheries has been defined, the administration of the access right involves an annual renewal by the Government. Such annual renewal, with no legislative guarantees that the renewal will occur, significantly diminishes the value of the property right as a bankable asset.

7.3 Views of other community groups

There was little debate, or consultation, with other community groups in the initial allocation procedure. While not initially an issue of great concern, this is becoming an increasing point of debate. Both recreational fishing groups and conservation groups are lobbying the Government for specific allocations of the TAC. The Government has, in fact, recently implemented a specific TAC for recreational purposes for rock lobsters, and the overall management of the rock lobster resource will be conducted taking this recreational TAC into account. However, it was significant that the recreational TAC was an additional TAC (based loosely on a knowledge of existing recreational catch) and was not a re-allocation of a part of the existing commercial fishery TAC.

Another emerging aspect of the allocation debate revolved around the escalating values of the access right. Community groups are questioning the wisdom of past Government decisions that have provided a very large windfall capital gain (in terms of asset values of access rights) to a small number of fishermen. These groups lobby for a more equitable distribution of the TAC and the participation of a greater number and diversity of user groups in the exploitation of the resource. Such debates are likely to become more vociferous in future years.

7.4 Hind-sight assessment

Several major issues could have been addressed better in the initial allocation process. First, there were no economic or social considerations in the initial allocation debate in any fishery. This resulted in a number of unexpected consequences, the most significant of which is in the rock lobster fishery. Here, there has been virtually no restructuring of the fishery to take advantage, for example, of higher prices in some months of the year and to maximize economic performance. The explanation for this lack of restructuring seems to be social, one of entrenched habits and traditions of fishermen regarding family and holiday commitments, *etc.* It should be noted for the first five years of quota management, transfers in the Southern Zone were only allowed within the fishery and this undoubtedly would have slowed the rate of adjustment. Both zones also maintain upper pot limits, which are an artificial impediment to free market adjustment in the respective fleets.

Another major issue has been the secondary impacts on coastal communities. In those areas and fisheries where fishing patterns have changed, there have been significant impacts on small local businesses, which have had major cash-flow disruptions as fishermen take their quota in only a few months of the year and then often leave the town until the next season.

Second, as mentioned above, the allocation process has had the effect of producing large asset-values for the access rights created to those who own them. This is becoming a major social debate as the Government defends its past role in having created a group of wealthy, elite fishermen. During the initial allocation process, this effect was unforeseen and the process for re-allocation of access rights was not addressed. In hind-sight, such a process would have been best considered as part of the initial allocation package rather than trying to address the issue in later years after asset-values have increased.

7.5 Industry views¹

The introduction of individual transferable quotas in the South Australian Southern Zone lobster fishery alongside the Northern Zone input-controlled lobster fishery presented a unique opportunity for social, economic, biological and management comparisons. There have been many social and economic consequences. Some important ones are listed below.

- i. The allocation on an average per pot saw a redistribution of wealth from historically high catchers to the historically low catchers.
- ii. Those not able to take quota now, as they are poor catchers, in many cases lease it to those who were historically high catchers.
- iii. In effect the allocation has redistributed annual profits.
- iv. The allocation has seen new investment in gear by those who received the wind fall wealth/profits.
- v. Those who lost catch and do not lease quota now have excess capacity. This excess capacity will no doubt be taken up in the future by the wealthier fishers.
- vi. The problems with initial allocation has also seen a shift in catch pressure within the fishery. The allocation dispute went through various courts, with their case funded by groups of fishermen.
- vii. Families were divided and remain divided on the initial allocation outcome.
- viii. The industry was divided on the allocation issue and remains divided, with two of seven ports representing about 33% of licence holders effectively disengaged from recognized industry structures.
- ix. The input-control fishery (*i.e.* the northern zone) sees industry unified with consistent 90% support for industry structures on a voluntary basis.
- x. The management time remains relatively high in the quota-fishery: industry and Fisheries Management Committee (FMC) meetings are much more frequent (a ratio of 2:1 quota-managed fishery: input-control fishery) in the quota-managed southern zone fishery.
- xi. Costs of management are higher in the quota fishery at \$A1250/t compared with \$A841/t in the input-controlled northern zone of the fishery.
- xii. Compliance costs are also higher in the quota-managed southern zone at \$A690/t for quota versus \$A290/t for the input-controlled northern zone. This is seen by fishers as a gross injustice since it is the fishers who pay for these costs under the 'cost-recovery' system.
- xiii. Fishing patterns have emerged under the quota regime which are clearly sub-optimal from an economic point of view. Stock, weather and price-uncertainty, results in most of the quota being caught in periods when profits are low although catch rates might be high.

In short, the ITQ system has pitted one fisherman against another and has lead to social and industry disharmony, which is not seen in the input-controlled northern zone fishery.

¹ These views on the initial allocation-process of access-rights were provided by members of the South Australian Rock Lobster Industry.

8. LITERATURE CITED

- EconSearch 1999a. Economic Indicators for the SA Southern Zone Rock Lobster Fishery 1997/98. Report prepared for Primary Industries and Resources South Australia, February 1999.
- EconSearch 1999b. Economic Indicators for the SA Northern Zone Rock Lobster Fishery 1997/98. Report prepared for Primary Industries and Resources South Australia, February 1999.