

## THE PRIVATE FISHERY - AND REALITY: THE CASE OF THE SOLE OWNER

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### ABSTRACT

In discussing property rights, efficiency and fisheries management economic literature often refers to a fishery with a hypothetical single owner, comparing it to fisheries with more fragmented ownership. Through a range of effort reductions, since the near collapse of the fishery in the early 1980s, the Exmouth Gulf Prawn fishery in Western Australia has emerged with a single owner. The fishery's economic, social and environmental performance was recently rated by a panel of experts at 9.8 out of 10. In the presentation the history and context in which a single operator emerged is outlined. Practical constraints and issues for a single owner are discussed in the context of the history of the fishery, corporate strategy and market structure. Comparison is also made with other prawn fisheries in Australia which have a more diverse ownership base.

### Keywords:

**Sole owner, private fishery, prawn fishery, shrimp fishery, concentration of ownership, Australia**

### INTRODUCTION

A common feature of the economic analysis of fisheries has been a comparison of existing and proposed arrangements to idealised arrangements that might be undertaken if there was a single owner of a fishery<sup>i</sup>. Arguably a reference to a “single owner” has become the equivalent of a literary “trope”, a common theme used in storytelling. The Exmouth Gulf Prawn fishery has had 15 out of 16 licences owned by a single owner since 1993, with the last independent operator exiting the fishery in 2009. Management, fishing and marketing strategies in the Exmouth Gulf Prawn fishery can be assessed in the context of long held “a priori” expectations as to behaviour in a single owner fishery<sup>ii</sup>.

### The Concept of a Single Owner

In the mid 1950s two influential fisheries economics papers used a hypothetical example of a single owner fishery to illustrate principles of fisheries economics. H Scott Gordon in his 1954 paper considered how rents were dissipated in common property fisheries. Gordon surmised that the maximum net economic yield for a fishery would be expected to be reached at catch levels lower than the maximum sustained physical yield. As the natural resource, however, was ‘not private property’ (p.131) competition between fishers would be expected to result in the dissipation of any economic rent from the fishery. The exception was if the resource was placed under a ‘unified directing power’ (p.135). Gordon was of the view that, subject to certain assumptions, this unified control would lead to the maximisation of net financial yield, and to that extent would coincide with a ‘social optimum’ (p.140-1).

In a paper in 1955, entitled *The Fishery: Objectives of a Sole Owner* Anthony Scott compared sole owner fisheries to those which were exploited by competing fishers. Referring to Gordon’s

article, Scott observed that competing fishers they would tend to continue fishing until the marginal return for such effort just covered the marginal cost (Scott, 1955 p.117-8).

Scott expanded Gordon's arguments detailing what would be expected to be the behaviour of a sole owner of a fishery. Scott held that in the short term, and without long term tenure, a sole owner would have similar economic objectives to those held by competing fishers and would be expected to behave in a similar fashion (p.121). With permanent tenure, however, a sole owner would have a strong incentive to re-organise the factors of production on a more efficient basis. Scott also pointed out that a sole owner also has an interest in maximising the current value of returns and so has an incentive to set catches at a level that would maximise future catches in a fishery where increased short-term outputs would reduce future populations<sup>iii</sup>. Scott concluded that a sole owner was more likely to have objectives that were aligned with a social optimum, and certainly more likely to generate resource rents (p.124).

A recent search of Elsevier's database shows Gordon's paper had been cited 608 times, Scott's 139 times<sup>iv</sup>. Together these papers can be seen as seminal pieces in the theoretical development of the economics of fishery management. A central theme to both papers was the comparison between a "single owner" and a "competitive fishery". Some of the logical conclusions derived from their papers, for example that incentives can be better aligned with societal gains through rights based management, are now so well established that even critics of rights-based management tend to argue over the term and allocation of rights rather than the utility of rights themselves<sup>v</sup>.

True single owner fisheries, at least as reported in academic literature, are rare or non-existent. Arrangements that approximate the position of a single owner such as co-operatives and self-management organisations do, however, appear to be becoming more common (see examples in Townsend et al, 2008). This article considers a fishery which was 94% owned by one operator from 1993 to 2009. Since 1993 MG Kailis Pty Ltd has had significant control over decisions as to catching operations, processing and marketing and management, albeit within broad parameters set by legislation. In effect the Exmouth Fishery has had an ownership structure approximating that of a sole owner for nearly 20 years. In 2009 that operator, MG Kailis Pty Ltd, became the sole owner of licences in the fishery. This article reviews the extent to which the behaviour of the "owner" of the fishery matches predications made in these seminal papers by Gordon and Scott.

## **THE SINGLE OWNER FISHERY**

### **Exmouth Gulf – Contextual Factors**

The history of the Exmouth Gulf Prawn fishery up to 2007 has been summarised in other papers (Kangas et al, 2008; Kailis, 2000). This fishery is a relatively small scale, USD 7-10 million, prawn<sup>vi</sup> fishery which has had a dominant operator from its inception in 1963. The fishery was one of the first prawn fisheries in the world to show a strong spawning stock – recruitment relationship for the brown tiger prawn *Penaeus esculentus* (see Penn and Caputi, 1986). In the 1980s the fishery recovered from significant over-fishing of tiger prawn stocks, then the most valuable of the stocks in this multi-species fishery. The principal operator held 14 out of 23 licences in 1983 and 15 out of 16 licences by 1993. Reductions in licence numbers were

achieved through industry funded restructuring that was facilitated by the State government. In 2008 the final “independent” licence was leased and then tendered into a further buy-back arrangement in 2009. Although the independent operator caught and processed its own product until the mid 2000s, it sold exclusively through the dominant operator from around 2007.

The general bias against concentration of ownership in marine fisheries<sup>vii</sup> was not an impediment to a sole owner emerging in this fishery. Factors which may have reduced social and political concerns as to concentration of ownership in this fishery include its small scale and that there has always been a dominant operator (now sole owner). The sole owner, the MG Kailis Pty Ltd also maintains on-shore investments that provide significant regional employment and the fishery is remote from major population centres. There are no recreational or indigenous fishers whose interests might have competed with that of the commercial sector.

### **Ownership and Alignment with Social Objectives**

As noted above, Gordon and Scott were of the view that there would be closer alignment of the interests of a single owner with social objectives, so long as the owner had limited monopolistic pricing power. In 2008-9 the Australian Commonwealth Governments Fisheries Research and Development Corporation commissioned research into the quality of management of Australia’s marine capture fisheries (Ridge Partners, 2009). This research considered the optimal management of Australia’s fisheries taking into account social and environmental performance as well as economic performance. Around 70 experts were confidentially polled as to their views on the performance of Australian fisheries taking a broad view of economic, social and environmental factors, a triple bottom line approach.

Of the Australian fisheries specifically rated, the Exmouth Gulf fishery scored the highest at 9.8 out of 10 (Ridge Partners, 2009 Appendix 2b). The average of scores for fisheries assessed in this manner was 5.8 out of 10. In relation to the other Australian prawn fisheries discussed below, the Spencer Gulf fishery was rated at 6.7 out of 10 and the Northern Prawn fishery at 7.5 out of 10. The Northern Prawn fishery has been recently lauded as global example of ‘a fair, flexible and accountable’ fishery (CSIRO, 2009; referring to Gillett et al, 2008). The Shark Bay fishery, referred to below, was not rated in this research.

Each fishery will have special historical factors that affect its development and management and contribute to the ease, or otherwise of management. Accordingly, drawing strong conclusions cannot be drawn solely on the basis of an estimate from one piece of research alone. Nonetheless, the very high rating given to Exmouth Gulf fishery in relation to its combined economic, environmental and social performance is consistent with Gordon’s and Scott’s predictions.

### **Ownership and Change – Delay and Risks**

Significant control over the fishery control was held by MG Kailis Pty by 1993, and yet the company was initially slow to take full economic advantage of its position. In particular, there was a five year gap before the trial of more efficient ‘quad gear’ in 1998, with full adoption of quad gear only occurring in 2000. This delay was not due to regulatory impediments. The fisheries research agency for Western Australia was supportive of experimentation with new trawl techniques.

The delay in adopting new and more efficient fishing methods can be attributed to a number of factors. There was also some initial concern that lower levels of effective effort (with reduced fleet numbers) might lead to less spatial coverage by vessels and allowing more escapement of prawns from the fishery (Kailis, 2000). In addition, although the numbers of vessels overall could be reduced, some vessels needed to be upgraded or replaced in order to handle larger per vessel catch volumes. Once vessels had left the fishery, if the change was not successful, then it would be difficult to return to the status quo ante. These concerns were predicted by Scott in his observations as to the risks a sole owner faced in getting the ‘scale’ right in relation to capital invested (Scott, 1955 p.123-4).

### **Ownership and Change – Social Factors**

Social factors may also have had an influence in delaying change. Michael Kailis, the majority shareholder of MG Kailis Pty Ltd and a founder of the fishery, was initially sceptical as to the wisdom of removing vessels that the company had built and operated in this fishery for over 30 years. At this time the profitability of this fishery was relatively high. A move to fewer vessels appeared to be a sign of retrenchment and failure, rather than an improvement to the operations, through increased catching efficiency and reduced costs of fishing.

There was also some apprehension by vessel skippers in Exmouth Gulf to the adoption of more efficient fishing gear (Kailis, 2000). The success of any innovation requires the willing and creative application of expertise. The adoption of new and more complex fishing gear required the co-operation and technical fishing knowledge of senior skippers. Skippers had a short-term interest in boosting their relative catch on a competitive basis and as long-term stakeholders they had an interest in the viability and profitability of the fishery overall. This stakeholder group was given appropriate assurances as to the implementation of future vessel reductions, and on successful completion of trials of different fishing gear configurations they were won over to the new techniques.

Gordon and Scott did not address social considerations to any great depth. Gordon suggests, however, that fishers are intrinsic risk takers (p.132). The slow take up of efficiency boosting measures in this fishery tends to contradict Gordon’s suggestion. The history of the Exmouth Gulf fishery suggests that, even in a sole fishery, change may be implemented at a slower pace than that which might be considered economically optimal. It is a plausible explanation that a degree of risk aversion may develop where a fishery is well managed and with moderate and relatively predictable returns. Accordingly, apparently “rational” moves might well be adopted only slowly and cautiously.

### **COMPARISON WITH OTHER AUSTRALIAN PRAWN FISHERIES**

It is useful to compare the development of the Exmouth Gulf fishery with that of the Northern Prawn fishery the Shark Bay fishery, and the Spencer Gulf fishery<sup>viii</sup>. These prawn fisheries shared a number of common historical elements. They were all founded in the 1960s and early 1970s. Effort peaked in these fisheries in the late 1970s and early 1980s. The vessels used in these fisheries were broadly similar, and applied similar technology.

### **Concentration of Ownership**

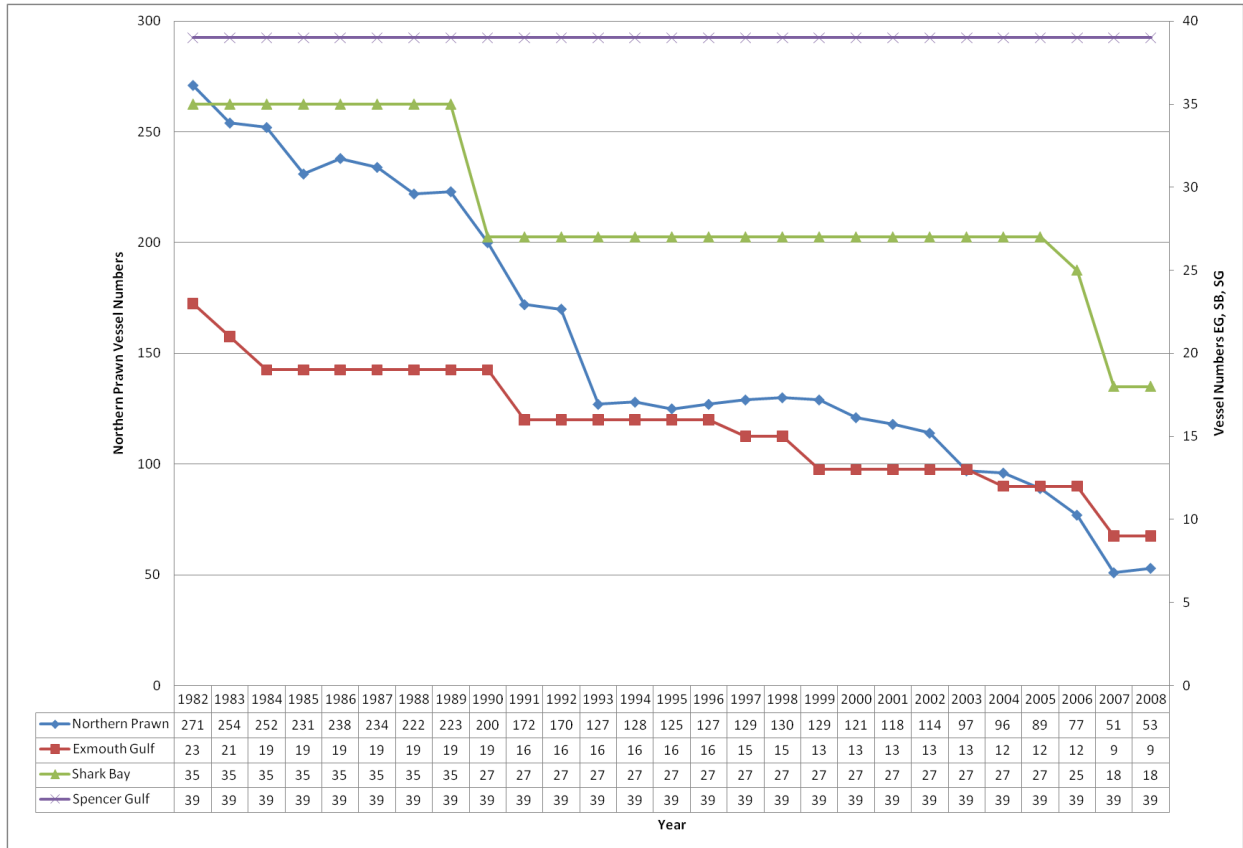
The Shark Bay and Northern Prawn fisheries have a high degree of concentration of ownership. The largest operator in Shark Bay has 15 out of 27 licences with the remaining 12 licences owned by 5 operators (as at 2010). In the Northern Prawn fishery the largest operator is A Raptis and Sons Pty Ltd, who operates 12 of 52 vessels. The second largest operator in the Northern Prawn Fishery is Austral Fisheries Pty Ltd with 9 vessels (as at 2010). From their inception in the 1960s, these fisheries had participants who operated multi-vessel fleets. The Spencer Gulf prawn fishery on the other hand, has a highly diversified ownership structure with each licence being held by a separate legal entity. Past policy decisions in South Australia have restricted fleet ownership in favour of individual ownership (see discussion in Haldane, 2004). A search of the registered addresses and recurrent family names in relation to Spencer Gulf, suggests a limited degree of connection exists between some owners, as has also been observed by Haldane (2004).

### **Does Sole Ownership make a difference – Vessel Reductions and Efficiency of Trawl Operations?**

Historical trends in reduction in vessel numbers in the Exmouth Gulf, Shark Bay, Spencer Gulf and Northern Prawn fisheries are shown in Figure 1, with catch per vessel shown in Figure 2. Broadly speaking Exmouth Gulf, Shark Bay and Northern Prawn fishing vessel reduction trends are similar despite the many differences that exist between these fisheries. For example, the Exmouth Gulf fishery, and in particular its tiger prawn component, is now considered to be managed at an optimum level, with flexible management on a daily basis (Kangas et al, 2008). The Northern Prawn fishery on the other hand is considered to have been over-fishing its tiger prawn fishery (Gillett, 2008) and is pursuing a recovery strategy.

The fishery management strategy adopted in South Australia's Spencer Gulf Fishery has been strikingly different. In this fishery the number of vessels licensed has remained static at 39 since 1981 (Zacharin et al, 2008). This fishery has instead been managed through sophisticated and complex tight controls on effort. Under this fishery management strategy, hours fished have declined 50% from 1980 (Zacharin et al, 2008 p.247). As a consequence although each vessel needs to expend less effort in any particular season the catch per vessel has been stable for an extended period, albeit at the expense of the vessel fishing for only 50-60 days a year. The vessels used in this fishery are specialised and have limited alternative economic uses.

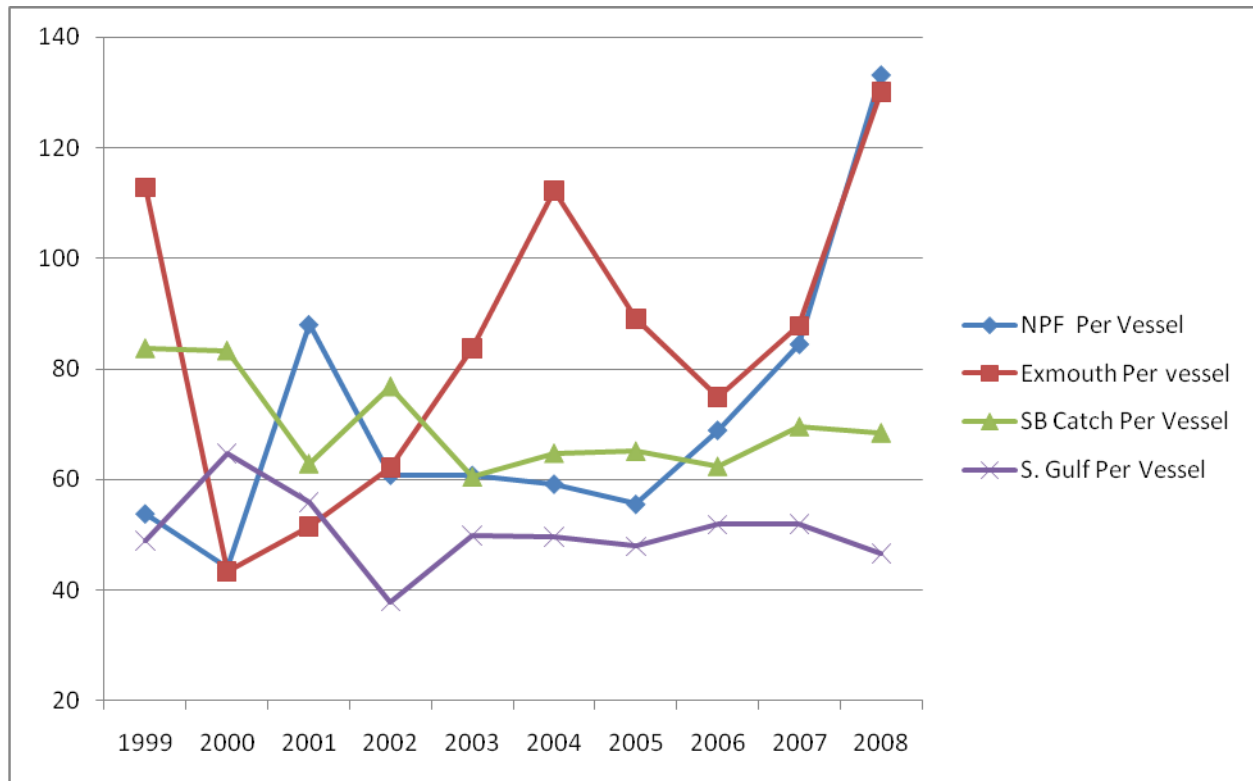
**Figure 1: Number of vessels from 1982 (Northern Prawn fishery left hand scale, others right hand scale)**



Sources: W.A. Fisheries Department, South Australian Research and Development Institute, NPF Industry Pty Ltd.

The similarities involved suggest that for the Exmouth Gulf, Shark Bay and Northern Prawn fisheries common external factors may have been more important to fleet reductions than the degree to which ownership is concentrated. A long-term decline of prawn prices is likely to be the common factor influencing changes in these fisheries. Recently rises in fuel prices have also had an impact. Differences between these three fisheries do exist as will be discussed below, especially as to when more flexible rules relating to efficient forms of trawling were adopted.

**Figure 2: Tonnes per vessel per annum: Exmouth Gulf, Shark Bay, Northern Prawn fishery, Spencer Gulf 1999-2008**



Sources: W.A. Fisheries Department, South Australian Research and Development Institute, NPF Industry Pty Ltd.

Although the Exmouth Gulf fishery adopted more efficient fishing gear (quad gear) in 1999, the Shark Bay fishery only did so in 2007 (Kangas et al, 2008 p.236-8). The Shark Bay fishery has also been somewhat slower to reduce vessel numbers. These delays can partly be attributed to the higher transaction cost of reaching agreement between a greater number of participants. The Western Australian state government facilitated licence reductions by providing capital for loans, re-payments to be made by the remaining licensees through higher licence fees. The state government, however, required evidence of a high level of industry consensus before it would implement a licence reduction scheme. The structure of a buy-back represents a complex challenge to resolution by consensus. In the Shark Bay fishery the issues included which licensees would stay and which would go, the need to assess a fair value for exiting licensees and setting a timetable for repayments. Compared to the Exmouth Gulf fishery, a complicating economic factor was the access by Shark Bay licensees to a commercially valuable resource of scallops.

By comparison to the Shark Bay fishery, the Northern Prawn fishery has been a faster adopter of vessel reduction strategies. This is the case notwithstanding the significantly greater number of participants involved in the Northern Prawn fishery. The availability of public funds for effort reduction schemes for this fishery has likely facilitated restructuring efforts for the Northern

Prawn fishery. The Northern Prawn fishery is a Commonwealth (national) fishery. The Commonwealth, unlike the Western Australian state government, has been prepared to subsidise industry re-organisation and effort reduction schemes. For example, the latest reduction in the Northern Prawn fishery in 2007-9 was paid for by the federal government at a cost of 60 million Australian dollars (Vieria et al, 2010). The potential availability of government subsidies not only increases the payoff to industry for reform, but creates incentives for fishers to develop effective corporate mechanisms to lobby government.

Given the trends in the Exmouth Gulf, Shark Bay and Northern Prawn fisheries, the stability in vessel numbers in the Spencer Gulf fishery appears anomalous. The Spencer Gulf prawn fishery has also experienced lower prices in recent years (Zacharin et al, 2008 p.247). The fishery has a formal strategic objective of favouring ‘management arrangements that allow commercial operators to maximise operational flexibility and economic efficiency’ (Zacharin et al, 2008 p.252). A specialised adaptive management mechanism has been adopted for this fishery which is targeted towards maximising the value of each year’s catch. The strategy applied would appear to have significant limitations in enabling future cost reductions, given vessels in the fishery are already operating for as little as 50-60 days per year.

Proposals have been raised to reduce vessel numbers in the Spencer Gulf fishery, but they have not been agreed upon or implemented<sup>ix</sup>. The Spencer Gulf fishery has a diversified ownership base of single vessel owners. All other things being equal, more participants would make it difficult to forge a consensus for change. In addition unlike a single vessel owner a multiple vessel fleet owner has the option of dropping vessels and consolidating its fleet. More speculatively, the complex and sophisticated mechanisms developed in Spencer Gulf over an extended time may have had the effect of acting as an unintended institutional and social barrier to change. Together these factors would be expected to lead to higher transaction costs in relation to the implementation of structural change.

In considering Gordon and Scott’s articles, it would appear that changes affecting capital restructuring (at least in terms of tonnes per vessel) have indeed been more easily implemented in fisheries that have corporate fleets and a significant concentration of ownership. The Exmouth Gulf fishery has been an early adopter of both vessel reduction and gear efficiency strategies. Over time, however, similar strategies have also been adopted in the Shark Bay and Northern Prawn fisheries. This suggests that for fisheries with a significant concentration of ownership transaction costs as to increasing capital efficiency can be overcome without the necessity of sole ownership.

### **Ownership and Marketing**

Australian prawn fisheries have seen a long term decline in the real value of their product, (see Curtotti, 2010). There have been unsuccessful attempts to develop a collective Australia-wide branding and marketing responses to address this decline. These attempts faced formidable problems at a national level of reconciling the interests of different fisheries within the prawn industry, collecting revenues without creating free-rider problems and in demonstrating long-term benefits from generic marketing. In this context it is perhaps unsurprising that in the late 1990s prawn fishers voted by a significant majority (85%) against a national levy to develop broad promotional and marketing activities (Commonwealth of Australia, 1997).



A true sole owner has lower transaction costs in funding and developing market strategies and is more likely to capture the benefits of a targeted product differentiation/marketing strategy. On the last page of his 1955 article, Scott speculated that a sole owner would have a strong incentive to influence taste and demand for the products of its fishery (p.124). From 2007 MG Kailis Pty Ltd acquired the sales contracts for the remaining independent licensee in Exmouth Gulf, and could plan promotional and branding strategies with a strong regional element and with a greater degree of control over the image and distribution of “Exmouth” prawns. MG Kailis Pty Ltd commenced low intensity branding campaigns focussing on fresh product in the Perth market in 2008, with expenditure of AUD 80-120,000 per annum. Financial returns have been modest and it is reconsidering its strategy with greater insight gained from further market research<sup>x</sup>.

Pursuit of branding and promotion strategies has, however, not been restricted to the Exmouth Gulf fishery. In the Northern Prawn fishery by the newly formed association, NPF Industry Pty Ltd has also initiated low- key promotional strategies see ([www.npfindustry.com.au](http://www.npfindustry.com.au)) with expenditure since 2008-9 of around AUD 120,000 per annum based on voluntary levies<sup>xi</sup>. Success of this strategy has yet to be determined, but if there is a successful move to quota management for this fishery there may be heightened interest and investment in such a strategy. Marketing strategies are also being pursued in the Spencer Gulf fishery (Zacharin et al, 2008). In June 2010 the Spencer Gulf Prawn fishery announced it would support its marketing efforts through seeking Marine Stewardship Council certification.

In considering the market opportunities for a sole operator, the behaviour of MG Kailis Pty Ltd is consistent with the marketing possibilities referred to by Scott, but similar strategies have been taken up by other prawn fisheries regardless of ownership structure. The question of viability of these strategies in relation to a commercial return on investment remains open.

## **CONCLUSIONS**

The recent historical development of the Exmouth Gulf Prawn fishery is consistent with the predictions made by Gordon and Scott. The sole owner is engaging in behaviour consistent with the expectations of Gordon and Scott, and expert opinion is that this fishery is managed in a socially optimum manner. Vessel reduction and gear efficiency strategies have, however, also been followed in Northern Prawn fishery and Shark Bay fishery. This suggests that, with supportive institutional frameworks and a substantial degree of concentration of ownership, similar outcomes can be expected as if there was a single owner.

The unique effort management strategy followed by the Spencer Gulf fishery shows that fisheries experiencing similar economic pressures, might take very different strategies as to development. Institutional factors relating to the development of a particularly complex system of management, combined with policies favouring diversity of ownership, are likely to have contributed to this fishery’s development proceeding along a different path.

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## ENDNOTES

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<sup>i</sup> For example see Iudicello et al, 1999.

<sup>ii</sup> This paper represents a work in progress by the principal author (George Kailis) on these matters. In future research more precise estimates of ownership diversity over time will be considered. The principal author is a non-majority shareholder of MG Kailis Pty Ltd and was Managing Director from 1992-1999.

<sup>iii</sup> The degree to which this incentive will exist depends on the interaction between discount rates and biological parameters of the fishery. For example see Kompas et al (2010).

<sup>iv</sup> Elsevier's 'Scopus' database. Searched 23 July 2010. By way of comparison the same database lists Hardin's 1968 classic *Science* article 'Tragedy of the Commons' was cited 3271 times. Scott's influence should also be seen in the context of his long career and many publications on this and related topics (see for example Scott, 2008).

<sup>v</sup> See article by Bromley in *Fisheries* (2009), and responses in the same edition by Grafton et al and Harte et al.

<sup>vi</sup> Australians use the term "prawn" rather than "shrimp".

<sup>vii</sup> For example, a 45% accumulation limit in a recent NMFS plan for Mid-Atlantic Tilefish, (National Marine Fisheries Service, 2009)

<sup>viii</sup> Reviews of these fisheries are included in Gillet, 2009.

<sup>ix</sup> Pers Com, Ross Haldane 8 July 2010.

<sup>x</sup> Pers Com, David Haynes, Marketing Manager MG Kailis Pty Ltd, July 2010.

<sup>xi</sup> Pers Com, David Carter Newfishing Australia Pty Ltd, July 2010.