

**FISHERY MANAGEMENT AND PROPERTY
RIGHTS:
A STUDY OF THE SRI LANKA SOUTH COAST
SPINY LOBSTER FISHERY**

By

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Thesis

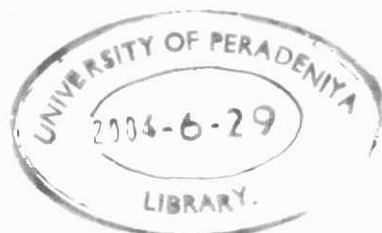
Submitted in Partial Fulfillment of the
Requirements for the Degree of Master of Philosophy
In Economics

UNIVERSITY OF PERADENIYA

PERADENIYA

SRI LANKA

2003



ABSTRACT

In terms of foreign exchange generation and employment, the southern coast spiny lobster industry plays an important role in Sri Lanka's economy. Like other fisheries in Sri Lanka, this fishery operates under open access (by local fishermen). A drop in the production of spiny lobsters along this coast since the late 1980s, is attributed to a diminishing lobster stock due to over-fishing. This study therefore analyzes the opportunities of the existing open access in the southern coast spiny lobster industry, to its management. The analysis takes into account the bio-economic equilibrium of the industry, and both open access and private property equilibria under static and dynamic conditions.

The study mainly uses secondary data, suggested, where necessary, by primary data. Primary data was gathered through informal interviews. For data analysis, out of surplus production models which suited study objectives and data availability, the statistically significant Schaefer model was used bio- economic equilibrium, open access and private property ownership were all analyzed using this model.

The findings of the study were as follows.

In the southern coast spiny lobster industry, the maximum sustainable yield (i.e., the yield consistent with bio - economic equilibrium was 256.07 MT, with corresponding

effort of 71,280 boat-days. The equilibrium stock was 312.28 MT. Under static conditions, the southern coast open access steady - state equilibrium yield was 180.89 MT, with a steady-state equilibrium effort of 125,320 boat-days. The steady-state equilibrium spiny lobster stock was 75.62 MT. Under static conditions, the private property steady-state equilibrium yield was 110 MT, with a steady-state equilibrium effort of 17,445 boat-days, and a steady-state equilibrium stock of 548.3 MT.

Under dynamic conditions, the open access discount rate is taken as infinite, and hence dynamic equilibrium is the same as the static equilibrium. The dynamic steady-state equilibrium yield and effort for private property were 240.78 MT and 53,876 boat-days respectively, with a corresponding discount rate of -1.64 (negative). The steady-state lobster stock was 388.62 MT.

The open access equilibrium is determined by the condition $TR_E = TC_E$, and is therefore economically inefficient. By being located to the left of the bio - economic equilibrium, it is also inefficient in bio - economic terms. Private property equilibrium attained is through $MC_E = MR_E$, and is therefore economically efficient; by being located to the right of the bio -economic equilibrium, it is also bio - economically efficient. In comparison with open access, private property ownership gives a higher steady-state harvest and lobster stock, and a lower effort.

The behavior of effort and harvest under open access decay 1985 – 1998 confirms that open access biologically inefficient. It is clear that the open access in the southern coast spiny lobster industry is not as appreciate as private property ownership in managing the resource. Thus this industry should be directed away from open access to a system which can obtain the benefits of private property ownership.