LICENSE VALUES IN RESTRICTED ACCESS FISHERIES

SPIRO E. STEFANOU
Department of Agricultural Economics,
Pennsylvania State University,
University Park, PA 16802, U.S.A.

JAMES E. WILEN
Department of Agricultural Economics,
University of California,
Davis, CA 95616, U.S.A.

(E.mail: TTC@PSUVM)

1. Introduction. The last two decades have witnessed an explosion of new institutions designed to mitigate some of the wasteful effects of common property in renewable natural resource use. This move towards institution redesign was given special impetus by the extension of ocean jurisdiction to 200 miles by coastal nations in 1978. In the relatively brief period since then, we have seen a wide range of fisheries and marine management policy changes, from extension of coverage of the limited entry programs begun in the Sixties, to the very innovative development in New Zealand and elsewhere of individual transferable quota (ITQ) systems (I. N. Clark et al., 1989).

The movement towards rationalizing renewable resource use has been encouraged by the analytical and empirical contributions of many resource management scientists. Colin Clark has been in the forefront of such work, beginning with his early interests in the bioeconomics of whaling and continuing with his important work on the dynamics of optimal use and numerous policy-oriented studies (cf. Colin Clark, 1971, 1973a, 1973b, 1976, 1980, 1985). In many of these papers, the juxtaposition of a dynamically optimized renewable resource system with its common property/open access antithesis provides a powerful framework for thinking about management institution redesign.

This paper examines an issue that cuts across several of Colin Clark's thematic contributions in that it deals with dynamics, information and markets, and capital—all tied together in a real world fisheries management setting. The question we address is: how should limited entry license prices behave in a regulated fishery, or alternatively, what can be inferred about the health of a restricted entry industry by observing patterns of license prices? The
paper is organized as follows. In Section 2, we discuss restricted access programs and the concepts behind license price determination. Section 3 follows with a more explicit development and some examples of various scenarios. Section 4 presents a summary and some concluding remarks.

2. Restricted Access Regulation. One of the most significant institutional innovations to emerge in fisheries management in the past three decades has been implementation of restricted access. Beginning with H. S. Gordon's influential article in 1954 and popularized by Garrett Hardin's tragedy of the commons paper in 1968, it has become generally accepted that open access resources will be misused. Garrett Hardin and many other biologists have characterized the misuse by focusing on excessive harvests and low population levels; economists have added excessive input use and dissipation of potential rents to the characterization. Whatever the rationalization, many of the more important fisheries resources that once operated under open access have become restricted access fisheries, mainly through the use of licensing systems. For a survey of various systems see Townsend (1990).

The typical restricted access or limited entry system restricts one or a few dimensions of effort in order to freeze fleet capacity. In almost every case, limited entry programs have been initiated at the behest of management biologists who have been confronted with growth in fishing capacity and increasingly tenuous control of harvests. Hence most plans have aimed at licensing some measurable inputs expected to be highly correlated with physical fishing capacity. Two problems have emerged as a result. First, it has become quickly apparent that restricting an input addresses only the symptom rather than the cause of the problem. At its most fundamental level, the cause is the incentive system associated with common property which drives participants to employ more inputs than necessary. Several of the first programs found need to "chase" inputs by (for example) first restricting numbers of boats, then restricting tonnage, then length, then gear characteristics, etc. as fishermen altered strategies around the restricted inputs. Second, by focusing on physical capacity, the biological problem has been addressed without necessarily improving economic conditions. Thus many license programs still face the symptoms of the open access problems (growing capacity, extra effort controls, tenuous harvest management, low profits) although perhaps less severe than would have been in the case with no programs (cf. Wilen, 1989).

An important and unresolved debate has been over the ultimate outcome of this process of restricting one or a few inputs without changing the basic motivations to continue adding unrestricted inputs (as discussed in the J. Fish. Res. Bd Can., special Vol. 36, 1979). If the harvest technology is very inflexible with minimal substitution possibilities between different inputs, then