



## Short communication

# Why ITQs on target species are inefficient at achieving ecosystem based fisheries management outcomes

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## ARTICLE INFO

*Article history:*

Received 20 August 2009

Received in revised form

13 September 2009

Accepted 13 September 2009

*Keywords:*

Catch rights

ITQ

Quotas

Fisheries management

Ecosystem based fisheries management

EBFM

## ABSTRACT

The effectiveness of managing fisheries through the allocation of catch rights, including Individual Transferrable Quota's (ITQs), has been the subject of a number of recent reviews. Inspection of these reviews suggests that the effectiveness of ITQ and similar catch rights schemes in meeting single species sustainability objectives differs from their effectiveness in meeting broader Ecosystem Based Fisheries Management objectives, especially in terms of managing effects on associated and dependent species and habitats. This should not be a surprise, given the attributes of rights-based neoliberal market policy instruments, as discussed here.

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Branch [1], Chu [2] and Costello et al. [3] have all presented reviews of the efficacy of catch rights and ITQ (Individual Transferrable Quota) fishery management regimes over recent months. Two clear signals emerge from these reviews. Firstly ITQs can, but do not always, have beneficial impacts in terms of reducing over-catch of target species. In many ways this is unsurprising as market-based instruments such as ITQs are narrowly-focused policy instruments directed towards achieving precisely this outcome: the efficient allocation of catch shares within a biologically meaningful prescribed harvest cap. Interestingly, it can be argued that a major factor underpinning the effectiveness of ITQs in reducing over-fishing of target species is the fact that a meaningful cap or output limit is established rather than through changes to allocation mechanisms, although these clearly play a strong role in improving economic efficiency [4]. The second general conclusion from these reviews, especially Branch [1], is that target species catch rights approaches are not consistently effective at achieving ecosystem or EBFM (Ecosystem Based Fishery Management) [5] outcomes. By contrast to the effectiveness of strong private property rights regimes in controlling over-catch of target species, these inconclusive results should also not be surprising since ITQs on target species are a narrowly-focused policy instrument that are not explicitly designed to manage the ecosystem effects of fishing. However, this does not

mean that ITQs cannot contribute to broader EBFM objectives and there are pathways by which the establishment of ITQs on target species can indirectly lead to achieving positive effects to associated and dependent species and habitats, as discussed below.

There are four main mechanisms through which ITQs may lead to positive EBFM outcomes. The first mechanism is through the establishment of a TAC (Total Allowable Catch) that leads to an overall reduction in fishing effort. If a TAC that 'bites' is established than in the absence of substantial high grading, it is to be expected that the overall fishing effort may be reduced in some fisheries. This is particularly the case in over-capitalised fisheries that convert to rights-based regimes. By implication this suggests that the incidence of by-catch and direct interactions with associated and dependent species and ecosystems may be reduced. It is likely that much of the initial benefit of catch rights approaches to associated and dependent species is a result of this mechanism. However, it is also clear in many cases that this marginal effect alone will not be enough to lead to desirable ecosystem management outcomes. In other words this marginal effect of reducing overall effort cannot necessarily be relied upon to achieve comprehensive EBFM outcomes [6].

The second mechanism is through a process whereby rights holders and management agencies collectively agree that an additional reduction in the TAC will lead to future increases in catch rates via maintaining essential feedbacks with other species and habitats. For example in shellfisheries a reduction in the overall effort may in some cases conceivably lead to less habitat degradation and this may have a positive influence on recruitment

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and stock size, which then may lead to future increases in catch rates. If this were to occur than a collateral effect would be a reduction in destruction of benthic habitats—a key objective of EBFM. However, unfortunately such cause-effect links are extremely difficult to defensibly establish and support of such an approach is often clouded by implicitly high discount rates given to future catches despite the underlying assumption of catch property rights that rights holders will have a strong incentive to protect future stock status. A similar mechanism may be enacted when fisheries pursue maximum economic yield (MEY) objectives in cases where  $MEY < MSY$  (maximum sustainable yield). However, once again even if the establishment of an MEY reference point leads to a reduction in overall effort, it is far from clear if this will also co-incidentally result in the achievement of reference points with regards to associated and dependent species and benthic habitats.

The third mechanism is through a process whereby price signals from the market incentivize minimizing effects to associated and dependent species and habitats. This is one of the foundations of eco-labelling approaches that have sometimes been seen as a panacea for achieving EBFM objectives through market mechanisms [7]. However, whilst there have clearly been some favourable EBFM outcomes from eco-labelling approaches, it is equally clear that in many cases consumers respond primarily to the price of the product over and above perceived ecosystem sustainability benefits. This effect is strongly reinforced through globalization that often promotes a large geographic separation between the source of seafood and its consumption. In such cases consumers of seafood products are often less willing to pay a premium for the protection of non-local ecosystems [8].

The fourth mechanism is enacted when rights holders take a deliberate individual or collective approach to minimize fishing effort with the primary intention of minimizing adverse impacts to marine ecosystems for purely altruistic reasons. Whilst many have argued that a number of traditional forms of fishery management pursue this as an explicit objective [9], it can be argued that under a globalised, market-based seafood industry, altruistic intentions are explicitly seen to be economically irrational (and often demonstrably irresponsible to shareholders) whilst greater ecosystem goods and services remain external to markets established solely around product species. This presents a substantial barrier to the implementation of EBFM outcomes and it can be argued that through the process of allocating strong private property rights, an implicit form of co-management,

attempting to incentivize rights holders to achieve EBFM outcomes when there is no perceived direct benefit to the value of rights actually becomes more difficult. In other words through the allocation of strong private property rights, outcomes in terms of reducing over-fishing of target species may be achieved at the expense of achieving broader EBFM objectives.

In summary it can be argued that it is unsurprising that reviews of catch rights and ITQ approaches suggest that the allocation of strong catch rights and establishment of meaningful TAC's can reduce over-fishing of target stocks. Similarly, as argued here it should be equally unsurprising that there is a paucity of clear evidence demonstrating that these neoliberal approaches lead to positive outcomes in terms of EBFM objectives. This is because although there are multiple mechanisms by which ITQs on target species can positively impact on associated and dependent species and habitats, these are often weak and indirect. Finally, perhaps the most important point to remember is that establishing strong catch rights applied to target species alone, as the sole policy instrument, can actually make it more difficult to achieve EBFM outcomes [10–12].

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