

The Commons Trap and Fishery Deliberations

Dr. Richard Collins



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Author: Richard C. Collins
Institute for Environmental Negotiation
University of Virginia

Editor: Pauli H. Fitzgerald
Virginia Graduate Marine Science Consortium

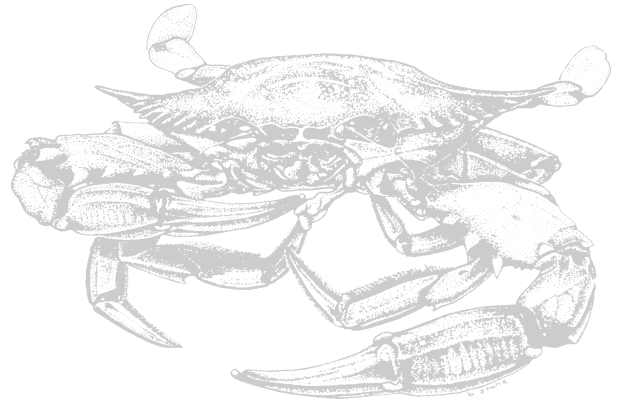
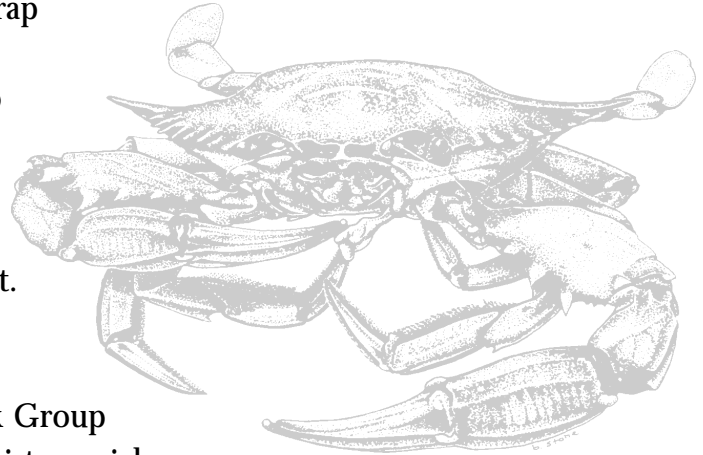


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I. Introduction

This paper, **funded by a grant from the Virginia Sea Grant Program**, describes the development of the Commons Trap Principles (CTPs). The CTPs were used in a workshop sponsored by the Bi-State Blue Crab Commission (BBCAC), a group established by the Chesapeake Bay Commission to study the status of the blue crab and to make recommendations for its bay-wide management. The BBCAC was composed of representative stakeholders from within the Bay region. The BBCAC was also assisted by a Technical Work Group (TWG) composed of fishery scientists, economists, social scientists and fishery resource managers from Maryland and Virginia.



This report does not evaluate the blue crab study process or its recommendations. It assesses the difficulties inherent in using consensus processes to achieve a “breakout from a commons trap” in a fully exploited fishery.

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The Chesapeake Bay Commission organized the BBCAC process and sought consensus on a set of recommendations for the bay-wide management of the blue crab. The BBCAC process achieved this goal.

The BBCAC report *Taking Action for the Blue Crab*, issued in 2000, followed nearly two years of work by the TWG and the BBCAC. The report recommendations were accepted by the Chesapeake Bay Commission and referred to Maryland and Virginia decision-makers for implementation.

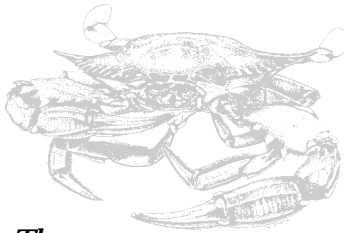
The reader might profitably read the BBCAC report in light of the substantial changes and actions that were triggered by its [recommendations](#).¹ The BBCAC report recommended a 15 percent reduction in crab harvesting over three years, but left open the means to achieve that goal. Instead, each state decided on the steps to best accomplish their respective share of the harvesting reduction.

Today, the BBCAC continues its work. More Commission recommendations will likely be forthcoming.

¹ Chesapeake Bay Commission, *Taking Action for the Blue Crab*, January, 2001.

The Tragedy of the Commons and the Commons Trap Principles (CTPs)

Garrett Hardin's powerful parable of the Tragedy of the Commons is a rallying cry for those who fear that the environment's natural limits will be exceeded to accommodate perceived human needs.² The ethic of sustainability maintains that limits to the exploitation of the global commons of air, water, renewable and non-renewable resources should serve as the overarching guides for future human development. Fisheries exemplify a critically important renewable resource that virtually all observers consider to be highly threatened by various forces, including overfishing.



The villagers may collectively recognize the threat to the commons, but without a collective commitment to limit access each individual will continue to graze as many cattle as he can to maximize his own benefit.

The Tragedy of the Commons describes a village commons available for all villagers to graze their privately owned cattle. As the number of cattle grazing on the commons begins to threaten the area's carrying capacity, the villagers face a serious dilemma. They must either limit access to the commons or cope with an overgrazed and depleted resource.

The villagers may collectively recognize the threat to the commons, but without a collective commitment to limit access each individual will continue to graze as many cattle as he can to maximize his own benefit. The tragedy in the commons metaphor arises from the absolute rationality of each individual continuing to exploit the common resource in the absence of everyone else also agreeing to do the same. Each individual receives the continuing – but inevitably declining – benefit of each grazing animal's weight increase.

In this paper, the Tragedy of the Commons metaphor serves as the basis for a bioeconomic model called a *commons trap*. This seems to be an appropriate designation for the relentless, self-defeating race to exploit a fishery that will continue indefinitely unless those in the trap can find a way to break free.

To understand the power of the commons trap, imagine the fish harvester caught in the same situation as the commons villager. Imagine how you would feel if your personal livelihood depended on a drastically declining natural resource. Imagine as well that your harvesting is subject to various regulations aimed at reducing the pressure on the common resource. In such a situation, trapped harvesters are not convinced that they are trapped in any way. Furthermore, even if they believe that they are trapped, they remain deeply skeptical that there is a satisfactory common solution available. Individual self-interest governs the fishery.

The principles of the Tragedy of the Commons have been applied and refined to fishery applications. Sometimes called the “fisherman's problem” or the “race to fish,” the basic principles apply to fisheries as well as to grazing. They are both renewable resources, and they both can be over-exploited to the point of [collapse](#).³

² Garrett Hardin, *The Tragedy of the Commons*, Science, Vol. 162, p. 1243.

³ See H. Scott Gordon, “The Economic Theory of a Common-Property Resource: The Fishery” 62 *Journal of Political Economics* 1954. Also see Arthur F. McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980*, Cambridge University Press, 1986.

The Commons Trap Principles (CTPs) start with the premise that converting a fully exploited fishery to a stable, sustainable fishery requires a *breakout* – a fundamental change – and that the best chance to achieving such change comes from a better understanding of the trap itself. Achieving a breakout requires understanding and then a decisive – and difficult – transition to create a long-term balance between fishing effort and a sustainable harvest. This breakout, if achieved before a fishing stock collapses, requires a consensus and a commitment to address and implement the necessary steps.

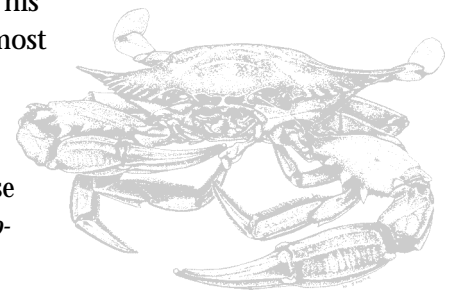
A breakout establishes a long-term, stable relationship between those who are allowed to harvest the resource and a sustainable stock of the species. Once a breakout is achieved, harvesters' self-interest is re-oriented to become compatible with a sustained yield. Breakout changes the basic dynamic of the tragedy in some fashion.

A breakout does not consist of a single pre-established solution. It requires an effective, crafted policy that emphasizes fairness and consistency. Breakout options are necessarily novel and threatening to those potentially affected by the proposed changes. As it will later be suggested, those who are most successful in the existing fishing regime will be more threatened than those who are less influential. This may be so despite the fact that the more successful harvesters also have the most to gain.

In fisheries, the principal options available are limited access to harvest resources, quotas, or an altered relationship between the harvesters and those charged with protecting the common resource. This latter option, called *co-governance*, may be combined with the other limits on access or catch. Co-governance will be considered later in this paper. Basically, co-governance institutes more mutual goal setting and participation between the industry and the resource agency regulating the industry.

The CTPs presented the optimistic assumption that a breakout, or at least serious consideration of breakout alternatives, would be more likely if the common trap was understood and accepted as a bioeconomic model. Second, the CTPs were used as a frame of reference to encourage harvesters and other stakeholder groups to promote a possible breakout without reaching consensus.

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II. Commons Trap Principles in the Blue Crab Workshop

Below, this paper describes the introduction of the Commons Trap Principles (CTPs) in the Blue Crab Workshop and summarizes the Workshop's ensuing small-group discussions. Workshop facilitators reported and summarized the [responses](#).⁴ A commentary on the relationship between the CTPs and deliberative processes follows

⁴ Chesapeake Bay Commission, *Managing the Chesapeake Bay Blue Crab, A Workshop Report*, 2000.

each of these response summaries. Finally, the paper provides additional information on the BBCAC, fishery management, and the dynamics of the commons trap model.

The Commons Trap Principles (CTPs)

The Principles, listed as a series of statements, were designed to initiate discussion among Workshop participants as well as to gauge their attitudes toward fisheries management in general and blue crab resource management in particular.

STATEMENT 1:

When there is a public concern related to declines in blue crabs, the crabbers are perceived and treated as the principal source of the problem rather than other possible contributors such as crab population cycles, natural variations in conditions, water pollution or habitat loss.

Summary of CTP 1 Discussions

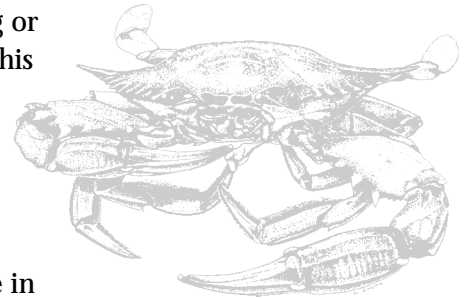
Participants agreed that there is substantial public misperception of the watermen's profession. The public, caught up in nostalgia for the past and lacking a general understanding of the crab population, tend to romanticize the profession, while at the same time viewing watermen as a cause of the Chesapeake's Bay environmental degradation. In addition, participants noted that there is a great deal of misunderstanding about the impacts of the winter dredge fishery. Participants also felt that perceptions of the sponge crab fishery and other fisheries that target female crabs are influenced by emotional feelings about taking "mommy" crabs. Also, crabbers are easier to regulate than other factors that may be contributing to the decline of the blue crab. Some noted that crab loss is probably more of a systemic problem than simply a matter of over-harvesting by crabbers. Management must address the predator/prey issue, multi-species approaches, and land use/water clarity. Some felt that much of the blame for the decline of blue crabs must lie with land use practices in the Chesapeake Bay watershed. More attention should be given to determining the impact of declining submerged aquatic vegetation (SAV) and poor water quality on the blue crab population. Information on these issues needs to be distributed to the public.

Commentary on CTP 1

This CTP was developed and introduced with the assumption that members of the commercial crab fishery would perceive themselves as politically oppressed, beset by an ignorant and unsympathetic set of regulators, condescended to by fishery scientists,

and vulnerable to charges of being selfish exploiters of a common resource. This CTP assumes that if commercial crab fishery stakeholders positioned themselves as an aggrieved minority whose continued livelihood depended upon the maintenance of the status quo, development of an honest and candid discourse would be difficult.

This CTP acknowledged that the crabbers were reluctant participants in the BBCAC process. They had not requested public assistance in resolving their acknowledged problem. Rather they had essentially agreed to participate in a process they did not seek, but which was too risky to avoid. The crabbers seemed to have agreed implicitly (or explicitly, but privately) that they would not engage in discourses that might pit one group or category of crabbers against another. For example, the Maryland potters would not encourage or actively initiate limiting winter dredging or soft-shell crabbing in Virginia. If this writer's perceptions are accurate, this amounted to social and economic pressure to retain a united front as an industry. If this was the crabbers' strategy, it assumed that any intra-industry differences would be exploited by non-industry stakeholders to their collective detriment.



This strategy is understandable. If the consensus-process is viewed as one in which the industry is threatened with additional regulations, one would expect that industry to assume a defensive posture, rather than as an opportunity to apply creativity to a dismal, partially self-inflicted condition. In a survey sent to all licensed crabbers requesting information on economic aspects of the fishery, the respondents were assured anonymity. A few questions concerning their attitudes about the status of the fishery were also included. Many crabbers stated that they felt the fishery was in trouble. Many of them offered their analysis of why the fishery was in trouble, and unlike the discussions in the BBCAC sessions they felt that certain harvest practices were more harmful than others. Interestingly, if the concerns most often expressed (e.g. the harvesting of immature females, the peeler catch, and winter dredging) had been considered in deliberations it would have been a divisive issue since Virginia's, rather than Maryland's fishery would have been most affected. Informal comments from individual crabbers suggested that any crabber who broke ranks would face considerable loss of status, or worse.

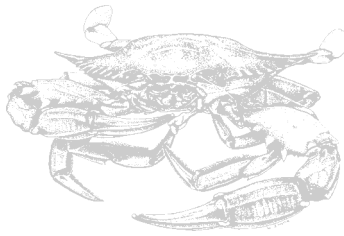
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While politically understandable, the united front strategy is antithetical to the principles of dialogue and consensus. One could hypothesize that if the differences within a fishery are not addressed openly, the chances of a workable and implementable consensus are not likely to be realized. The united front or defensive industry strategy can derail or pervert a process of building consensus through full examination of breakout options.

The dynamics of the consensus-process change if the defensive strategy is successful. It shifts attention away from issues considered divisive and threatening to the consensus, to issues that shift the responsibility to others, or to concentrate on issues that are not likely to provoke strong arguments.

Issues where stakeholders are more likely to agree than to divide can be called valency issues. These issues can be quite important in presenting opportunities for useful

dialogue and study. Their strategic effect is to reduce the amount of attention paid to issues that are more divisive but critical to a breakout option. One likely outcome of a strategic shift to valency issues is that a consensus will emerge but will be inherently unstable, ambiguous in application, and non-prescriptive for implementation



In fishery negotiations, one issue with guaranteed valency is the need for further research, information, and monitoring. The appeal for further research will almost always be justified because of the “mystery” of some aspects of the species life cycle and reproductive conditions. There will always be uncertainty about the contributing causes to fishery declines, and there will always be inconsistencies in data.

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Paradoxically, the maturing of fishery science from species specific “aquarium” models to an ecological perspective only adds to the valency of additional research and knowledge. The consensus formation problem arises not from the understanding that there are unknowns and uncertainty, but that until those conditions are changed, there is an insufficient basis for consensus-based decisions to break out. While “If it ain’t broke, don’t fix it” makes good sense, the commons-trap model asserts that a break is inevitable and it is timely to act.

Designers and facilitators of deliberative processes ought to be alert to the attractiveness of a defensive tendency within a stressed fishery. If the fishermen are the impetus for a special deliberative study – as sometimes happens – it is less probable that such a posture will dominate a consensus-based fishery deliberation.

A consensus-based process, like any other policy process, is subject to particular weaknesses and deficiencies. The fact that consensus processes can be derailed by a strong defensive posture suggests that, at minimum, an intensive process of pre-convening analysis of the fishery industry of interest is desirable. Sometimes called a conflict analysis, a written report on the status of the fishing industry could serve several roles, including that of testing the appropriateness of a consensus process in a particular situation.

STATEMENT 2: Crabbers should play a substantial and direct role in developing crab fishery management rules and regulations.

Summary of CTP 2 discussions

All discussion groups agreed that it is crucial to have more industry participation from the very beginning for the success of any management effort. Crabbers know the industry, are the ones being regulated, and have a vested interest in improving the fishery. However, the extent of their participation in regulating the crab is difficult to determine. Some question crabbers’ objectivity in reviewing regulations

that will affect their own income. In addition, the management process should involve other stakeholders, including environmentalists, restaurant owners and others. There should also be dialogue among stakeholders, including scientists and crabbers.

Commentary on CTP 2

The fishery clearly has a great stake in the management of the fishery and should be fully consulted in matters affecting it. But if the fishing industry perceives itself as dominated by a management system that is hostile and uninformed about it, or subject to threatening political influences, it will be reluctant to consider breakout options.

Because their livelihood is directly affected by fishery regulations, crabbers understandably feel they should have special access and influence in the regulatory process. However, does this relationship also protect the common resource or the public interest? The government's role as resource steward – as protectors of the public trust – places a special burden on the respective agencies to ensure that non-economic interests also have a strong voice in the deliberations.

A basic premise of consensus-development processes is that all stakeholders should be represented. If in a fairly representative process differences can be overcome and consensus agreement emerges, the theory is that the public interest will likely be realized by decision-makers implementing it.

The theory assumes that the consensus among all stakeholders reflects a fair outcome since all parties have agreed to it. Because of this same consensus the implementation of the consensus-based decision will proceed effectively because the parties have “bought in” to it.

But if a major stakeholder – particularly the one with the greatest economic interest in the outcome – is not committed to the process of full deliberation, then the outcome is less likely to be either creative or complete. Then neither an effective policy decision or implementation process is likely to emerge.

In consensus-based deliberative processes, it is difficult to maintain the degree of sensitive discussion that must almost certainly precede breakout alternatives. Harvesters' tendency to criticize government resource managers and fishery scientists as an incompetent policeman is a usual perspective among the regulated harvesters.

One interesting – and relatively unstudied – aspect of parties caught in a commons trap is the impact of the trap on the resource agency/harvester relationship. Generally a decline in trust and mutual understanding occurs. In general terms this decline in trust and mutual understanding arises from the failure of conventional regulations in the commons trap settings.

As some European observers have noted, everyone agrees on the need for regulation of fisheries, but the relatively poor record of the regulations in protecting fisheries – despite great effort and concern – generates a breach in the relationship that perpetuates ineffective regulation.

These observers note that the “dangerous state of many fish stocks in the European waters call into question the effectiveness of the current management systems and the scientific perspectives these management systems are based on.”⁵

The evident effects of increasing fishery regulations without providing a corresponding breakout are a general loss of respect for government regulations, a rationale for selectively violating the regulations, and an ingenuous appeal for additional enforcement of the existing rules. Appeals for additional enforcement are based on the premise that some people violate the rules more than do others. The implicit assumption that is that all of the fishers are inclined to avoid the rules some of the time.

Generally, prevalent enforcement complaints parallel a significant decline of faith in the rule-making process. This relationship is an indicator that the commons trap dynamic is operating, and that it calls for breakout alternatives. If people do not comply with the rules or if there is widespread lack of faith in enforcement, traditional regulations to limit harvests will not work.

STATEMENT 3:

The “fisherman’s problem” – that conventional fishing customs motivate people to overfish – is real and applies to crabs as well as other common resources. This problem arises because of interaction between predictable human behavior and finite resources; that is, the fish are not “owned” until they are captured, so every fisherman is motivated to “capture” them before others do. This interaction between humans and fish will almost always lead to wasteful fishing effort and to over-exploitation of the fishery.

Summary of CTP 3 Discussions

Many felt that the “fisherman’s problem” of harvesting a common property resource is not as clear cut as it seems. The nature of the crab fishery, given that the crab is fished heavily throughout its life cycle, can lend itself to the tragedy of the commons, but a tragedy of the commons is not inevitable. Some concluded that the fishermen’s problem “can” lead to exploitation, but it will not “always” happen.

Some participants felt frustrated that the finger is always pointed at regulation of a finite natural resource without considering the natural refereeing and management that goes on within the fishing industry. This inherent refereeing takes the form of some crabbers dropping out of fishing altogether and working in other industries or making parts of their living from harvesting other forms of marine life. The problem may reside with a public that always expects that a set number of crabs will be available. The public tends to ignore the natural progression of a population, which

⁵ Jan Kooiman, Martijn Va. Vliet, Svein Jetoft, Creative Governance, Ashgagte Publishers Brookfield, USA 2000 p. 13.

goes up and down over time, and seeks to institute management techniques that tend to harm watermens' livelihoods (e.g., fishermen's limited entry for ten years). The "use it or lose it" licensing strategy, they argue, works against the natural ebb and flow of business and may force someone to keep crabbing even though it may not be economically viable. Participants also felt that excess effort in the recreational fishery needs to be examined.

Commentary on CTP 3

This CTP was the core idea behind the organization of a workshop focused on deliberative processes and the commons trap. This CTP was entitled the "fisherman's problem" because this variation on the tragedy of the commons would more likely be perceived as pertinent to fishermen's situation.

The CTP assumed that while factors including natural cycles, pollution, habitat alteration, and multi-species relationships such as crab predation by other fish, contributed to the decline of the fishery, these factors were not central to policy deliberations.

The summaries show that the groups did not accept uncritically the commons trap as a bioeconomic model that would inevitably doom a fishery. There was a suggestion that natural inflow and outflow of crabbers to economic forces would automatically regulate effort to a sustainable level. Clearly some adaptation does take place. Economists are generally concerned that effort can enter or leave a fishery, but the availability of entry represents "latent effort" which can maintain the economic features of the commons trap.

A troubling component of this CTP discussion is the possibility that even if harvesters accept the commons trap as a realistic model it would have the effect of encouraging the dynamics of the commons trap, rather than devising means to escape it.

In other words, if the harvesters accept the inevitability of the commons trap, they might still conclude that a breakout is politically or economically unfeasible, so it is better to try and survive as long as one can.

This possibility casts serious doubt on the central premises of the CTP. The blue crab example suggests that if harvesters believe that neither the consensus-process nor other action will likely achieve breakout before the fish population falls low enough to impose a moratorium on all harvesting, a survival strategy would at least technically be rational.

The harvesters' reaction to this CTP revealed the limits of the premise that self-awareness and acceptance of the commons trap model would lead to a vigorous search for a breakout. It is unknown whether a large number of harvesters actually view the crab fishery as caught in the trap. Consequently, it is also unknown what effect an explicit acceptance of the commons trap would have on the subject fishery. Whether



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the commons trap might not advance breakout behavior but rather reinforce existing behavior patterns is a testable hypothesis.

More efficient harvesters, or at least those in an economically advantageous position, might expect to maintain their livelihood for the foreseeable future. If they can outlast their competition and avoid a moratorium or dramatic harvest collapse, they would have obtained the questionable privilege of outlasting fellow fishermen, even if the fishery ultimately collapsed.

STATEMENT 4:

Crabs, like other fishery resources, belong to all the people of a commonwealth or state. The government has a “public trust” to protect and manage that resource. Those who have traditionally harvested those resources do not have a legal right to capture that resource if the resource itself is threatened.

Summary of CTP 4 Discussions

Most participants agreed that government has a duty to protect the resource. The difficulty lies in determining how governments should protect the resource. Where to draw a line for resource oversight is a recurring problem for fishermen and the public. Watermen should have a greater voice in policy because crabbing is their legacy and livelihood, but ultimately the public decides if a resource is threatened. Some participants stated that the right to take a common property is granted by the state, while others claimed that there is no constitutional “right” to fish regardless of the consequences.

Commentary on CTP 4

Crabs, like other fishery resources, belong to all the people of a commonwealth or state. The government has a public trust to protect and manage that resource. Those who have traditionally harvested those resources do not own the resource but are allowed to harvest it because the government has decided that this is the best method to use the resource.

However, the commercial fishery possesses a property right in the fish once it is captured. The commons trap elevates the issue of whether the public interest is any longer being realized when a fishery resource is fully exploited. It does not challenge the ownership of captured fish, but rather the public policy that authorizes the capture and subsequent ownership of the resource.

One might assume that the regulation of those who are granted a provisional privilege of harvesting a public trust resource would induce a different tone than in one where government was regulating private property. The purpose of this CTP was to make

this difference explicit. If it did perform that function, it may not have changed the tenor of the discussion very much.

A threatened commercial fishery will highlight its economic stake in harvesting the resource. Without actually claiming to own the fish, the harvesters will emphasize that their livelihood depends upon the continued ability to fish. In effect, the discussion framework emphasizes the harvester's expectations based on traditional practices – a property claim – and de-emphasizes the public priority in protecting the resource.

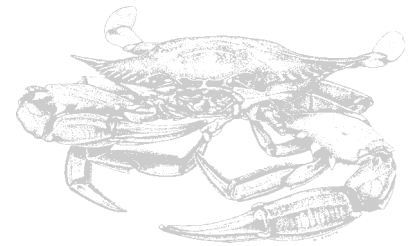
This situation is understandable, for the livelihood that depends upon a property claim of the uses of land is socially comparable to the livelihood that depends upon the exploitation of a common resource. The public trust discussion can open some possibilities for breakout, as well as to limit them.

The identification of fisheries as public trust resources rather than as private property may inhibit considerations of breakout strategies that involve public subsidies or adjustment payments to the “losers” in a breakout. Government actions that reduce the economic value of private property are often softened by government subsidies or compensation. Although courts have generally upheld severe restrictions on potential economic value of private property, radical changes in permission to utilize land are rather uncommon because of the political resistance to them. The perceptions of “fairness” or “unfairness” in the distribution of costs and benefits inhibits what otherwise would seem to be sound and necessary public policies.

Property rights advocates, to cite one example, have been quite successful in thwarting reasonable changes in land use policy based on property rights claims. The general stance taken by those affected by such regulations is that public benefits from restrictions on property use – such as in protecting wetlands or preserving open space – are substantial enough that the costs should to be borne by the general public rather than by the relatively few owners who own wetlands or critical open space. This argument is politically enhanced by the fact that until recently owners were not limited in their use of these lands.

A similar political situation affects the political feasibility of breakout options in fully exploited fisheries. Interestingly, public subsidies of various kinds have encouraged excessive land development as well as fish harvesting. It is well documented that governments have subsidized fishing capacity to the point of “over-capitalization” even as fishery resources [decline](#).⁶

Additional parallels exist if we frame the issue as one affecting food production on private land and food production from the harvesting of public trust fish resources.



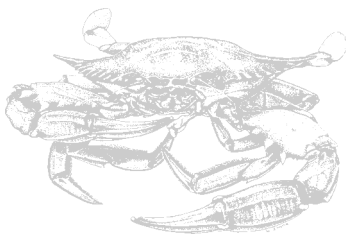
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⁶ Udicello, Suzanne, Michael Weber and Robert Wieland, Fish, Markets and Fishermen, Island Press, Washington D.C. 1999.

In land agriculture government acts to balance supply and demand to provide reasonably priced food for the public and to provide income for farmers.

Even though the farmer owns the land and the public concern is with over-production (as the fisherman harvests a public resource and the concern is with resource depletion), the role of government is similar in achieving important public goals through cash subsidy payments to the affected interests for important policy goals.

The opportunities for breakout in fishery commons traps would be greatly enhanced if there were some reasonable expectation that the “losers” in a breakout strategy would be compensated in dollars. Strictly speaking, there is no property right involved, but the availability of subsidies to those sectors who would be perceived as bearing an “unfair” burden would certainly enhance the likelihood of a breakout. Government subsidies are often utilized to favor production; similar strategies would seem well suited to do the reverse as well. The use of government payments to reduce fishing effort has been tried in a few instances, but it did not receive serious discussion in the crab deliberations.



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Quite the opposite. In the crab deliberations it seemed that the problem of perceived inequality in impacts from any biologically sound limitations on different types of gear users, specific communities distributed along the Bay, or on the political jurisdictions of Virginia or Maryland inhibited open and candid discussion of breakout possibilities. Virtually any proposal that would appear to be effective from a resource conservation view had foreseeable impact on some sub-sector. This seemed to create a barrier to open discussion of such options.

If the deliberations had assumed that some form of financial adjustment or economic compensations would be a contingent condition for an agreement on a breakout strategy it would have created a quite different climate for discussions. A similar potential for financial compensation for changing the structure of production should be an option in fishery commons traps even if it is a public trust resource.

The possibility – and not the necessity or justice – of compensation should be considered an option that is always on the table in commons traps. The purpose of this option is to open up the range of alternatives that can be considered without the harvesters assuming that any concession in harvesting practice will be distributionally unequal in terms of livelihood to some segment of their industry. *Ecology should precede economics.*

If at an early stage in the convening process the stakeholders acknowledged that any alternatives that would be effective in biological terms would be preliminary to – and contingent upon – also addressing political and socioeconomic aspects, it would encourage a more open and cooperative consideration of breakout opportunities.

The BBCAC discussions gave little consideration to compensation options, partly because breakout options were not seriously explored after the workshop. The issue of how to ensure the acceptability and fairness of breakout options often precluded discussion of strategies that would have established a breakout. Stakeholder groups

important to the consensus-process seemed to assume that if changes in harvesting practices would affect any stakeholder in an unequal way that was reason to avoid discussion of it. Transfer payments from one state to another state, from soft-shell crabbers to hard-shell crabbers, or for compensatory measures that would protect communities dependent on fishing for their very existence could have been discussed earlier in the process. *Economics should precede biology.*

Ideally, deliberations concerning commons traps should focus initially on the need for a breakout with an explicit list of biological and economic possibilities. Discussions of fair distribution of costs and benefits to states, communities, harvesters and individuals should be a secondary concern. Achieving fairness should not revolve around the provision of equal harvesting opportunities. Instead, ideal adjustments should be politically and economically feasible with the goal of achieving resource sustainability. For example, if crab dredging in Virginia waters were judged especially harmful to species reproduction, then a dredging prohibition could be tentatively accepted. This prohibition would then be subject to further discussions relating to the burdens placed on Virginia harvesters.

In the absence of tentative provisions for developing breakouts (including possible offsetting compensation options), serious consideration of a range of resource management options will be inhibited or avoided.

Fairness-related issues arising from a breakout will necessarily have to be included in any consensus-based accord. However, these issues do not necessarily have to focus on catch shares. Instead, these issues should address the compensation differences between those who will receive increased revenues from a more efficient and sustainable fishery and those who will no longer have legal access.

The public trust features and compensation contingency plans for breakout options need to be established early in a consensus process. This framework encourages creative thinking and concept development and discourages fears that catch share burdens will be unfair.

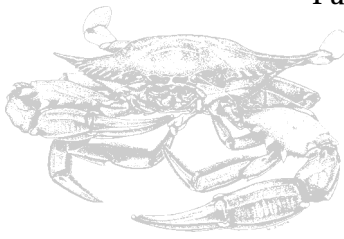
STATEMENT 5

Currently, crab management focuses on limiting “inputs” rather than “outputs”. Thus there is a tendency for more and more regulations, seasons, gears, times, size limits, etc. More attention to limiting “outputs” or catches could reduce the need for more regulations.

Summary of CTP 5 Discussions

Almost all participants felt that output controls were hard to implement. Identifying a quota system would be very difficult due to the blue crab’s life cycle and the nature of the industry. The crab goes through several developmental stages, each of which is harvested with different gear and techniques and sold for different prices. Participants

noted that one single quota on the crab fishery would not be as effective or as simple as it is for other fisheries. Such a system would require the need for more detailed data than are currently available on both harvest and stocks.



Input regulations such as limits on days of fishing effort or acceptable technologies often do not prevent overharvesting.

Furthermore, the industry is still driven by markets and economics. Rigid output restrictions that do not respond to market changes are inadvisable. On the other hand, recent proposed Potomac River regulations would leave wide discretion to the Commission in limiting catch quota. As a result, watermen are expending more effort in anticipation of upcoming regulation changes. In light of this, it may be better to have more stability in any quota system (i.e., fewer changes and fluctuations in the quota). The greatest concern with the quota system is that it could create a monopoly that drives smaller crabbers out of [business](#).⁷

Commentary on CTP 5

Fishery management relies on extensive regulation of harvesters to accomplish the goals of an economically viable but sustainable fishery. Traditional regulations try to protect the resource by putting limitations on the individuals who harvest the resource. Regulation of the amount of capital or total effort that can be employed in a fisher, or establishing a total allowable catch, are avoided.

Excess fishing capacity (often termed over-capitalization by economists) leads to the commons trap, but limiting that capital directly arises only when the trap is demonstrating its strength. Fully exploited fisheries typically face numerous regulations and the threat of more regulations regarding the hours, times, locations and technologies that can be employed. These can be categorized as “input” controls intended to limit the catch or “output” at a level that will maintain a sustainable resource. But most, if not all, efforts to restrict these “inputs” are ultimately ineffective in a commons trap, because the prime motivation of the fishers is still to get the most individual benefit from the fishery.

Input regulations such as limits on days of fishing effort or acceptable technologies often do not prevent overharvesting. Harvesters will tend to compensate for the restrictions by turning instead to unregulated inputs in order to catch fish. Then more regulations are adopted that would presumably limit the total catch. Harvesters resent the effects of these frequent regulation changes on their operations. And, since the regulations are often ineffective or unenforceable, the total catch does not decline. Instead, the regulations simply alter how a high catch can be achieved.

This CTP was introduced to encourage consideration of a typical feature of commons traps – a dynamic in which the resource managers and the harvesters see each other as opponents in a losing game, rather than as collaborators in a winning game.

Breakout strategies that might change this motivation for individuals to exploit the resource are difficult to enact because of opposition from the harvesters. The trap

⁷ Blue crab workshop report.

typically incorporates efforts to avoid the input limitations, or to fully comply with them on a voluntary basis. A typical dynamic is that the harvesters disdain the regulators, and find ways to either avoid or evade the rules. In short, there is no breakout from the pattern of resource managers adopting regulations and harvesters trying to evade or avoid them. Breakout measures require that either the overall effort or capital allowed – and not just input regulations to limit its impacts – change the harvesting ethic to a mutual interest in maintaining a sustainable stock.

III. Concluding Observations

Below, this paper further describes the BBCAC, the Chesapeake Bay blue crab fishery and the dynamics of the commons trap to provide additional context for the paper’s discussion of the Common Trap Principles (CTPs) in the blue crab study process.

The BBCAC and the Chesapeake Bay Blue Crab Fishery

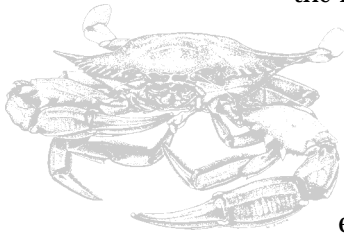
The Chesapeake Bay Commission’s Bi-State Blue Crab Advisory Committee (BBCAC) is a bay-wide deliberative body comprising legislators, resource managers, watermen, seafood processors, researchers and environmental groups from Maryland and Virginia. The BBCAC, advised by a Technical Working Group (TWG) of scientists and economists from both states, was formed in 1996 to advise the Chesapeake Bay Commission on matters of science and policy related to the blue crab. In 1999, the governors and legislatures of Maryland and Virginia responded to concerns about the health of the Bay’s crab stocks by allocating \$150,000 each to support a two-year review of the current status of the crab and to investigate whether it could be better managed. In order to review potentially relevant management strategies in other fisheries around the world, and to gauge current interests and attitudes, the BBCAC convened a workshop in Solomons Island, Maryland, to bring together various stakeholders in the blue crab fishery, including watermen, seafood processors, regulatory agencies and legislators. Together, they examined issues central to devising future management options for the Chesapeake Bay blue crab fishery, including alternative management techniques and the impact of regulations on the people who depend on the blue crab for their livelihood.

There are several indications that the Chesapeake Bay blue crab fishery needs better management. Virginia crab harvests have decreased from 42 million pounds in the 1980s to 34 million pounds in more recent years, and there has been a 70 percent decrease in female biomass. According to most resource economists, the fishery is also suffering from “gear saturation.” It was postulated at the workshop that the same amount of crabs could actually be caught with one-half of the pots now being used. Furthermore, in Maryland, it appears that the number of pots actually used is only 17 percent of the total pots currently licensed. The impact that the fishery could have on the blue crab population if all permitted gear were fished appears to be tremendous.

In addition, recreational harvests are an unknown factor affecting the crab fishery. Approximately 29,000 recreational crab licenses were sold in 1999 in the state of Maryland alone. Surveys in 1983 and 1988 estimated that between 11-40 million pounds of crabs are harvested each year by sport crabbers.

At the workshop, watermen and seafood processors explained that they are facing financial and physical hardships threatening their livelihoods. Processors/packers have been noticing first-hand a decline in the numbers and size of crabs. In the 1970s, for example, 100 crabs yielded 13 to 14 pounds of meat. Now the same number only yields seven to ten pounds. Also, a greater number of crabs are coming from North Carolina and Delaware as well as Asia, providing picking houses with larger, easier-to-process crabs. Generally, the watermen's effort is substantially increasing while their harvest and income levels are stagnant or decreasing. In addition, watermen are frustrated that the public tends to institute management techniques that often harm the livelihoods of working watermen without considering other factors, like declines in submerged aquatic vegetation (SAV), that can contribute to the decline of the crab population.

One question posed at the workshop was whether some form of "rights-based" fishery could solve the problems created by current regulations. In particular, workshop participants discussed the Individual Transferable Quota (ITQ) as one possible alternative management solution. An ITQ is a transferable property right entitling the holder to harvest a specified number, volume or weight of fish or shellfish.



According to some fisheries experts, ITQs can increase profit and quality, enhance safety, create fisher-supported stock assessments, improve technical and economic efficiency and provide greater benefits to society. As reported at the workshop, there have been substantial improvements in more than 40 fisheries around the world using ITQs. Nevertheless, some workshop participants expressed great skepticism and strong opposition to the desirability and feasibility of implementing an ITQ program for the Chesapeake Bay blue crab fishery. These concerns were based on the potential for ITQs to supplant a more diversified, traditional fishery with more concentrated ownership and management. Fears about the potential concentration of ownership from ITQs emerged repeatedly as a concern, and many workshop participants felt that ITQs may lead to serious inequities in the initial distribution of licenses, income and subsequent wealth.

The Commons Trap and the World's Fisheries

The vulnerability of fisheries to overharvesting has been dramatically revised in recent years. As one fishery policy expert has observed, "Through the late 1970s, it remained a respectable scientific and policy position to view as unfounded and alarmist the idea that actual loss of fisheries on a long-term basis might be the result of [overfishing](#)." ⁸

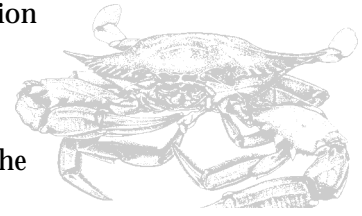
⁸ "Harry N. Scheiber "Ocean governance and the marine fisheries crisis: two decades of innovation – and frustration" p. 120 20 Virginia Environmental Law Journal 1 (2001).

Today, the opposite position has become axiomatic: fishery collapse is becoming the pattern throughout the world. Since many fisheries extend across national boundaries and are caught in international waters, the general public might conclude that overharvesting results from the absence of law and regulations. If this were so, then one would not expect to see fully-exploited fisheries where sovereignty exists, because laws would prevent it.

However, even within the U.S. Exclusive Economic Zone, where no fishing by foreigners is permitted, more than one-third of the stocks are deemed overfished and another 40 percent are considered fully **exploited**.⁹ This is not to say that sovereignty and law are not important factors, but it does indicate that possession of formal sovereignty or of ample regulatory authority simply does not guarantee that fisheries can break out of a commons trap.

A recent study conducted by the National Academy of Science observed that the causes of exploitation in fisheries worldwide are found in a “complex interplay between fluctuating marine populations and a political economy that tends to subsidize or over-invest in fishing capacity” and from an “inclination to make risk-prone rather than risk-averse decisions in the presence of **uncertainty**.”¹⁰

The commons trap highlights the commonality of the problem even in the face of substantially different biological, cultural, political and economic conditions. A breakout will necessarily require an understanding and adaptation to specifics of a fishery, but the commons trap provides a potential reference framework to energize public response.



The concern about unsustainable use of renewable resources has heightened public concern about stalemates, conflicts and disputes that continue while the problem worsens.

Deliberative Processes and Commons Traps

The academic field of policy analysis has increasingly turned its attention away from purely quantitative or microeconomic factors and toward the processes of deliberation and communication. Deliberative processes, if they are to achieve policy goals, must produce better outcomes than other forms of policymaking.

The concern about unsustainable use of renewable resources has heightened public concern about stalemates, conflicts and disputes that continue while the problem worsens. However, consensus-based processes are not an easy panacea and the public will demand an assessment of their effectiveness in different policy settings.

The understandable desire to seek political resolution and effective implementation in the face of previously unsuccessful attempts makes consensus deliberation very appealing. From this perspective, consensus will carry weight with decision-makers,

⁹ Ibid.

¹⁰ Committee to Review Individual Fishing Quotas, National Research Council, National Academy Press, 1999 p. 13.

and assure “buy in” by all parties. Consensus, in other words, represents a win-win alternative.

But to make consensus-based deliberations successful there must be a commitment to asking the hard questions, arguing the controversial aspects, and proposing options that are unpalatable to some stakeholders. If breakout is required to adequately protect a common resource, then a consensus-outcome is less policy-relevant than deliberations that could not achieve it. A report of the differences that precluded consensus is of greater value to the public than a consensus that didn’t confront those differences openly and comprehensively.

In consensus-oriented deliberations, research scientists, resource harvesters, resource managers and political decision-makers will recognize the value of an agreeable and non-confrontational climate for discussion. But care must be taken that the focus on consensus does not lead to an avoidance of issues that are uncomfortable or radical.

Valency issues, where agreement can be expected more readily, is a process that can help win elections, but excessive emphasis on these issues can limit the potential effectiveness of consensus-focused discussions. Equating consensus-seeking with an avoidance of a commons trap’s most difficult issues completely dilutes the principal goal of the exercise.

In the case of the BBCAC, the need to produce a consensus recommendation without rupturing relations between Virginia and Maryland producers or creating divisions among resource users resulted in the heavy promotion of consensus at the expense of breakout options that offended or threatened major stakeholders.

The consensus-building concept, at least initially, is viewed as a way to get different jurisdictions with different political regimes, constituencies, and fisheries to agree on mutually beneficial rules.

The BBCAC blue crab project is a prominent – and promising – example of a deliberative process introduced to create better outcomes than the usual political or management process.

This paper is intended to stimulate discussion about how consensus processes may function in commons trap settings.

Barriers to Accepting the Commons Trap as a Frame of Reference

The obstacles to converting the tragedy of the commons metaphor into a bioeconomic model, and making it the central frame of reference for fishery deliberations, do not arise solely from defensive efforts by a beleaguered fishery.

What scientists generally refer to as “fuzzy” models are held in much lower esteem than are those considered more rigorous because they are more technical and

quantitative. Fuzzy models incorporate human behavior, including especially economic elements in human behavior.

Fishery models of various types dominated the discussions, work agendas, and deliberations of the BBCAC. While there are many scientific questions about the applicability of fishery models themselves, the major concern with their dominance in fishery deliberations is that they deflect attention and energy away from breakout [strategies](#).¹¹

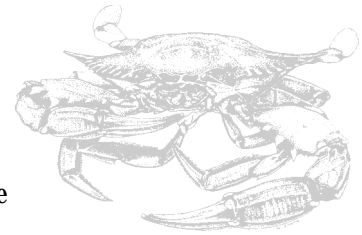
The dominance of fishery science and fishery models in stressed fisheries is understandable, but can distort the process. These models are highly technical, less transparent, less accessible to lay examination and permeated by statistical and mathematical interpretations that can become continuing subjects of dispute among the scientists themselves. Is it ironic that the technical inaccessibility making it difficult for citizens and decision-makers to knowledgeably discuss the key elements in a model actually encourage, rather than discourage, their use by policy-makers?

The use of stakeholder groups based on consensus models and assisted by committees of experts and scientists has become a standard approach to dealing with fishery issues. The relationships between these technical committees to the stakeholder groups and their deliberations demands attention.

The technical and scientific working group was clearly the main actor in the blue crab deliberative process. The scientific-technical panel dominated the agenda and the attention of the process managers. The stakeholder group spent a large portion of its time being briefed by the TWG on the status of its research and efforts to develop a scientific consensus on the status of the blue crab stock.

The need for technical and scientific advice is clear. But the relationships between technical and scientific resources and the major stakeholder process need careful evaluation. The technical and scientific input can be subordinated to the discussion of major policy issues in consensus processes. This appears to have been the case in the consensus-process established to study the creation of a marine reserve for California's Channel Islands. In formal terms the arrangement is virtually identical in structure and organization to the BBCAC [strategy](#).¹² In practice, the Channel Island group gave the stakeholder group the dominant role while the technical and scientific group's work was more limited. The technical panel was told to "evaluate alternatives that best meet the goals and objectives established at the outset by the stakeholders [themselves](#)."¹³

In fishery deliberations the two most prominent disciplines are fishery science and economics. This was the case in the blue crab study. But the economists were clearly



The BBCAC blue crab project is a prominent – and promising – example of a deliberative process introduced to create better outcomes than the usual political or management process.

¹¹ McGlade, Jaqueline, "Bridging Disciplines" in Kooiman op. cit. p. 175.

¹² Ibid.

¹³ Environmental Defense, Citizens Guide to Marine Reserves" 2001 p. 4e.

secondary in importance. This subordinate status of economics to fishery science is unfortunate in several respects.

Neoclassical economists are predisposed to accept key parts of the commons trap as a model or frame of reference for deliberations because they believe that the tragedy of the commons results from inadequate property right entitlements. If a common property resource can be converted into private property entitlements, the over-exploitation of the fishery will be reversed, they hold, because resource owners act rationally to protect the long-term value of their entitlements.

So from an economic perspective, an open-access commons is inherently inefficient and will lead to overcapitalization and loss of resource rent. The evidence supports the soundness of this analysis, even if the analysis doesn't necessarily lead to market dominated breakout strategies.



The economic perspective and the commons trap model share the assumption that self-interested behavior in a fully exploited fishery will be difficult to counter without system change.

But economists can demonstrate that less fishing effort can produce the same or higher benefits to harvesters and to society than a continuation of the race to fish. From a theoretical perspective, it is only a small step from the acceptance of the economists' theory of overcapitalization to the acceptance of resource depletion and the commons trap. If a reduction in catch per unit of effort can be demonstrated, doesn't it logically follow that this is only a milepost on the way to depleting a fishery?

The economic perspective and the commons trap model share the assumption that self-interested behavior in a fully exploited fishery will be difficult to counter without system change. The economist can highlight the commons trap's economic effects, such as declining incomes, increased risk-taking to capture fish, and declines in catch-per-unit-of-effort. Concentrating on economic indicators certainly strengthens the reality of the commons trap, but the economist must still defer to the fisheries biologist regarding the urgency of a fishery's condition.

However, this logical progression may not be embraced by economists in a technical process dominated by fishery scientists. The economist (as expert) may be reluctant to endorse the inevitability of overfishing assumed by the commons trap. As long as the fishery scientists debate the status of the stock, the economist's insights may be relegated to a secondary and seemingly separate status in discussions.

So the economist may be skeptical of both "fuzzier" models than the supply/demand model they employ, and at the same time defer to the fishery scientists' expertise on resource specific issues.

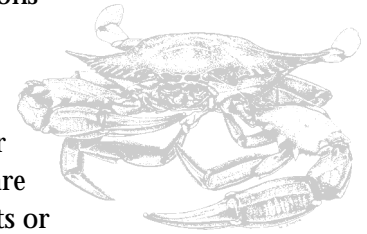
As a policy and political matter the economist's argument that a fishery is inefficient and self-destructive as an economic matter does not provide the foundation for decisive breakout on economic grounds alone.

So although economists are one of the dominant disciplines in fishery studies and they are generally ideologically and intellectually predisposed to breakout options, their inputs may be muted, misunderstood, or both. Neo-classical economists'

prescriptions for creating property entitlements also evoke opposition from harvesters who, as we have seen, may defend the status quo even if it is inefficient and resource depleting. Nevertheless, Individual Transferable Quotas (ITQs), or some other form of privatized entitlement, must be considered as part of any breakout strategy.

The economist's perspective in consensus-oriented deliberations aimed at a breakout must be elevated, if only as a prelude to further discussion. Without serious and sustained discussion of ITQs or similar options such as total allowable catch limits or – in the case of crabs – limits on pot numbers, the prospects for breakout are poor. The theory and concepts that lie behind ITQs are unfamiliar to many people, and even though ITQs can be tailored to address many issues of concern about social consequences, the exploration of options that could finally gain broad support will not come easy. In the case of the blue crab workshop, the exploration of ITQs, catch quotas and Community Fishing Quotas (CFQs) aroused strongly negative reactions from fishery representatives and the discussions of such options became taboo.

Still another barrier to using the commons trap as a framework for fishery deliberations is the competing attitudes about what constitutes “good science” for policy decisions. The increasing efforts to develop a consensus among scientists are a measure of the declining faith in science. However, a consensus among scientists or technical experts strengthens the claim of science to provide a solid basis for political decisions.



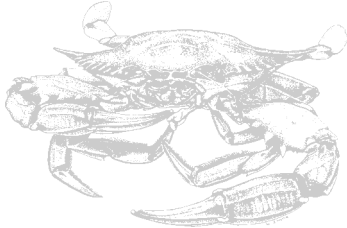
For example, the blue crab technical group invested considerable energy and commitment to obtaining consensus on the status of the blue crab stock. The scientific consensus was considered essential to getting support for a blue crab strategy among the stakeholders. Such scientific consensus was sometimes obtained through a structured interaction specifically aimed at that purpose. However, the underlying premise was that consensus was to be achieved before serious stakeholder deliberation was to be conducted.

This sequence of action assumes that if there is significant scientific disagreement on the status of the stock, it makes it unlikely that a consensus among stakeholders can be achieved on what action to take. This, in turn, supports a continuation of the status quo in fishery governance policy, and inhibits the search for breakouts.

Some fishery policy experts have defined the status of the world's fisheries as a “crisis in governance.” Governance is defined as a process of moving from a “problem and solution orientation to an opportunity-creating [situation](#)”.¹⁴ In many ways this view is consistent with the point of this commentary; the entire process of fishery management needs to re-evaluated, including the management and scientific models dominating the field.

¹⁴ Kooiman, op. cit. p. 13.

The propensity to structure discourse so that scientific certainty, or at least consensus, should precede decision-making is a part of that failure. This has been termed the “answer culture”¹⁵ and that this culture creates unrealistic expectations of science.



The commons trap as a bioeconomic model provides a framework for governance based on science, but emphasizing discourse on the commons trap. It elevates the deliberative process, and proposes a subordinate role for the technical-scientific experts. The model does not assume that data is unimportant or that science should not inform judgment. Instead, the commons trap model assumes that there will be incomplete and uncertain scientific knowledge. But the commons trap model argues that if the fishery is fully exploited, then the model provides sufficient justification for exploration of breakout options even if there is considerable mystery or ignorance about the specific stock status.

As this paper has previously noted, a coalition of interests including a defensive fishing industry, politically sensitive resource managers and uncertain elected officials can always agree that more research is needed before action can be justified. Scientists’ salaries, laboratory support, and tenure and promotion (in the case of academic scientists) depend upon continued research funding. Fishery scientists cannot be expected to resist the calls for “good science.” There may be inadequate funds provided for fishery research, but an emphasis on the need for more scientific research because it can become the valency issue that preoccupies the deliberative process.

The policy outcomes of consensus-processes depend upon the skillful ability to combine valency issues and divisive issues. The use of the commons trap model places the scientific and management processes as well as the fish species within this framework.

What emerges from this review of the common trap principles in a particular setting is that an effective policy outcome – a breakout of the commons trap – requires more than good science, and more than consensus. It demands a conceptual model that legitimates the evaluation of policy prescriptions that may not be initially welcomed by stakeholders and the testing of processes that focus on breakout rather than consensus. A breakout strategy calls for a model for stakeholder participation that legitimates the consideration of breakout options that may not be initially welcomed by all stakeholders. It also demands a better balance between fishery science, economic analysis, and policy alternatives.

¹⁵ Myerson, George, and Yvonne Rydin, *The Language of Environment*” University College London Press, 1996. The “answer culture” the authors suggest is collapsing under the weight of its own expectation. The pedestal that science rests upon is teetering under the assumption that it provides “answers” to “problems”.

