

FISHERIES MANAGEMENT SYSTEMS: AN INTRODUCTORY OVERVIEW

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*This document is a draft chapter for a book which I am writing on “Fish Economics.”
I welcome questions, comments, and suggestions.*

I use the term *fisheries management* to refer to all the government rules which affect who can fish, how they can fish, where they can fish, and how much fish they can catch.

I use the term *fisheries management systems* to refer to particular combinations of types of fishery management rules.

Six Broad Types of Fisheries Management Systems

There are many fisheries management systems around the world. It's useful to group them into six broad types of management systems. It can also be useful to think of these types of management systems as “stages” of fisheries management. That's because in many countries and fisheries the management system has been evolving over time between these systems, generally in the order that I've listed them below. In general (not always!) each new management system or stage has been implemented in response to problems which developed with an earlier management system or stage as conditions in the fishery changed.

Not all fisheries management systems around the world fit neatly into one of these types. Many are combinations of different types, and some are completely different. However, many of the world's fisheries particularly in developed countries, are managed under one of these types of management systems.

- Unregulated open access. Unregulated open access management means that there is no government management of the fishery. “*Unregulated*” means that there are no rules to limit how many fish are caught by individuals or in total. “*Open access*” means that the fishery is legally “open” to anyone to fish: there are no government restrictions on who can fish.
- Regulated open access. There continues to be open access to the fishery, so anyone who wants to can fish. But managers now *regulate* how much fishermen can catch or how they can fish. Managers may establish a *total allowable catch* (TAC), or a limit on how much fishermen can catch in total. Or they may establish regulations which indirectly limit how many fish are caught, such as regulations on how fishermen can fish or when they can fish, such as gear restrictions and fishing seasons. An important feature of regulated open access fisheries is that they are *competitive*: managers don't restrict the catches of individual fishermen, so the fishermen compete with each other to catch as much as they can of the total allowable catch.

- Limited entry. There is no longer open access to the fishery. Instead, managers limit *who* is allowed to fish, partly to help control total catches and partly to make the fishery more profitable for those fishermen who are allowed to fish. To limit who can fish, managers may issue *limited entry permits*. Sometimes these permits are *transferable*: fishermen can lease or sell them to other fishermen. The government continues to *regulate* the fishery by imposing a *total allowable catch* and/or other restrictions such as gear limits and fishing seasons. The fishery remains *competitive*: fishermen compete with each other to catch as much as they can of the total allowable catch. Limited entry (as well as the catch share and self-governance systems below) is an example of a *rights-based* management system, because certain people hold rights (to fish, or to catch shares of the total allowable catch), and only people with these rights are allowed to fish.
- Individual catch shares. Managers create a system under which individual fishermen or are allowed to catch only designated *shares* of a total allowable catch. The fishery is no longer *competitive* because fishermen are no longer competing with each other for how much they can catch, since they are only allowed to catch their own shares. Sometimes individual shares are *transferable*: fishermen can lease or sell them to other fishermen. Names for individual catch share systems include *individual quotas* (IQs), *individual fishing quotas* (IFQs), *individual transferable quotas* (ITQs), and simply *catch shares*.
- Group catch shares. In group catch share systems, the catch shares are held by a group of fishermen or companies or organizations which establish their own rules for who catches the fish and how to catch them (within limits established by the managers). Examples of group catch share systems include *harvester cooperatives* (such as those in Alaska's Bering Sea Pollock fishery), *sector allocations* (such as those recently implemented for many New England fisheries), and the *Community Development Quotas* (CDQs) in Alaska's Bering Sea fisheries in which catch shares are held by groups of villages along Alaska's Bering Sea coast.
- Self-Governance. In *self-governance systems*, the government delegates some or all fishery management authority to fishermen's organizations. The organizations make their own rules about who can catch the fish, how much they can catch, and potentially much more. They may also carry out other management functions such as scientific research about the fish stocks and enforcement of fishery management regulations.

Here is a summary comparison of these six types of fisheries management systems:

Comparison of Six Fishery Management Systems

<i>Fishery management system</i>	<i>Who can fish?</i>	<i>When, where, and how can they fish?</i>	<i>How much can an individual fisherman catch?</i>	<i>What limits the total catch?</i>
Unregulated open access	Anyone	Any time, anywhere, and any way they want to	As much as he can	When fishermen decide to stop fishing—which is driven by resource and economic conditions. Typically, they keep fishing until it's no longer profitable.
Regulated open access	Anyone	Only at times, in places, and with gear allowed by managers	As much as he can, given the restrictions he faces about when, where and how he can fish	Regulations which limit when, where and how fishermen can fish—or sometimes how much they can catch in total. Typically managers try to impose regulations which will restrict catches so that fishermen don't exceed a <i>Total Allowable Catch</i> (TAC)—but this may be difficult if there are lots of fishermen. Sometimes managers close the fishery after the Total Allowable Catch has been caught, so that fishermen can't exceed this catch.
Limited entry	Only people with limited entry permits	Only at times, in places, and with gear allowed by managers	As much as he can, given the restrictions he faces about when, where and how he can fish	Total catch is limited in the same ways as with regulated open access. However, this tends to be easier with limited entry than with regulated open access, because there are fewer fishermen.
Individual catch shares	Only people with catch shares	Only at times, in places, and with gear allowed by managers	Only as much as he has catch shares for	The total allowable catch (TAC) established by managers, which determines how many fish each individual catch share is equivalent to. However, the catch is limited to the TAC only if fishermen follow the rules and enforcement is effective!
Group catch shares	Only people the group allows to fish	Only at times, in places, and with gear allowed by managers	Only as much as the group allows him to catch	The total allowable catch (TAC) established by managers, which determines how many fish each group catch share is equivalent to. However, the catch is limited to the TAC only if groups follow the rules and enforcement is effective!
Self-governance	Only people the group allows to fish	Any time, anywhere, and any way the group allows	Only as much as the group allows him to catch	Whatever total allowable catch (TAC) the group establishes, whatever other restrictions they impose on fishing that affect catches, and how effective those restrictions are.

Four Performance Criteria for Fisheries Management Systems

A useful way to think about different fisheries management systems is to compare how well they perform with respect to four broad types of objectives or performance criteria:

- Resource protection. How well or poorly does the management system protect fish resources and the environment? How effective is it at preventing overfishing? How well or poorly does it promote sustainability of fish and other resources for current and future generations?
- Economic efficiency. How well or poorly does the management system promote economic efficiency in the utilization of fish resources? How well or poorly does it do at keeping costs low and the value of fish products high? How successful or unsuccessful is it at generating economic rent from fish resources?
- Fairness. How “fair” or “unfair” is the management system? To what extent does it promote or disrupt social cohesion, communities, and cultural traditions which depend on people being allowed to go fishing if they want to?
- Simplicity. How easy or hard is the management system to understand and to implement? How much does it cost to administer? How effectively can it be enforced?

These aren't the only objectives that matter for fisheries management systems, but they are among the most important for debates about fisheries management policy. Different groups vary in how important they consider each objective to be.

Different fisheries management systems tend to have different advantages and disadvantages with respect to these different objectives.

Unregulated Open Access

Unregulated open access means that there is no management of the fishery. “Unregulated” means that there are no rules to limit how many fish are caught by individuals or in total. “Open access” means that the fishery is “open” to anyone to fish: there are no restrictions on who can fish.

Here is a summary of how well unregulated open access fishery management systems tend to perform with respect to our four performance criteria:

Resource protection: When fishery resources are scarce, unregulated open access can potentially be very bad for resource protection. Unregulated open access can lead to the “tragedy of the commons”: fishermen may over-fish the resource because harvesting what they can now is their only way to benefit from it. However, unregulated access is not *necessarily* always bad for resource protection. It's not bad if fisheries resources aren't scarce. And it's not bad if fishermen can successfully establish rules on their own, without formal government “management,” to prevent over-fishing. This is more likely to happen when fisheries are

relatively small, the number of fishermen is small, the fishermen know each other, and the government lets them make their own rules.

Economic efficiency When fishery resources are scarce, unregulated open access can lead to inefficient resource use. Competition for between fishermen can lead not only to overharvesting but also overspending (higher than necessary costs) and undervaluing (lower than potential value) as fishermen focus more on catching fish fast than on keeping their costs low or taking care of the fish to increase their value.

Fairness: Unregulated open access is “fair.” Everyone has an equal opportunity to fish and to continue traditional fishing practices.

Simplicity: Unregulated open access is simple. It’s easy to understand, it costs nothing to administer, and there are no rules to enforce.

Here’s an even simpler summary. Keep in mind that this summary doesn’t necessary apply to all unregulated open access fisheries! For example, resource protection isn’t necessarily “terrible” if fishermen can establish rules on their own to protect the resources.

Summary of Advantages and Disadvantages: Unregulated Open Access

Resource protection	Terrible!	☹️!	Lack of harvest regulation lead to the tragedy of the commons
Economic efficiency	Terrible!	☹️!	Competition causes overspending and undervaluing
Fairness	Great!	😊!	Equal opportunity for everyone
Simplicity	Great!	😊!	Nothing to explain, administer or enforce

Regulated Open Access

With *regulated open access*, there continues to be open access to the fishery: everyone has an equal right to fish. But the government now imposes restrictions on the total catch and/or how fishermen can fish, such as gear limits and fishing seasons. Individual fishermen compete to catch as much fish as they can under the regulations: there are no limits on the catches of individual fishermen.

Historically, governments have imposed regulated open access management in response to over-fishing or concerns about the potential for over-fishing. From the perspective of the biologists who had primary responsibility for fisheries management, the problem was over-fishing, and the solution was to restrict or limit how much fishermen could catch.

Regulated open access management typically restricts the kinds of “economic inputs” fishermen can use, such as boats, gear, and labor. Examples of input restrictions include vessel size limits,

gear limits, and season limits. If the restrictions don't succeed in preventing overfishing, the typical solution is to impose stricter restrictions, such as shorter seasons.

Resource protection: Regulated open access fishery management systems *can* perform fairly well in protecting fishery resources, governments establish and enforce rules that make it difficult for fishermen to catch too many fish, or which close fisheries once total allowable catches have been reached. However, at times it can be difficult to control fishing effort or catches in open access fisheries.

Economic efficiency Economists tend to think of regulated open access systems as being very bad for economic efficiency, for several reasons:

- Government-imposed inefficiency. Input restrictions add to costs without adding to value. They may help to control catches, but they do so by reducing profits.
- Ineffective restrictions. Fishermen are smart. If the government restricts the use of one input they tend to respond by increasing their use of other inputs. For example, if the government restricts the net length per boat, they may fish more boats. If the government restricts the number of fishing days, they may fish more hours per day. As a result, the restrictions don't necessarily limit harvests as much as expected.
- Competition adds to costs and reduces value. Without restrictions on individual catches, fishermen have an incentive to spend more in an effort to increase their share of the total catch. This is rational from the point of view of individual fishermen, but adds to total costs of the fishery. In addition, short fishing seasons needed to control total catches may increase processing costs and reduce market value.
- New entrants increase fishing pressure. Placing limits on how or when individual fishermen can fish doesn't limit the total fishing effort. If demand for the fishery resource continues to increase, there will be more and more fishermen. To control catches, managers will have to impose more and more restrictions, making the fishery less and less profitable for everyone who participates—not only the new fishermen but also the long-time fishermen.

Fairness: Regulated open access is “fair.” Everyone has an equal opportunity to fish and to continue traditional fishing practices.

Simplicity: Regulated open access is fairly simple to manage and enforce, in comparison to the more complicated management systems discussed below. All the managers have to do is look and see if fishermen are following the rules. They don't have to check if they have limited entry licenses or catch shares.

Here's a simple summary of the advantages and disadvantages of regulated open access management (remember that it doesn't necessarily apply to all regulated open access management systems)

Summary of Advantages and Disadvantages: Regulated Open Access

Resource protection	Mixed	☹️?	Input and catch restrictions can protect resources but can be difficult to enforce
Economic efficiency	Terrible!	☹️!	The government mandates inefficient input restrictions; competition continues to cause overspending and undervaluing
Fairness	Great!	😊!	Equal opportunity for everyone
Simplicity	Good	😊	Fairly simple and cheap compared with other systems

Limited Entry Management

With “limited entry,” the government restricts who is allowed to fish. For example, in the Alaska salmon fisheries, there are a fixed number of “limited entry permits,” and only holders of those permits can fish. In order to control total catches, the government continues to impose restrictions on how and when fishermen can catch. Individual permit holders compete to catch as much fish as they can under these restrictions.

Resource protection: Limited entry management systems tend to do as well as or better than regulated open access management systems at protecting fishery resources. They use the same kinds of rules, but the rules are easier to enforce because there are fewer fishermen. Also, the fishermen may be more willing to support catch restrictions which will benefit the fishery resources in the long run, because they know that they will be the ones to benefit from higher resources.

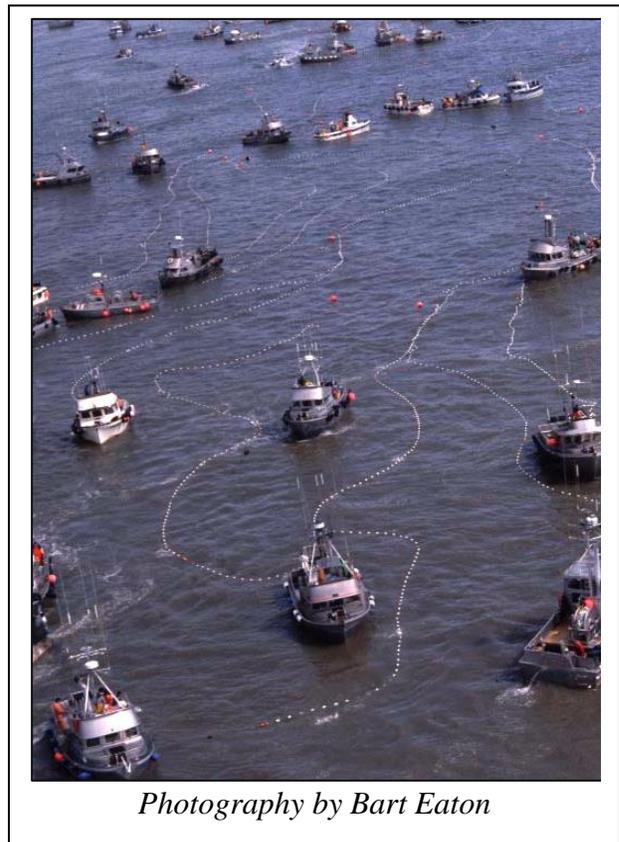
Economic efficiency: Limited entry can solve some of the efficiency problems associated with unregulated open access fisheries, because restricting the size of the fleet reduces the total costs of the fishery and each fisherman can catch more fish. However, limited entry management can still lead to inefficiency and rent dissipation in fisheries.

This picture illustrates one way in which rent dissipation occurs in Alaska’s Bristol Bay drift gillnet salmon fishery. To try to reduce the fishing pressure, managers restrict the length of fishing boats to a maximum of 32 feet. However, fishermen are still find ways to build bigger boats (by building them wider and higher) and more powerful boats (by installing bigger engines). This is rational for individual fishermen, because it allows them to catch a larger share of the fish. But collectively it is inefficient because it adds to fishermen’s total costs without adding to their total catch.



Economists call this phenomenon “capital stuffing” —competitive investment in boats and gear in a limited entry fishery.

This picture shows another way in which rent dissipation occurs in the same fishery. Although the fishery is under a limited entry management system, there are still more boats than are needed to catch the fish. The boats compete aggressively with each other, crowding into the best areas for catch salmon and interfering with each other.



Fairness: From the point of view of the fishermen who don’t have permits, limited entry is not “fair.” Not everyone has an equal opportunity to fish—only the people lucky (or politically connected) enough to be given permits by the government, or by people wealthy enough to buy them from other fishermen (if the permits are transferable by sale).

Simplicity: Limited entry is simpler in some ways than open access management (because there are fewer boats to manage) but more complicated in other ways, because there has to be a system for deciding and enforcing who gets the limited entry permits.

Summary of Advantages and Disadvantages: Limited Entry

Resource protection	Good	☺	Easier to limit catches with fewer fishermen; creates incentive for permit holders to protect the resource
Economic efficiency	Mixed	☹?	Limits excessive use of boats but competition and capital stuffing can still result in significant inefficiency
Fairness	Bad	☹	Only people with limited entry permits—those lucky enough to be given them or rich enough to buy them--can fish!
Simplicity	Mixed	☹?	More complicated and expensive than regulated open access; but simpler and cheaper than catch share systems

Individual Catch Shares

With individual catch shares, the government creates a system of “rights” for fishermen to catch particular volumes of fish, or shares of a total allowable catch. Individual fishermen are only allowed to catch the volume of fish that they have “catch shares” or “rights” to. Note that these are not necessarily “rights” in the legal sense—and the government may even specifically say that they are not “legal rights.” But from an economic point of view, they function like rights, because they do in fact convey a right to harvest a particular volume of fish, at least for a particular period of time.

Individual Fishing Quotas (IFQs) are the most common form of rights-based management in United States fisheries. With IFQ management, fishermen typically hold quota shares, which are a “right” to a percentage of the total allowable catch (TAC) for an area. Once the TAC is established for a season, the fishermen’s quotas for that season are calculated by multiplying their quota shares by the TAC.

Resource protection: Catch share systems can, in certain circumstances, perform very well in protecting fishery resources. If fishermen follow the rules and only catch their legal quotas, they managers can limit catches almost exactly to the desired total allowable catch. In addition, fishermen have a strong incentive to protect the resource for the future, which is sometimes called a *stewardship* incentive. Any given fishermen knows that if catches are restricted this year to allow the resource to grow larger for the future, he will benefit directly from higher future catches. In general, studies of fisheries around the world have shown that fisheries managed under catch share systems tend to be less overfished than fisheries managed in other ways.

However, skeptics of catch share systems have argued that catch share systems may be bad for resource protection in some ways. If fishermen cheat and catch more fish than their catch shares allow, resources may be overharvested. Another important potential problem is high-grading. If fishermen are only allowed to catch a certain volume of fish, and if they are paid a higher price per pound for some sizes of fish than others (for example, if they are paid a higher price for larger fish), then they may throw the lower-valued sizes of fish back into the water rather than reporting them against their catch quotas. As a result, the actual total catch and fishing mortality may be higher than the harvest volume that fish deliver to port.

Economic efficiency: Mainstream economists tend to argue that catch shares promote economic efficiency—which is why mainstream economists tend to prefer catch share management systems over other types of management systems. Economists argue that if fishermen have rights to catch a particular volume of fish, they focus their effort and their ingenuity on finding ways to catch the fish in ways that keep reduce costs and increase value, leading to a more efficient fishery which generate higher “economic rents.”

IFQ management has typically been implemented because of the perceived failure of earlier stages of fisheries management—regulated open access and limited entry—in controlling the economic problem of excessive fishing effort leading to “rent dissipation.” Where IFQ management has been implemented, stocks have generally remained healthy or increased, costs have declined, and market values have increased. Thus mainstream economists tend to perceive that IFQs have succeeded with respect to the objective of increasing net economic benefits from fisheries.

Fairness: Like limited entry, catch share systems aren't "fair." The only people who can fish are those who are lucky (or politically connected) enough to be given catch shares by the government, or who are wealthy enough to buy them from other fishermen.

In many IFQ-managed fisheries, such as the Alaska halibut and sablefish fisheries, quota shares were originally distributed for free to vessel owners based on the historical catches of their vessels. This has led to intense controversy over how quotas are distributed, and bitter opposition from fishermen who did not receive quotas, including hired captains and crew.

This is one reason why, despite the support of mainstream economists and many fishermen, IFQ and other forms of catch share management have generated a great deal of controversy. Fishermen and other fishery stakeholders see catch shares as fundamentally unfair and strongly oppose catch share systems.

There is no "economic" reason why catch shares should necessarily be distributed to vessel owners, be distributed for free, or be based on past catches. To the extent that these ways of distributing catch shares are unfair, the government could distribute catch shares in other ways. However, most fishermen also don't like the idea—favored by some economists—that catch shares should be auctioned by government to the highest bidders, as is done with oil and gas leases. (Note that this might be most "fair" to the general public which theoretically owns but doesn't usually benefit from fishery resources.)

Another concern that many fishermen express is that catch shares management leads to consolidation of fishing fleets—fewer fishing boats and fewer fishing jobs. Economists respond that this is exactly the goal—fewer boats means less cost and a more efficient and profitable fishery. And economists point out that the remaining fishing jobs are likely to be better, which last longer, provide more income, are more financially secure, and are safer.

Another concern—expressed by processors—is that IFQs change the relative market power of fishermen and processors. When they are catching fish at a slower rate over a much longer season, fishermen can and do seek out new markets, and there is much less need for processing capacity, reducing processors' bargaining power and the value of fish processing investments. Processors have argued that to be fair, catch share management systems should include provisions to "protect" processors from these adverse effects, such as "processor quotas," which limit who fishermen can sell their fish to. Not surprisingly, most fishermen don't like this idea.

In many catch share-managed fisheries the shares are "transferable," meaning that they can be bought and sold. Economists argue that allowing IFQs (or property rights in general) to be transferable is good because over time they are likely to be transferred to the most efficient fishermen—those who are able to create the most value from the opportunity to fish.

However, the astute Canadian fisheries economist Parzival Copes has argued that distributing transferable permits for free can result in a "transitional gains trap," in which most of the benefit from catch shares goes to the original generation of permit holders. This is because the original generation gets not only the benefits of the opportunity to fish before they sell, but also the

benefits of fishing after they sell—in the form of the money buyers pay them for their catch shares.

Simplicity: Catch share management isn't simple! It requires an elaborate system of allocating catch shares among fishermen, keeping track of who owns it, reporting and tracking how of their shares fishermen have caught, and enforcing that they don't exceed the individual quotas their catch shares allow them to catch.

Summary of Advantages and Disadvantages: Individual Catch Shares

Resource protection	Great!		Limits catches to total allowable catches; creates stewardship incentives for resource protection
Economic efficiency	Great!		Fishermen focus on maximizing net economic value from their catch shares, by reducing costs and increasing value.
Fairness	Terrible!		Only people with catch shares—those lucky enough to be given them or rich enough to buy them--can fish! Consolidation leads to concentration of catch shares and wealth and fewer boats and fishermen.
Simplicity	Bad		Complicated and expensive system to establish and enforce

Group Catch Shares

In group catch share systems, the catch shares are held groups of fishermen or companies or organizations which establish their own rules for who catches the fish and how to catch them (within limits established by the managers). Examples of group catch share systems include *harvester cooperatives* (such as those in Alaska’s Bering Sea Pollock fishery), *sector allocations* (such as those recently implemented for many New England fisheries), and the *Community Development Quotas* (CDQs) in Alaska’s Bering Sea fisheries in which catch shares are held by groups of villages along Alaska’s Bering Sea coast.

Group catch shares are similar in many respects to individual catch shares management system in many respects, but with one clear difference: the government isn’t involved in allocating and enforcing individual catch shares. The groups do this on their own. The government simply needs to monitor and enforce the group catch shares. So group catch shares are a lot *simpler*. But they *may* be even less “fair”—because the government doesn’t get involved in making sure that the catch shares or economic benefits are shared “fairly” within the groups.

Summary of Advantages and Disadvantages: Group Catch Shares

Resource protection	Great!		Limits catches to total allowable catches; creates stewardship incentives for resource protection
Economic efficiency	Great!		Groups and their members focus on maximizing net economic value from their catch shares, by reducing costs and increasing value.
Fairness	Terrible!		Only members of the groups benefit from the fisheries—and the benefits are necessarily fairly distributed within the groups.
Simplicity	Mixed		Simpler than individual catch share systems, but still requires government allocation and enforcement

Self-Governance

In *self-governance systems*, the government delegates some or all fishery management authority to fishermen’s organizations. The organizations make their own rules about who can catch the fish, how much they can catch, and potentially much more. They may also carry out other management functions such as scientific research about the fish stocks and enforcement of fishery management regulations. There aren’t many, if any, pure self-governance fishery management systems, although elements of self-governance are beginning to appear in some fisheries, particularly in New Zealand.

Resource protection: Does the concept that fishermen might set their own catch limits—without any government involvement—bother you? Won’t fishermen overharvest? Economists argue that they probably won’t—if the fishermen’s organizations have clear rights to the fish. Overharvesting—the problem that occurs with unregulated open access management occurs because no one has an incentive to save (not harvest fish) because someone else would harvest

them. But a fishermen’s organization *would* have an incentive to manage the resource carefully for the future.

Think about farmers. Governments don’t set rules about how much livestock farmers can harvest or how much grain they can sell. Governments don’t worry that farmers won’t save any livestock or seed grain for next year—because farmers have an economic incentive to keep enough livestock and seed grain to be able to farm sustainably. Economists argue that fishermen’s organizations would have the same incentives to take care of fish resources, if they really had control of them.

Economic efficiency: Economists argue that self-governance systems could be extremely efficient. Not only would the fishermen’s organizations have an incentive to harvest fish efficiently and derive the maximum value from them, but they would also have an incentive to *manage* them efficiently—to do the economically efficient amount of research and to avoid a costly bureaucracy.

Fairness: Self-governance systems probably wouldn’t seem very fair to the people left out of them, or to people who think that fisheries resources should be managed by the public to meet public objectives rather than managed by private organizations to meet private objectives.

Simplicity: In theory, self-governance is very simple. The government doesn’t have to do anything and incurs no costs.

Summary of Advantages and Disadvantages: Self-Governance

Resource protection	Great!		In theory the self-governance organizations should have a strong incentive to protect the resource. But we don’t have enough experience to know what would actually happen.
Economic efficiency	Great!		The self-governance organization will focus on maximizing the net economic benefits from the resources
Fairness	Terrible!		All the benefits of the fishery would go to the self-governance organization and its members
Simplicity	Great!		The government doesn’t have to spend or do anything

Which Fishery Resource Management System is Best?

Which fishery management system is “best”? Clearly, it depends on what your objectives are for fisheries management, and what performance criteria matter to you. As the simple summary table below suggests, no fishery management system is “best” in all ways. The systems that are “best” in some ways tend to be “worst” in other ways. There is no “perfect” fishery management system.

Summary of Advantages and Disadvantages of Different Fisheries Management Systems

<i>Fishery management system</i>	<i>Resource protection</i>	<i>Economic efficiency</i>	<i>Fairness</i>	<i>Simplicity</i>
Unregulated open access	Terrible! 	Terrible! 	Great! 	Great! 
Regulated open access	Mixed 	Terrible! 	Great! 	Good 
Limited entry	Good 	Mixed 	Bad 	Mixed 
Individual catch shares	Great! 	Great! 	Terrible! 	Bad 
Group catch shares	Great! 	Great! 	Terrible! 	Mixed 
Self-governance	Great! 	Great! 	Terrible! 	Great! 

Keep in mind that the discussion of the advantages and disadvantages of different systems in this chapter—and especially in the summary tables—is extremely simplistic! Fisheries management systems are extremely varied and complex. Although this chapter attempts to generalize, in order to help you think about the contrasts between the systems, keep in mind that it is risky to generalize. How well fishery management systems work with respect to different criteria depends greatly on the specific circumstances of the fishery and the details of the management system. Remember:

Objectives matter! Which system is best depends on your *objectives* for fisheries management. Different people or groups may have widely differing opinions about what these objectives are or should be. In particular, *biologists*, *fishermen* and *economists* often perceive distinctly different objectives for fisheries management. Different perspectives about objectives lead to different perspectives about which system is best. If your most important objective is to protect fisheries resources, the best system may be to ban all fishing!

Circumstances matter! *No fisheries management system is always best for all circumstances!* Which system is best depends upon the circumstances. Which system is best may change over time as circumstances change. If there are abundant fishery resources but prices are low and few fishermen want to harvest fish, there may be little need for any government management, much less an elaborate rights-based management system. In contrast, if there is intense fishing pressure on a declining high-valued fishery resource, there may be powerful economic reasons for a rights-based management system.

The devil is in the details. For each type of fishery management system there is a very wide range of potential management rules. The details of these rules can make a very big difference in how the management system works and what its effects are. So although we can generalize about typical advantages and disadvantages of each system, how they actually work depends to a great extent on the specific details of the rules.

Many economists tend to characterize catch-shares or self-governance systems as the “best” way to manage fisheries. They have strong arguments about why these systems are “best”—if you assume certain objectives and circumstances. Part of my goal is to help you understand these economic arguments. But it’s also very important—before you agree with economists’ conclusions about fisheries management systems—to think about whether your objectives and the circumstances conform to what economists tend to assume.