

GROWTH IN THE OREGON GROUND FISH FISHERY: CHALLENGING THE
TRAGEDY OF THE COMMONS MODEL OF HUMAN USE
OF NATURAL RESOURCES

by

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Dr. Carolyn Cartier

Relying on assumptions about the economically rational individual, the “tragedy of the commons” model of human behavior ignores the role of historical and social conditions. I use social theory and the case of the Oregon groundfish fishery to offer a critique of the model. Existing literature relies on the tragedy of the commons to explain substantial growth in this fishery and current problems which resulted. However, a discourse of fisheries development influenced specific policies which made growth of the groundfish fishery possible. These policies included the Fishery Conservation and Management Act of 1976, market development policies, and policies that increased fisher’s access to financial resources. Through this case study, I show that even in open-access situations in which resources exhibit problems that the tragedy of the commons ascribes to individual decision making, structural influences cannot be overlooked and may be a primary causal factor.

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CHAPTER I

INTRODUCTION

The Tragedy of the Commons?

Coined by Garrett Hardin (1968), though first developed by H. Scott Gordon (1954), the theory of the tragedy of the commons posits that environmental degradation inevitably occurs when people have access to a resource that is commonly, rather than privately, owned. The tragedy of the commons (TOC) model holds that any resource not privately owned will be degraded by the people using it. In a commons, according to this model, individual incentives are not commensurate with either sustainable use of resources (in the long run) or economic efficiency and so degradation is inevitable. In this view, the problem is thought to stem from individual actions that are based on economically rational behavior, i.e. individual profit maximization in the short term as a form of human nature. This model of environmental degradation has been described as a "fundamental truth" of human behavior (Baden 1977, 137). "The tragedy of the commons has become a core theoretical model for the analysis of natural resource problems" (Roberts and Emel 1992, 249).

The TOC model has been embraced by many attempting to explain problems in fisheries, problems which include overfishing, "overcapitalization," and allocation conflicts (Gimbel 1994; Neher, Arnason, and Mollett 1989; Mollett 1986; Rettig 1978; Christy and Scott 1965). In the traditional fisheries management narrative, the cause of

overfishing is that fish exist in a commons, owned and controlled by no-one. As one fisheries economist says, "One of the most robust results in economic theory is the theorem that common property resources will be overexploited, possibly to the point of ultimate depletion" (Hannesson 1991, 401). Fish are not privately owned and it is difficult to fence them off (the problem of excludability or open access), and each fish taken is not available for someone else (the problem of subtractability or rivalry) (Berkes et al. 1989). Therefore, any incentive to leave a fish in the ocean today to conserve for tomorrow is undermined by the risk that someone else will harvest it today.

As Gordon (1954) explains in his original paper on the economics of fishing, this situation leads to the further problem of "overcapitalization," in which there are so many fishers, or so many boats with a lot of fishing capacity, that they are able to catch more fish than can be exploited sustainably. This idea is captured in the cliché "too many boats chasing too few fish." "That open access fishery regimes have been a major cause of over-capacity is now well established" (FAO 1995, 2). Overcapitalization can lead to overfishing if controls on fishing activity are not enacted. Overcapitalization can also lead to "rent dissipation:" as there are fewer and fewer fish and more competition for them, each fisher must put more energy into catching each fish, and so the profit margin goes down. Because of all these factors, overfishing is seen as inevitable in a common-property situation (Gordon 1954). "Lack of property rights has motivated fishermen to race each other for the fish. This race usually leads to industry overcapitalization and overexploitation of fishery resources" (Boyd and Dewees 1992, 179).

Framing the severe problem of overfishing within this framework is powerful; it is easy to understand, simple, and clear-cut. It is universal, and makes the solutions seem clear. Because human nature cannot, by definition, be changed, policy makers and academics recommend altering the property rights scheme so that individual incentives

parallel the environmental reality (e.g. Neher, Arnason, and Mollett 1989). Proposals now abound to privatize the right to fish, enclosing the commons of fisheries (e.g. PFMC 1994a). It is said that privatization, often known as rights based fishing, will solve the problems in fisheries. Rights based fishing regimes "are a part of one of the great institutional changes of our times, the enclosure and privatization of the common resources of the ocean....Rights based fishing can promise a net benefit which exceeds [its] cost" (Neher, Arnason, and Mollett 1989, 3-4).

Although the TOC explanation of environmental degradation is very widely used, there are several problems with it, both empirically and theoretically. The model assumes that all humans are always individualistic, always profit-oriented, and always free to make their own decisions (see Chapter 2). This conception of human behavior can be critiqued on many levels. First, the inevitability of the tragedy has been challenged empirically by many researchers. In the TOC, degrading behavior is explained as natural, and because the process is universal, applicable at all times and all places, it is inevitable. There is no way that common property can be sustainable; common-property institutions are considered static and unchangeable. Contrary to this thinking, there is a large body of literature that documents successful commons (Hanna in press-a; Hanna and Munasinghe 1995; Dyer and McGoodwin 1994; Bromley 1992; Feeny et al. 1990; Hanna 1990; Ostrom 1990; Berkes 1989; Berkes et al. 1989; McCay and Acheson 1987, McEvoy 1986). Emphasizing the difference between resources that are commonly owned and those in an open-access situation (Ciriacy-Wantrup and Bishop 1975), researchers have identified many characteristics of these commons that led to their success. Various institutional and cultural settings encourage people to work successfully in commons, using but not depleting a locally available resource, such as fish. Rather than lead to destruction, the commons can also work to protect resources. Research in this area has

focused on the “institutional arrangements that provide for exclusion and regulation of use” (Feeny et al. 1990, 13).

Secondly, the TOC can be challenged theoretically; there are frameworks for conceptualizing human behavior that do not rely on the same assumptions about the self-interested nature of individuals. I address this issue in Chapter 2, where I discuss the TOC model and some of the assumptions that underlie it. I then use ideas from poststructuralist social theory to offer a theoretical challenge to these assumptions and to the model itself. I examine the concept of rational economic behavior and the idea of radical individualism. Through a critique of these ideas, I offer other modes of conceptualizing human behavior and rationality.

Third, the TOC overlooks the many factors beyond selfish behavior (i.e. economically rational behavior) that are important in shaping a natural-resource situation (Feeny, Hanna, and McEvoy 1996; Roberts and Emel 1992; Marchak, Guppy, and McMullan 1987; McEvoy 1986). These factors include culture, political and economic institutional structures, and the relationships among scales of action and decision making. As Marchak, Guppy, and McMullan (1987) explain in their discussion of fisheries in British Columbia, the focus on the commons is misplaced. They instead focus attention on management of the fishery resource by the state and on economic relations and conditions.

I address this issue through a case study of the Oregon groundfish fishery, in which I examine the various social structures that have influenced this fishery. I explore the specific history of the fishery, its inception, when and how it grew, and the specific influences involved. I explore the ways in which a discourse of fisheries development has shaped the groundfish fishery. In Chapter 3, I discuss basic characteristics of this discourse, explore how it has been used in relation to this fishery, and illustrate how it has

affected policies that subsequently shaped the direction that development took. I argue that this discourse created a cultural context within which fisheries policy was developed and within which fishing was carried out.

Because I discuss fisheries development in the context of a *discourse* of development, it is important to understand what a "discourse" is. A discourse is in part a way of talking about something, but in the process it allows some things to be thought and said, consequently preventing the consideration of other points of view. A discourse is a set of narratives, concepts, ideologies, and also practices (Peet and Watts 1993). "Discourse is not the expression of thought; it is a practice, with conditions, rules, and historical transformations" (Escobar 1995a, 216). It is through discourse that ways of thinking and seeing are *produced* (Crush 1995; Escobar 1995a). Discourses, and the metaphors that they embody, "structure the way that we think and the way that we act...in a pervasive and fundamental way" (Porter 1995, 65). We are not aware of the ways that discourse and metaphor affect how we see and do, but it is through them that our actions are shaped. A discourse of fisheries development thus fundamentally shapes how we understand fisheries, what we think they are and should be, and how to fashion them after our understandings.

In Chapter 4, I examine specific fishery-policy measures that draw upon the development discourse. I examine the Fishery Conservation and Management Act of 1976 and the policies that followed it over the next several years, and show how they affected the groundfish fishery. Policy measures include Americanization, financing programs, and several policies aimed at market development, including regulation of joint ventures and the American Fishery Promotion Act of 1980. Through this case study, I show that even in open-access situations in which resources exhibit problems that the

TOC ascribes to individual decision making, structural influences can not be overlooked and may be a primary causal factor.

The Oregon Groundfish Fishery

The groundfish fishery has many of the problems that are characteristic of fisheries around the world, and also has some of its own unique characteristics. Groundfish are any fish that live on or near the bottom of the continental shelf and slope; the term includes flatfish such as flounder and sole, many species of rockfish, and a number of other species such as sablefish and Pacific whiting. There are 80 species of fish in the groundfish fishery on the Pacific coast (see Table 1). The fishery in Oregon started in the 1940s when trawl gear was introduced from California and the Puget sound (PFMC 1990). There was a steady growth in the fishery until the mid-1970s, when the Fishery Conservation and Management Act was passed by the US Congress. After this time, the fishery expanded rapidly, creating an economically vital fishery (PFMC 1995).

Today, groundfish is economically the most important fishery in Washington, Oregon, and California (PFMC 1994b). While groundfish are discussed as a single fishery, there are several subfisheries which, combined, constitute the groundfish fishery. The single largest subfishery is the Pacific whiting fishery, which accounts for greater than two-thirds of the entire groundfish fishery coastwide and almost half the landings of *all* fish in Oregon (PFMC 1995). Most Pacific whiting is caught in the waters off of Oregon (PFMC 1994b). Whiting is primarily processed into other fish products, such as fish sticks and surimi (PFMC 1993). Other important groundfish species are found in the deep waters offshore, where fishers drag their nets at depths greater than 600 feet (PFMC 1992). The most important of these are caught together as part of the "deep water complex," which includes Dover sole, both long- and short-spined thornyheads, and

Table 1 Common and Scientific Names of Major Groundfish Species Landed in Oregon.

Common Name	Scientific Name
ROUNDFISH	
Lingcod	<i>Ophiodon elongatus</i>
Cabezon	<i>Scorpaenichthys marmoratus</i>
Pacific cod	<i>Gadus macrocephalus</i>
Pacific whiting	<i>Merluccius productus</i>
Sablefish	<i>Anoplopoma fimbria</i>
Jack mackerel	<i>Trachurus symmetricus</i>
ROCKFISH	
Canary rockfish	<i>Sebastes pinniger</i>
Pacific ocean perch	<i>Sebastes alutus</i>
Thorneyhead, longspine	<i>Sebastes altivelis</i>
Thorneyhead, shortspine	<i>Sebastes alascanus</i>
Widow rockfish	<i>Sebastes entomelas</i>
Yellowtail rockfish	<i>Sebastes flavidus</i>
FLATFISH	
Arrowtooth flounder	<i>Atheresthes stomias</i>
Curlfin sole	<i>Pleuronichthys decurrens</i>
Dover sole	<i>Microstomus pacificus</i>
English sole	<i>Parophrys vetulus</i>
Flathead sole	<i>Hippoglossoides elassodon</i>
Pacific sanddab	<i>Citharichthys sordidus</i>
Petrale sole	<i>Eopsetta jordani</i>
Rex sole	<i>Glyptocephalus zachirus</i>
Rock sole	<i>Lepidopsetta bilineata</i>
Sand sole	<i>Psettichthys melanostictus</i>
Starry flounder	<i>Platichthys stellatus</i>
SHARKS	
Soupin shark	<i>Galeorhinus zyopterus</i>
Spiny dogfish	<i>Squalus acanthias</i>

sablefish. Rockfish are another important sub-group, of which Widow rockfish is one of the more prominent species (PFMC 1993). Rockfish are sold as fresh and frozen filets under variants of the name "snapper."

Currently, some of the species in the fishery are overfished, though none are currently at risk of extinction. The Pacific Fishery Management Council has stated that most species have been "fished down" to the Maximum Sustained Yield (MSY) level. This is the level considered the minimum to ensure a continued fishery in the future (PFMC 1995). The abundance of fish available during the fishing-down phase represents a one-time "surplus" of unexploited stocks that no longer exists once MSY has been reached. The near-MSY level of many species indicates a mature fishery without room for growth or for error in setting acceptable fishing levels (PFMC 1992).

The Pacific groundfish fleet, comprised of a number of different gear types and fishing strategies, is overcapitalized. There is too much fishing capacity available to catch fish at a sustainable level (PFMC 1995). An overcapitalized fishery leads to allocation battles because there are not enough fish available for every fishing operation to fish to capacity. There are several ongoing allocation conflicts in Oregon and the Pacific coast. The first is between two sectors of the whiting fishery. The shore-based processors and the at-sea, floating processors dispute over allocations of whiting (PFMC 1993). Second, sablefish fishers who use different gear types vie to divide access to the species (PFMC 1994a). Third, there are also international disputes. Both Canada and the United States claim access to Pacific whiting such that the yearly catch is above the level considered acceptable by the management council (PFMC 1995). Further, there are conflicts between fishers and managers. While managers blame fishers for the problems, claiming that they simply take too many fish, many fishers argue that problems are created by the government, through management. Fishers claim that if they were left

alone there would be no problem; there would be plenty of fish for all (conversations with fishers, Charleston, Oregon, summer 1995).

The Pacific Fishery Management Council has attributed these problems in the groundfish fishery to the open-access, common-property nature of the fishery, in which anyone is allowed access to the fish. "The underlying cause of [these problems] is the 'olympic system' under which most of the fishery is currently managed. Under this system, there is a lack of clearly assigned 'property' rights...for harvesting of the resource" (PFMC 1992, 2.13). Because the commons has been seen as the problem, the Council has proposed only certain management options as solutions. The first of these is limited entry, implemented in 1994, in which only individuals with a license are permitted to fish. There are a limited number of groundfish licenses issued, and so the fishery is essentially not open-access anymore (PFMC 1992). The management council is also proposing a form of individual transferable quotas for some fisheries, sablefish in particular, though it has not yet been implemented locally. Under quota systems, each fisher owns a permit that guarantees a certain percentage of the yearly catch (PFMC 1994a). Proponents claim that quotas will provide the long-term personal incentive to conserve that is theoretically missing in a common-property situation (e.g. Neher, Arnason, and Mollett 1989). Quotas are essentially a way to privatize fishing and fish.

Alternative Conceptions of the Problems in Fisheries

I offer an alternative understanding of the problems in the groundfish fishery and how they evolved, an understanding that does not rely on the TOC conception of human behavior. Individuals certainly play a large role; it is individual actions that create any situation. Yet individuals exist within larger cultural, political, and economic contexts

that shape how they think and what actions they take. Within a specific context, some options for action do not even exist.

The groundfish fishery exists within a culture which views the natural world primarily as resources (Grima and Berkes 1989, Merchant 1989). For Americans, fish have traditionally been seen as a resource to be exploited properly (Hanna in press-b). Fish "constitute valuable and renewable natural resources. These fishery resources contribute to the food supply, economy and health of the Nation" (FCMA 1976, 332). A major goal of fisheries management is to attain "full utilization," or the "maximum biological yield," of a fishery (e.g. PFMC 1990, 2.1-2.2). Viewing fish as a resource is taken for granted in both the fisheries development discourse and in the TOC model. Fisheries development seeks to harness the natural world for the economic development of human society while the TOC implies that it is natural human behavior to treat the world simply as a resource.

Contrary to this conception, viewing the natural world as a package of resources is not absolute. Instead, the use and understanding of nature are dependent on inherently social processes (Grima and Berkes 1989, Peet and Thrift 1989). Ideas about nature, including seeing it as a resource, are "cultural constructions that reflect human judgments, human values, human choices" (Cronon 1995a, 34). Nature is not simply what we immediately see it to be; our ability to see it and to define it is always filtered through our cultural and historical standpoint, or, as it has already been defined, through discourses. Nature "is the meeting place between the world 'out there' and the culturally constructed ideas and beliefs and values we project onto that world" (Cronon 1995b, 458).

When fish are looked at within this context, it is possible to see that they too are culturally defined. Which is not to say that fish do not exist, or that they are not being depleted, or that if we think differently the problems in fisheries will all disappear. They

will not. We can, however, say that fish *as a resource* are not absolute; instead, our definition of fish as a resource depends on factors such as culture, availability, profits, or the technology available to exploit them. For example, most species of fish that live beyond coastal waters were not resources to American fishers until the FCMA told fishers after 1976 that they should be exploiting them. This perspective also has implications for understanding the problems associated with natural resource use, problems such as overfishing. These problems are also socially constructed, created at the same time that the resource was “created.” By asserting this, I do not mean to imply that overfishing is not a very real problem or that fish populations and the ecosystems that they are a part of can not be highly affected by overfishing. However, overfishing itself is not “natural.” Instead, it is a part of socially mediated relationships which are based on specific understandings of the natural world.

My central argument is that the TOC model does not accurately describe the causes of overfishing. The model has limited utility for discerning either problems or solutions associated with human use of the natural environment. The TOC does not take social context into account and it rests upon faulty assumptions. Through examining the Oregon groundfish fishery, it is possible to see that many factors beyond fishermen’s individual decisions have played a role in bringing about today’s situation. The TOC conception of the problem ignores the specific history of the fishery. Looking at the problems in this way is like looking at a photograph: all that is thought to matter is a single moment. An alternative is to examine the history of the fishery, and examine the specific processes that shaped the present. It is possible to look at the interaction between the decision-making of individual fishers and policies at the regional and national level, and between those decisions and policies and the larger social context. This approach facilitates a specific examination of how problems arose and how they have been

addressed. This approach does not assume that all situations are the same, or that processes work in the same way in all places and at all times.

As an alternative, I argue that a discourse of fisheries development has shaped the Oregon groundfish fishery. Reflecting cultural values and ideas about people and about the way things should be, the development discourse has shaped how individuals think about fishing, what they think is possible, and what they think is proper. While fishers are the ones who purchase boats and go out on the water to fish, and while their goals often are profit-oriented (Hanna and Smith 1993), these motivations and actions must be seen within the larger cultural context. Cultural and economic behaviors, such as fishing, do not stem from innate human nature, but from largely unconscious, seemingly natural cultural norms. Further, these behaviors are constrained by institutional structures, both political and economic, that are themselves formed within these same cultural norms. As I will show, the discourse of fisheries development was an extremely powerful force in shaping conceptions of growth and progress, and it was enacted in specific ways in the Pacific region and in Oregon. Fisheries policies which set the parameters for action were formed within the development discourse. It is this discourse and related political, economic, and cultural structures that, I argue, form the basis for the fishery today, not an a-historical and a-social tragedy of the commons. This perspective takes into account different scales, both temporal and spatial. Each scale provides a different perspective on the Oregon groundfish fishery, allowing for a more detailed and complex understanding of the situation.

CHAPTER II

THEORETICAL CHALLENGES TO THE TRAGEDY OF THE COMMONS

The Tragedy of the Commons

The Model

In his classic paper, Gordon (1954) decried the lack of research applying economic theory to fisheries. "On the whole," Gordon stated, "biologists tend to treat the fisherman as an exogenous element in their analytical model, and the behavior of fishermen is not made into an integrated element of a general and systematic 'bionomic' theory" (1954, 128). He sought to address the lack of economic research on fisheries by applying neoclassical theories of individual behavior to the fishing industry. In his model, the primary relationship of importance is that between production as a function of effort and the total cost of fishing (see Figure 1). At some levels of fishing effort, there are profits, also known as economic rents. Beyond this level of total effort, these rents will dissipate. The cumulative effect of rational, individual decision-making in a commons is dissipated rents: each fisher will put more and more effort into getting fish before his competitor does. Even though this leads to an overall loss of profit in the fishery, and possibly to overexploitation, there is no incentive to the individual to leave the fishery or reduce the level of fishing effort. To do so would only be to leave more fish for someone else to

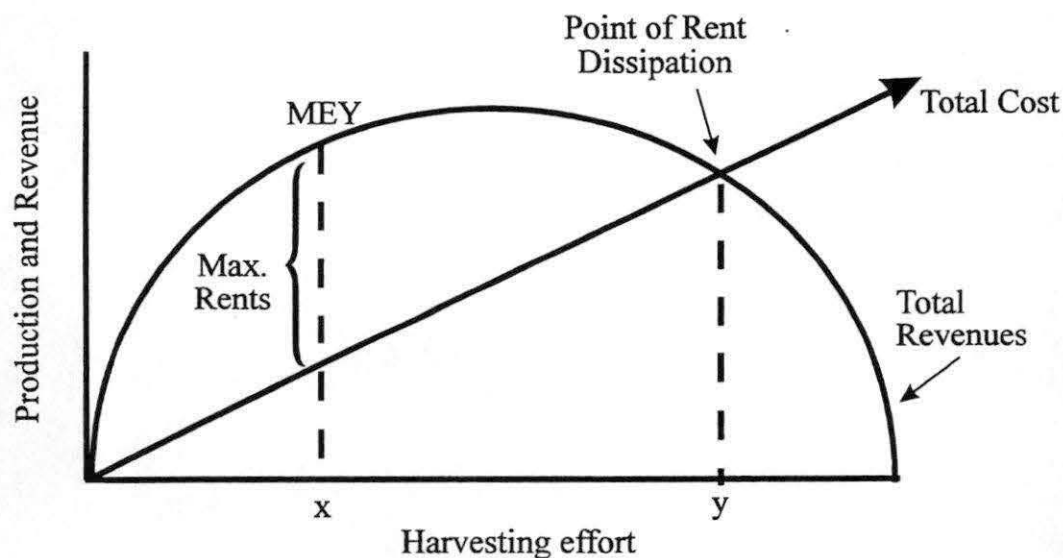


Figure 1. The Economic Model of the Tragedy of the Commons

Total revenues are a function of production per unit effort. The revenue curve decreases because high levels of fishing effort cause declines in the fish population. Each unit of effort is assumed to have the same cost, and so the cost curve is linearly proportional to the level of effort. Maximum Economic Yield (MEY) from the fishery is achieved at effort x , where the difference between revenues and costs is greatest. At an increased level of effort, y , total costs are equal to revenues, and rents are dissipated. In a commons, profits draw new participants into the fishery, increasing effort to the initial point of rent dissipation and beyond.

Gordon 1954, Rees 1985, Grima and Berkes 1989

catch; in a commons situation, individual reduction of fishing effort does not restore rents or fish populations.

Garrett Hardin (1968) expanded on this model to include all problems of overexploitation and overpopulation. The example that is given in Hardin's paper is cattle grazing on commonly owned land: at some density of animals (implying also a density of people), overgrazing and degradation of the rangeland occurs. Even if every individual is aware of that degradation, in the absence of anyone controlling access to the resource it is still economically rational for each individual to continue to overgraze. For the individual, the benefit of adding one more head of cattle outweighs the cost of degradation because the benefit comes to the individual while the costs are borne by all. Therefore, degradation is inevitable in a commons situation.

The tragedy of the commons model, as defined by both Gordon and Hardin, is nested within a larger set of theories and models about individual decision making (Ostrom 1990). These models explore how a rational individual will act in uncertain and relatively uncontrolled situations in which the good of the group is a function of the cumulative effect of many individual's actions. These models predict that these situations lead to non-cooperative solutions in which each individual acts in his or her own self interest but to his or her own ultimate disadvantage. All such theories are based on the problem of the free-rider. Free-rider problems exist when no one person can be excluded from collective benefits; each person is then motivated to not contribute to a joint effort, but to "free-ride" on the efforts of others.

Assumptions in Neoclassical Economics

All of these theories share neoclassical economic assumptions about human decision making and behavior. Michael Jacobs (1994) identifies several premises that support the

neoclassical economic project. The first is individualism, in which "economic activity consists of the behaviour of individuals, and is explained in terms of individual psychology." Second is the rational economic person who is presumed to always "behave in a self-interested and consistent manner to maximize their utility." Only actions that lead to the highest individual profit are considered rational. Third, "the rational economic person ideally operates in competitive markets where he or she can exercise free choice" (all quotes Jacobs 1994, 70). The ability to exercise free-will and make ones own decisions independently thus underlies neoclassical economics.

This view of the economically rational individual free to make his or her own decisions is treated as a universal truth of human behavior. Economists believe that they are describing inevitable behavior. As Jacobs points out, "neoclassicism tends to regard itself as morally neutral, a 'positive' rather than a normative subject" (Jacobs 1994, 70). Thus, individual economic rationality is thought to be human nature, which is considered unchangeable. The word "nature...signifies all that is concrete, unmediated, and *naturally* given" (Olwig 1995, 380, italics in original).

Because neoclassical economics and the TOC rely on the idea of human nature, they gain a sense of objectivity. "Human nature" is used to legitimate the ideas and solutions that they propose. Because economic theorists posit individual profit-maximization as human nature, they can not attempt to address this as an underlying problem of environmental degradation. Instead, they have to look to the commons as the problem. It is in the commons that "human nature" becomes destructive; it is in this situation that human nature leads to a tragedy. The commons becomes the target of efforts to reduce environmental degradation.

However, the concept of human nature is problematic. As I discussed in the Introduction, nature itself is a socially mediated concept: what we call nature is always

filtered through our cultural understandings. This is also true for human nature. By calling certain types of human behavior "natural," we deny that culture plays any role in determining what we call natural or in determining types of behavior. As Cronon states, "when we refer to 'the nature of x,' we usually imply that there is no further need to analyze or worry about that nature. We need not ask where it came from or on what contingencies it depends, for it is simply the way x is....[The] term [human nature] compresses such diverse and complex phenomena into a flat, colorless cartoon....It assumes as an uncontested fact that humanity can be captured in a single, monolithic description" (1995a, 34-35). In defining certain behaviors as natural, we treat nature, including human nature, as though it had no cultural context. The assumption of an economically rational individual as "human nature" can only hold if we also assume that cultural contexts are irrelevant. It is these assumptions which underpin the TOC that I address for the rest of this chapter.

Challenging the Tragedy of the Commons

In my critique of the assumptions underlying neoclassical economic conceptions of human nature, I focus on the role of the individual and his or her ability to be an independent decision maker. Intertwined with this conception of individualism are other issues, including the roles played by different types of knowledge, by rationality, and by economism. Poststructural theory on the relationship between structure and agency provide the necessary tools for addressing these issues.

Structure and Agency

Structure and agency have typically been conceived of as either/or: either structure or agency is completely dominant (Giddens 1984). Structuralism, or determinism, strips people of all power, of all ability to make choices. In this view, our actions are all determined by the social structures within which we live, structures such as capitalism or patriarchy. Voluntarism, or agency, on the other hand, conceives of humans in the opposite way. People, individual agents, have absolute power to make free and independent choices. This is where the neoclassical conception of the individual lies.

Poststructuralist theorists have reformulated the structure-agency debate, asserting that the two are connected rather than either/or (Bourdieu 1977; Giddens 1984; Gregory and Urry 1985). Giddens posits a duality of structure, rather than a dualism. Both structure and agency exist in a recursive relationship, each constantly constituting the other. Therefore, we are not automatons, with no power whatsoever, but neither are we completely free to choose what we will do, who we will be, or what our outlook on life is. The structures in which we live set limits as to what is possible, as to what we can know, do, or think, but we are the ones who produce and reproduce these structures. We do so at every moment through our actions, what Bourdieu calls practice. The mediating factor, the thing that connects structures and agents, is knowledgeability: we know what it is we are doing, we are not wholly determined by external structures, but that knowledge is rarely acknowledged, discursive knowledge (Giddens 1984).

Bourdieu, predating Giddens' work on structuration theory, defined this knowledgeability as "the habitus:" a set of enduring dispositions through which we order our lives. The habitus, into which we are born but then reproduce through everyday experience, is a "natural philosophy," or "knowledge that attempts to unify a number of bodies of knowledge into one whole" (Thrift 1985, 377). The habitus gives meaning to

our lives; we are always acting and thinking from within a certain perspective. The habitus is simultaneously constitutive and normative. This is a critical point that Bourdieu makes through defining the habitus: our worlds are socially constructed and historically contingent, but we internalize them and make them seem “natural.” Because we live within a specific way of understanding the world, and we learned that way throughout our lives, we take it for granted; it is just the way that things are. Our knowledge and practice are the truth, seemingly “objective” to us; knowledges form a taken-for-granted reality (Thrift 1985). It is possible to present the TOC and atomistic human behavior as human nature because of taken-for-granted knowledges, the habitus, specific to Western culture.

This perspective is made clearer by exploring the types of knowledge that are posited by Thrift (1985): the unconscious, practical knowledge, empirical knowledge, and natural philosophy. Most knowledge within the habitus is *unconscious*: we live within a world that makes sense because of the habitus, because of what we have learned, but we are unaware of that. Related to this, *practical knowledge* is unarticulated knowledge; it allows us to act in the world, to interact with other people. We know how to get up in the morning, how to carry on a conversation, not to get too close to people, what a door is, etc. This is Giddens’ knowledgeability: we know what we do even if we do not know that we know. As we act within these knowledges, our common sense beliefs about the world are created, reinforced, and reproduced. *Empirical knowledge*, or articulated knowledge about things in the world, is only possible because of these other forms; it is only possible within a framework about what the world is. It is through the combination of all forms of knowledge, reproduced through time but specific to different groups of people in different places and different times, that we “naturalize,” objectify, and accept as “real” what we know. This is our *natural philosophy*.

It is important to remember, however, that this body of social theory also makes clear that we create the way things are. Things stay the same in part because the basis for our actions remains unspoken, known but not-known; we, as human actors, reproduce the socio-spatial structures that exist. This is the role that agency plays: our knowledge is not just a given, we create and recreate it moment by moment. As Edward Soja puts it, "purposeful human agency jostles problematically with tendential social determinations to shape everyday activity, particularise social change, and etch into place the course of time and the making of history" (1985, 90). Even change, which is possible, arises out of what came before; it is not something completely new. "The habitus engenders all the thoughts, all the perceptions, and all the actions consistent with [that habitus], and no others" (Bourdieu 1977, 95).

Bourdieu and Thrift are both saying that truth-- knowledge-- is socially constructed through the everyday practices of people. Truth is not constructed out of nothing, constructed solely in our minds, but out of the specifics of history, culture, and place. Our knowledge and practice together form the discourses which shape subsequent ideas and actions. In this view, there can not be absolute laws of human nature as the TOC posits there to be. Instead, we must take temporal and spatial specificity into account; people in different places and times will find themselves in very different situations. Despite this, we have accepted and naturalized the TOC conception of human behavior precisely because it has made sense within the unconscious knowledge of those of us from the industrialized West, within our habitus. We accept the TOC as natural and true, completely unaware that both the model and our acceptance of it have been shaped by specific cultural perspectives. It is within this framework that it is critical to explore the assumptions that underlie the neoclassical explanations offered by the TOC. How is the relationship between structure and agency (implicitly) understood? What is rationality?

How are individual decisions made and actions carried out? These questions, which evolve from an understanding of poststructuralist thought, guide me as I critically examine the TOC as an explanatory model.

Rationality

As outlined above, the TOC rests upon neoclassical assumptions about the economic rationality of people. Individuals are presumed to weigh the costs and benefits of any action and decide to do that which will bring the most profit. In this conception, “rational” is based on the ability of the individual to think independently and make individual choices. As Bourdieu (1977) illustrates, however, no-one is thinking independently. We are all living within an ordered conception of reality, within the habitus. This ordered reality creates the context within which we think, which makes it impossible for us to think “independently.” Given this, that which is “rational” is not self-evident; it is socially constructed, culturally specific. As Michael Redclift (1994) claims, cultural contexts are not neutral, and in fact are normative in defining what counts as rational. We can conceive of rational action as including internal norms as well as expected costs and benefits (Ostrom 1990). Applying this to decisions within fisheries, we should accept that “conceptual cores are a part of the ‘intellectual baggage’ that each and every participant in every phase of the management process brings to negotiating, planning and implementing fishery plans....[D]ifferent cognitive models *do* exist, *do* play an important role in the way people think about the world, and *do* affect everyday things that everyday people do or choose not to do” (Smith 1990, 11, italics in original). In our society we are taught that we are thinking for ourselves, making our own decisions, but those choices rest upon various unacknowledged, practical knowledges, knowledges that are culturally accepted, a part of everyday life.

Another facet of the illusion of pure rationality in the TOC is the assumption of pure economism. A critique of this economism can act as an illustration of how our thoughts and actions are influenced in various ways. In the TOC, each individual is making decisions and taking action based on what will bring the most economic good to that person. This assumes that everyone is basically an economic agent, and that other considerations are either unimportant or will be subordinate to the goal of profit. Such a strictly economic position further assumes that what counts as economic is a given, static through time and space. However, like rationality, economic behavior is also culturally determined, influenced by social institutions (Jacobs 1994). Further, a strictly independent and economic view of rationality ignores all of the other, non-quantifiable reasons why people do things. In the case of the groundfish fishery, Hanna and Smith (1993) have documented that Oregon trawl captains, while desiring profit, also value the freedom that fishing provides them. For example, they are their own boss and are able to make decisions about time and money. Similar research has found that fishers mostly have a very high level of job satisfaction, based on factors such as the ability to be one's own boss and the ability to work outside, and that which factors are important vary across types and locations of fisheries (Gatewood and McCay 1990). These are just a few examples of how factors other than economics can influence a fisherman's decision of where, when and how to fish. When these "non-economic" factors are combined with the idea that all rationality is socially situated and constructed, the idea of economic rationality as a universal mechanism that determines individual action seems far too simplistic.

Individualism

Intimately tied to the traditional idea of rationality, as it is understood in the TOC, is the idea of the individual. Individualism is based on the idea that we each exist unto ourselves, can think for ourselves, and can make our own independent and rational choices (Hankinson Nelson 1990). Individuals are free, in the sense of free will and the ability to choose one's circumstance; i.e. the self-made man. However, the meaning of the individual radically changes with an understanding of the relationship between structure and agent, a relationship which is mediated by culture and the habitus and supported by practical, non-discursive knowledge. Suddenly individuals are no longer independent or free, constituting their own lives, but instead are embedded within communities, constituted by them and further constituting them. Just as there is a duality of structure, there is a duality of agency, of the individual.

The supremacy of the individual is a specific conception of action and decision-making. A recognition of this can be found in some of the literature on the benefits of the commons (Bromley 1992; Berkes 1989). "In many Western societies, the individual self-interest is seen as supreme. In many other societies, however, as well as within certain groups in Western cultures, the individual is not the dominant locus of choice; the community is the relevant decision-making unit" (Grima and Berkes 1989, 37). To take this one step further, when looked at within the framework of the habitus, even Western individualism can be seen as a form of group decision-making: we as a culture put our faith in the individual.

This Western idea of the individual arose out of Enlightenment thinking and the scientific revolution. Descartes's "I think, therefore I am," one of the early expressions of radical individualism, was based on the dualism of humans from nature, of mind from body, and on the ability of the individual to transcend specificity and context in order to

know things absolutely (to be rational) (Keller and Grontkowski 1983). It is through this move that the individual and universal rationality became linked: the idea of the individual arose of a piece with the idea of being able to know the world absolutely. The individual observer, set a part from everything else, is assumed to be able to see objectively (Keller and Grontkowski 1983). The presumed ability to transcend specific circumstances in order to see the truth, in order to be rational, is called the "god-trick" by one theorist (Haraway 1988, 582). This primacy of the individual and individual rationality has been challenged by many philosophers as well as the poststructuralist theorists cited earlier (e.g. Alcoff and Potter 1993; Scheman 1993; Hankinson Nelson 1990).

Looked at from this perspective, the idea of the economically rational individual is not an absolute truth but instead is part of the Western cultural standpoint. The TOC theory itself is thus firmly culturally rooted in the Western tradition and cannot be the objective truth that it claims to be. The TOC relies on simplistic mechanisms to explain human use of the natural world, assuming that individual behaviors can be analyzed separately from the social context within which they exist. In this sense, the TOC itself is structural: it shapes our approach to natural resource use by drawing upon our unacknowledged, culturally specific understandings of the world. Drawing upon our assumptions, it then reinforces those assumptions, making them seem like empirical truths. Thus, because of the formulation of the TOC, we are prevented from looking for multiple causes of the problem of overfishing. The TOC provides one and only one problem: the commons. We are essentially cut off from looking for other causes of overfishing, just as by taking a strictly economic viewpoint we are prevented from exploring the multiple reasons why people fish.

CHAPTER III

THE DISCOURSE OF FISHERIES DEVELOPMENT

Introduction

In this chapter and the next, I offer an empirical critique of the TOC conception of fisheries. I use a case study of the Oregon groundfish fishery to illustrate a different way of looking at fisheries, one that views social structures as defining the context within which individual actions are carried out. Understanding actions at different spatial scales provides an alternative perspective on the growth of the groundfish fishery. Individual actions, such as those of fishers, take on new meanings when they are put into the context of a variety of scales. The individual fisher can be seen as the embodiment of one scale which interacts with other scales: the community of fishers, Newport, Oregon, the Pacific region, the United States, and the international arena. Recent theory on regional geography offers ways to understand the links between different scales (e.g. Pudup 1988; Johnston, Hauer, and Hoekveld 1990). It is important to "articulat[e] the *relationship* among various geographical scales in the constitution of the local level" (Pudup 1988, 373, italics in original). It is not possible to generalize from one situation to all situations: a local situation is the outcome of intersecting processes happening at many scales. It is not just fishers who have played a role in developing the fishery; structures enacted at various scales have been important in shaping the actions of fishers.

There are numerous ways to empirically address the role of social structures in Oregon fishing. One would be to do interviews with individual fishers in order to discern how their thoughts and actions have been shaped by larger social structures. This approach, however, still focuses on the individual as decision-maker and ignores the actual social structures within which these individuals exist. I have taken a different approach, focusing on the larger cultural, political, and economic issues surrounding the groundfish fishery and how these contributed to its current problems. The fisheries development discourse fostered certain cultural and economic values and goals and led to certain types of economic and political actions. The development discourse as a cultural factor is the focus of this chapter. First, I provide background information on the groundfish fishery.

The Fishery

The term "fishery" is used to define a distinct industry. It usually implies a specific group of people, defined by geographical area or fishing method, and the species that they fish. The Oregon groundfish fishery is defined by both geographical region and by species targeted; it is further subdivided by gear types and specific species. Most groundfish in this region are caught using nets called otter trawls. Other groundfish fishers use longlines, which are a form of hook and line fishery, or pots and traps (PFMC 1992). The fishery can thus be subdivided into the trawl fishery or the longline fishery, for example, or, by species, into the whiting fishery or the pot sablefish fishery. The trawl fishery is a multispecies fishery; many species live together in groups and nets capture more than one species at a time. Before the late 1970s, the fishery was confined to the shallow waters of the continental shelf (Pacific Fishing 1981a); after this time it expanded into the deeper waters of the continental shelf (PFMC 1990).

In the mid 1960s, fishing in the area outside of the territorial sea was initiated by foreign factory trawlers (PFMC 1982). These ships were very large, and could stay at sea up to a year. These boats targeted just a few species, mainly Pacific whiting, catching large quantities and processing them on board (Murai, Gangmark, and French 1981). Foreign fisheries also targeted Pacific Ocean Perch, a species of rockfish, and depleted stocks along the coast. This species is still in recovery today (PFMC 1995). The main countries that had fleets in the waters off of Oregon were the Soviet Union, Japan, Poland, and the Republic of Korea (Murai, Gangmark, and French 1981).

The fishery underwent a rapid transformation in the late 1970s to early 1980s. In Oregon in the 1970s, the most important fisheries were salmon, crab and albacore tuna. The vast majority of the regional fisheries focused on salmon in particular because it is a high-priced luxury item (Oregon Department of Economic Development 1974). The groundfish fishery was relatively unimportant: fishers targeted a few higher-priced groundfish species, mostly for local markets, and few processors were equipped to handle groundfish (Pacific Fishing 1980a). The groundfish fishery did not approach that of salmon, tuna, or crab in volume, value, or employment. In 1976, at the time of the FCMA, the groundfish fishery in Oregon was comprised of approximately 325 fishers and a fleet of 96 boats (NMFS 1976). Fishers targeted a few economically important species such as Dover and Petrale soles (ODFW 1985), mostly in the shallow waters nearshore and in bays. Boats were relatively small because fishers did not need to make long trips offshore to fish (PFMC 1992).

Today, the groundfish fishery is an extremely important component of the coastal economy. The fishing industry as a whole contributes 12% of total earned income for all coastal communities, while Newport, the center of the whiting fishery, earns close to 25% of its income from fishing (ODFW 1992). Of this total, a large part comes from

groundfish, which is the largest fishery in the state. Landings of Pacific whiting are the highest of any species targeted by Oregon fishers. Whiting was once considered a "trash fish" by American fishers because of a parasite that produces enzymes which give the fish a soft texture if it is not carefully handled (OCZMA 1985, vol. 3). Despite this, twice as many pounds of whiting are caught in a year than the next largest fishery in Oregon, which is pink shrimp, and approximately 10 times as many pounds as the second largest groundfish species, Dover sole (ODFW 1992). The important species of the 1970s and earlier are no longer important, and are in decline ecologically as well as economically (PFMC 1995). By the 1990s, the trawl fleet included many larger, modern boats, including factory trawlers (PFMC 1992), which is in stark contrast to the fleet of aging wooden boats of the 1970s (PFMC 1982). This fleet is also considered overcapitalized and a limited entry regime has been instituted by the Pacific Fishery Management Council in an attempt to control overall fishing capacity (PFMC 1992). In order to limit the total quantity of fish taken, the Council also places strict controls on the amount of fish that each boat can bring to shore every month (PFMC 1995). There is now no foreign fishing of any kind within 200 miles of the coast of Oregon (PFMC 1995). How did this happen?

The FCMA and Extended Jurisdiction

The groundfish fishery in Oregon was profoundly affected by changes in the territorial structure of the United States. In 1976, the US launched a massive fisheries development and management program known as the Fishery Conservation and Management Act of 1976 (FCMA), which changed the political territory of the United States and changed the fisheries policy landscape. The legislation extended jurisdiction by the US over coastal waters from 12 to 200 nautical miles. Initially, extended

jurisdiction took the form of a Fishery Conservation Zone (FCZ), where the US claimed all rights to control fishery activities by both domestic and foreign fishers. In 1983, the FCZ became an Exclusive Economic Zone (EEZ) by a presidential decree from Ronald Reagan.

Extending the political territory of the country provided the US government with new opportunities to control fishing activities off the coasts of the country. The FCMA emphasized management of overfished stocks and created eight regional management councils to oversee fishing and fishing policy. The Pacific Fishery Management Council (PFMC or "the Council") was created to manage all fisheries in the Pacific region, which includes the waters off of Washington, Oregon, and California, focusing primarily on the salmon and groundfish fisheries. The Council also played a large role in developing fisheries for "underutilized species," which was another emphasis of the FCMA. All of this was done under the umbrella of "Americanizing" offshore fisheries. The ideas of "Americanization" and "developing fisheries for underutilized species" will be addressed extensively below.

While part of the motivation to create the FCZ was protection of domestic fishers, the declaration of a US 200 mile zone came in the midst of decades of global negotiations concerning jurisdiction of the high seas. From the 1950s to the 1980s there was a radical transformation of the political map of the oceans (Scovazzi 1985). Starting with Chile and Peru in the 1950s, and spreading first to other Third World countries, every coastal state declared extended jurisdiction over adjacent coastal waters. By the time of the Law of the Sea Convention in 1982, a 200-mile economic zone became customary international law. Freedom of the high seas was significantly eroded and sovereign control over ocean territory became the norm.

The United States was originally resistant to this movement, fearing that its power both militarily and economically would be eroded (Burke 1994). However, it also wanted to protect its rights in the face of claims by other countries, and so passed the FCMA in 1976, creating the FCZ. While extended jurisdiction by all states enclosed about 30% of the world's marine area and 95% of the world's fish catch (Nadelson 1992), the US was actually the great "winner" in the global battle for control over the oceans, gaining more territory than any other country in the world (Woodworth 1994). The US was also among those countries which increased their share of the world fish catch after extended jurisdiction, even though it also puts limits on the US distant water fishing fleet (e.g. for tuna) (Juda 1991).

Extended jurisdiction expanded the territory of the "nation," making it possible for the groundfish fishery to expand into new waters and new species. While these waters were technically open to US fishers prior to the FCMA, it is through a series of laws and regulations enacted at the national and regional level that individual fishers were able to enter this fishery after 1976. National and regional policies were formulated and carried out within the context of the FCMA. The FCMA and the policies that followed it can be situated within the development discourse, which fostered a cultural climate that encouraged the transformation of the Oregon groundfish fishery. Changes within this fishery can only be understood within this context: individual decisions and actions were both shaped and constrained by this cultural climate and by specific policy actions on the part of the federal government, regional Council, and local governments. In the next section, I provide background information on the Oregon coastal region, information that explains why the concept of development had such power in this region.

The Economic Situation of the Oregon Coast

The coastal region of Oregon is the narrow strip of land bounded on one side by the Pacific Ocean and extending on the other side into the coastal mountains. The waters of the continental shelf and slope are a further, integral part of the coastal region. The region consists of five counties (Clatsop, Tillamook, Lincoln, Coos and Curry, from north to south) and the western portions of two more (Lane and Douglas, which are south of Lincoln).

The economy of the Oregon coastal region has traditionally focused on natural resources. The most important basic sector was timber and wood products manufacturing, which in the early 1970s provided approximately 40% of all coastal employment (Oregon Department of Economic Development 1974). While the forest products industry was the principle contributor to the coastal economy, fisheries as a whole were the third most important sector. The second most important was tourism and recreation (Bureau of Governmental Research and Service 1969), which is also heavily dependent on the natural attributes of the region. Other important sectors include agriculture (on the northern coast) and other export industries, which are usually indirectly related to resource extraction, e.g. water transport or paper production (OCZMA 1988). A final important source of income on the coast is non-earned income, or transfer payments, mainly to retirees. By 1987, transfer payments amounted to 43% of total personal income on the Oregon coast (OCZMA 1988). Because the coast is dependent on just a few industries, its overall economy is especially susceptible to changes within those industries. The coast's dependence on natural resource based industries and tourism has been blamed for its overall low rates of growth and high swings in employment during recessions (OCZMA 1988).

The Oregon coast has been economically peripheral to the economic core of Oregon, which is the Portland area and Willamette Valley, and to the nation as a whole. Coastal communities are small, and while the above industries are important locally, they make up a small percentage of the total economic activity of the state (PFMC 1993). Unemployment on the coast has been, and remains, higher than that for Oregon, major metropolitan regions within the state, or the United States, though differences between coastal counties also exist (Oregon Employment Division 1987; PFMC 1993). During the mid-1970s, just as the FCMA was being drafted and passed, several coastal counties experienced an all time high unemployment rate (Oregon Employment Department 1993). Further, employment is highly seasonal, as all three major industries-- timber, fishing, and tourism-- are seasonal, providing primarily summer employment (Oregon Employment Division 1990-1991). The seasonal nature of employment is a perpetual issue for the coast; it has been cited as major problem for the region's economy for at least 35 years (Lincoln Area Redevelopment Committee 1961). Several thousand people can become unemployed for the winter months, which is not fully reflected in the overall, yearly unemployment rates. As well as having high rates of unemployment, per capita personal income is also always lower on the coast than it is for the state or for the country (Oregon Employment Division 1987).

The emphasis on the groundfish fishery in the 1970s was carried out during a period of economic transition on the coast that started in the early 1960s. At this time, there was an overall downturn in the coastal economy which marked a turning point: even though the overall coastal economy did recover, timber employment never returned to its earlier level (Oregon Department of Economic Development 1974). From the 1950s to the 1980s, the timber industry on the coast employed fewer people overall (OCZMA 1988). During the recession of the early 1980s, timber was the hardest hit industry on the coast,

with many layoffs and plant closures, further limiting economic opportunities along the coast (Oregon Employment Division 1990-1991).

The 1970s also marked the beginning of a transformation within the fishing industry. During this time the high-valued salmon and shrimp industries began to decline (OCZMA 1988). This problem was exacerbated in the recession of the early 1980s. There were large losses in the salmon industry (OCZMA 1985) and also in fish processing employment (Oregon Employment Division 1990-1991). Several processors experienced economic problems, and one of the largest, the New England Fish Company with a plant in Newport, went bankrupt (US House 1980a). This downturn in fisheries presented employment problems to coastal communities.

Because of all these factors-- reliance on a few declining industries, small communities with high unemployment and low personal income, and peripheral status to the larger state and country economy-- the coastal region became the target of state and, indirectly, national development strategies. Oregon Congressman Jim Weaver stated during this time that "the development of a healthy processing industry for [groundfish] could significantly alter the employment situation in every coastal county from northern California to the Olympic peninsula" (US House 1978, 557). "The fishing industry is critical, particularly now, when the wood products industry is in [a] deep, deep slump" (US House 1980a, 42). In this way, fisheries development was seen as one key to developing this area, especially in the post-FCMA era. "Underutilized" species were seen by politicians and residents alike as a possible salvation for the region, providing employment in fishing, processing, marketing and other fish-related industries. Underutilized species held the promise of vast resources off the coast, resources which were in demand on the international market, as long as the fishery could be developed to

take advantage of them. This perspective is very much a part of the discourse of development.

Fisheries Development

Fisheries development has been important in defining the way that fishing has been done in this country. There has been a national discourse of fisheries development, a discourse that fits in to wider societal ideas about development and underdevelopment. Traditionally, the ocean has represented a frontier that offers the promise of fishery resources available to be developed (Hanna in press-b). However, not all types of fishing have been considered equal. As I will show, there is a distinct idea about how development should be carried out, about what a "developed" fishery looks like. There have been many plans for development of Pacific coast fisheries, they have occurred at many scales, from the local to the national, and have come from diverse sources (e.g. OCZMA 1985; PFMC 1982; WCFDF 1982; AFPA 1980; Combs 1979; FCMA 1976). The FCMA triggered and unified many development policies, but there was no centralized plan for development. As I will illustrate, diverse as these plans are, they are united by the discourse of development, and in fact this discourse connects fisheries development to other types of development throughout the world.

Emphasis was placed on developing the Pacific groundfish fishery in the post-FCMA era because many species were thought of as "underutilized," a term which illustrates well the nature-as-resource perspective of those involved in fisheries. By underutilized it is usually meant species that are abundant yet are not heavily targeted, processed or marketed by the fish industry. However, policy makers of the FCMA-era did not invent new concepts, but drew upon concepts that have long had influence. National fisheries development has involved the Pacific groundfish fishery in the discourse of underutilized

species since the 1940s. In 1945, shortly after trawl fishing began in Oregon, the US Fish and Wildlife Service identified groundfish off the Oregon and Washington coasts as underutilized species that offered opportunities for development and expansion in the post-War period. USFW began doing research on the technical aspects of development of these fisheries at this time (Stansby 1945). Research aimed at development of the trawl fishery, including increasing marketing and consumption of groundfish, was carried out throughout the 1940s and 1950s (e.g. Alverson 1953, Christensen and Boshell 1959). For example, a palatability study was done on different species of rockfish in the late-1940s (US Fish and Wildlife Service 1947).

Characteristics of the Development Discourse

Development such as that in fisheries is carried out within the broader context of "development" worldwide. There are three aspects of the development discourse that I critique here. The first is that the discourse actually creates the object of development (Crush 1995; Escobar 1995a, 1995b; Porter 1995; Watts 1993). Assumptions about development and underdevelopment create the context in which people and situations are understood, discussed, and treated. This in turn fosters social relationships that actually define the different actors. The second is an emphasis on modernization, meaning industrialization, economic growth, and involvement in the global economy (Crush 1995; Escobar 1995a, 1995b). "Modern" is generally thought of as the opposite of underdeveloped. Thirdly, development itself is never blamed for the problems it creates (Crush 1995; Dove 1988). Instead, problems are blamed on insufficiencies in the people being developed. Each of these three aspects exists within the national discourse of fisheries development and is enacted at various scales. Each has implications for how

people make decisions and about what their expectations and assumptions are. I will discuss each of these concepts as they relate to fisheries.

Objectification

The first aspect of the development discourse is that it actually creates the object of its analysis and action. "By means of this discourse, individuals...and communities are seen as 'underdeveloped' and treated as such" (Escobar 1995b, 213). "Underdevelopment" does not just exist in itself, it has to be defined. "Objects of development [are] stripped of their history [and] they are then reinserted into implicit...typologies which define a priori what they are, where they've been and where, with development as a guide, they can go" (Crush 1995, 9). Underdevelopment is thus seen in the negative; "underdeveloped" is a lack of that which is defined as "developed." This sense of the negative, of the lack, is created within the development discourse itself. "Development proceeded by creating 'abnormalities' (such as the 'illiterate,' the 'underdeveloped,' the 'malnourished,' 'small farmers,' or 'landless peasants'), which it would later treat and reform," regardless of how the people being described as such see themselves (Escobar 1995a, 41). The people who are targeted for development eventually come to see themselves in light of this discourse also; they learn to define themselves in terms of negative comparisons to that which is developed (Escobar 1995a). The object of development thus exists *as underdeveloped* only within the development discourse.¹

Because of this basic characteristic, the development/underdevelopment discourse is normative, defining one end point as the ideal; all else is lumped together into a

¹The critique that development creates the very object which allows for its existence draws upon Edward Said's definition of Orientalism: Orientalism is a discourse "by which European culture was able to manage-- and even produce-- the Orient politically, sociologically, militarily, ideologically, scientifically, and imaginatively" (Said 1978, 3). "The texts of Orientalism can not only create knowledge of other places and subjects but also the very reality they appear to describe" (Watts 1993, 261, on Said).

(negative) mass, where individual histories, cultures, perspectives, and desires are erased. As Timothy Mitchell points out, the very descriptions of people and places that can be very evocative at the same time "naturalize" problems, making them appear as an empirical object waiting for the science of development to come and fix the problems (1995, 146). These ideas can be seen in the way that the groundfish industry, fishers and their families, and fishing communities are talked about.

The groundfish fleet was considered inadequate for expansion of the groundfish fishery into the offshore waters of the FCZ. The fleet was composed of old, small, wooden boats. Newer, larger, steel boats that were capable of fishing farther offshore for longer periods of time were considered an essential element of development (WCFDF 1982; Combs 1979). The fishing industry was described in many places as "fragmented," by which it was usually meant independent (US House 1977, 220), not market-oriented (US House 1980a, 91), not controlled by well-financed corporations (WCFDF 1982, 7.1), and with firms mainly of a small size (Combs 1979, 157). Both fishing and processing on the Oregon coast had been family oriented, "mom and pop" businesses. This was seen as "incompatible" with the goal of developing the groundfish fishery (WCFDF 1982, 8.7). Fishing in Oregon was seen as a "pre-industrial business." As members of a "loose tribe of fishing and processing enterprises, most boat and plant owners [were] accustomed to crude commodity production" (Warren 1995, 16). Seen as a major impediment was the lack of capital available in a small, fragmented, family oriented industry, capital that would be essential to development (WCFDF 1982; US House 1980a; US House 1977).

Fishers themselves have been constructed as standing in the way of development. Several studies have been done that examine managers' and the public's attitudes toward fishers. These studies have found that fishers are thought of as individualistic and unable

to cooperate (Ward and Weeks 1994). At the same time, fishers are thought to have strong family and community ties which bind them to tradition, which is inimical to progress (Smith and Jepson 1993). Further, fisher's knowledge, be it of fishing, fish, or the ocean, is not valued; it is seen as folk knowledge rather than professional science (Feeny, Hanna, and McEvoy 1996; Smith and Jepson 1993). In the Pacific groundfish fishery, fishers and managers have a strained relationship, often centering around this issue of types of knowledge about fish and fish stocks. Fisher's challenges to stock assessments by fisheries biologists have not been accepted with alacrity, and communication between the two groups has been minimal (see *The Charleston Herald*, July 3, 1995). This quote from an industry newspaper discussing the potential for development in the whiting fishery illustrates the view of fishers as backward: "The go-it-alone solitary ocean hunter, wary of rivals and averse to jawboning on shore, is no longer the archetype of a successful skipper" (Warren 1995, 16).

Modernization

In the post-World War II era, the emphasis of development worldwide has been industrialization, or what is also called "modernization" (to go along with the idea of progress) (Escobar 1995a). Modernization is offered as an antidote to underdevelopment; the two have been united within development discourse as oppositions that define each other. "Underdeveloped" is equated with "not-modern" in a negative sense. The development discourse says that "[D]evelopment is about paving the way for the achievement of those conditions that characterize rich societies: industrialization, agricultural modernization, and urbanization" (Escobar 1995b, 214).

Modernization-- industrialization-- is explicitly tied to economic growth. The cornerstones of growth were seen to be "capital accumulation, greater division of labor, technological progress, and trade" (Escobar 1995a, 75). The orientation is on production

and growth, i.e. continual progress. Industrialization means moving away from small-scale, traditional modes of economic activity, such as small-scale farming or fishing, to large-scale, integrated operations that can act most efficiently and be best integrated into a "global" economy.

For the groundfish fishery, modernization has meant creating a capital-intensive, industrialized fishery which is integrated into national and international markets. Economic growth is the consistent goal of fisheries development. In the post-FCMA era, the newly available groundfish of the EEZ were seen as having the potential to transform local economies and peoples. As US Representative Les AuCoin, from Oregon, said, "the fishing industry isn't a doddering old fool, but a sleeping giant with vast potential to unleash productivity and to return economic vitality to many West Coast cities" (Fishermen's News 1978a, 1). "Bigger is better" has been the rallying cry of fisheries development: bigger boats, more sophisticated technology, high productivity and high profits are the signs and goals of development.² In order to take advantage of the resources of the EEZ, the emphasis in Pacific coast development was on making fishing, especially for whiting, big business. "Successful fishing people will grow to resemble the powerful institution-builders in agriculture: business leaders whose integrated production, distribution and marketing operations...can consistently capture the center of the dinner plate-- and swing key votes in state legislatures and Congress" (Warren 1995, 16-17).

In order to increase production and profitability, development plans emphasized large scale projects and new technologies (e.g. Combs 1979). Inadequate technology and vessels were seen as a barrier to development by many (see US House 1977, 226). Development plans emphasized modernizing the fleet through new and larger vessels

²For an illustration of this, see articles on the groundfish fishery in the first volume of Pacific Fishing, an industry magazine that began publishing in 1980.

(e.g. WCFDF 1982). Some plans turned to factory trawlers-- vessels over 200 feet long that can catch, process, and store fish on board-- as the means to develop the whiting fishery. One "development prospectus" stated that "expected to play a dominant role in the processing of Pacific [whiting] are catcher/processors....Each catcher/processor will cost about \$13.8 million in 1979 dollars" (Combs 1979, 113).

Modernization also meant producing industrial "fish products," not just fish fillets for local markets. "Pacific [whiting] blocks, which are further processed into battered portions for institutional use, are seen as the best potential market" (Combs 1979, 115). Surimi, which is used to make pressed fish that resembles crab or other fish types (e.g. "Krab") also offered important new processing and marketing opportunities (Pacific Fishing 1983). These products are made to compete in the global market. "The fishing industry needs money to modernize and to develop technology that will allow it to compete with large scale foreign operations subsidized by foreign governments" (Fishermen's News 1979b, 3).

The emphasis on large-scale fishing changes fishing as a way of earning a living. The faith placed in large boats and industrial fishing left no room for a successful small boat, localized fishery (US House 1980a). While factory trawlers and "motherships" (processing vessels that accept catches from other boats) provide employment, it is a very different kind of employment than that in small scale fishing. The development prospectus cited above aimed to create 1600 new jobs, but few of them were as fishers; they were all as laborers on factory trawlers or at shoreside processors (Combs 1979). For fishers, the way fishing was done drastically changed also. Opportunities were available through selling fish to motherships, but "trawling for a factory processor is more like mowing wheat than catching salmon or crab. It's plodding drudgery rather than

a gut-wrenching rush followed by calm" (Pacific Fishing 1982b, 11). This can be seen as a kind of "Fordism" of the seas.

Assigning responsibility for problems

When there are problems with development, when things do not go as planned and desired, development itself is never seen as the cause. "Development is always the cure, never the cause" (Crush 1995, 10). Instead the people and places targeted by development are blamed for the problems. It is the people who are the object of development who, whether intentionally or not, sabotage the development process. Development policy itself is never scrutinized for elements that could have created problems, elements such as faulty basic assumptions, lack of information, or miscalculations. "Development discourse has a remarkable capacity for forgiving its own mistakes and reinventing itself as the remedy for the ills it causes" (Crush 1995, 16). "There are no bad projects and mistreated [people], but only 'misunderstood' projects and 'misunderstanding' [people]" (Dove 1988, 29).

Fisheries development is similarly always seen as the cure and never the cause of problems, be they biological, social, or economic. Specific policies are never identified as causing problems; instead the underlying problem is always defined as the TOC. "How [does] overcapacity develop? Many fisheries are open to all comers....Under open access, boats continue to enter the fishery well after fish yield and profits begin to fall" (Weber 1995, 23-24). Constructing the problem in this manner places all of the blame for overfishing and overcapitalization on individual fishers. This ignores the fact that there has been a process of "upward aggregation of authority and responsibility" in fisheries (Maiolo and Orbach 1982, 1). The FCMA put legal control and ownership of fisheries in the hands of the US government instead of local fishers, extending the state role in fisheries development and management. The FCMA gave management responsibility to

eight regional councils, such as the Pacific Fishery Management Council, which were to make all decisions about resource use and allocation. The ability of individual fishers to make decisions about fishing activities was constantly eroded at the same time that their decision making was blamed for all the problems. While the PFMC has a high rate of participation by fishers (Hanna 1995), final authority rests with the Council, and, even more removed from fishers, with the National Marine Fishery Service, of which the councils are a part. Decision making about national and regional policies was far removed from the realm of control of individual fishers, and yet these decisions affected fishers enormously. It is assumed that fishers will always act negatively in relation to the fish, and that managers, making decisions from afar, will always act positively.

A Program of Fisheries Development

All three of these aspects of development discourse were incorporated into a national program of fisheries development that was defined by the FCMA. This program focused on underutilized species and "taking back what belongs to us" (US House 1980a, 229). "A national program for the development of fisheries which are underutilized or not utilized by United States fishermen, including bottomfish off Alaska, is necessary to assure that our citizens benefit from the employment, food supply, and revenue which could be generated thereby" (FCMA 1976, 332). It was the purpose of Congress "to encourage the development of fisheries which are currently underutilized or not utilized by United States fishermen" (FCMA 1976, 333). In the wake of the FCMA and its emphasis on national-level involvement in fisheries development, Congress continued to look for ways to encourage and facilitate development at the local and regional levels. Congressional oversight hearings were held to study various alternatives for developing

the US industry (US House 1979). This increased emphasis led to national legislation designed to facilitate development; I address these policies in the next chapter.

National development discourse has also had influence in regional fisheries management. The PFMC included fisheries development measures and goals in their management process. The Groundfish Fishery Management Plan (FMP) included 9 objectives for management, one of which was to "provide for the orderly development of domestic groundfish fisheries, including new fisheries" (PFMC 1982, 2.1). Other objectives included promoting the availability of seafood to the consumer, and promoting "rational and optimal use" of the resource (PFMC 1982, 2.1). The initial FMP, released in 1982, emphasized the beneficial economic impact of management through overall increased production and employment with an emphasis on underutilized species. The growth of the fishery overall was seen as "inevitable," in part because of the presence of these underexploited stocks (PFMC 1982, 3.26). The Council saw the development of new fisheries as a way of alleviating overcapitalization, rather than exacerbating it in the long run.

The development discourse has also had influence locally. Both the coastal counties and the state of Oregon have emphasized fisheries development as source of economic activity on the coast. This was primarily as a result of the peripheral economic situation of the coast, which was exacerbated by the decline in the salmon fishery, as mentioned above. Even before the FCMA, Oregon considered fisheries development essential to coastal economies (PFMC 1993). In the early 1970s, Lincoln County, on the central Oregon coast, emphasized fisheries infrastructure (e.g. docks, cold storage, and ice facilities) and aquaculture in their development plan (Lincoln County Planning Department 1973). Fisheries development remains important today. Development of the shore-based whiting fishery plays an important role in Oregon Department of Economic

Development plans for coastal communities (PFMC 1993). This creates conflict with the state of Washington: while Oregon emphasizes shore-based whiting development, the major fleet of at-sea factory trawler/processors is based in Seattle. Oregon planners fear that an emphasis on at-sea processing would impede the growth of important economic activity in the coastal region. In response, the PFMC has created a complex allocation scheme, renegotiated every three years, that provides opportunities for both sectors to participate in the whiting fishery (PFMC 1993).

Local, regional and national level development planning were all tied together by the development discourse. The coastal region was defined as underdeveloped; the groundfish fishery offered opportunities for regional development if the industry itself could modernize and industrialize. The FCMA extended and legitimized the discourse through its national program of fisheries development and extended political control over the oceans. The development discourse, and the place of the coastal region and fishing communities within this discourse, has repercussions for understanding how fisheries in the Pacific northwest developed in the era of the FCMA. Responsibility for the groundfish fishery rests at many scales of decision making and actions, each scale influenced by political and economic structures.

CHAPTER IV

FISHERIES DEVELOPMENT POLICY

Fishery development policies were both political and economic in nature. There were three categories of policy aimed at achieving the goal of developing the domestic fishery. The first policy arena was controlling foreign fishing in the EEZ and at the same time encouraging domestic use of these waters. This policy arena took on a cultural tone: the US government incited nationalist feelings surrounding fisheries. Second, market development was a high priority for the US government. In order to facilitate expansion of the groundfish fishery, the government was actively involved in developing domestic and international markets for domestically caught fish. Third, in order to encourage domestic fishing, financing for both the harvesting and processing sectors of fisheries for "underutilized" species was expanded and publicized. Political, economic, and cultural issues were woven together in national and regional policy surrounding development of the groundfish fishery.

Kicking out the Foreigners

Americanization

The stated purpose of the FCMA was to protect and foster the American fishing industry. Prior to the Act, many domestic fishers were clamoring to have foreign fishers removed from the fishing grounds. In response, the legislation did two things affecting

domestic fishers: it curtailed foreign fishing off the coasts of the United States, and expanded the domestic fishery to take its place (FCMA 1976). The goal within the FCZ was "Americanization" (PFMC 1995) of offshore fisheries by "kick[ing] the foreigners out" (Maiolo and Orbach 1982, 4). As was noted by one researcher, many thought that all would be well "if only 'the natives' could regain control and sovereignty over their own territory once again" (Smith 1982). The rhetoric of sovereign, national identity was extended into the oceans under the rubric of economic protection for hard-working, local fishers.

The form of Americanization was different in different regions of the country. In New England, where a well-developed fishery was already competing with international factory trawlers, Americanization was a matter of removing extremely efficient competitors from the fishery (Stencel 1992). Depletion of local stocks was blamed on foreign fishers. Americanization offered new promise for the future of New England fisheries (Smith 1982).³

In contrast, for groundfish off the coasts of Oregon and Washington, Americanization became the story of fishery development. In this region, there was little overlap between foreign and domestic fisheries; there was no fishery that could easily displace Soviet factory trawlers. Even prior to the FCMA, Oregon fishers were free to enter the offshore fishery; those international waters were open to anyone with the desire and ability to fish. However, it was only extended jurisdiction and the policies that came with it that sparked the transformation of the local fishery into one capable of exploiting these offshore waters. The idea of modernizing the groundfish fishery was linked to extended jurisdiction and national control over resources.

³However, domestic overfishing replaced international overfishing on some of the most productive fishing grounds in the world. New England fisheries are in crisis now as managers and fishers try to protect both the fish and the fishing communities (Parfit 1995; Stencel 1992).

The FCZ, the territory itself, had an impact on how people thought about offshore waters: the territory now belonged to domestic fishers; it was reserved for their economic gain. Emerging with this concept of the territory as "ours" is the concept of the oceans for the benefit of the nation: the resources of the 200-mile zone were to be used for "the greatest overall benefit to the Nation" (FCMA 1976, 335). "A national program for the conservation and management of the fishery resources of the United States is necessary to prevent overfishing, to rebuild overfished stocks, to insure conservation, and to realize the full potential of the Nation's fishery resources" (FCMA 1976, 332). It was the role of local fishers to bring those fish into the national economy for the benefit of all. The rhetoric of Americanization thus created a cultural climate that encouraged fishers nationwide to fish. In this manner, the idea of sovereignty and territorial control provided an ideological context within which individual fishers along the coast made decisions about fishing activities. However, while cultural ideologies about territory, nationhood, and development were extremely important, active control over the territory determined *how* that atmosphere was translated into action.

Optimum Yield

The first important step toward Americanization was removing foreign fishing fleets from the FCZ. Management of foreign fishing was carried out first by regulating if and how much each country could fish. The FCMA provided for control over foreigners within the FCZ by prioritizing domestic fishing over foreign fishing. This was carried out using a concept known as "optimum yield" (OY). The concept of OY was defined in the FCMA as the yield of a species of fish that provides the greatest long-term economic, social, and ecological benefits. Foreign fishing was allowed only if there was a surplus in the OY after domestic fishers had access to the fish. "The total allowable level of foreign

fishing...shall be that portion of the optimum yield of such fishery which will not be harvested by vessels of the United States" (FCMA 1976, 338). If the domestic industry was able to fish to the OY level, then no foreign fishing was allowed. While not all fishers felt reassured that the government was acting in their best interests, it was clearly stated that the needs of domestic fishers were to come first in all decisions about foreign fishing (FCMA 1976).⁴ Each country that does fish in the FCZ pays a fee for a permit and agrees to abide by US rules (FCMA 1976).

The regional Council played a large role in determining the actual level of foreign fishing by determining which species were to be available to the foreign fishery. While it seems that this would be up to the local fishers-- how much of a given species did they actually fish?-- in actuality, the Council had substantial control over whether or not any foreign fishing would be allowed. Each Council sets OYs for all the species that it manages. The Pacific Fishery Management Council set a *nonnumerical* OY for almost all species, defining it instead as "all fish which are harvested under regulations adopted by the PFMC" (PFMC 1982, 1.1). Because the level of foreign fishing is determined after OY is set, under this definition, the OY for Pacific groundfish was the quantity that the domestic fishery caught. Therefore, there could never be a surplus to become available to the international fishery. Exceptions were made to this OY for four species for which numerical OYs were set. For three of the species, this was done for the purposes of conservation and for one, the purpose was fishery development. Pacific whiting was assigned a numerical OY by the PFMC so that a foreign fishery could

⁴For an example of fisher's concern, see a 1976-1977 column that ran in the Pacific coast fishing industry newspaper The Fishermen's News (Crouch 1976-77). In the column, entitled "'200 miles' a blessing or a nightmare?", the author expressed concern that the government was using the legislation to hurt fishers.

participate. As I will show, foreign participation in the whiting fishery provided the means for the domestic fishery to develop.

Setting nonnumerical OYs for most species was also done to "create a climate for controlled growth and minimal disruption of the domestic fishery" (PFMC 1982, EIS.20). Groundfish are primarily a multi-species fishery, making separate management of each species difficult. Because many species live together in one area, it is impossible to target one species without bringing up a net full of many species. Nonnumerical OYs were set so that there would be flexibility in management to the benefit of fishers. "If...OYs are assigned to logical groupings of species, then fishermen can try to harvest the maximum yield from the group, even though one species in the group may be fished at slightly higher than its optimum yield or another slightly lower" (PFMC 1982, EIS.14). Under this definition of OY, some species may actually be overfished. The flexibility that it affords, however, allows fishers to catch more than they would be able to otherwise. In this manner, both regional and national definitions of OY were used to control access to the FCZ, encouraging domestic fishers to fish while blocking foreign boats from access to most species.

Market Development

While the FCMA used Americanization to actively encourage Oregon fishers to expand their fishing activities, the local industry faced many barriers to development. Federal, state, and local governments developed policies designed to address the major problems that the fishery faced. Problems included poor quality of fish products, lack of processing capacity, and foreign domination of the industry (US House 1979, 223-225). One of the largest problems the industry faced was lack of markets: there were large numbers fish, but it was unclear how fishers, once they caught them, would be able to sell

them. The Pacific groundfish industry had neither domestic nor international markets that it could rely upon as it expanded. Lack of markets, for both traditional species and new species such as whiting, was the single most important barrier to development that the groundfish fishery faced (WCFDF 1982; Pacific Fishing 1980a; US House 1979). The only markets available to groundfish were local, fresh fish markets in the major cities in California, Oregon, and Washington (Pacific Fishing 1980a). The situation had not significantly changed a decade after the FCMA: Oregon fishers still competed with fishers from other western states for these local markets (OCZMA 1985, vol. 3). Market development, both national and international, thus became a major focus of government development efforts. Without market expansion, the fishery would not have been able to expand.

There were three major barriers to market development for the domestic groundfish fishery. First, Oregon fish was not well received in domestic markets. West coast groundfish were thought to be inferior to those of New England (WCFDF 1982). While similar to many of the fish that Americans are familiar with, such as cod from New England, Pacific groundfish were not the same as other groundfish species. The lack of consumer familiarity with Pacific groundfish was addressed by a number of activities at both the local and national levels. Local fisheries organizations tried to stimulate local groundfish markets through education programs. Among these was a program by the Pacific Coast Fisherman's Wives Association, funded by the federal government, to teach grocery store meat department managers how to handle fish (Pacific Fishing 1980b). Also, the West Coast Fisheries Development Foundation produced marketing brochures that included recipes, "hints for handling," and information about different species (Pacific Fishing 1981b).

The government tried to stimulate domestic markets by making it legal to call fish by different names for marketing purposes. In 1979, the Oregon legislature passed House Bill 3116 listing legal common market names for many Oregon groundfish. Many different species of rockfish became snapper, red snapper, Oregon snapper, Oregon red snapper, Pacific snapper, or Pacific red snapper, any of which could be used interchangeably. Sablefish became butterfish or black cod. Also at this time was an effort to change "hake" to "Pacific whiting." Other species of the same genus, but from other areas, were already marketed as whiting. Marketers on the west coast wanted to break into this already developed market with a similar product. They lobbied the federal government and the Food and Drug Administration, which made the decision about names for marketing. Representative Les AuCoin argued that "from the standpoint of fisheries development it's time for the FDA to get off its hands. Denying this change does nothing to protect the consumer and continues to hamstring development of a strong and vital industry" (quoted in Fishermen's News 1979a, 2). The state legislature also urged the federal government to allow the name change. Arguing that the lack of a market for "hake" inhibited the ability of local fishers to take advantage of the 200-mile limit, in 1979 the legislature sent a joint memorial, sponsored by the Committee on Trade and Economic Development, to the president and the FDA urging them to allow hake to become whiting alongside the other, similar species (Oregon Legislature 1979).

The second barrier the fishery faced was competition in domestic markets from imports of groundfish. Foreign companies dominated domestic industrial fish markets, such as those for frozen fish block that goes into frozen or fast-food breaded fish filets and fish sticks. The domestic industry did not initially process groundfish into the frozen blocks needed by the US food companies that made these products (Pacific Fishing 1982a). Production of domestic frozen fish product in order to displace imports was seen

as one area with large development potential (WCFDF 1982, 7.8). This was seen as especially important since approximately 15% of *imported* fish block was made of fish caught *within* the US FCZ (US House 1978, 521).

Canadian imports were seen as having an especially deleterious effect on domestic markets for both traditional and underutilized species (US House 1980b). The US imported 6,000 metric tons of Canadian groundfish into western ports in 1983; this number increased to 20,000 mt by 1987 (Korson and Kinoshita 1989, 35). Canadian competition was called "most sinister" for Oregon: it was the same mix of species, but sold at lower prices than could support the Oregon fishery (OCZMA 1985, 3:11). It was thought that the Canadian government was subsidizing its fisheries-- even at a loss-- in order to outcompete US fisheries in their own, domestic market (OCZMA 1985, vol. 3). The domestic groundfish industry also faced competition from imports of orange roughy, a rockfish-like species, from New Zealand and Australia (Korson 1986).

Third, domestic whiting fishers and processors had difficulty competing in the international market, which was dominated by the fishing nations that had been targeting whiting for years (US House 1978). The Soviets had large factory trawlers that could catch and process whiting on board, and had both domestic and international markets already developed. Some said the US was "in reality a developing country" when it came to the groundfish fishery (US House 1978, 635). Further, the Soviets were still fishing for whiting within the US FCZ. Even though the FCMA gave the domestic fleet priority to the fish in the FCZ, the domestic fishery was not developed enough to use all the fish that were available and so the Soviets were still given a yearly allocation. The presence in the FCZ of the experienced, efficient, and large Soviet fleet made it more difficult for Oregon fishers to develop the fishery. The Soviets had advantages in terms of fishing and processing technology and markets. As long as the Soviets had access to the abundant

whiting resource, they would be able to outcompete the Oregon fishery, thus making it difficult for that fishery to ever develop.

One of the reasons that the Soviet fleet had such an advantage was that there was little domestic processing capacity for groundfish. Most processing plants had traditionally focused on salmon and crab, and had only secondary ability to process groundfish, and even then not in large quantities. Processing capacity for underutilized species did not expand at the same rate as fishing capacity (US House 1978). Further, because of its parasite problems, whiting posed a processing challenge. If it is not processed very quickly after being caught, the flesh of the fish turns to "mush" (OCZMA 1985, 3:52). The opportunities for immediate processing and freezing offered by factory trawlers thus offered an important advantage to the Soviet fleet. With no domestic processing industry in sight, and facing an abundant supply of whiting that was being caught by foreign countries, Oregon fishers turned to joint ventures as the solution to their problems.

Joint Ventures

Joint ventures (JV) were a fishing arrangement in which local whiting fishers sold the fish that they caught to foreign factory trawlers stationed within the 200-mile EEZ. These factory ships acted as "motherships," processing the fish that other boats caught. While joint ventures were for Pacific whiting only, they played a pivotal role in the development of the west coast groundfish fishery as a whole. The PFMC has stated that the overall increase in groundfish landings from the 1970s to the 1990s was due to increases in whiting, which are attributable to the joint venture fishery (PFMC 1992). The JV fishery also encouraged the development of other, entirely domestic fisheries. The technology that was required for the whiting fishery-- large boats and special trawl gear-- could also be used in other, nascent fisheries such as for Widow rockfish (Shafer

1981). The larger boats were also essential for the development of the deep water trawl fishery (Pacific Fishing 1981a), a fishery that is also important today. This level of development was only possible because of decisions about definitions and control of joint ventures made at the regional and federal levels.

While in retrospect it is clear that JVs were extremely important in facilitating development of the groundfish fishery, when they began in the late 1970s they were highly controversial. Fishers and processors had different goals and needs regarding the fishery. For domestic fishers, JVs clearly offered important opportunities for growth. Fishers contended that foreign motherships provided them with an essential market without which they would not be able to fish at all. Given the lack of domestic processing capacity on the coast, fishers had no choice but to find buyers elsewhere. "We need these markets desperately.... We can increase our catches...if we get these quotas under the joint venture and there are no other markets, believe me. The markets do not exist.... We invested money in this fleet and we invested heavily and we invested in good boats, and none of us did this without attempting to assure that there would be a market.... The [domestic] markets have not come forth." (Barry Fisher, commercial fisherman, in US House 1980b, 395-397).

There were other benefits from JVs as well. Fishers had a higher profit margin when delivering to a mothership rather than to shore (US House 1978, 636). Because motherships could follow the fishing fleet, each boat was not required to return to shore regularly, and therefore had lower fish storage and fuel costs. This allowed vessels to range coastwide following whiting as they moved (PFMC 1982, 1.29).

Processors, on the other hand, felt that they were at a disadvantage with joint ventures. They thought that JVs would limit their ability to develop their sector. "Of very great concern to Northwest processors is that arrangements for foreign factory ship

processing of US catches in the Zone will make it virtually impossible for this country's industry to have risk capital available for needed new plant construction and equipment installation. The onshore expenses incurred by the US processing industry place them in a position of not being able to be competitive with foreign processors" (Association of Pacific Fisheries in US House 1977, 299). Processors claimed that the minimal interest in developing domestic markets disappeared once JVs were introduced. "The minute there was consideration by the council of allowing the Russians to process, the interest...on behalf of...the Treachers, the McDonalds, and the H. Salt Co. absolutely died" (Ted Bugas, processing plant owner, in US House 1978, 125). While fishers claimed that they would be happy to stop the joint ventures once there were local, competitive processing plants (Barry Fisher in US House 1978, 115), processors claimed that they would never be able to raise the capital to do so if they faced foreign competition.

Many processors further expressed concern that foreign processors had an unfair advantage because they did not face US labor and environmental laws. "When one considers the cost of meeting OSHA, EPA, and FDA standards; the requirements of the minimum wage law; State, local and Federal taxes, it becomes apparent that an unencumbered offshore facility can easily outbid the shore-based plant" (Lee Wedding, Vice President of National Fisheries Institute, in US House 1977, 213).

Those opposed to JVs argued that the FCMA was designed to give priority to all sectors of the fishing industry, not just the fishers, and that JVs were against the intent of the FCMA (US House 1977, 1978). The battle between fishers and processors in the northwest sparked the federal government to take a position, and decide 1) if joint ventures were in line with the intent of the FCMA and, if they were, 2) how to regulate them so that processors would not be at a disadvantage. The concept of "greatest benefits

to the nation" implies that the entire fish industry should be afforded protections, not just fishers. This idea was codified in amendments to the FCMA passed in 1978, known as the "Processor Preference Amendment" (FCMA 1978). In this act, the processing sector was provided the same protections afforded fishers: they had priority to the fish taken within the FCZ. The legislation stated that joint venture fishing would be allowed only if the processors were unable to show that they had *both* the capability *and* the intent to process the fish that the harvesters caught. Any amount that they were unable to handle, fishers would be free to sell to foreign processors. JVs were thus regulated to provide fishers with markets while protecting domestic processors from some of the negative effects of foreign competition.

The US government displayed its commitment to JVs in 1980, when it placed many sanctions on the USSR for its invasion of Afghanistan. Among these sanctions was a refusal by President Carter to allow any directed fishing within the US FCZ by Soviet fishing operations. A bill was then proposed to further reduce Soviet access to US resources by curtailing all existing fishing agreements, including all JVs. Oregon fishermen and legislators argued that such a measure would hurt US fishermen more than it would hurt the Soviet Union. Representative Les AuCoin stated that "cancellation of the United States-Soviet [joint venture] is an example of an ineffective sanction that is just dripping with symbolism but disastrously off-target" (US House 1980b, 382). Because JVs offered important opportunities for developing the offshore groundfish fishery, Congress decided not to curtail JV agreements with the Soviets. Even as the US boycotted the 1980 Summer Olympics in Moscow over the invasion of Afghanistan (New York Times 1980), the concept of fisheries development was employed in order to continue operating JVs with the Soviet Union.

Through regulation of JVs, the regional Council also played an important role in controlling access to the 200-mile zone. Before the federal decision, the PFMC had the ability to allow or curtail JVs. After initially voting against them (US House 1977, 203), they approved the permit for Soviet processing vessels in 1978 (PFMC 1982). As with directed foreign fishing, the Council used optimum yield as a tool to control JVs. Permits for joint ventures were the same as those for directed fishing, governed by the same rules; they could only be given for those fisheries for which there was a numerical OY from which surpluses in harvesting and processing could be calculated (NMFS 1985). If the PFMC had set a nonnumerical OY for whiting, as they did with almost all other species, they would have eliminated the possibility of any joint venture fishing. Instead, the Council made the whiting joint ventures possible, thus making the growth of the groundfish fishery as a whole possible as well. The PFMC stated that the rationale for allowing the joint ventures was that they would benefit fishers (PFMC 1982). The PFMC later tried to use this tool to encourage other fisheries. When some foreign processors expressed an interest in jack mackerel, they set a numerical OY for that species (PFMC 1984). While a lack of markets prevented this fishery from developing, this example further illustrates the role that the PFMC was willing to play in fishery development.

Because levels of foreign fishing were determined using OY, joint ventures provided incentives for other countries to participate in developing the domestic fishery (US House 1978, 637). As long as the domestic industry had priority in the fishery, foreign nations could only catch fish for themselves if there was surplus OY after both the domestic fishery and the joint venture fishery. In order to retain access to the resource, the Soviets were compelled to buy the fish from these joint ventures, thus providing development opportunities to domestic fishers. The Japanese and Koreans got involved in JVs in Alaska in order to maintain their access to the fish in that region (US House

1980b, 399, 405-406). In all three cases, these countries would rather have been allowed to fish for themselves within the FCZ.

Fish and Chips

Control over foreign access to fish within the FCZ was the basis for market-development legislation entitled the American Fisheries Promotion Act of 1980, or the "fish and chips" policy (Snead 1989). After passage of the FCMA, the US wanted to take advantage of fact that countries now had less access to fish within the FCZ. In theory, this would encourage these countries to buy American-caught fish in order to alleviate supply shortages. After 1976, Japan, for example, was required to import fish that it once had free access to. The country's imports of US fish rose from \$56 million in 1974 to \$600 million in 1979 (National Fisherman 1980). US groundfish fishers were dependent on the new markets that were created by extended jurisdiction (US House 1980a). However, countries such as Japan were able to limit their imports of US fish as long as they could catch their own fish. If they did supply US fishers with markets, they were contributing to the development of the US domestic fishery, thereby limiting their own access to directed fishing within the FCZ. These countries thus had no incentives to encourage the domestic fishery to develop by accepting US fish as imports. Therefore, the US government decided that it should create incentives for foreign countries to buy American fish and assist in developing the US fishery (US House 1980a).

Countries that desired to fish in the FCZ were required to negotiate permits, called "governing international fishery agreements" (GIFA), with the State Department (Snead 1989). Under the original FCMA, there were no general qualifying requirements to receive a GIFA. The fish and chips policy developed several criteria to determine

eligibility for GIFAs, criteria designed to encourage participation in development of the US fishing industry. The criteria for allocation of catch to other countries included:

- 1) the extent to which a country has tariff and nontariff barriers to US fish and fish products;
- 2) the extent to which a country buys US fish and fish products; and
- 3) the extent to which a country contributes to the development of the US fishing industry.

(AFPA 1980, 3297-3298)

Between 1976 and 1990, the US negotiated GIFAs for participation in the Pacific groundfish fisheries with the Soviet Union, Poland, Bulgaria, Japan, Greece, the Peoples' Republic of China and the Peoples' Republic of Korea (PFMC 1990). Joint ventures were viewed by many nations as the best means of conforming to the fish and chips policy (WCFDF 1982, 7.6). The Soviet Union participated in JVs for whiting from 1978 to 1990, when all joint venture activity in the whiting fishery was terminated (PFMC 1995). Poland, West Germany, and Japan were sufficiently concerned about their allocations to start joint venture operations in the North Pacific (Alaska) in the early 1980s (Pacific Fishing 1982a). China and the Republic of Korea started JVs for whiting in 1987 (PFMC 1990). Further, Japan agreed to invest in processors on the Alaskan coast and, more importantly for Oregon fishers, to liberalize their import quota system for fish products (Snead 1989). A 1987 agreement opened up Japanese markets to surimi, a fish paste made from pollack of Alaska and whiting of Oregon (Snead 1989). In 1988 Japan started a JV for whiting, conducting the first wide-scale surimi operation using whiting (PFMC 1990, 11.83). Japan is now a net-importer of fish (Sproul and Queirolo 1994). While "fish and chips" was never fully implemented-- other trade issues often took

priority (Pacific Fishing 1982c)-- federal control over fishing within the 200-mile zone did lead to fishery development opportunities for domestic fishers.

Financing

Another major barrier to fisheries development in Oregon and the Pacific Coast was a lack of capital. Outside capital was seen by many as key in order to fully Americanize and "realize benefits to the Nation" (US House 1980a, 1986). Financing became a major emphasis of fisheries development both nationally and locally. Access to government backed credit was a central factor in the growth in the number and type of vessels in the groundfish fishery (OCZMA 1985, vol. 3). Although there were several federal programs for financial assistance to the fishing industry that existed prior to the FCMA, some fishers initially had difficulty obtaining funding for new, large boats through these programs (US House 1977). In the era following passage of the FCMA, these programs were expanded and strengthened to promote certain types of development. A large majority of Pacific groundfish vessels constructed in the late 1970s were funded through federal programs (US House 1980b).

In the family-oriented industry of Oregon and the rest of the coast there was often a lack of personal capital available for new vessels (Combs 1979). The gear needed to successfully Americanize the groundfish fishery was expensive. Larger boats, made of steel, were needed to replace the older vessels that constituted the fleet of the 1970s. The first vessel built for the whiting fishery, Barry Fisher's *The Lady of Good Hope*, cost \$1.2 million to build and outfit (US House 1980b, 418). The average cost for a new whiting vessel is \$1 to 3 million (PFMC 1993, 34). Converting an appropriate, existing vessel to enter the whiting fishery, or other new groundfish fisheries, cost approximately \$50,000 (Fishermen's News 1978b, 6). Factory trawlers are much more expensive; the minimum

investment in a new factory trawler in the early 1980s was \$18-22 million (WCFDF 1982, 8.6). These costs included expensive gear and technology necessary for newly developed fisheries, such as Pacific whiting and Widow rockfish. Larger nets, stronger and faster winches to raise the nets, and new fish finding gear such as sonar and net recorders were essential elements of these new segments of the groundfish fishery (Fishermen's News 1978b, 6).

There were several types of financing available to fishers for fisheries development. The first were direct loan programs, primarily through Production Credit Associations (PCA). PCAs are local organizations of farmers, ranchers, and fishers that make loans through Federal Intermediate Credit Banks, chartered through the Farm Credit Administration. PCA funding was originally targeted only to farmers, but in 1971 the Farm Credit Act extended the program to fishers as well. By 1980, PCAs had a greater number of loans with fishers than farmers (Pacific Fishing 1980c). The 1971 Farm Credit Act provided for loans of seven years (Farm Credit Act of 1971, 594). In 1978, the repayment time *for fishers only* was extended to 15 years (PL 95-443 1978).

There were two federally-run programs that were targeted at assisting fishers in paying for vessels and gear: the Fishing Vessel Obligation Guarantee (FVOG) and the Capital Construction Fund (CCF). The FVOG and CCF programs, both run by the National Oceanic and Atmospheric Administration, were created as a part of the Merchant Marine Act of 1936. FVOG was originally designed as a mortgage insurance fund, and was modified in 1972 into a vessel financing fund. This program offers federal guarantees on private loans for fishing vessels and gear. "The program has made a substantial contribution to the expansion and modernization of [the American fishing industry] by providing Federal guarantees for long-term commercial loans at favorable rates" (Representative John Breaux in US House 1986, 1). The government, not the

fisher, thus bore all the risk for these loans. Because of the program, loans for higher dollar amounts are available to fishers who would otherwise not qualify for them. It also lowers the cost of loans, and stretches them out over longer periods of time, making large loans feasible for individual fishers (US Senate 1993). "It was always the clear intent of Congress that this program operate to encourage the private financing of vessel...construction" (US House 1986, 2).

During the fisheries development push of the late 1970s, the FVOG program was changed to make it easier for fishers to acquire large loans. The program originally guaranteed only 75% of the loan. The rest had to be either guaranteed through other sources or paid outright as a down payment. After 1978, this percentage was increased to 87.5% of the total loan for fishing vessels and gear (PL 95-257 1978). This was done to stimulate investment in the fishing industry and to stabilize fishing economies (US Senate 1978).

FVOG was further amended in the American Fisheries Promotion Act of 1980 to include fishery facilities, including land, equipment, and buildings for processors and distributors (AFPA 1980, 3291-3292). Like the measures of the Processor Preference Amendment outlined above, this change was the result of the battles over joint ventures. Financial assistance for processors was intended to facilitate development of the domestic processing industry by alleviating the negative effects of foreign competition. This act put processors on the same level as fishers in relation to fisheries development.

The Capital Construction Fund is a tax-deferral program for income from fishing. Fishers enter into agreements with NOAA to deposit deferred taxes into the program. Funds can then be withdrawn for vessel construction, reconstruction, or, occasionally, acquisition (NMFS 1994). This program protects fishers altogether from the risks of taking out loans for vessel improvement.

All of these programs were important for fisheries development in Oregon. PCAs were the primary financiers of vessels in this region (US House 1980b, 205), and they were particularly important in Oregon, more so than for Washington or California. Because of this program, even before passage of the FCMA Oregon commercial fishers were said to be "swimming in capital" (US Senate 1975, 242). CCF and FVOG were also used extensively by groundfish fishers in the years following the FCMA. "When the combined Capital Construction Fund and Loan Guarantee package of benefits was made available to the harvesting sector, it went far toward modernizing and increasing the capacity of our fishing fleet" (WCFDF in US House 1981, 219). Even before the FCMA, the FVOG program was increasing the number of applications that it received from the Pacific region (Fishermen's News 1975). By 1980, NOAA had a backlog of loan-guarantee applications from the Pacific Northwest (Pacific Fishing 1980c). And in the late 1980s, 75% of CCF program agreements were with fishers from Oregon, Washington, and Alaska (PFMC 1992, 5.9).

These programs were not, however, available to all types of fishing, all types of vessels, or all types of fishers. Starting in the 1970s, FVOG could not provide credit to any "conditional" fisheries, fisheries which were fully- to over-capitalized. This included the Pacific salmon fishery. Instead, the emphasis was to be on vessels targeting underutilized species (AFPA 1980). Further, federal funds were used to build only certain types of boats. Lenders looked "with great favor" upon midsized combination boats, capable of participating in the groundfish fishery and other fisheries such as crab and shrimp (Pacific Fishing 1980c, 15). Even in the early 1970s, the emphasis was on modernizing the fishing fleet through buying new boats and upgrading old ones, rather than providing support to keep older boats on the water (US Comptroller General 1973). In addition, financiers tended to only provide loans to "highliners," who were considered

good risks and able to develop new fisheries (Fishermen's News 1979c). Loan approval was often based on an individual's reputation, past performance and ties to larger segments of the seafood industry (WCFDF 1982). Financing was a fisheries development measure, designed to encourage entry of new fishers and new boats into a modern groundfish fishery.

One outcome of these programs is that more and more fishers did indeed take out more and larger loans, often to their eventual detriment. By the early 1980s, many owners had a hard time keeping up with their payments. Many vessel owners with large mortgages were unable to catch enough fish to make their payments: many individual vessels were "grossly over capitalized" (OCZMA 1985, 2:4). Vessels started to fail financially and lenders repossessed vessels (Huppert 1986). While this was an issue for all loan programs, it was an especially large problem with PCA loans. PCAs took risks with loans and continued to finance vessels even after the fishery was considered overcapitalized given market conditions of the time (OCZMA 1985, vol. 3). Even in the late 1970s, as many as 25% of vessel owners were behind on their payments (US House 1980b, 205). High interest rates during the time loans were taken out is also thought to have contributed to the problem (OCZMA 1985, vol. 3). This led to an overall decline in the number of trawlers in the groundfish fishery between 1983-1984 (PFMC 1992, 5.46).

During this time, even though profits from fishing were low, fishers were forced to continue fishing, and fish intensively, in order to keep up with their payments. This massive capitalization, funded and encouraged by the federal government, had real repercussions for fishers. Further, this situation limited the option of exit from the fishery for many people. Few people were entering the fishery looking for boats to buy, and so fishers were stuck with their very expensive, overcapitalized vessels. This contradicts the assumption of the TOC model, in which each individual is free to make their own good or

bad decisions; the economics of fishing can effect an individual's ability to leave the fishery (Feeny, Hanna, and McEvoy 1996). Institutional factors, such as government-encouraged debt or lack of local employment alternatives, can severely limit people's options.

Another form of federal financing for fisheries development is Saltonstall-Kennedy (S-K) grants, which have been used for fisheries development research since 1954. Grants are made for "research and development projects addressed to any aspect of United States fisheries, including...harvesting, processing, marketing, and associated infrastructures" (AFPA 1980, 3288). Through 1979, S-K funds were used exclusively to support National Marine Fisheries Service (NMFS) management and development research (US GAO 1985). In 1979, the total dollar amount available increased, and S-K grants were used to fund outside research as well. The American Fisheries Promotion Act of 1980 broadened the list of those eligible to receive S-K grants to include individuals, fishery development foundations, universities, and private agencies (AFPA 1980). The West Coast Fisheries Development Foundation, which focuses its efforts on developing underutilized species, was founded in 1979 as a conduit for S-K funds (Yuska and Ridlington 1985). In 1981 the foundation received over \$550,000 for Northwest projects (Pacific Fishing 1981c, 14), and throughout the 1980s, they received approximately \$800,000 per year (Yuska and Ridlington 1985, 4). The foundation's role is to "promote and develop seafood" through technical projects such as "exploratory fishing, developing products, processing equipment development, helping develop markets, and promoting the products of the West Coast industry" (Yuska and Ridlington 1985, 4-5). S-K funds are also used to finance NMFS' Utilization Research Laboratory at the Northwest and Alaska Fisheries Center where research is done on finding new and better ways to handle and use fish, especially underutilized species (US GAO 1985).

Through vessel and gear financing programs, the government created fleet expansion and overcapitalization, put fishers in debt, and kept fishers in the fishery even if profits were not great. Governmental programs for financing significantly contributed to problems of overcapitalization and pressure on fish stocks. Federal grants for research on harvest, use and marketing of underutilized species also encouraged rapid expansion of the groundfish fishery in Oregon. The rapid growth of the fishery after 1976 would not have been possible without these financial programs.

Fisheries policy encouraged growth of the Oregon groundfish fishery. The Fishery Conservation and Management Act of 1976, with its emphasis on Americanization, encouraged fishers to expand their fishing operations into new regions of the ocean and into new, previously little-exploited species. The Processor Preference Amendment of 1978, the American Fisheries Promotion Act of 1980, and further modifications of existing financial programs all provided essential incentives for development of the domestic industry and controls on foreign fishing. Without these policies which expanded markets for "underutilized species" and financed modern fishing vessels and gear, the groundfish fishery would not be in the situation that it is today. The government played a critical role in the development of this fishery; it also played a critical role in the creation of the problems facing the fishery today.

CHAPTER V

CONCLUSIONS

The Tragedy of the Commons?

Throughout the 1980s, the whiting fishery and deep-water groundfish fishery continued to grow. In 1988, the whiting joint venture expanded to the point that it displaced all directed foreign fishing; there was no longer any surplus beyond OY for international vessels to target (PFMC 1995). In 1990, an American factory trawler from Alaska started an exploratory whiting fishery off of Oregon. The activity of this domestic factory trawler immediately preempted all joint venture fishing (PFMC 1995). By 1991, the entire Pacific groundfish fishery (which does not include Alaskan fisheries) was domestic (see Figure 2). Americanization was a success for the Pacific region. Success, though, has created its own problems. By the late 1980s, the groundfish fishery fleet as whole had too much capacity to catch the amount of fish that would ensure long-term sustainability (PFMC 1992). The underlying problem, in the Council's view, is open-access, or the commons (PFMC 1992, 2.13).

When problems in the fishery are blamed on the commons, however, little attention is paid to the complex processes that influenced today's situation. The creation of the 200-mile zone by the United States had large and long-lasting repercussions for the Oregon groundfish fishery, especially the Oregon-based Pacific whiting fishery. This new national territory and sovereign control over that territory transformed a small, nearshore

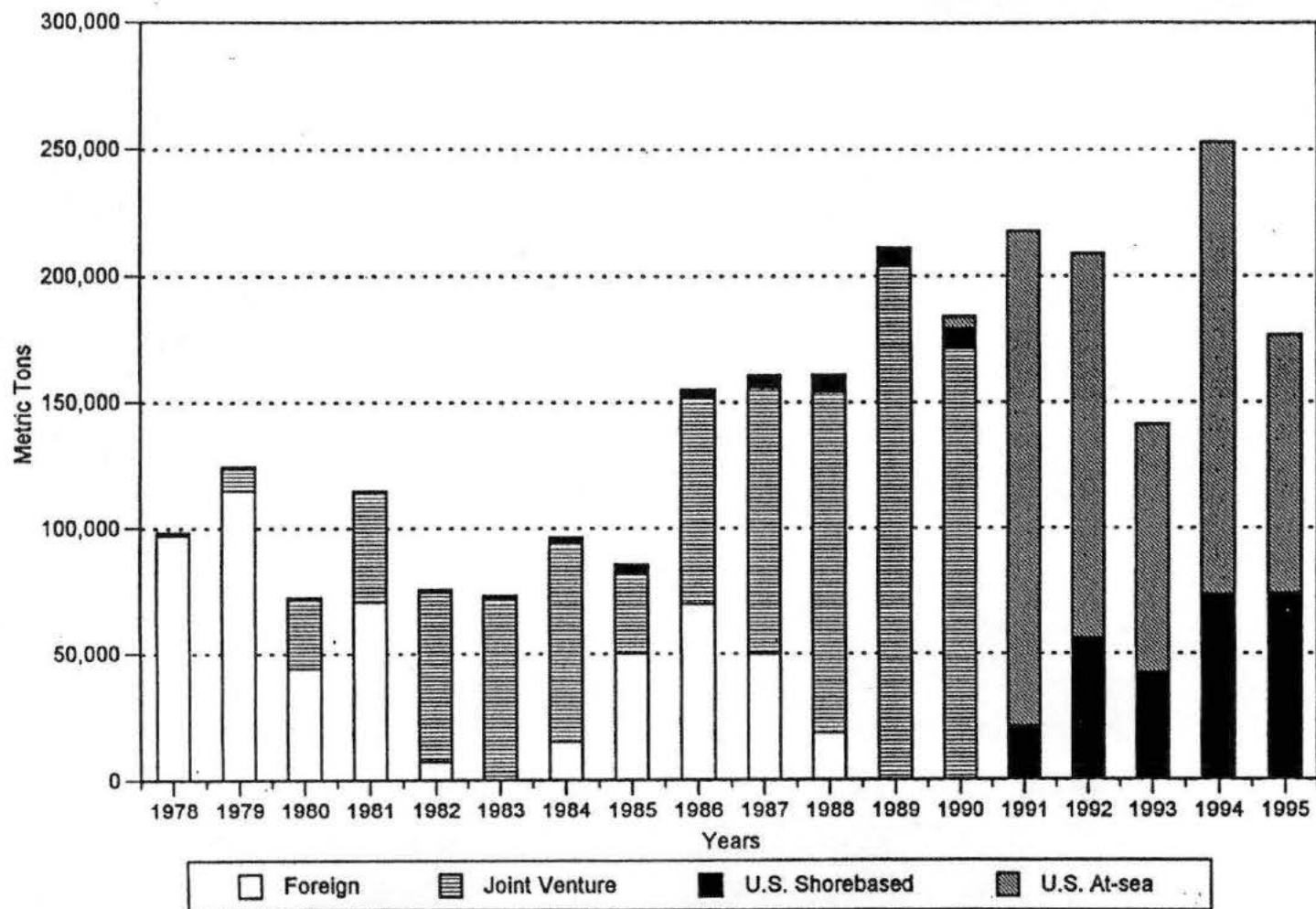


Figure 2. Catch of Pacific whiting 1978-1995.
 From: Pacific Fishery Management Council (1995, 103)

fishery into a large and economically important industry. The Fishery Conservation and Management Act created a cultural climate of fisheries development that sparked increased interest in the groundfish fishery. Further, processes occurring at the federal and regional scales interacted to allow for the growth of the fishery. Today's successes and problems within this industry must be seen within this context.

Individual fishers played a large role in the expansion of the fishery. They went out on the water, made new opportunities real, and caught fish. However, it was only within the context of political and economic structures that they were able to do so. The climate of development created by the government, definition of optimum yield by federal policy makers and regional managers, allocation of foreign fishing and processing permits, emphasis on joint ventures, and federally-backed financing programs all created the means by which the groundfish fishery could grow. Fishers themselves can neither take all the credit nor be assigned all the blame for the current situation.

The tragedy of the commons oversimplifies the problems that face fisheries. The model relies on an a-cultural, a-historical, and a-political view of individuals as independent thinkers and decision makers. In doing so, it draws attention away from the complexities of social interaction. The tragedy of the commons ignores the historically contingent context within which fishing is practiced: social structures molded the historical development of fishing. It is this complex situation that the tragedy of the commons defines as natural and inevitable individual behavior. When we rely on the tragedy of the commons as an explanatory model, we are unable to address the underlying structural causes of natural resource degradation.

APPENDIX

LIST OF ACRONYMS

AFPA	American Fishery Promotion Act
CCF	Capital Construction Fund
EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization of the United Nations
FCMA	Fishery Conservation and Management Act
FCZ	Fishery Conservation Zone
FDA	Food and Drug Administration
FMP	Fishery Management Plan
FVOG	Fishing Vessel Obligation Guarantee
GIFA	Governing International Fishery Agreement
JV	Joint Venture
MSY	Maximum Sustained Yield
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCZMA	Oregon Coastal Zone Management Association, Inc.
ODFW	Oregon Department of Fish and Wildlife
OSHA	Occupational Safety and Health Administration
OY	Optimum Yield
PCA	Production Credit Association
PFMC	Pacific Fishery Management Council
PL	Public Law
S-K	Saltonstall-Kennedy
TOC	Tragedy of the Commons
US GAO	United States General Accounting Office
USFW	United States Fish and Wildlife Service
WCFDF	West Coast Fisheries Development Foundation

LITERATURE CITED

- Alcoff, Linda, and Elizabeth Potter, eds. 1993. *Feminist Epistemologies*. New York: Routledge.
- Alverson, Dayton L. 1953. Deep-water trawling survey off the Oregon and Washington coasts (August 25- October 3, 1952). *Commercial Fisheries Review* 15 (10):5-15.
- American Fisheries Promotion Act (AFPA). 1980. *US Statutes at Large* 94:3287-3302.
- Baden, John. 1977. A primer for the management of common pool resources. In *Managing the Commons*, ed. G. Hardin and J. Baden, 137-46. San Francisco: W.H. Freeman and Co.
- Berkes, Fikret, ed. 1989. *Common Property Resources: Ecology and Community-Based Sustainable Development*. London: Belhaven Press.
- Berkes, F., D. Feeny, B. J. McCay, and J. M. Acheson. 1989. The benefits of the commons. *Nature* 340:91-93.
- Bourdieu, Pierre. 1977. *Outline of a Theory of Practice*. Translated by R. Nice. Cambridge: Cambridge University Press.
- Boyd, Rick O., and Christopher M. Dewees. 1992. Putting theory into practice: Individual transferable quotas in New Zealand's fisheries. *Society and Natural Resources* 5:179-98.
- Bromley, Daniel W., ed. 1992. *Making the Commons Work: Theory, Practice and Policy*. San Francisco: Institute for Contemporary Studies Press.
- Bureau of Governmental Research and Service. 1969. *Central Oregon Coast*. Central Lincoln People's Utility District and Lincoln, Lane, Douglas, and Coos Counties, Oregon.
- Burke, William T. 1994. *The New International Law of Fisheries: UNCLOS 1982 and Beyond*. Oxford: Clarendon Press.
- Christensen, S. Kent, and Russell M. Boshell. 1959. *Fish Marketing and Consumption in the Pacific Coast States*. United States Fish and Wildlife Service Special Scientific Report--Fisheries No. 335.
- Christy, Francis T., Jr., and Anthony Scott. 1965. *The Common Wealth in Ocean Fisheries: Some Problems of Growth and Economic Allocation*. Baltimore: Johns Hopkins Press.

- Ciriacy-Wantrup, S. V., and Richard C. Bishop. 1975. "Common property" as a concept in natural resources policy. *Natural Resources Journal* 15 (4):713-27.
- Combs, Earl R. 1979. *Prospectus for Development of the United States Fisheries*. Washington D.C.: Fisheries Development Task Force, National Oceanic and Atmospheric Administration.
- Cronon, William. 1995a. Introduction: In search of nature. In *Uncommon Ground: Toward Reinventing Nature*, ed. W. Cronon, 23-56. New York: W.W. Norton & Company.
- , ed. 1995b. *Uncommon Ground: Toward Reinventing Nature*. New York: W.W. Norton & Company.
- Crouch, Don. 1976-1977. '200 Miles' a blessing or a nightmare? *Fishermen's News*. Column running 1976-1977.
- Crush, Jonathan. 1995. Introduction: Imagining development. In *Power of Development*, ed. J. Crush, 1-23. London: Routledge.
- Division of Commercial Fisheries. 1947. *Outlook for production, distribution, and marketing in the fisheries and related industries in 1947: A summary of factors bearing on the fisheries*. United States Fish and Wildlife Service Fishery Leaflet No. 215, March 1947.
- Dove, Michael R. 1988. Introduction: Traditional culture and development in contemporary Indonesia. In *The Real and Imagined Role of Culture in Development*, ed. M. R. Dove, 1-37. Honolulu: University of Hawaii Press.
- Dyer, Christopher L., and James R. McGoodwin, eds. 1994. *Folk Management in the World's Fisheries: Lessons for Modern Fisheries Management*. Niwot, Colorado: University Press of Colorado.
- Escobar, Arturo. 1995a. *Encountering Development: The Making and Unmaking of the Third World*. Princeton: Princeton University Press.
- . 1995b. Imagining a post-development era. In *Power of Development*, ed. J. Crush, 211-27. London: Routledge.
- Farm Credit Act of 1971. 1971. *US Statutes at Large* 85: 583-602.
- Feeny, David, Susan Hanna, and Arthur F. McEvoy. 1996. Questioning the assumptions of the 'Tragedy of the Commons' model of fisheries. *Land Economics* 72 (2):187-205.
- Feeny, David, Fikret Berkes, Bonnie J. McCay, and James M. Acheson. 1990. The tragedy of the commons: Twenty-two years later. *Human Ecology* 18 (1):1-19.
- Fishermen's News. 1975. Obligation guarantee program reaches new high. *Fishermen's News* 31 (7):13.
- . 1978a. AuCoin urges wise fisheries spending. *Fishermen's News* 34 (23):1+.

- . 1978b. Mid-water trawling-- a low cost solution. *Fishermen's News* 34 (19):6+.
- . 1979a. AuCoin renews support for Pacific whiting name. *Fishermen's News* 35 (7):2.
- . 1979b. AuCoin's bill to help industry 200-mile zone. *Fishermen's News* 35 (6):3.
- . 1979c. Bottomfish in the '80s. *Fishermen's News* 35 (20):A5.
- Fishery Conservation and Management Act of 1976 (FCMA). 1976. *US Statutes at Large* 90:331-361.
- Fishery Conservation and Management Act of 1976, amendment (FCMA). 1978. *US Statutes at Large* 92:519-522.
- Food and Agriculture Organization (FAO). 1995. *Review of the State of World Fishery Resources: Marine Fisheries*. Food and Agriculture Organization of the United Nations. FAO Circular No. 884.
- Gatewood, John B., and Bonnie J. McCay. 1990. Comparison of job satisfaction in six New Jersey fisheries: Implications for management. *Human Organization* 49 (1):14-25.
- Giddens, Anthony. 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Berkeley: University of California Press.
- Gimbel, Karyn L., ed. 1994. *Limiting Access to Marine Fisheries: Keeping the Focus on Conservation*. Washington D.C.: Center for Marine Conservation and World Wildlife Fund US.
- Gordon, H. Scott. 1954. The economic theory of a common-property resource: The fishery. *The Journal of Political Economy* 62 (2):124-42.
- Gregory, Derek, and John Urry, eds. 1985. *Social Relations and Spatial Structures*. New York: St. Martin's Press.
- Grima, A. P. Lino, and Fikret Berkes. 1989. Natural resources: Access, rights-to-use and management. In *Common Property Resources: Ecology and Community-Based Sustainable Development*, ed. F. Berkes, 33-54. London: Belhaven Press.
- Hankinson Nelson, Lynn. 1990. *Who Knows: From Quine to a Feminist Empiricism*. Philadelphia: Temple University Press.
- Hanna, Susan S. 1990. The Eighteenth Century English commons: A model for ocean management. *Ocean & Shoreline Management* 14:155-72.
- Hanna, S. in press-a. Creating user group vested interest in fishery management outcomes: A case study. In *Fisheries Utilization and Policy: Proceedings of the World Fisheries Congress Theme 2*, ed. R. M. Myers, C. Zhang, M. Windsor, B. McCay, L. Hushak, and R. Muth. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.

- Hanna, Susan S. in press-b. The new frontier of American fisheries governance. *Ecological Economics*.
- Hanna, Susan, and Mohan Munasinghe, eds. 1995. *Property Rights and the Environment: Social and Ecological Issues*. Washington D.C.: The Beijer International Institute of Ecological Economics and The World Bank.
- Hanna, Susan S., and Courtland L. Smith. 1993. Attitudes of trawl vessel captains about work, resource use, and fishery management. *North American Journal of Fisheries Management* 13:367-75.
- Hannesson, Rognvaldur. 1991. From common fish to rights based fishing: Fisheries management and the evolution of exclusive rights to fish. *European Economic Review* 35:397-407.
- Haraway, Donna. 1988. Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies* 14 (3):575-99.
- Hardin, Garrett. 1968. The tragedy of the commons. *Science* 162:1243-48.
- Huppert, Daniel D. 1986. *A Primer on Limited Access Alternatives for the Pacific Coast Groundfish Fishery*. La Jolla, California: National Marine Fisheries Service, Southwest Fisheries Center.
- Jacobs, Michael. 1994. The limits to neoclassicism: Towards an institutional environmental economics. In *Social Theory and the Global Environment*, ed. M. Redclift and T. Benton, 67-91. London: Routledge.
- Johnston, R. J., Joost Hauer, and Gerald A. Hoekveld. 1990. Region, place and locale: An introduction to different conceptions of regional geography. In *Regional Geography: Current Developments and Future Prospects*, ed. R. J. Johnston, J. Hauer, and G. A. Hoekveld, 1-10. London: Routledge.
- Juda, Lawrence. 1991. World marine fish catch in the age of Exclusive Economic Zones and Exclusive Fishery Zones. *Ocean Development and International Law* 22:1-32.
- Keller, Evelyn Fox, and Christine R. Grontkowski. 1983. The mind's eye. In *Discovering Reality*, ed. S. Harding and M. B. Hintikka, 207-24. Dordrecht, Holland: D. Reidel Publishing.
- Korson, Charles S. 1986. *Economic Status of the Washington, Oregon, and California Groundfish Fishery in 1985*. NOAA Technical Memorandum, National Marine Fisheries Service, Southwest Region, NOAA-TM-NMFS-SWR-014.
- Korson, Charles S., and Richard K. Kinoshita. 1989. *Economic Status of the Washington, Oregon, and California Groundfish Fishery in 1987*. NOAA Technical Memorandum, National Marine Fisheries Service, Southwest Region, NOAA-TM-NMFS-SWR-020a.
- Lincoln Area Redevelopment Committee. 1961. *Provisional Overall Development Program for Lincoln County, Oregon*. Newport: Lincoln County.

- Lincoln County Planning Department. 1973. *Overall Economic Development Plan*. Newport: Lincoln County Planning Department.
- Maiolo, J., and M. K. Orbach. 1982. Government policy and management assumptions: Introduction. In *Modernization and Marine Fisheries Policy*, ed. J. R. Maiolo and M. K. Orbach, 1-16. Ann Arbor: Ann Arbor Science.
- Marchak, Patricia, Neil Guppy, and John McMullan, eds. 1987. *Uncommon Property: The Fishing and Fish-processing Industries in British Columbia*. Toronto: Methuen.
- McCay, Bonnie J., and James M. Acheson, eds. 1987. *The Question of the Commons: The Culture and Ecology of Communal Resources*. Tucson: The University of Arizona Press.
- McEvoy, Arthur F. 1986. *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980*. Cambridge: Cambridge University Press.
- Merchant, Carolyn. 1989. *Ecological Revolutions: Nature, Gender, and Science in New England*. Chapel Hill: The University of North Carolina Press.
- Mitchell, Timothy. 1995. The object of development: America's Egypt. In *Power of Development*, ed. J. Crush, 129-57. London: Routledge.
- Mollett, Nina, ed. 1986. *Fishery Access Control Programs Worldwide: Proceedings of the Workshop on Management Options for the North Pacific Longline Fisheries*. Fairbanks: Alaska Sea Grant. Report number 86-4.
- Murai, Sueto, Harold A. Gangmark, and Robert R. French. 1981. *All-nation Removals of Groundfish, Herring, and Shrimp from the Eastern Bering Sea and Northeast Pacific Ocean, 1964-80*. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northwest and Alaska Fisheries Center, Seattle, Washington. September 1981.
- Nadelson, Robert. 1992. The Exclusive Economic Zone: State claims and the LOS convention. *Marine Policy* 16 (3):463-87.
- National Fisherman. 1980. The 200-mile limit: has it succeeded or failed? *National Fisherman* (Nov.):14-16.
- National Marine Fisheries Service (NMFS). 1976. *Fishery Statistics of the United States 1976*. US Department of Commerce, National Oceanic and Atmospheric Administration. Pp. 221-259.
- . 1985. *Magnuson Fishery Conservation and Management Act (MFCMA): Operations Handbook*. Washington D.C.: US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.
- . 1994. *Fishing Vessel Capital Construction Fund*. Pamphlet published by the National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

- Neher, Philip A., Ragnar Arnason, and Nina Mollett. 1989. Introduction. In *Rights Based Fishing*, ed. P. A. Neher, R. Arnason, and N. Mollett, 1-10. Dordrecht, The Netherlands: Kluwer Academic Press.
- New York Times. 1980. Feb 21, p. 1, col. 4.
- Olwig, Kenneth R. 1995. Reinventing common nature: Yosemite and Mount Rushmore-- a meandering tale of a double nature. In *Uncommon Ground: Toward Reinventing Nature*, ed. W. Cronon, 379-408. New York: W.W. Norton & Company.
- Oregon Coastal Zone Management Association, Inc. (OCZMA). 1985. *Economic Adjustment Strategy for the Oregon Fishing Industry*. Newport: Oregon Coastal Zone Management Association, Inc.
- . 1988. *The Economic Landscape of the Oregon Coast*. Prepared by Hans D. Radtke and Shannon W. Davis. Newport, Oregon.
- Oregon Department of Economic Development and the Pacific Northwest Regional Commission. 1974. *Economic Analysis and Profile of the Oregon Coastal Zone*. Prepared by the Oregon Coastal Conservation and Development Commission.
- Oregon Department of Fish and Wildlife (ODFW). 1985. *Pounds and Values of Commercially Caught Fish and Shellfish in Oregon*.
- . 1992. *Pounds and Values of Commercially Caught Fish and Shellfish Landed in Oregon*.
- Oregon Employment Department. 1993. *Regional Economic Profile, Region 1*. State of Oregon Employment Department.
- Oregon Employment Division. 1987. *Research and Statistics*. State of Oregon Employment Division, Department of Human Resources.
- . 1990-1991. *Business and Economic Outlook, JTPA District 1*. Vol. 1, *Economic Structure and Analysis*. State of Oregon Employment Division, Department of Human Resources.
- Oregon Legislature. 1979. *House Joint Memorial 5*. Sponsored by Committee on Trade and Economic Development.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Pacific Fishery Management Council (PFMC). 1982. *Pacific Coast Groundfish Plan: Fishery Management Plan and Environmental Impact Statement for the California, Oregon and Washington Groundfish Fishery*. Pacific Fishery Management Council, Portland, Oregon.

- . 1984. *First Amendment and Implementing Regulations to the Pacific Coast Groundfish Fishery Management Plan Incorporating the Environmental Assessment, the Regulatory Impact Review/Regulatory Flexibility Analysis, and Requirements of Other Applicable Law*. Pacific Fishery Management Council, Portland, Oregon.
 - . 1990. *Final Amendment 4 to the Pacific Coast Groundfish Plan Including Supplemental Environmental Impact Statement, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis*. Pacific Fishery Management Council, Portland, Oregon.
 - . 1992. *Amendment 6 (Limited Entry) to the Fishery Management Plan for Pacific Coast Groundfish Including Supplemental Environmental Impact Statement and Regulatory Impact Review*. Adopted by the Pacific Fishery Management Council, September 1991, Portland, Oregon.
 - . 1993. *Pacific Whiting Allocation: Environmental Assessment and Regulatory Impact Review of the Anticipated Biological, Social and Economic Impacts of a Proposal to Allocate the Resource in 1994, 1995, 1996*. Pacific Fishery Management Council, Portland, Oregon.
 - . 1994a. *Draft Amendment 8 (Fixed Gear Sablefish Individual Quotas) to the Pacific Coast Groundfish Fishery Management Plan Including Draft Supplemental Environmental Impact Statement, Regulatory Impact Review, and Fishery Impact Statement*. Pacific Fishery Management Council, Portland, Oregon.
 - . 1994b. *Status of the Pacific Coast Groundfish Fishery Through 1994 and Recommended Acceptable Biological Catches for 1995: Stock Assessment and Fishery Evaluation*. (Document prepared for the Council and its advisory entities), Pacific Fishery Management Council, Portland, Oregon.
 - . 1995. *Status of the Pacific Coast Groundfish Fishery Through 1995 and Recommended Acceptable Biological Catches for 1996: Stock Assessment and Fishery Evaluation*. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, Portland, Oregon.
- Pacific Fishing. 1980a. Bottomfish: the fishery of the future? Part I: The fresh market. *Pacific Fishing* 1 (4):16-23.
- . 1980b. Fishermen's wives begin new marketing program. *Pacific Fishing* 1 (8):11.
 - . 1980c. Sources of vessel financing. *Pacific Fishing* 1 (4):15-16.
 - . 1981a. Deep-dwelling Dover sole, abundant Pacific flatfish. *Pacific Fishing* 2 (6):49-51.
 - . 1981b. Development foundation publishes new booklets. *Pacific Fishing* 2 (7):22.
 - . 1981c. Saltonstall-Kennedy grants announced. *Pacific Fishing* 2 (9):14.

- . 1982a. Bottomfish update: The Pacific coast plunges into bottomfish. *Pacific Fishing* 3 (11):65-71.
- . 1982b. The business side of the joint venture. *Pacific Fishing* 3 (2):11.
- . 1982c. Joint ventures: Enormous promise and broken promises. *Pacific Fishing* 3 (1):33-37.
- . 1983. Kanibo/artificial crab. *Pacific Fishing* 4 (5):38-45.
- Parfit, Michael. 1995. Diminishing returns: Exploiting the ocean's bounty. *National Geographic* 188 (5):2-37.
- Peet, Richard, and Nigel Thrift, eds. 1989. *New Models in Geography: The Political-Economy Perspective*. Vol. 1. London: Unwin Hyman.
- Peet, Richard, and Michael Watts. 1993. Introduction: Development theory and environment in an age of market triumphalism. *Economic Geography* 69:227-53.
- Porter, Doug J. 1995. Scenes from childhood: The homesickness of development discourses. In *Power of Development*, ed. J. Crush, 63-86. London: Routledge.
- Public Law 95-257, Amends Title XI of the Merchant Marine Act of 1936. 1978. *US Statutes at Large* 92: 194.
- Public Law 95-443, Amends the Farm Credit Act of 1971. 1978. *US Statutes at Large* 92: 1066.
- Pudup, Mary Beth. 1988. Arguments within regional geography. *Progress in Human Geography* 12 (3):369-90.
- Redclift, Michael. 1994. Sustainable development: Economics and the environment. In *Strategies for Sustainable Development: Local Agendas for the Southern Hemisphere*, ed. M. Redclift and C. Sage, 17-34. Chichester, England: John Wiley & Sons.
- Rees, Judith. 1985. *Natural Resources: Allocation, Economics and Policy*. London: Methuen.
- Rettig, R. Bruce, and J. C. Ginter, eds. 1978. *Limited Entry as a Fishery Management Tool: Proceedings of a National Conference to Consider Limited Entry as a Tool in Fishery Management*. Seattle: Washington Sea Grant.
- Roberts, Rebecca S., and Jacque Emel. 1992. Uneven development and the tragedy of the commons: Competing images for nature-society analysis. *Economic Geography* 68:249-71.
- Said, Edward. 1978. *Orientalism*. New York: Pantheon Books.
- Scheman, Naomi. 1993. *Engenderings: Constructions of Knowledge, Authority and Privilege*. New York: Routledge.

- Scovazzi, Tullio. 1985. Explaining exclusive fishery jurisdiction. *Marine Policy* 9 (2):120-25.
- Shafer, Sheila. 1981. Widow rockfish: Will booming midwater fishery last? *Pacific Fishing* 2 (9):45-48.
- Smith, M. Estellie. 1982. Fisheries management: Intended results and unintended consequences. In *Modernization and Marine Fisheries Policy*, ed. J. R. Maiolo and M. K. Orbach, 57-93. Ann Arbor: Ann Arbor Science.
- . 1990. Chaos in fisheries management. *Marine Anthropological Studies* 3 (2):1-13.
- Smith, Suzanna, and Michael Jepson. 1993. Big fish, little fish: Politics and power in the regulation of Florida's marine resources. *Social Problems* 40:39-49.
- Snead, Larry L. 1989. A US perspective on access to fisheries resources. *Marine Fisheries Review* 51(1):15-17.
- Soja, Edward W. 1985. The spatiality of social life: Towards a transformative retheorisation. In *Social Relations and Spatial Structures*, ed. D. Gregory and J. Urry, 90-127. New York: St. Martin's Press.
- Sproul, John T., and Lewis E. Queirolo. 1994. Trade and management: Exclusive Economic Zones and the changing Japanese surimi market. *Marine Fisheries Review* 56 (1):31-39.
- Stansby, M. E. 1945. *Opportunities for small business in the fisheries of the Pacific northwest and Alaska*. United States Fish and Wildlife Service Fishery Leaflet No. 107, February 1945.
- Stencel, Sandra, ed. 1992. Marine Mammals vs. Fish. *CQ Researcher* 2 (32):737-60.
- Thrift, Nigel. 1985. Flies and germs: A geography of knowledge. In *Social Relations and Spatial Structures*, ed. D. Gregory and J. Urry, 366-403. New York: St. Martin's Press.
- US Comptroller General. 1973. *Need to Establish Priorities and Criteria for Managing Assistance Programs for US Fishing-Vessel Operators*. Washington D.C.
- US General Accounting Office (US GAO). 1985. *Uses of Saltonstall-Kennedy Fisheries Development Funds*. US GAO Report. Washington D.C.: The Office.
- US House. 1977. *200-Mile Fishery Oversight-- Joint Ventures: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 95th Cong., 1st sess. Serial No. 95-19.
- . 1978. *200-Mile Fishery: Hearings on 200-mile Fishery Authorization and Implementation of the 200-mile Fishing Zone Act-- Joint Ventures before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 95th Cong., 2d Sess. Serial No. 95-38.

- . 1979. *Fisheries Miscellaneous: Hearings on Fisheries Development Act Oversight before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 96th Cong., Serial No. 96-45.
 - . 1980a. *American Fisheries Promotion: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 96th Cong., 2d sess., Serial No. 96-44.
 - . 1980b. *Fisheries Miscellaneous: Hearings on United States- Soviet Fishing Agreement before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 96th Cong., Serial No. 96-45.
 - . 1981. *Fish and Wildlife Miscellaneous, Part 2: Hearings on American Fisheries Promotion Act Oversight before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 97th Cong., 1st sess., Serial No. 97-7.
 - . 1986. *Guarantee of Obligations (Title XI): Hearings on Guarantee of Obligations (Title XI) before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries*. 99th Cong., 2d sess., Serial No. 99-51.
- US Senate. 1975. *Economic Problems of Small Business in the Northwest United States: Hearings before the Select Committee on Small Business*. 94th Cong., 1st sess.
- . 1978. *Report on Fishing Vessel Loan Guarantees*. 95th Cong., 2d sess., S.R. 95-703.
 - . 1993. *Federal Financial Programs Affecting Commercial Fisheries: Hearings before the National Ocean Policy Study, Committee on Commerce, Science, and Transportation*. 103rd Cong., 1st sess.
- Ward, William, and Priscilla Weeks. 1994. Resource managers and resource users: Field biologists and stewardship. In *Folk Management in the World's Fisheries: Lessons for Modern Fisheries Management*, ed. C. L. Dyer and J. R. McGoodwin, 91-113. Niwot, Colorado: University Press of Colorado.
- Warren, Brad. 1995. How Oregon turned whiting into gold. *National Fisherman* 76 (6):16-18.
- Watts, Michael J. 1993. Development I: Power, knowledge, discursive practice. *Progress in Human Geography* 17 (2):257-72.
- Weber, Peter. 1995. Protecting oceanic fisheries and jobs. In *State of the World 1995*, ed. L. Starke, 21-37. New York: W.W. Norton & Company.

West Coast Fisheries Development Foundation (WCFDF). 1982. *System Strategy for California, Oregon, and Washington Fishing Industry and Public Ports Infrastructure Needs and Assessment, Final Report*. Prepared by Kramer, Chin & Mayo, Inc. for the West Coast Fisheries Development Foundation; US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service; and the Economic Development Administration.

Woodworth, Donald C. 1994. The Exclusive Economic Zone and the United States insular areas: A case for shared sovereignty. *Ocean Development and International Law* 25:365-90.

Yuska, Joe, and Sandy Ridlington, eds. 1985. *Underutilized Species and Seafood By-Products: Proceedings of a Workshop*. Corvallis, Oregon: Oregon Sea Grant. ORESU-W-85-002.