

## Fishing in a Sea of Court Orders: Puget Sound Salmon Management 10 Years after the Boldt Decision<sup>1</sup>

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### ABSTRACT

The United States obtained title to nearly all of western Washington from the Indians in the mid-1850's in exchange for a small amount of money and the promise that the Indians would be able to go on fishing for salmon as they always had "in common with all citizens . . ." This promise presented no difficulty as long as people were scarce and fish were abundant, but the situation changed in this century and harvestable fish had to be allocated between Indians and non-Indians. Judge George Boldt of the federal district court divided the fish evenly in 1974, and since then a unique fishery management system has evolved under court supervision. The goals of this system are to maintain the salmon runs and divide the harvests evenly. These objectives are achieved by a number of court orders that require the State of Washington and 21 Indian tribes to agree on methods for estimating run sizes and setting escapement goals. The total harvestable number from each run is then determined as the excess (if any) of run size over escapement goal, and each side is left to take its half however it chooses. If any matter is disputed, either before or during the season, the parties can take it to the Fisheries Advisory Board, a body established by the court to consider technical and management questions. Most disputes are settled there either by the parties themselves or by the court's Technical Advisor who chairs the meetings, although either party has the right to take any dispute to court after a Board hearing. At present (10 years after the original district court decision), Puget Sound salmon management is a success overall, at least in the author's opinion. Some problems remain but the prospects for solving them are better than for most other fisheries.

The Boldt decision of 1974 established the principle that Indian tribes were entitled by treaty to a fair chance to catch a fair share (eventually set at half) of the annual harvest of salmon and steelhead (*Salmo gairdneri*) runs to Puget Sound, an inlet of the Pacific Ocean in the State of Washington. The ruling marked the end of a long legal struggle by the tribes and the federal government

for state recognition of Indian fishing rights. It also marked the beginning of a long, joint effort by state and tribal fishery managers, mediated by the court, to put the principle of equal sharing into practice in managing a multitude of interacting fisheries on overlapping runs.

The parties have negotiated procedures for handling various management issues over the years, and these agreed procedures have been adopted as court orders. In this fashion, a set of rules has accumulated that by now provides detailed guidance not only on the goals and objectives of management but also on the data to be collected and the quantities to be estimated in deciding on regulations. It is these detailed rules

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enforced by the court that account for a management process that is orderly and harmonious on the whole, despite some continuing disputes and some residual animosity between the two sides.

The element of court supervision makes Puget Sound salmon management quite different from other regimes, such as those adopted by international commissions or national governments (e.g., the regional councils in the United States). In some ways, the Puget Sound system works much better for the fishery manager, the fishery biologist, and the fish. The availability of court machinery for the speedy resolution of disputes means that hard questions do not drag on and on until some compromise is worked out or the fishery collapses, as tends to happen under other kinds of management. On the other hand, the court rules are difficult for managers and biologists to learn and check because they are scattered among 10 years of court orders, some of which were amended, some superseded in whole or in part, and some never widely circulated. Some of the rules are not even in court orders but rather in memoranda to the court or simply matters of unwritten custom. No one has codified the workings of the system and, as a result, it is common even for frequent participants to be surprised by the invocation of some rule or requirement of which they were unaware.

At present, the Puget Sound management process is good but not perfect. Some essential elements of salmon management (e.g., run management periods and incidental catches) are not covered by the rules. Other matters (particularly fishing on mixed stocks) are not covered satisfactorily.

This article was written to provide, if not a codification, at least a coherent account of how the Puget Sound salmon fisheries are managed today and how disputes are resolved, along with a discussion of current problems. This must be a personal account in places, as there is some doubt in some quarters about some of the accumulated court orders. In writing this article, the author has endeavored to adhere scrupulously to the rulings of the court in every particular and to provide ample citations. Nevertheless, in view of the differing interpretations of some rulings, the reader is advised to take this account as an introduction to the subject and not as the final word.

## HISTORICAL BACKGROUND

Fifteen thousand years ago there were no salmon in Puget Sound. There was a glacier—really the southwest lobe of the Cordilleran ice sheet that covered most of western Canada. Some 12,000 years ago the climate of the area turned warm and dry, and hunters from the interior expanded into the Puget Sound lowland exposed by the retreating glacier. They did not take up fishing right away, either because they lacked the skill or because the salmon and steelhead had not become established. Between 5 and 10 thousand years ago, however, the people around Puget Sound took up fishing in earnest, as evidenced by the sudden appearance of prodigious quantities of salmon bones at sites from this period (Borden 1979).

The Northwest Coast Indians (occupying an area from northern California to southeast Alaska) developed over time a prosperous maritime culture based on the steady stream of food provided by the year-round salmon and steelhead runs. Along with plenty of food, these runs provided trade goods and leisure time for the development of the most advanced culture north of Mexico in art, trade, and technical specialization at the time of European contact (Joseph 1969).

The immensely profitable trade in sea otter pelts first brought Europeans to western Washington around 1780. As both the Europeans and the Indians spoke a bewildering assortment of languages, a pidgin called "Chinook jargon" evolved rapidly for bartering purposes. Composed of a few hundred words drawn from various European and Indian tongues, this pidgin spread to intertribal trade as well. After the beginning of American settlement in the mid-nineteenth century, it was even pressed into service for treaty negotiations between the United States and the tribes.

The United States presented itself officially to the Puget Sound tribes in the person of Isaac Ingalls Stevens, the first Governor and Superintendent of Indian Affairs of Washington Territory, who summoned the Indians to a series of meetings in 1854 and 1855 where they were invited to sell their lands to the United States at a price of something less than half a cent per acre. Having no real choice on that point, the Indians ceded nearly all of western Washington to the whites but, while giving up almost everything,

they insisted on keeping two things for themselves and their descendants: their homelands and the right to fish. The government would have preferred to settle all of the Territory's Indians on one or two large reservations, but the Puget Sound tribes refused to leave their homelands, and more importantly, their home waters where they fished (American Friends Service Committee 1970). As a result, they kept a number of mostly small enclaves around Puget Sound that, with a few exceptions, are today's Indian reservations (Fig. 1). The Indians also insisted on the right to carry on the fisheries that sustained them, both on and off their reservations. Governor Stevens negotiated five treaties with western Washington Indians and in each one the treaty fishing right was stated as follows:

"The right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians, in common with all citizens . . . ."

Because the Indians did not speak English, this provision (along with the rest of each treaty) was first translated into Chinook jargon by Governor Stevens' interpreter and then from Chinook jargon into the various tribal languages by Indian interpreters. The precise meaning of the treaty right (particularly the words "in common with") has since been debated at length by learned lawyers, but it is obvious that only the most general of meanings could have been conveyed to the Indians by a process of two-stage translation through a commercial pidgin. At any rate, the federal courts have concluded from the record of the treaty negotiations that both Governor Stevens and the Indians believed the tribes were reserving the right to continue fishing as they always had, without restriction or limitation (384 F. Supp. at 334).<sup>2</sup> As the Supreme Court noted in its decision, there is no evidence that Governor Stevens was any better versed in legal subtleties than were the Indians (443 U.S. at 677).

For a generation or two, no one argued with that interpretation. Fish were abundant and peo-

ple were few, mostly because the Indian population around Puget Sound had been halved by European diseases between 1780 and treaty times, and their decline continued thereafter (384 F. Supp. at 352). There were only about 10,000 people in western Washington in the mid-1850's, three-quarters of them Indians (443 U.S. at 664). Gradually, however, white settlers occupied the land, fish became valuable with the development of modern canning techniques, and the new citizens challenged the Indians' fishing rights at their "usual and accustomed grounds and stations." In *U.S. v. Winans* (1905), the U.S. Supreme Court upheld the right of treaty Indians to conduct their traditional fisheries on what had become private property; in *Tulee v. Washington* (1942), it held the Indians exempt from state license fees but not from state conservation regulations.

The question of conservation became paramount in this century as non-Indian trap, net, and troll fisheries (commercial and recreational) developed apace in the open ocean and inside waters. Fishing in saltwater, the non-Indians intercepted returning salmon before they reached the Indian fisheries which were and are now located mostly in or near the home rivers. By the time the fish reached the rivers, there usually were only enough left to provide the required number of spawners. The Indians were then prohibited from fishing for conservation reasons after the non-Indians had taken all of the available surplus. The tribes disputed this arrangement in a series of federal court cases: *Maison v. Confederated Tribes of the Umatilla Indian Reservation* (1963); *Puyallup Tribe v. Dept. of Game of Washington* (1963); *Sohappy v. Smith* (1969); *Puyallup Tribe v. Washington Department of Game (Puyallup II)* (1973). The outcome of these suits was that the State of Washington not only had the authority to regulate Indian as well as non-Indian fisheries for conservation purposes but also that, in so doing, it was obliged to provide a "fair share" of fish to treaty Indian fisheries.

The task of reducing these principles to practice fell to George H. Boldt, Senior Judge of the U.S. District Court for western Washington, who heard the suit brought in 1970 by the United States against the State of Washington in defense of Indian fishing rights secured by the Stevens treaties. In rendering his final decision in 1974 after the tribes, the state, and the United States

<sup>2</sup> Many of the citations in the text are standard references to U.S. federal court proceedings. Specifically, 384 F. Supp. 312 and 459 F. Supp. 1020 refer to the original Boldt case and subsequent court orders, respectively. Similarly, 520 F. 2d 676 was the 9th Circuit Court of Appeals opinion on the Boldt case, and 443 U.S. 658 was the U.S. Supreme Court decision.

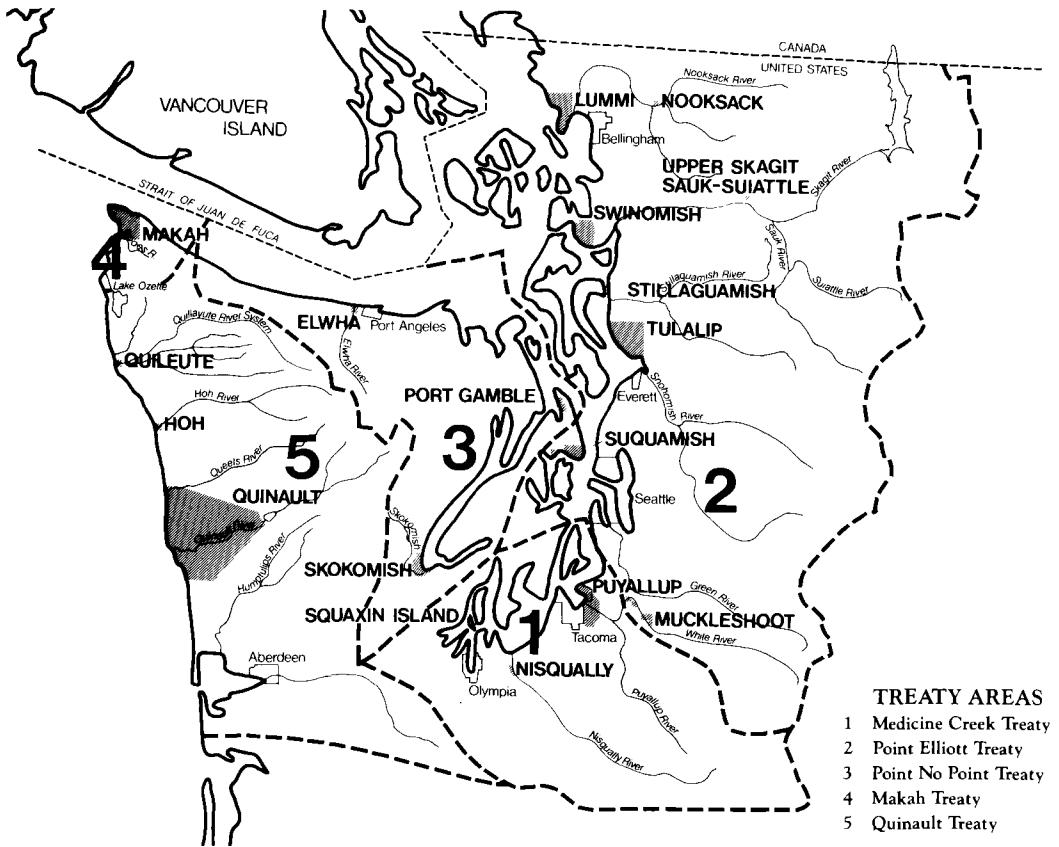


Figure 1. Western Washington, showing areas covered by the various Stevens treaties (numbered) and Indian reservations (shaded). Courtesy Northwest Indian Fisheries Commission.

had presented a great mass of testimony, Judge Boldt aimed to settle the treaty fishing issue once and for all:

“The ultimate objective of this decision is to determine every issue of fact and law presented and, at long last, thereby finally settle, either in this decision or in appeal thereof, as many as possible of the divisive problems of treaty right fishing which for so long have plagued all of the citizens of this area, and still do.”

Judge Boldt’s decision, as modified slightly on appeal, was that the Indians were entitled to the opportunity to catch enough fish to provide a “moderate living,” up to a maximum of half the harvestable number of fish in each run. (This number was defined to mean the number in excess of the required escapement of spawners.) In

practice, this standard was deemed to mean half the harvestable number of every run, as none of the tribes was deemed to be so well off as to be in danger of exceeding a “moderate living” if it got as much as half the catch (506 F. Supp. at 208). Like others who have reviewed the legal history of the treaties (e.g., Finnigan 1975, Landau 1980, Vessels 1980), Judge Boldt found no legal justification for the Supreme Court’s assertion in *Puyallup II* that the State possessed authority to regulate treaty fisheries for conservation purposes, but he dutifully incorporated it into his decision (384 F. Supp. 312, 334–339). Except for the occasional exercise of that authority, which he strictly limited, the State was to leave the Indians free to take their share of each run in a place and manner of their own choosing (384 F. Supp. at 385).

The federal district court reserved continuing jurisdiction over the case, and it has often been called upon to exercise it. Shortly after rendering its decision in 1975, the court ordered the parties (i.e., the United States, the tribes, and the State agencies concerned with salmon and steelhead management) to exchange information and work out interim procedures implementing the decision (459 F. Supp. at 1035). A more detailed set of salmon management procedures for Puget Sound, called the Puget Sound Salmon Plan, later was developed by the parties and adopted by the court in 1977 (459 F. Supp. 1020, 1107–1112). Basically, these procedures required the State and the tribes to make a joint determination of harvestable numbers and then manage their respective fisheries accordingly. Frequently, however, the two sides disagreed as to harvestable numbers or specific regulations and the court was urgently called upon to decide the issues. To minimize proceedings of this sort, for which it was not well suited, the court quickly established a body called the Fisheries Advisory Board (consisting of one voting member from the State and one from the tribes) to advise the court on technical matters and to intercept all technical disputes before they were heard by the court. The court's Technical Advisor for the case was appointed the non-voting chairman, with the duty of reporting all agreements reached in the Board and, at the request of the court or any party, his own analysis and recommendation concerning any matter on which the Board members could not agree.<sup>3</sup> Since its establishment in 1975, the Board has handled scores of issues every year, with the vast majority being settled either by agreement or by the chairman's recommendation without involving the court itself.

While the federal district court was overseeing the implementation of its decision, the Washington State courts were repeatedly overturning it in suits brought by non-Indian fishing interests. The federal court would then quash the state court rulings. When the Washington State Supreme Court heard the issue, it boldly ruled in

1977 that the federal court's decisions were not correct, not constitutional, and not binding on State officials.<sup>4</sup> Caught in the middle, the State agencies deferred to the State courts and ceased to regulate fisheries in accordance with the Boldt decision. Obligated to enforce its own decision, the federal court took over direct management of salmon and steelhead fisheries in the case area with the assistance of federal agencies, specifying in detail the shares of each run to be taken in 1977 by each side (459 F. Supp. 1020, 1097–1103). In a similar order for 1978 and subsequent seasons (Memorandum Order and Preliminary Injunction re Salmon Allocation for 1978 and Subsequent Seasons, signed 11 August 1978 and later amended in several respects), the court further provided that whenever the two sides on the Fisheries Advisory Board could not agree on a proposed regulation opening or closing any fishery, Indian or non-Indian, they should follow the recommendation of the chairman unless and until the matter was brought to court for a ruling. As a result of this order, the chairman, in addition to providing advice on technical matters, became responsible for applying the principles of the Boldt decision to daily disputes over fishery management—but subject to judicial review.

The United States Supreme Court put an end to the worst of the controversy in 1979 by affirming the Boldt decision with only slight alterations (443 U.S. 658). The vote was 6-3, with the dissenters contending, as had the State, that the phrase "in common with" was only intended to assure the Indians access to their traditional fishing places, not to assure them a fixed proportion of the catch. The State agencies resumed managing fisheries according to the rules finally decided, and the federal district court resumed ruling on questions of implementation as they arose rather than implementing its own management regime. After 5 years of conflict, a measure of calm was restored to the fisheries and the management process became reasonably routine.

#### ELEMENTS OF RUN MANAGEMENT

Two major issues dominated court decisions on treaty fishing: assuring an adequate escape-

<sup>3</sup> Until 1982, a single Technical Advisor covered the entire case area (and the Columbia River). Then separate advisors were named for Puget Sound (including the Strait of Juan de Fuca), the Washington outer coast, and the Columbia River. The author was Puget Sound advisor during the 1982 and 1983 seasons.

<sup>4</sup> The cases were *Puget Sound Gillnetters v. Moos*, 88 Wash. 2d 677, 565 p. 2d 1151 (1977), and *Washington State Commercial Passenger Fishing Vessel Association v. Tollefson*, 89 Wash. 2d 276, 571 p. 2d 1373 (1977).

ment of spawners to maintain the runs, and assuring a fair share of the catches to the Indians. The same two issues, briefly titled conservation and allocation, now dominate State and tribal decisions on managing each year's fisheries. The aim of management is to estimate the size of each run, subtract the escapement goal to obtain the harvestable number, and then allow each side to harvest its half as it chooses (384 F. Supp. at 385). The system is simple in principle, but in practice there are a number of conflicts and interactions that make it quite complicated. The reasons will be clear from a detailed consideration of seemingly simple things like escapement goals and estimates of run size.

### Escapement Goals

There are five species of salmon that spawn in Puget Sound tributaries: chinook, also called king or spring salmon (*Oncorhynchus tshawytscha*); sockeye or red salmon (*Oncorhynchus nerka*); pink or humpback salmon (*Oncorhynchus gorbusha*); coho or silver salmon (*Oncorhynchus kisutch*); and chum or dog salmon (*Oncorhynchus keta*). The first chinook salmon make their way from the open Pacific into Puget Sound in early spring. The other species follow through the summer and fall in the order listed in overlapping runs lasting 1 to 5 months. The last chum salmon enter the Nisqually River at the southern end of the Sound in mid-January. Steelhead, similar to salmon in size and habits, run mostly in autumn and winter, although there are summer steelhead runs in some rivers.

Fishery managers everywhere normally try to deal separately with distinct breeding populations called stocks. Pacific salmon are famous for returning to spawn in the locale of their birth, even to the point of seeking out very small natal streams in very large river systems like the Columbia and the Skagit. On biological grounds, therefore, the Puget Sound runs should be treated as a large number of (mostly small) stocks for conservation purposes, but this is not practical. Instead, escapement goals are set for each of the major rivers draining into the Sound (e.g., Dungeness, Nooksack, Stillaguamish, Puyallup). A single escapement goal is set for a group of small streams in some areas (e.g., "miscellaneous South Sound tributaries"), but the great majority of returning fish are covered by goals set for individual drainages.

Stocks also are distinguished by run timing.

Most sockeye salmon, pink salmon, and coho salmon runs in the Sound consist of single waves of fish that pass through the fisheries to the spawning grounds within a period of only a month or two, but chinook and some chum salmon runs are much more prolonged, with more or less distinguishable component waves of fish that differ in spawning habits as well as run timing. For this reason, separate goals are set for spring chinook and for summer-fall chinook salmon throughout the Sound—and for early, normal, and late chum salmon in some parts.

Escapement goals for naturally spawning fish are decided in various ways, according to the life history of each species and the information available on each run. The Puget Sound Plan requires setting goals that will "maximize the biomass of juvenile outmigrants" (and therefore subsequent recruitment to the fisheries, barring density-dependent marine survival) (459 F. Supp. at 1110). Some goals have been set accordingly on the basis of habitat inventories and some fairly controversial estimates of production rates per unit of habitat and per spawning female. In other cases, the goal simply has been set at the average level of past escapements judged to be satisfactory. Given adequate data, both sides eventually would favor setting escapement goals that maximize the harvestable number according to the estimated spawner-recruit relationship.

Escapement goals for chinook salmon and coho salmon runs on Washington's outer coast (i.e., in the Queets, Hoh, and Quillayute rivers) have been the subject of numerous disputes, two court-ordered workshops, and a major court case (*Hoh v. Baldrige*) over federal management of the ocean salmon fisheries outside the State's jurisdiction. In these matters, the State generally has favored setting fixed escapement goals on the basis of the estimated productive capacity of each river system. The tribes have proposed goals based on estimated spawner-recruit relationships in some cases and, as a general policy, have advocated a deliberate variation of escapement in order to obtain better data. Both approaches are fraught with technical problems. In 1983, this long-running debate moved into Puget Sound in a dispute over Skagit coho salmon. The management issue was settled there by the Puget Sound Plan's requirement, right or wrong, that escapement goals be set so as to maximize juvenile production.

Because catches in some marine areas may comprise fish from several runs, it would be a

knotty problem at best to achieve the escapement goal of each and every one of the natural runs discussed so far. The problem is further complicated by hatchery fish which account for many or most of the returns of some species in some parts of the Sound. Escapement goals are set for hatchery runs on the basis of the capacity of each facility and overall program objectives, the remainder being harvestable. Only a small fraction of hatchery runs normally is required for artificial propagation, while a much larger fraction of natural runs is needed for natural reproduction owing to the much higher mortality of early life stages in the wild. As a result, a choice has to be made between natural and hatchery harvest rates in managing the fisheries that catch fish of both kinds bound for the same river. If the needs of the natural fish are given priority, the natural escapement goal will be met, but there will be a substantial excess return to the hatchery of fish that will be in poor condition and therefore of little value by the time they get there. These fish could be harvested earlier in good condition, but only by fishing in salt water at a rate that would allow very few natural fish to reach their spawning grounds.

Making this choice is necessarily one of the first steps in determining management measures. The fisheries on a specific run can be managed at the hatchery harvest rate if both sides agree, which in effect means writing off the contemporaneous wild run or, in the words of the Puget Sound Plan, declaring it "non-viable." On the other hand, the parties may agree that a natural run is "viable," which requires that an escapement goal be set for it and that the fisheries be managed to achieve the goal. Needless to say, hatchery programming attempts to avoid having hatchery runs return in company with viable natural runs.

### Run-Size Estimates

Before a run, no one can tell how large it will turn out to be but rough pre-season forecasts are made in a variety of ways, ranging from the simple average of recent run sizes to predictive models incorporating brood-year escapements and environmental conditions. These pre-season forecasts serve as run-size estimates until catches (if any) provide a more reliable indication of run size as the season progresses.

Like pre-season forecasts, in-season estimates (usually called "updates") are made in various

ways, but all are based on historical relationships between run size and catch rates in commercial or test fisheries. In some cases, the run-size estimate is based simply on the cumulative catch up to a certain date; in others, on cumulative values of catch per effort (with effort almost always measured in numbers of landings). A small but increasing number of runs are gauged by fitting a parametric curve to the apparent entry pattern so that annual variations in run timing are estimated along with run size. By now, quite reliable in-season updates have been found for many but by no means all runs.

In order for an in-season update to measure the size of the run to an individual river, the catches on which it is based must consist predominantly of fish bound for that river. For this reason, all updates are based on catches in the so-called "terminal area" of each run, which is typically the river itself and the immediately adjacent marine area. Consequently, the in-season updates generally measure the size of the runs entering the terminal areas—after some catches already have been taken from them in fisheries on mixtures of stocks travelling together on the thoroughfares of migration along the Pacific Coast, through the Strait of Juan de Fuca, and down the main channel of Puget Sound.

Strictly speaking, the updates provide an estimate of the sum of commercial catches in the terminal area, reported in-season, and escapement to the spawning grounds, estimated by stream surveys conducted after the fishing season. A few other components, not similarly reported or estimated, are then added on to provide an estimate of the total run entering the terminal area. The "add-ons" are freshwater sport catches and net dropouts (fish killed by gill nets but not landed for one reason or another).

To arrive at an estimate of the total size of each run, it is necessary to add to the terminal run size the catches taken from the run on its way through the mixed-stock areas. These are of two kinds:

(1) Pre-terminal net catches in the Strait of Juan de Fuca and Puget Sound. Projections of such catches from each run are added to the terminal run size. This augmented run size is called the inside run size, or the run entering Puget Sound; for sockeye salmon and chum salmon, which are not taken in great numbers on hook and line in salt water, it is the total run size.

(2) Prior interceptions by commercial, ocean

troll fisheries and by sport fisheries in the ocean and inside waters. These fisheries take fair numbers of pink salmon on occasion, but usually their catches are exclusively chinook salmon and coho salmon. The fishermen are predominantly non-Indian, although Indian participation has been increasing in recent years. It is difficult to estimate the effect of these fisheries on the size of the various Puget Sound runs because they: (1) operate on a mixture of stocks (in the ocean this includes fish not even bound for Puget Sound); (2) take immature as well as mature fish; and (3) inflict a substantial rate of incidental mortality. Incidental deaths are fish killed but not landed. Mostly they are fish below the minimum size limit that are hooked, boated, and released, with a third or so dying from the experience. To see why the effect of these fisheries on inside run sizes is so difficult to estimate, consider the case of a sublegal chinook salmon caught in the ocean by a sport fisherman. When released, it may or may not die of the hooking wound. If it survives, it may succumb to natural mortality or it may wander north and be caught by a Canadian troller. If it does neither, it may or may not mature in the current year and join the current year's run of mature fish. If it does not, it may be caught by a Washington troller next year or on the inside by a gillnetter, and so on year by year.

The task of working out the effect of all these possible outcomes on the final size of Puget Sound runs (i.e., inside run sizes) of chinook salmon and coho salmon is done by a very large computer model of the ocean and Puget Sound fisheries (described by F. C. Johnson in a 1978 report to the Washington Department of Fisheries entitled "A model for salmon fishery regulation analysis—II"). Basically, the model infers from recaptures of marked salmon by the ocean and inside fisheries what would be the inside run size in the absence of ocean and inside sport fisheries. This run, which in the nature of things would consist entirely of mature fish, is called the adult equivalent run. The model calculations show that a fish caught (or killed) by the ocean or sport fishery does not reduce the adult run by a whole fish because it might very well die some other way before maturing, even in the absence of those fisheries.

The adult equivalent run is the working estimate of the total run size bound for each river. This estimate is controversial because the problem is so complicated that, in practice, some ap-

proximations have to be used, and reasonable people can and do disagree as to what approximations are best. However calculated, it is an estimate of prior interceptions from each run that completes the process of run-size estimation.

### Harvestable Numbers and Shares

The treaty (Indian) and non-treaty (non-Indian) fisheries are entitled to catch one-half of the harvestable number of (adult-equivalent) fish, which is the excess of the (adult-equivalent) size of each run over its escapement goal. For purposes of management inside Puget Sound, first the adult-equivalent ocean interceptions (mostly non-treaty) are subtracted from each share, then the estimated preterminal inside net catches (which are more evenly divided). The estimate of the freshwater sport catch then is subtracted from the non-treaty share. The remainders in each share are the numbers of fish harvestable in the terminal area by both sides' commercial net fisheries (including dropouts) and by Indian ceremonial and subsistence fisheries (i.e., non-commercial Indian fisheries). It is by controlling these fisheries that conservation and allocation goals for individual runs finally are achieved.

Looked at another way, each side's half of the harvestable number of each (adult-equivalent) run is taken in a series of fisheries: ocean troll, ocean sport, inside sport, preterminal net, terminal net, freshwater sport, ceremonial, and subsistence. There is one more category not yet mentioned and that is incidental catch. For example, the first chum salmon may arrive in a terminal area at the end of August, but the bulk of the run will not pass through until October. Meanwhile, September is the coho salmon season and September fisheries will be managed to achieve coho conservation and allocation goals, while a few chum salmon will be caught incidentally. On the other end, a few late chum salmon will be caught incidentally in steelhead fisheries after the bulk of the chum salmon run has passed. Like other catches that are difficult to control, an estimate of incidental catches before and after the main fishery on each run is subtracted from the number harvestable in terminal net fisheries to achieve the desired goals.

### Management Periods

During the major part of the coho salmon run, salmon fisheries are managed to achieve coho conservation and allocation goals, even though

some late chinook salmon and some early chum salmon also are taken incidentally in the fisheries. As October fades into November, however, the coho salmon run tails off, the chum salmon run builds, and management turns to achieving chum conservation and allocation goals.

Salmon runs overlap considerably so that an important part of the management process is deciding which species will be the object of management at a particular time and place, and which species will be treated as incidental. This is done by defining a management period for each run, which should be the period during which the bulk of the run passes through a given area. One practice is to estimate from catch records the period during which the central 80% of a run passes through a given area.

There can be gaps or overlaps between management periods determined solely on the basis of run timing. Gaps can be closed up simply by extending management periods—and they are—but overlaps are a problem. For example, suppose there is a week or so of overlap between the central 80% of the coho and chum runs in a particular area (as there is), and that in a particular year a strong chum salmon run follows a very weak coho salmon run with no harvestable fish. Should the chum salmon opening be delayed to protect coho salmon? That could mean wasting harvestable chum salmon, or skewing the subsequent timing of the chum run by targeting fisheries on the later portion of the chum run. Should an intense chum salmon fishery be permitted to open on schedule when the coho salmon run, needing protection, will unavoidably be harvested at the same rate?

These are still open questions. Unfortunately there is no court order that deals with how management periods should be set, or how gaps and overlaps should be handled. These matters are being discussed by the parties and eventually should be covered by an agreed court order, as escapement goals and run-size estimates are now, but they will continue to be a problem until then.

### Regions of Origin

Escapement goals are set for a large number of rivers and hatcheries, many of the runs being small. It is worthwhile to try to achieve every one of those goals, but it is not worthwhile to try to achieve equal sharing of every one of those runs between Indian and non-Indian fishermen.

On the other hand, allocation goals have to be set on a scale smaller than the whole Sound because the various tribes are not free to fish anywhere they please. The Stevens treaties assured them the right “to take fish at their usual and accustomed grounds and stations . . .,” and each tribe’s “usual and accustomed” area has been defined accordingly by the court on the basis of historical accounts of the tribes’ fishing places at the time of the treaties. Thus, the tribes of southern Puget Sound can exercise their treaty rights there but not in the Strait of Juan de Fuca. For the Makah and Lower Elwha Klallam Tribes, the reverse is true. Some tribes are restricted to a single river.

As a practical solution, the court has ordered that allocation be achieved for each species in each of seven regions of origin, which effectively divides the catch between the two sides all during the season and all around Puget Sound. Runs from different rivers and hatcheries are treated together by this mechanism for allocation purposes, as are runs that differ in timing. In south Puget Sound, for example, the early, normal, and late chum salmon are distinguished for purposes of conservation but lumped for purposes of allocation. In some cases, runs are in effect combined for conservation purposes as well—not by allocation rules but by run-size estimates. Every run that has an escapement goal also has a pre-season forecast but in-season updates commonly refer to groups of runs, such as “South Sound chum” or “Stillaguamish-Snohomish chinook,” because these updates are based on fisheries near the terminal areas but where stock separation is not complete. The update based on fisheries in marine waters off the mouths of the Stillaguamish and Snohomish rivers may show a healthy run with a moderate harvestable number when, in fact, the Stillaguamish run is weak and the Snohomish run strong. In fact, this is just what has been happening in recent years.

### Regulations

Principles, objectives, definitions, statistics, computer models—these are things that govern managers, not fishermen. Fishermen are governed by regulations that open a specified area to a specified gear during a specified time. Puget Sound (including the Strait of Juan de Fuca) is divided into 32 major areas for management purposes. Commercial openings for gillnetters and purse seiners may be a few hours or a few days;

sport openings (for anglers subject to bag limits) are much longer. There is no direct control of the number of fish that may be taken in a particular opening.

Regulations for Indian (treaty) fisheries are promulgated by the tribes; for non-Indian fisheries, by the State. Managers on both sides try to regulate their fisheries so as to catch their share of each species in each region of origin, taking into account reported catches and changing run-size updates as the season progresses. The managers are assisted in their work by rapid catch reporting and by another computer model that breaks down catches in mixed-stock areas by region of origin. There is still a large element of judgment in the process and ample room for disagreement, which traditionally has kept the Fisheries Advisory Board busy during most of every year.

#### THE MANAGEMENT PROCESS

It might seem, from the foregoing, that Puget Sound salmon management is largely a matter of deciding on escapement goals and run-size estimators, then regulating the fisheries accordingly. It is. The court's Puget Sound Salmon Management Plan (459 F. Supp. 1020, 1107–1113) requires the parties to settle on these things before each season, and for the great majority of runs management then proceeds according to plan with no disputes. It is this process that accounts for the overall success of Puget Sound salmon management under court supervision, and it is a few exceptions and oversights in the process (e.g., management periods) that account for most of the disputes. Both aspects will be clear from a narrative of the annual cycle of activities involved in management.

#### Pre-Season Technical Chores

The Puget Sound Plan requires agreement well in advance of all runs on escapement goals (including the question of "viability"), pre-season forecasts of run size, in-season updates, and methods for estimating prior interceptions. Deadlines are set for agreements on most matters (e.g., escapement goals for viable natural coho salmon runs by May 1), and the Washington Department of Fisheries is required to issue pre-season reports on some of them, specifically escapement goals and pre-season forecasts.

In practice, each year the Department of Fisheries prepares what is called a status report for each species, containing proposed management

periods, escapement goals, pre-season forecasts, and update methods. This document is circulated in draft around the date that the Puget Sound Plan requires the State to issue its report on escapement goals. The State allows about a month for comments, carefully considers any it receives, and then issues a final status report containing its own final opinions, whether agreed to by the tribes or not. The tribes went through the same process in 1983, although well after the court deadlines for most species. They intend to repeat the exercise on schedule in future years.

Referring to the reports required of the State, the Puget Sound Plan says, "These reports shall serve as a basis for discussions and to promote mutual understanding between the parties in reaching agreements as to these matters." The reports do serve some of those purposes in that they explain each side's position on a question and identify points of agreement and disagreement. Thereafter, the parties will meet informally to try to resolve any differences. In most cases they succeed, thanks to the good working relations and open communications that both sides have been careful to establish and maintain.

If they cannot agree on some technical point, like an escapement goal or a pre-season forecast, they can bring it to the Fisheries Advisory Board for a formal discussion moderated by the court's Technical Advisor sitting as chairman. Sometimes these discussions produce an agreement but not very often. Usually one side or the other will exercise the right of requesting the chairman's independent "analysis of the matters discussed in the Board meetings and recommendations, if any." When conveyed, usually a day or two later, the views of the chairman, in addition to providing a third opinion, naturally serve to apprise the parties of what the Technical Advisor would say in court if the dispute were taken there for a hearing. Because the judge almost always adopts the Technical Advisor's position on technical matters, the parties usually follow the chairman's recommendations without a court hearing.

Despite this custom, the chairman's views are purely advisory as long as there is no imminent management action at issue—which is true when matters are being worked out well in advance of the run. Any party that strongly disagrees with the chairman can insist on a court hearing where any really misguided recommendation would surely be rejected by the judge. On the other hand, the ever-present possibility of having to

mount a detailed defense in open court acts to make any chairman very careful to assure that his recommendation is the best attainable on technical grounds.

Unfortunately, while the parties are entitled to bring any pre-season technical disputes to the Fisheries Advisory Board, they are not required to do so. The Puget Sound Plan requires them to reach agreement on most elements of run management well in advance of each run, but it does not prescribe any alternative if they should fail to reach agreement and neglect to call a Board meeting. This is more likely to happen with the later runs each season (i.e., coho salmon and especially chum salmon), when day-to-day management of the earlier runs delays even informal discussions of differences until the run is at hand. At that point, neither the parties nor the chairman can deal adequately with numerous technical issues. There is not enough time, and the immediate practical consequences of the various technical alternatives are too apparent. The lack of any mechanism to require resolution of the dispute by some deadline and thereby prevent eleventh-hour crises of this sort is, in the author's view, the worst defect of the Puget Sound Plan.

Another problem is that the Plan does not require pre-season determination of some things that are sure to have a bearing on management during the season—specifically, management periods and incidental catch estimates (i.e., estimates of catches that will be taken from a run outside of its management period). These omissions are not as serious as they could be because both sides agree in a general way on how to handle the issues and they are considered during pre-season discussions. However, the lack of explicit rules in the Plan does result in some in-season disputes that could be prevented if management periods and incidental catches were included along with escapement goals and run-size estimators as matters to be settled pre-season.

### **In-Season Technical Chores**

If the parties have done all their work before the season, the only technical work to be done during the season is to collect catch and effort data and update run sizes by the agreed formulas so that the fisheries can be managed accordingly. This work is routine but, like everything else, it is not simple.

The updates are based on commercial catch rates and it is imperative that catches be reported promptly. All fish buyers are required to record

their purchases on standard reporting forms called fish tickets and mail these tickets to the Washington Department of Fisheries. These reports are reliable and complete but some do not arrive soon enough for day-to-day management purposes. For those purposes, the Fisheries Department estimates catches from telephone checks with key buyers and any other available information. These preliminary estimates are called "soft data," while the figures compiled later from fish tickets are the "hard data." Updates are based on soft data and are usually performed weekly. Both the catch data and updates for runs in progress are accessible to all parties in the form of public files stored in the main computer system at the University of Washington. Immediate access to the latest figures is a necessity for all parties because each side's share changes when the run-size update changes, and each week's fisheries have to be managed according to the current estimates of harvestable numbers and catches to date.

Commercial catch reporting runs pretty smoothly but there are some other catches that are not reported so reliably and do cause some controversy because estimates of these miscellaneous catches are subtracted from the appropriate side's share to determine the number of fish available for commercial harvest. The largest item of this sort is the marine sport catch of chinook salmon and coho salmon. Sport fishermen do not report their catches until after the season (on forms called punch cards that they are required to carry and use throughout the season), so that in-season management is necessarily based on a forecast. Even after the season the sport catch is most uncertain as only some of the sport fishermen turn in reports and there is some doubt about how representative that group is. Other, much smaller items are freshwater sport catches and fish taken home by commercial fishermen rather than sold, or sold direct to consumers without a fish ticket being filled out. These catches are small in relation to the total, but they arouse strong feelings because none of them can be controlled very effectively and people do seem to suspect that the other person cheats when he gets the chance.

### **Harvest Management**

Given the current estimate of its harvestable number from each run, each side tries to manage its fisheries in the mixed-stock and terminal areas so as to take that number from each run in catch-

es that are reasonably well distributed across the remainder of the run. To accomplish that, managers cannot specify the numbers of fish that may be taken from a certain area during the coming week, but only that a certain area will be open to fishing during specified periods (usually a certain number of nights for gill nets, or days for purse seines, or both). In order to estimate the catch that will be taken in an opening, managers must make some forecast of the number of boats that will participate, which is usually easier for tribal than for State managers.

The rule for both sides is that an area is closed to all commercial fishing unless explicitly opened by a regulation, and both sides work at taking their shares through openings of one or a few days per week, area by area, over the course of each run. The two sides are not equals in this process as the district court, in obedience to the Supreme Court, recognized the State's right to regulate Indian fisheries for conservation purposes. In doing so, however, it set up a number of checks and balances to assure that both conservation and allocation objectives would be achieved or, failing that, violated only by agreement of both sides.

The tribes are required to submit an overall fishing plan to the State before each run, showing that they have the intention and the means to take their half of the catch. During the management period, they are allowed to open fisheries on 24 hours' notice to the State. However, any time within 60 hours of such notice, the State is empowered to close the fishery on 24 hours' notice for conservation purposes, which means in effect that the State can simply cancel any tribal opening when it believes that is necessary for conservation (i.e., when it believes the tribes have no harvestable fish remaining from a particular run, taking account of incidental catches expected after the run management period).

Non-treaty (i.e., non-Indian) openings do not require a pre-season plan or any specified notice period, but technically such openings do require the approval of the Fisheries Advisory Board, under the terms of the 1978 order (before the Supreme Court decision) when the court adopted this mechanism to prevent the non-Indian fisheries from taking the treaty share. In recent years, by agreement and by memorandum from the Board chairman to the judge, this requirement has been operative only in cases where one or another tribe has objected to a non-treaty open-

ing. In these cases, however, the rule is that the fishery cannot proceed without Board approval (meaning tribal approval) or, lacking agreement in the Board, a finding by the chairman that the proposed fishery will not cause any allocation to be exceeded, treating as allocations the escapement goal, the treaty share, and the non-treaty share.

This provision could be extremely troublesome to the State because any tribe can register an objection right up to the last minute, and the onus is then on the State to prove to the tribe (or the chairman) that the proposed opening will not cause any allocation to be exceeded. There is clearly the potential for abuse of the procedure by the tribes, but in two seasons the author never saw such abuse. Still, it seems only fair that here, as in other matters, there should be advance notice and a deadline for challenges so that non-treaty openings would not be subject to last-minute objections as they are now.

Fishery closures are, for the most part, simply the closing times specified in each side's regulations opening fisheries, but they can be more complicated than that because of the State's authority to close tribal fisheries for conservation purposes. The court has narrowly defined this authority (384 F. Supp. at 415) and has placed strict notice requirements on the State's exercise of its authority. Specifically, a State closure can be effective on 24 hours' notice if at least 24 hours earlier the State has provided a justification of the closure and supporting data to the tribes. If it has not, the closure requires 48 hours' notice (along with the justification and data). Earlier effective times may be applied by the State if circumstances require but, in such cases, fishermen in violation of the closure may not be cited unless personally informed of the closure by enforcement officers and given a reasonable time to comply. (Procedural rules governing the State's exercise of its authority to close a treaty fishery for conservation are contained in the Order establishing the Fisheries Advisory Board, 459 F. Supp. 1020, 1061-1063, as amended by the Order re: Notification and Effective Date of Emergency Regulations, signed 26 August 1980.)

The notice periods required by the court give the tribes a chance to challenge any State conservation closure before it becomes effective for treaty fisheries. The tribes can bring the matter to the Fisheries Advisory Board as a dispute and (as explained below), barring agreement in the

Board, the chairman's recommendation will prevail unless and until the dispute is taken to court for a ruling.

The tribes have no authority to order closure of a non-treaty fishery, but they can convene the Fisheries Advisory Board to propose closing a fishery if they believe its continuation will exceed the non-treaty allocation. Disagreement in the Board on such a proposal is then exactly the same as disagreement on a State conservation closure—i.e., a matter to be settled by the chairman's recommendation or eventually a court ruling.

A number of notice requirements have been described. For Puget Sound, these requirements are routinely satisfied by teletype, as detailed in a court order on the subject (order re: Notification and Effective Date of Emergency Regulations, signed 26 August 1980). All the parties subscribe to a teletype network, and "filing a regulation" means conveying it by teletype. This must be done on weekdays between 0900 and 1430 hours (1400 hours on Fridays). For a while there was some confusion over whether conveying meant transmitting or receiving, but this has been settled in favor of transmitting by a memorandum from the Technical Advisor to the court. Either way, this procedure in conjunction with the 24- and 48-hour notice requirements explains why Friday afternoon is the busiest time of the week for the Fisheries Advisory Board.

### Disputes

When the federal district court retained continuing jurisdiction over Puget Sound salmon management in 1974 it opened itself up to a multitude of salmon management issues, and it quickly set up the Fisheries Advisory Board to intercept most of those that involved technical questions only. When the court was obliged to assume direct control of the fisheries in 1977, it opened itself to every detail of day-to-day fishery management and it quickly delegated the first shock of management issues to the Board. Specifically, the court ruled in its 1978 order that unless and until any dispute in the Board over opening or closing any fishery was brought to court for a ruling, the recommendation of the chairman should be followed in managing the fisheries. This marked a radical change in the role of the Technical Advisor, from a truly technical one to that of an arbiter of day-to-day disputes, cloaked with the court's authority. This

authority obtains only when an opening or closure is in dispute, but all disputes come to that eventually so the 1978 order added a great deal of responsibility to the office of Technical Advisor.

There still are circumstances in which purely technical matters are brought to the Board and the chairman's recommendation, if requested, is purely advisory. However, if any urgent management issue is brought to the Board, whether technical or not, the Chairman is obliged to recommend whether or not the fishery in question should open or close. The parties are obliged to follow that recommendation unless and until the court hears the question and rules on it.

Of the many issues that have to be decided each year in managing the Puget Sound salmon fisheries, only a few are taken to the Fisheries Advisory Board and very few of those are taken on to court. Most matters are agreed by the State and tribes at the outset, and most disagreements are settled in discussions outside the Board. Judge Boldt set up the Board in the first place to promote communication between the parties (among other things), and he guaranteed its success in that respect by ordering that any matter "relating to the fishery resource" must be considered by the Board before the court would hear it (459 F. Supp. at 1061). That purpose has now been achieved, with the result that the number of Board meetings has been roughly halved in recent years. On the other hand, issues that come to the Board nowadays are usually ones that the parties cannot settle between themselves, and therefore need to be resolved by the chairman or the court.

When a dispute reaches this stage, one of the parties will request a Board meeting, and usually will make the meeting arrangements also. Both sides are obligated to participate in a Board meeting on any matter addressed by the Puget Sound Plan, which covers just about every aspect of managing the salmon fisheries. In other cases (e.g., steelhead management disputes), each party has the right to object to a Board meeting on a particular matter, and the Board will then not take it up unless so directed by the court.

Most meetings are conducted by telephone but meeting in person is common and necessary when any quantity of numerical material has to be presented. The State and the tribes each name one of the two voting members and they usually see to it as a matter of course that all affected parties are notified of the meeting, but strictly speaking

this is a responsibility of the chairman. Attendance is not limited to affected parties; the meetings are public and anyone who happens to find out about one is welcome to sit in as an observer. Few do.

The chairman presides but does not vote, so only those motions supported by both parties are passed. While not common, agreements adopted as Board motions are solemn undertakings, worded with care by the parties and reported to the court verbatim by the chairman in his report of the meeting. More often the meeting simply gives each side the opportunity to present its position to the chairman and rebut the other side's arguments. The chairman also has a chance to ask questions with both sides present. Not always but almost always, after a full discussion, one of the parties will ask for the chairman's recommendation on the matter in dispute. If at all possible, he will take a day or two to ponder before stating his views.

Most disputes are over harvest management; i.e., whether or not a party may open a proposed fishery or must close one in progress. In making a recommendation in this situation, the chairman has the benefit of considerable guidance from the court in the form of the original Boldt decision and 10 years of district court orders thereafter, plus various utterances of the 9th Circuit Court of Appeals and the Supreme Court. Needless to say, it can be difficult to find just the right remedy for a specific case among this abundance of prescriptions, but usually the matters in dispute can be boiled down to one or two issues covered by the basic principles laid down by Judge Boldt. They are:

(1) The paramount concern of management is "assuring proper spawning escapement" for each stock. That requires not only meeting the numerical escapement goal, but also achieving the desired composition of the spawning run (e.g., early as well as late fish, females as well as males) (384 F. Supp. at 385). The Puget Sound Plan specifies that escapement goals are to be set so as to maximize juvenile production (459 F. Supp. at 1110). The original decision seems to reach the same conclusion (384 F. Supp. at 405), but only after a number of mysterious statements about "conservation," "preservation," and "perpetuation" along the way that leave the issue a little cloudy. (The author's frank opinion is that Judge Boldt's understanding of these matters was a little cloudy.)

(2) Fish in excess of the escapement goal are harvestable, and each side is entitled to the opportunity to catch half of them (384 F. Supp. at 343).

(3) Each side is free to harvest its share in a manner of its own choosing, without interference from the other side (384 F. Supp. at 385). In particular, the State may not limit Indian fishing "to State-preferred times, manners or purposes except as such limitation may be necessary for preservation of the resource and protection of the interests of all those entitled to share it," (384 F. Supp. at 401).

(4) Before enforcing any regulation of Indian fishing, the State must demonstrate to the tribes or to the court (in practice, to the chairman of the Fisheries Advisory Board) that the regulation is "reasonable and necessary to conservation"; i.e., to assuring proper escapement (384 F. Supp. at 342). To establish that a regulation is "reasonable and necessary to conservation," the State must show that:

- (a) it is essential to achieving escapement (i.e., the goal could not be achieved without that specific measure);
- (b) it is appropriate to its purpose;
- (c) tribal regulation and enforcement are inadequate to achieve conservation;
- (d) it is the least restrictive measure that could achieve conservation (384 F. Supp. at 415).

In addition, the regulation must not discriminate against Indians and it must satisfy "appropriate standards of substantive and procedural due process" (384 F. Supp. at 402).

(5) Underharvest of a run (i.e., taking less than the harvestable number) is wasteful or worse (384 F. Supp. at 384). If one side can demonstrate that the other will not be able to catch its share, that part can be reallocated (459 F. Supp. at 1069).

The Puget Sound Plan sets out definitions and deadlines for making the technical determinations needed to apply these principles in most situations—mainly escapement goals and run-size estimates. Once these determinations have been made and agreed upon before a season, the chairman's job in any in-season dispute is first of all to establish whether or not the party being challenged has harvestable fish remaining in its share. If it does, he will approve the fishery, however objectionable it is to the other side, because each side has a right to take its harvestable fish as it chooses. If the party being challenged does

not have harvestable fish, the chairman will disallow the fishery, even though there may be very good scientific reasons for having it (e.g., to obtain a better estimate of run size), because neither side has a right to more than its share. The idea of managing fisheries according to harvestable numbers may seem simple but the author's experience has been that both sides, despite the court's instructions, are reluctant to place this standard above all others. They tend to take variant positions in particular situations even now, 10 years after the Boldt decision. As a result, the chairman's function often is simply to remind one side or the other of the rules specified by the Puget Sound Plan, rules that govern fishery management during the season unless all affected parties agree to a change.

There is an important point here that needs emphasis. According to the Puget Sound Plan, the parties are required to agree on matters such as escapement goals and run-size estimates before the season. Later, during the season, one side or the other may change its thinking on one of these matters, but unless it can convince the other side to agree to the change, the pre-season agreement prevails, and the Chairman is obliged to uphold it in any dispute even though he may agree on technical grounds with the party proposing a change. There is a good reason for this. There are so many runs to Puget Sound during the summer and fall, and so many fisheries, that it would be impossible to resolve all the disputes over technical matters that would be brought to the Board during the season if that were allowed. As it is, the parties are required to raise these issues beforehand when both sides and the chairman have sufficient time to deal with them properly.

Some disputes arise that cannot be settled according to the numerical rules set out in the Plan (e.g., fishing in hatchery milling areas or the proper boundary between two fishery management areas, both issues that came up in 1983). The chairman can resort to the general principles set out in the court orders for guidance in these cases. If he finds none, and a recommendation is required, he will try to make a recommendation that is sensible to him, secure in the knowledge that the court will review anything questionable at the request of any party.

There are, of course, limits to what the chairman can do. His province is technical matters which include not only the scientific but also the

practical aspects of fishery management such as management area boundaries. However, if the issue raises legal questions that have not been answered clearly by the court, the chairman simply cannot make a recommendation and must precipitate a court hearing by refusing to do so. For example, throughout the 1983 season there was a constant danger that management of one fishery or another would hinge on whether Puget Sound catches by nonresidents of Washington should count against the nontreaty share, a point on which the two sides (and their lawyers) disagreed. The crisis never occurred but, if it had, the court would have had to settle it.

### **Post-Season Technical Chores**

The two sides labor throughout each season to assure that the escapement goal is met for every run that has a goal, and that the allocation goal is met for each species and each region of origin. On the whole they do pretty well, but every year there are some surprises that result in failure to achieve some of the goals. For example, a run-size estimate may drop sharply during terminal-area fisheries after non-Indians have taken large catches in mixed-stock areas on the strength of a high pre-season forecast, resulting in a catch imbalance on the non-Indian side. Sometimes an Indian fishery in a river will take many more fish than predicted by the managers, resulting in a catch imbalance on the Indian side.

Either way, the result at the end of the season is unequal salmon catches which violate basic principles. To make up the difference, the Puget Sound Plan provides a mechanism called equitable adjustment which basically means making up the difference in the following season, or over a number of succeeding seasons (up to five) if it is not "practicable" to make up the entire difference in the next season. Identifying any needed equitable adjustments is about the only chore to be done after a salmon season is over. Claims must be made by June 1, according to rules that are being litigated at the time of writing (late in 1983).

## **ODDS AND ENDS**

### **Unwritten Rules**

All of the rules outlined above are contained in court orders, but there are a few others that have earned the sanction of custom over the course of nearly a decade of Fisheries Advisory

Board proceedings and have nearly the same force. For example, nowhere is there any prohibition of the practice but lawyers never participate in Board discussions. They will listen on occasion and even whisper in their client's ear but they do not speak. As a result, the Board is better able to concentrate on technical and practical questions.

Many of the court's instructions include the proviso that the parties may make an exception if they so agree. In fact, though not always spelled out, this qualification applies to all court-ordered management procedures: anything agreed by the parties is agreeable to the court. As a result, many meetings of the Board are convened not to resolve any dispute but simply to record the parties' agreement on an arrangement that deviates somehow from the court-ordered scheme. Most often it is an agreement to waive the notice period required before a particular fishery can open.

An important but unwritten management rule is that all parts of a run should be fished at the same rate so as to preserve its composition. All Puget Sound biologists subscribe in principle to this rule (referred to as "proportional harvest"), and the court hints at it in defining conservation (384 F. Supp. at 385) but it is not stated explicitly. It is an issue because for various reasons the commercial fishermen on both sides prefer to catch early fish and would take most of their shares early in each run if given the chance. In view of this preference, the author believes that the basic principle of equal sharing requires each side to manage its fisheries to harvest all runs proportionally. However, this position, like the conservation argument, is not supported by any specific statement of the court.

### **Enforcement**

Judge Boldt ruled that federally recognized tribes have the authority to regulate their members' off-reservation fishing (384 F. Supp. at 403), and he limited treaty fishing to tribal members fishing under tribal regulations (384 F. Supp. at 420)—all of which are subject to review and challenge by the State.

Tribal regulations are enforced by tribal enforcement officers. State officers enforce the regulations issued by the State for non-Indian fisheries and will cite Indians found fishing outside the times and areas opened by tribal regulations if a State conservation closure is in effect. In

practice, therefore, the State does enforce some tribal area restrictions and closing times.

### **Hatchery Releases**

Most of the Puget Sound tribes rear and release salmon, as do the State and a number of private groups. All these releases need to be coordinated to avoid damaging viable natural runs (through competition or predation) or creating fishery management conflicts (between hatchery and wild fish, as explained above).

The State still retains full authority to control releases by requiring State permits, although the court has offered to reconsider this arrangement if any tribe believes a permit has been "unreasonably or unnecessarily limited or denied" (459 F. Supp. at 1089). A few disputes about hatchery releases have come to the Fisheries Advisory Board in recent years, but none has required a court hearing.

### **Steelhead**

Puget Sound salmon management is reasonably harmonious at least in part because the State and the tribes are both looking after similar commercial fisheries with similar interests. Steelhead management is different because long before the Boldt decision the State reserved steelhead for sport fishermen. This species is now classified by the State as a game fish rather than a food fish and, as such, is managed by the Game Department rather than the Fisheries Department. Non-Indians are prohibited to fish steelhead commercially but Indians treat salmon and steelhead about the same, as they always have and as non-Indians did in the last century (384 F. Supp. at 399).

The court has always treated steelhead management as a subject apart from salmon management because of these disparate interests, although the Puget Sound Plan contains the cryptic charge "The parties shall manage from the premise that steelhead and salmon fisheries are intimately related." All of the basic principles of the Boldt decision apply to steelhead as well as salmon, but a different set of management procedures has evolved.

It is not the purpose of this paper to describe steelhead management, except insofar as it affects salmon management. That happens in late autumn when early steelhead runs overlap with late chum salmon. If steelhead were treated like

salmon, this would be just another run overlap, to be treated like the numerous overlaps between salmon runs earlier in the season, but steelhead are different. They are managed by a different State agency in a different way, and there is no agreed way of meshing salmon and steelhead management during the period of overlap. As a result, this period regularly causes a lot of confusion and a large number of court hearings relative to the number of fish involved.

### PROBLEMS

A number of deficiencies and defects in Puget Sound salmon management already have been noted: the omission of management periods and incidental catches from the Puget Sound Plan, the lack of a deadline for resolving pre-season differences on technical points, the *de facto* lumping of stocks for conservation purposes by pooled run-size estimators, the uncertainty over the size of marine sport catches, questions about equitable adjustment, and the twilight zone of management during the chum-steelhead overlap. People on both sides are working on patching up most of these cracks and, at the time of this writing, the court is in the very act of providing further guidance on equitable adjustment. Progress is being made on all of these problems and the system works pretty well in spite of them.

There are worse problems than these, however, and the worst of all is the mixed-stock problem. Many fisheries, Indian and non-Indian, are conducted on the migratory paths travelled by several runs at the same time. For example, chum salmon from all over Puget Sound and Hood Canal are taken in early November in fisheries opened in Admiralty Inlet (which is really a channel running from the Strait of Juan de Fuca to Puget Sound). In any given year, some of the mixed runs in that area will be strong and others weak; some will be forecast or estimated to be less than their escapement goals.

The Puget Sound Plan states that harvest rates in mixed-stock areas shall be set to meet the needs of the weakest stock present. Strictly speaking, therefore, there should be no fishing in mixed-stock areas if any of the component runs need protection, even if the catch from the weak run would be only a minute fraction of the total catch and only a minute fraction of the weak run. In practice, both sides have been unwilling to apply this extreme standard, although both have

the option in every case of insisting on it. Instead, the parties and the court's Technical Advisor have devised a series of *ad hoc* formulas, all of them more or less unsatisfactory, to deal with the problem when and where it arises. (For example, the so-called "10-10 rule" is that a mixed-stock fishery is acceptable as long as the catch of fish from weak runs is less than 10% of the total catch and less than 10% of the weak run. This rule is not accepted by all parties and it would obviously be inadequate for weak runs subject to fisheries in a series of mixed-stock areas.) The Court has ordered the parties to agree on mixed-stock guidelines but, owing to deep divisions on both sides, the prospects are not good. Ultimately, this question probably will have to be resolved by a recommendation from the Technical Advisor.

Another serious problem is how to estimate the true division of chinook salmon and coho salmon catches of Puget Sound origin between Indian and non-Indian fisheries. Both species are taken by ocean troll and marine sport fisheries as mature and immature fish, and it is no simple matter to estimate the effect these fisheries have on adult runs to the terminal areas where the Indian fisheries are located. There is a large computer model that estimates these effects from returns of tagged fish, but there are a number of outstanding questions about the parameter values used by the model and the quantities it calculates. Both sides agree that a bigger and better model is needed, but that is a few years and many dollars away.

Last but not least is the problem of inter-tribal allocation. To see the problem, consider the management of coho salmon bound for the southern part of Puget Sound. In addition to a variety of non-Indian fisheries, these fish are subject to Indian fisheries in a series of mixed-stock areas from the open ocean through the Strait of Juan de Fuca and on down Puget Sound to their home streams or hatcheries. In total, the Indian catch along the way should total half the harvestables, but how much of this total should go to each tribe along the way? Judge Boldt held that this was a matter for the tribes to work out among themselves (384 F. Supp. at 410) and, for the most part, they have done so. The Indian fisheries were small in 1974 and half the catch was a bonanza for all of them. Since then, however, all of the tribal fleets have fed on the bonan-

za and have grown apace. Now there is not enough to go around, and the tribes are more and more going to court against each other rather than the State.

This development might have been predictable but the court machinery was not designed to handle it. The Fisheries Advisory Board, for example, has two voting members—one representing the State and one the tribes. It obviously cannot deal with an inter-tribal dispute, although such disputes are increasingly common. Dealing with inter-tribal conflicts probably will be the next major task of the courts.

### CONCLUSION

In the author's opinion, the federal district court, with the help of the State and the tribes, has done a good job of programming management of the Puget Sound salmon fisheries so as to achieve conservation and allocation goals. The court has prescribed a schedule negotiated by the parties for deciding how to calculate the numbers (primarily escapement goals and run-size estimates) required for run management, and it has prescribed rules negotiated by the parties for translating those numbers into regulations. These procedures have proved to be quite successful in guiding the Indian and non-Indian fisheries through salmon seasons with very few disputes relative to the number of fisheries that have to be managed. Disagreements that do arise are resolved by adversary proceedings, but these are decided either by the court's Technical Advisor on technical grounds or by the court itself on legal grounds. Either way the decision is expert, impartial, and prompt. That is not to say the decision is always necessarily a good one but, in the author's experience, it is much better on the average than the decisions made by politically appointed management bodies—national or international.

The management process still has some flaws, mostly oversights in the court-ordered scheme such as the treatment of incidental catches. In the absence of detailed instructions from the court, these issues are disputed year after year

by the parties and disposed of in different ways by successive chairmen of the Fisheries Advisory Board. The repeated debates with inconsistent outcomes are naturally frustrating for the participants. The solution, of course, is to update the Puget Sound Plan, incorporating more rules that the last several years of experience has shown to be needed. This work is underway and it can be finalized in short order by the court, in much less time than any national agency or international commission could act.

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