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INTRODUCER: Ladies and gentlemen, you can imagine my extreme pleasure at being invited to introduce our next speaker for the day. He is a gentleman whom you all know from his records of books. His first book concerned Atlantic salmon and was called *Silver*. You have read *The Western Angler*, *A River Never Sleeps*, and the infinite number of books that he has published, which I think has formed the pattern of education and entertainment for young and old and also has led up, I think, to a major definition and the elevating of the ethics of the sports fraternity in British Columbia. I'd like to introduce the magistrate from Campbell River, Roderick Haig-Brown.

RODERICK HAIG-BROWN: Thank you, Dave. Ladies and gentlemen, I got ready ahead of time, but it didn't work, you see. I'll have to do it all again. The first thing I want to say is how very deeply I am impressed by the extremely rapid development of the Steelhead Society and by its obvious effectiveness as demonstrated here today. I think this is a terrific organization, and I think it's going to make a terrific difference all around the province. The steelhead fisherman really has been rather the left-out character, the forgotten character. He went his quiet way, but quiet ways don't exactly work anymore. We just have to do a little more about it, and I think that you people are doing a magnificent job of this.

I have a whole lot of things here to say; in fact, I'm going to run pretty well across the whole framework of what I've heard said here this morning. I'm not sure you really need me here at all, because I think that every point I'm going to raise I've heard already discussed here. But I would like to start by emphasizing one point that I haven't heard commented on, and this is that the true center of abundance of steelhead is really the Columbia River and the states of Washington and Oregon. The species tapers off in California south of San Francisco and also in southern Alaska. There is some question as to whether it exists at all up in Bristol Bay. In California, of course, it's been limited by uncertain water flows and high temperatures; in British Columbia by low winter temperatures and relatively low stream productivity, to oversimplify. And it has nowhere in its range achieved the abundance of the pacific salmon, though it has always been associated with them. And I think the reason it hasn't achieved this success is because of its more exacting freshwater requirements.

Now, the record commercial catch of steelhead on the Columbia, for instance, and this is by far the record commercial catch for the whole coast, was something less than half a million fish, and it was back around 1892 that that was achieved. Comparing British Columbia to that, the highest recorded commercial catch back to 1890 I've been able to find was up in the Skinner area and represented somewhere around thirty thousand fish. It's a much more recent catch than that.

I think this emphasizes two points: this being that the steelhead is a somewhat less successful animal than the pacific salmon, and secondly that British Columbia is just beyond the limits of its most successful range. It follows that our fish are more precisely adapted to local environmental conditions, and that any interference with those local conditions or with the natural stocks themselves is likely to be more sharply felt and more difficult to adjust or repair. I don't mean to suggest by this that B.C. steelhead are in any way weak or inadequate or emasculated or anything of that sort; they are in fact very robust and healthy creatures, with a significantly larger average size at maturity than their relatives to the south. But their growth rate is slower, and both fresh- and saltwater residences are longer. The streams are generally less productive, with lower winter temperatures, and the balances between stock and environment are therefore precarious and delicate, and must be understood and respected in any attempt to manage or develop.

The relatively low fertility of B.C. coastal streams suggests very strongly to me that the salmon runs play an important part in their yield. We know, for instance, that there is a significant correlation between the four-year cycle of the Adams River sockeye run and the [inaudible] Thompson production of rainbow trout. In all streams where steelhead run, good sporting runs of salmon play an important part – that is, if they aren't missing – in stirring up the gravel, floating out the silt, and maintaining the permeability that fosters production of aquatic creatures. Waste eggs and decaying carcasses contribute significantly to stream fertility; abundance of alevins and fry in both streams and estuaries provides an important food source for steelhead parr and smolts. To maintain good steelhead runs, I believe we need good salmon runs, and not from hatcheries but spread through the streams themselves in a natural way.

True, there is competition and predation between steelhead and cohos – and steelhead and other fish, incidentally, other salmon – but it cuts both ways, and the balance may be fairly even between those two species. It depends largely on the state of development at which they respectively are when they come into contact. There is really no great competition from pink salmon, chum salmon, and very little from chinooks. So I would argue that the balance there in terms of competition and predation is all in favor of the steelhead, and if we have a lot of salmon, steelhead is going to better. I think an abundant salmon, a healthy commercial fishery, good salmon research, management, and protection are all of real importance to the steelhead runs, and the steelhead fisherman should support them with his interest and with enthusiasm.

Nearly all our streams are damaged in greater or lesser degree. Some are blocked by dams; some have greatly altered slow regimes; a few are polluted; some have had water diverted; many have had gravel stolen from them, and I use that word 'stolen' with emphasis and complete literal meaning; many have suffered extensive estuary modification – perhaps not many, but a good many have. All these injuries call for different remedies, and perhaps not all can be fully healed.

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But the greatest stream damage, apart from the final construction of main stream dams, is the continuing damage of bad land management, and this can and must be changed. I note, of course, that you do have your green strip policy and various other proposals for this. We have been concerned with this, as you know, for many years, the problem of keeping logging away from stream beds and stream hedges. And we have been so far remarkably unsuccessful, in large measure because land management is a provincial responsibility, while the management of anadromous fish streams is a federal responsibility. The result has been half-hearted, ill-informed, and totally inadequate cooperation, not only between federal and provincial departments but between provincial departments themselves and between departments of both governments and logging operators. Departments of *both* governments – that is, I mean both federal and provincial and the logging operators on the other hand. And there have been failures too between the proclaimed interest of logging management and actual logging performance. This usually involves some failure, willful or otherwise, of communication between top management and the man down on the job.

Now, we have some new and fairly strong federal legislation to protect salmon and steelhead streams. I mean particularly Section Thirty-three of the Fisheries Act and its various subsections. I think that unless the spirit changes, this is very likely to be challenged on constitutional grounds. It bothers me that this should happen, just as it bothers me to see Mr. [Garth?] and Mr. Davis squabbling with each other when they should be getting together to work on our common concerns. That's what we elected them for. We have suffered from this squabbling between Ottawa and the provincial premier for a long time. We don't want to see it come about again. And I hope that we're not going to run into constitutional conflict over Thirty-three of the Fisheries Act, though I'm afraid this may happen.

But even if we don't, we do not have staff, and I include federal Fisheries staff, adequately trained or in adequate numbers to enforce this legislation or to bring adequate cases to court. And I speak with some bitterness about this because I listened to a few cases that I have had to throw out. There is a remedy, and I think it is by developing teams to go out on a complaint and get proper evidence by means of stream samples and that sort of thing, instead of coming vaguely into court and saying, "Well, we felt some silt in the stream, and it looked dark," and so on and so forth. You're not going to get convictions on that basis. In fairness, I should say that logging companies and forestry officials have shown some inclination to cooperate with the new legislation, but again, they're lacking in knowledge and understanding and perhaps will, and we just are not getting solid results yet.

Now, this lengthy and discouraging struggle convinces me that the only real hope of adequate stream protection is in redefinition of land use priorities. At the present time, we dedicate huge tracts of land, regardless of lakes and streams, or anything else for that matter, to forest use: in effect, to logging and monocrop regrowth, where there is regrowth. We talk a lot about multiple use of these areas, but almost entirely without conviction. Logging operations in fact have absolute priority in determining how the land is used, and anything else is an inconvenient side issue. My thought on this is that all lands within six hundred feet of stream banks or lake shores; in all those lands, the management priorities must be recreation and fisheries. Now, that six hundred feet [audience applauds] – that six hundred feet is a figure somewhat dragged out of the

air. It could equally well be the three hundred feet quoted here this morning, but I do think that if you're going to manage, then you need a somewhat wider area than three hundred feet, and that's why I have it at six hundred.

Now this wouldn't necessarily preclude logging, farming, road building, or other uses. But it would ensure the firm control of all such activities would be in the hands of the recreational and fisheries authorities. It would mean, for instance, that a logging operator might be required to remove only mature timber from a certain area, to leave another completely untouched, perhaps to clear cut it, and so on. It would not preclude logging, but it would make sure that logging was conducted in such a way to satisfy the recreation and fisheries demands of the area. It would mean, and I think this is very important, that all road building, public or private, would conform to rigid standards and be subject to constant inspection, because road building is very damaging if it isn't done right. Similarly, in agricultural areas, crop spraying and fertilization would be subject to check and [inaudible]. And residential or other building would also be subject to control, as it is to some extent now.

Even a proposal of this sort, which will certainly meet with a little questioning and possibly some operational difficulties, wouldn't solve the whole problem. Poorly planned and improperly constructed roads elsewhere, logging with heavy machinery on steep slopes, clear cutting and burning in headwater [inaudible] areas will still do damage. That was examined to some extent this morning, and I think you have to go on examining, but I believe that if we had this positive recognition of this area close to the streams that it would drive home the point that sound land management is essential not merely there but everywhere.

I've been told recently by some of our fisheries authorities and federal authorities actually that we do not know enough about stream rehabilitation and stream improvement to put good money into them. If that's the case, and I don't altogether believe it is, it's time we learned. It's more than time we learned. I wouldn't suggest for one moment that stream improvement is a simple matter. It's complex and difficult, and much will have to be learned in my opinion by trial and error. But after all, we have fisheries engineers, we have hydraulic engineers, we have biologists, and many other specialists to guide us, and we do in fact know a great deal. We know that flow control by comparatively small headwater [impoundments?] can be productive. It has to be combined with certain other stream handling matters, but it can be productive. We know that some measure of temperature control is often possible. We know that sunlit riffles produce aquatic feed, while pools provide holding water for fish and settling places for silt lifted out of the gravels above. We know the approximate flow requirements of young fish at all stages of growth. We know the size and quality of gravels and the weight and depth of flow needed for successful spawning. We are beginning to develop effective machines for cleaning gravel at low cost. We have one on the international salmon commission up at [Gates?] Creek. I don't know that it's just a machine – in fact, I'm sure that it's not just a machine that is needed for general stream clearing, but it's a start, and it's effective. It cleans a spawning channel up there in very good shape and at very low cost. We know that artificial spawning channels, with their many advantages over hatcheries, can often be built and maintained quite cheaply. We know something about streamside planting. I believe we could very quickly learn about the forest culture of aquatic food organisms. There I am thinking in terms of artificial or semi-artificial

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rearing, and also of the improvement. It's time to put all this knowledge to use and start learning from the results.

River values, and you recognized this also this morning, do not end with their freshwater reaches. There is a good deal of evidence to suggest that the feeding capacity of the estuary is critical and limiting for all anadromous species and perhaps especially for young steelheads. Lloyd [Royal?], the former director of the International Salmon Commission, is doing, or has been doing, some work for the past two years in the State of Washington on this. It's not yet published, but I think it will be of great interest when it is published.

Now, no amount of upriver production can yield results beyond the capacity of an estuary to support young fish in the final stages of development and acclimatization that fits them for saltwater life. This critical area probably extends beyond the estuary proper, in the river's outflow of fresh or brackish water well beyond its mouth. You will have seen the reference to Dr. [Parson's?] comments about the plume of a river dragging up the productivity of the underlying salt water and becoming quite a fertile area. This can be of enormous importance. For instance, the Fraser's plume probably influences the entire Strait of Georgia up as far north as Cape Mudge, where it tends to turn around and come down the east side of Vancouver Island. In fact, you could say the entire Strait of Georgia is influenced by that freshwater plume.

Few estuaries have not been modified in greater or lesser degree. When I say few, I'm thinking in terms of the many estuaries that have been used at one time or another for log booming grounds and probably since abandoned; for transportation, or other industrial uses. And always this modification has been so far in the past without any regard whatsoever for their productivity. I believe it should prove profitable in many instances to examine these modifications and their effects very closely. Admittedly, we don't know nearly as much as we should about estuaries, but it may well be possible to alleviate or compensate for damaging effects, and in some instances I would think it might be possible to increase natural productivity of estuaries, either by work within the estuary or along the nearby shorelines. I have some little faith in the possibility of some form of artificial construction that would extend an estuary or would provide ready shelter in the directions the young fish move out of the estuary, and perhaps increase their development into smolts.

Now I am going on to the awkward subject of hatcheries. I have to admit that modern hatchery and rearing techniques have achieved some successes in certain areas, and it may be that some watersheds are so grossly damaged or so completely obstructed that nothing else is really worth thinking about. But hatcheries should be only a last resort. And here in British Columbia, for God's sake, we shouldn't be looking at last resorts now or ever. Hatcheries are the apparently easy way, very appealing to politicians who want to make a quick show, quite attractive, I'm afraid, to administrators and to taxpayers who have too much money, too little understanding of the natural requirements, and too little energy and ingenuity to find ways of providing for these natural requirements. Dependence on hatcheries for the permanent maintenance of runs is defeat, an unhappy [prologue?] to the eventual phaseout of both salmon and steelhead runs as we have known them in the past and as we should know them in the future.

Hatcheries are very expensive, both in capital cost and in operation. The average cost of returning an adult hatchery steelhead to the fisherman is not less than eight dollars and maybe considerably more. I've dragged that up from many, many sources; I notice it isn't too far from that very excellent paper that you're all going to read shortly, where Fred Wessler suggested it was probably about \$4.60, I think, and of course the capital cost is not counted into that and would probably double it. Well, I listened to California, Oregon, and Washington busily discussing this matter about ten days ago, and as nearly as I could come, eight dollars would be a very conservative figure.

Hatchery fish make for a very poor timing in the runs, and that is a progressive characteristic of hatchery selection that can – I don't think it's done so yet – but can reduce the period of a winter run to one week or less. They distribute very poorly through the streams, and this results [inaudible] of fishing. Hatcheries are highly susceptible to diseases and may spread these to wild fish through hatchery and rearing pond effluents, or through individual contact. Pollution control devices on hatcheries are expensive, and yet we have them on the Capilano hatchery, and they're praying to heaven that nobody will make them have them down in the States of Washington and Oregon, though I suspect that they will have to come to it in the end, because that will increase again their already very high costs.

All those weaknesses and disabilities will become more pronounced with each succeeding generation, and efforts to compensate will become more and more costly, with only limited effects. Phasing out selection for hatchery purposes over the natural timing of a run for instance would add very greatly to hatchery operating costs. Breeding back into wild stocks or hybridizing with stocks from other streams can only have temporary effect and that not necessarily beneficial. Dependence on hatcheries reduces the will to attack and solve the real problems of more natural production, and it absorbs far too much money that should be directed to these ends. Well grown hatchery smolts, among other little problems, provide excessive competition for smaller wild stock smolts, especially in the estuaries, and that could in time wipe out your wild stock.

Most serious of all is the risk, if not certainty, of genetic pollution of wild stocks through interbreeding. Once the genetic versatility and resilience of the wild stocks is seriously impaired, I believe we shall be inside of the end. After a few generations, hatchery stocks can have no inherent capacity for freshwater survival, and the constant breeding of this and other weaknesses back into wild stocks will sooner or later make these ineffectual.

Ten days ago, I attended a steelhead symposium sponsored by California Trout and the American Fisheries Society down at Lake Tahoe. Yes, I did leave the slot machines alone. We heard there from steelhead management people from Oregon and Washington as well as California. And it was soon apparent, at least to me, that California had not gone down nearly so far down the primrose path toward hatchery dependence as have those two other states, Washington especially. Nor do the California steelheaders intend to let the state go that way. The very clear consensus of that meeting, insofar as one was expressed, appeared to be that the Californians want two separate and distinct fisheries: a wild fishery wherever this can be maintained or restored, and a high-intensity artificial fishery on obstructed or otherwise heavily

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damaged major stream. The two examples most frequently quoted of this latter were the Sacramento and the American Rivers, both of which are obstructed by dams, and both do have now intensive, short-duration, artificially produced fisheries whose chief merit, in the opinion of the people at this meeting anyway, seemed to be that they keep some of the pressure off the natural streams. However, it was also argued that this rather easy and productive fishery tends strongly to increase pressure on itself, and how much this would spread out onto the natural streams no one seemed to be prepared to say or perhaps didn't know. I don't think they could know. But there was no doubt that the existence of places somewhere around hatchery intakes where steelhead can be taken in numbers and with relative ease has increased pressure enormously. And people are crowded there side by side, close in around where the hatchery fish stack up.

But in general, apart from that, California steelheaders seem to face much the same problems as we do, though in more acute form. The stream and possibility the estuary rearing capacities are the limiting factor, and water shortages, variously caused, are critical. Improperly planned land uses were their chief concern, as being the chief cause of course of water shortages. And fisheries authorities down there have very little say, have very little control in land management. This was deplored by everybody there, but they do have a very complex system of government, and I certainly don't know any easy solution for them, though I offered for consideration the idea that there should be fisheries-oriented management of some lands.

The most disturbing element of the symposium to me was the hatchery-oriented thinking of the senior administrators. There seemed to be little or no appreciation –

[END OF SIDE A]

HAIG-BROWN: – money. I don't know if that's exactly the right word, but it gets the idea over. A compensatory money that has been so readily available from dam builders, water diverters, and other stream destroyers. They say, "Well, we're putting a dam here; we'll give you a hatchery." So the state gets the hatchery, and the other people get the dam, and the steelheader gets nothing.

Hatcheries – and this was my point, and I must say I had difficulty with it – hatcheries are only one means of producing fry: in the narrow sense, an efficient means, and in any broad sense of producing a good fishery, an extremely inefficient. Natural spawning, salvage – and I mean salvage [at fly?], artificial spawning channels, upwelling incubation stations can only yield fry in quantities and of superior quality, and I suspect at considerably lower price. And all those yields can be taken from the total genetic variability of the run. That is to say, selection is at a minimum. I wouldn't say there is no selection at all; there is in artificial channels particularly perhaps. And all these yields can, if necessarily, be caught up and reared in artificial rearing ponds. I think in that course of action, your operational costs might be significantly higher, but capital costs would be very much lower and of course the results would be measurably superior.

Wholly artificial rearing ponds are probably the least satisfactory means of rearing fingerlings and smolts. The practical alternatives are stream improvement, flow control, stream fertilization,

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artificial side channels or flow ponds or combinations of these according to circumstances. And that really was the point I was trying to get over. We have many resources, and hatcheries are only one, and they are the last resort. The point is that you can realize smolt production by any combination of fry production alternatives with improved rearing.

In British Columbia, they have unfortunately already embarked but extremely costly hatchery program. I said the Capilano hatchery may be justified apart from its high cost by the fact that the river is totally obstructed and is close to a large center of population, and it is the home stream of unusual runs of both cohos and steelhead. The Quinsam hatchery has the appeal of an ideal water supply, but I am uncertain of its purposes, and I don't mind telling you somewhat suspicious of them, and strongly of the opinion that the saved money could be better spent on the rehabilitation of the Quinsam River itself. There are other and certainly more productive uses for the Coal Creek water supply.

If there is some tenuous justification for these two proposals – or one of them [inaudible] – I can see none at all for the Vedder-Chilliwack River proposal. The Vedder is a major steelhead producer, and it has stood up for many years to heavy fishing pressure, and it's still standing up to it. It has a dynamic, high-quality natural stock, and any impairment of this quality can only be undertaken at your peril. Some improvement of the stream's quality is already promised in the very large pink salmon sporting channel proposed for the upper reaches of the International Salmon Commission. Eventually that channel will spawn, I think, 200,000 pink salmon female, and I would think there should be some negotiation between the steelhead managers and our staff on the International Salmon Commission as to what is the ideal [disposal?] effect and so forth, in terms of increasing the stream's fertility.

But any hatchery on this watershed is going to result in enormously increased fishing pressure, with almost certain impairment of the natural stocks. No doubt a large part of the intention will be to release advanced fingerlings or smolts in other streams, and there may be some value in this. I realize that both steelhead and Atlantic salmon may be somewhat more adaptable than Pacific salmon. But individual native stocks are still the ones best adapted to their particular watershed, and by that I mean individual small streams as well as large streams. And any [inaudible] should be very carefully considered. I have seen enough of the problems of restoring damaged stocks and replacing lost stocks on the Fraser watershed and have some respect for the astonishing quality of discrete natural stocks.

There is one point that I would like to raise here that is a little bit off the point, and that is the difficulty that we have presently in determining which streams produce the Strait of Georgia resident coho stock. The obvious solution is to put on a great big tagging program in the Strait of Georgia and find out. Now, the objection that has been raised here is that it is impossible to cover all the possible streams that these coho might go to in any efficient way for tag recovery. My suggestion is this, and it will be helpful to steelhead as well as to saltwater fishermen. I would like to see every school in the province adopt a small stream, or a section of a larger stream, or even a section of a small stream, and become completely familiar with it. I would like to see this be a part of the B.C. curriculum, not something dreamed up by individual teachers. We have a side stream up in the Campbell River area where there is a little artificial spawning

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channel built by the schoolchildren, and while I don't think it has been extremely productive so far, it has been extremely productive in terms of education. And it probably will produce some fish in the end. But the point is that this is the kind of thing that belongs in the school curriculum. It would develop the interests of a whole generation of children, and it would serve our interests as steelhead fishermen and just as much interest in the saltwater angler. And in the case of this tiny manner, we have a beautiful little come-on, and I'm betting one year from now or two years from now, we're going to have a major Strait of Georgia tagging program [inaudible] so you can get out there and find those tags. I didn't want to miss saying that, even though it's a little off the point.

Getting back to my main subject, in the end of course, as Jim as mentioned and many other people have mentioned, it's the fishermen who will really settle the matter. He can choose to catch a fish or two shoulder to shoulder with his brothers in a pool immediately below the hatchery and imagine himself a steelheader, and it's a very pleasant conceit that may yield satisfaction for a brief span. Or he can decide he really wants to go steelhead fishing.

If he wants steelhead fishing, there has to be a proper distribution of fish through the river and through the sea. The steelhead fisherman travels the river; it's an important part of his sport. If we want steelhead fishing, we do not want or need to kill fish. Now that isn't necessarily a conservation point I am making. It's much more important to have fish in the pools and know with reasonable certainty that we're fishing real fish and not empty water. And it is to kill a fish and take it home to the pot. And this to me is the biggest thing about catch-and-release. You would know if [inaudible – audience applauds].

Now, I don't think you have to have total catch-and-release, nor even why you shouldn't take a fish if it's the season or [inaudible] trophies if they're big enough, and you don't mind or your wife doesn't mind having them stuck up in the living room. But I believe in catch-and-release. I know it's not necessary to use bait to catch steelhead in the summer or in winter. And they would be regarded a loss [inaudible] if they were caught on Vancouver Island. Everybody got used to it, and they were catching just as many fish on teaspoons as they were on bait. But what is very important, and again I commend this to Jim [Hatter's] attention. It's necessary to plan your restrictions to keep the fishermen moving. Somehow or other, we want this movement when he comes to a pool, let him fish it through and then let him get the hell out, let another guy have a chance. And if we can get this movement through gear restriction, well, fine; that's important. But really whether you catch them on bait or get them on flies, I don't know if that's too important. Sometimes it is, sometimes it isn't. But in general, the important thing is to get the fisherman moving and not hogging one place. I'm sure that that's the only solution toward setting the pressures that have come on the rivers today.

Now, apart from gear restrictions, which are not all that important, and catch restrictions, which may be extremely important, I [inaudible] we should expect much more about fishing than we do. We have a right to expect of him some knowledge of the fish and its needs, absolute respect for the stream itself and the stream banks in terms of litter, brush cutting, and other abuses. He should have a decent understanding of stream etiquette and common courtesy, which are much the same; he should have respect for all other life of the streams including bird, insect, and plant

life. He should be in faithful observance of the laws and have some means [inaudible] the police to report infractions. With all of this, some sort of training and qualification for a license, that may not be a bad idea. After all, we already have other training courses. It should not be too much to expect a fisherman of any age to recognize a steelhead smolt when he sees one. He should be able to tell the difference between a pre-migrant salmon and a trout of any kind. He should be aware through the steelhead that a small trout may be a pre-migrant steelhead, and he should want to see that fish return to the stream. Natural stock pre-migrants are worth their weight in silver and should be protected absolutely from capture. I've seen steelhead smolts that were over eleven inches long. I believe we should aim at the protection of a fourteen-inch size limit on all coastal streams. [audience applauds] Size is a major factor in survival, and if you have a medium size limit, it just ensures that your best fish are all [inaudible]. We've got to hang onto those, and I think we need a two-inch margin in size limit if we're going to have any satisfactory [inaudible].

Modern fisheries management takes money. I don't think that a sports fisherman can expect the general taxpayer to go on providing forever. We should be expecting and even requesting increased license fees. Think what they put in hatcheries: it struck me that at eight bucks a fish, a forty-fish punch card should cost \$320. That's a nice piece of change. Now, I noticed you don't have any difficulty with this theory. Well, I find that let him sell a one-punch punch card for eight bucks. Then the fisherman can put the other fish back. If somebody wants forty hatchery fish, he ought to pay \$320. [audience applauds] It may sound funny, but I don't really see that it is, you know, it's dead serious in a sense, because if we're going to have [inaudible], it's going to cost money and we're going to have to pay for it. Why not? Why shouldn't we? I don't see any reason why some guy who never goes fishing should be paying part of his taxes to let us do that. I think of course we can produce good natural fishing for a lot less than eight buck a fish, so maybe you won't have to pay that much. But we should be [inaudible].

That really brings me to the end. I'm going to say again, the only real hope we have of ensuring the perpetuation of steelhead and salmon stocks is the hard way. We call for understanding intimately and in great detail the natural needs of these magnificent animals and providing for those natural needs in the best way we can devise, which will always be those closest to the natural way. The steelhead runs, in all the complexity of place they have held for themselves, and I'm sure it's been a hard struggle, among the Pacific salmon, are a natural miracle of no common order. Our determination should be to preserve them in the system and not to debase them.

MODERATOR: I have been accorded the honor to thank our speaker. And in so doing, I find it pertinent to say something about ourselves. We as members of the Steelhead Society are indeed fortunate people, as compared to probably the majority of the community in which we live. And this is because we have found the quality of living has something to do with angling. And in pursuing our chosen sport, we found that it's essential to know something of the natural world in which we live. And our earlier experiences tell us that a lake is more than a stretch of water, or a stream is just a little more than a riffle and a run and a waterfall. And the more we know and the more we learn of our natural environment, the less we become tied to the plasticity of urban existence, which is imposed upon us all. Therefore I say we are indeed fortunate people.

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But we cannot properly pursue our sport, nor can we accept our responsibility to the environment without knowledge. And this knowledge we acquire in a number of ways: primarily it's based on our own experiences; secondly, it's what we learn from our fishing colleagues; and probably thirdly, it's what we learn from the printed word. And we have all discovered that the literature of angling is extremely rich. It's probably the richest literature in the world for any one given subject. I'm not talking about the pulp magazines, which will tell us how to get wrist-cracking strikes from [long cut?] trout. I'm talking about the literature that deals scientifically with our sport, relates us to the environment, and does indeed provide us with a great deal of poetry, to say nothing of the excellent prose that most of it is based upon. This is the way we manage to acquire our knowledge. And we are singularly fortunate in having here amongst those illustrious ones whose works will survive in history, we have our own here in British Columbia, the speaker we have had today, Roderick Haig-Brown. And we all owe a debt to him for that because, as many of us do, we revert continually to his books. But quite apart from that, information is acquired by the spoken word as well, and if there are any of us here who have not learned something from this magnificent discourse that we have heard this afternoon, then surely they should never turn out again. We've all got more than enough to think about for the next three or four months, more things to debate, more things to discuss, more arguments to pursue, and this is a part of a fisherman's life as well. This is what makes for good company, this is what makes for good fishermen, and this is what makes good for the future of our sport.

And so, Doctor Roderick Haig-Brown, on behalf of the executive and the members of the Steelhead Society, thank you for your excellent discourse. Thank you very much. [audience applauds].

MODERATOR: Rod has indicated that if anyone has any question that they would like to ask him, possibly of his recent talk in California, we certainly welcome any questions from the audience if anyone has anything they wish to ask.

HAIG-BROWN: – transactions, it'll be a fairly bald thing on that, and I don't know how complete a record was kept of what went on at the meeting. I should pass [inaudible] that that meeting was made up, I believe, some ninety percent were scientists of one kind or another, invested people [inaudible] and so on, and the other ten percent were fishermen.

QUESTION: Sir, do you think that a fish ladder in the [Binn?] River, which is north of Campbell River, would this be a help to the steelhead in getting up into the Cosmo Creek and their tributaries and that water system? What are your feelings on a fish ladder?

HAIG-BROWN: Well, I think that that's a very interesting proposition, that [Binn?] River fish ladder. It would certainly open up the [inaudible] watershed to both salmon and steelhead, and I have no doubt it would be productive and I think it would pay off. Unfortunately, there have been two very different estimates as to the cost of such a ladder. I think was \$70,000, and the other was over \$200,000, and both those figures would be up very considerably today on construction costs alone. But that is one place I think it's the sort of place a ladder could be very, very good. There is some questioning on salmon ladders on some steelhead streams in Oregon

now; not salmon ladders, but just ladders. I don't know that it's correct, but there's a feeling among some of the Oregonian fishermen that some steelhead get up over falls that winter fish can't negotiate and salmon can't negotiate, and this may well be true. If you then allow the winter fish to get up with the laddering, you might lose your summer run; it might spoil your summer run. Apart from that, I don't see any objection to a ladder if it's economically sound and physically correctible.

QUESTION: A comment first that I'm pleased to hear Mr. Roderick Haig-Brown state that we should be sticking with nature in forests all over. I don't want a put-and-take system; I want quality on the river, and I hope this society will continue to move along this line. I wanted to ask you: you referred to manners on the river, river etiquette. It's badly lacking here in the lower mainland, so much so that I personally as a fly fisherman have lost interest in the Vedder and the Squamish. I don't desire to go much anymore from the bad experiences I have had. What would be a wrong with the suggestion of a – mostly on the lower mainland where we're mainly fishing for winter rain fish – the full fisherman and the fly fisherman generally speaking are fishing winter runs – he goes in at the head of a run or pool and then he fishes downstream. What's wrong with a rotating system where you run at the head of a pool or run and you fish through it at your own leisure but in such a way that you're not holding up someone waiting to come through the water and has maybe driven sixty or a hundred miles, and it's only his one time out a week or a month or every two weeks. Why can't we have a system where we share the water in this respect? It seems logical where we rotate down through the river – you can take your time because nobody is immediately behind you. If there is, you use your own common sense and judgment. Wouldn't this be a solution where we're fishing for winter runs? That's my question.

HAIG-BROWN: Well, I think this is a logical step. I think that logical step was the question I was tossing toward Ken [Rayburn?] and his administrators when I suggested that movement is the essence of the thing. If you can produce regulations that will keep your fishermen moving and logically movement would be downstream, certainly, when fishing for winter steelhead. I think it would solve part of the problem. But with the fly fishermen, you can get the guy who becomes absorbed in the fact that he missed a place there under the log over there, and he's going to stay in that one place until he gets that fish to come again. It isn't easy, and it really is more a matter of education than it is of legislation. And that's why I would like to see some attempt made, when issuing steelhead licenses, to teach – make sure somebody knows a little bit about what the sport's all about. That would be one of the points, I think: give the other guy a chance. I really don't think that we can legislate good sportsmanship or ethics, but you can design some legislation that tends to make the right thing be done automatically. And it's best done [inaudible].

MODERATOR: Rod, on behalf of the group, we certainly appreciate your coming, and hopefully we will have you here again another time.

[END OF TAPE]