

CHAPTER 24

Application of the precautionary approach to the conservation of wild Atlantic salmon stocks

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Introduction to the Precautionary Approach

Why are most fisheries management organizations, international and national, now attempting to introduce the concepts of the Precautionary Approach to their work? Most fisheries management has failed. The evidence is all around us. One of the reasons for the failure has been a tendency by politicians and others to ignore advice that they do not like but to try to make this seem rational by calling for more research. Thus the demands for more research become something of a smoke screen to obscure the fact that unpleasant decisions needed to be taken, but were not. One of the central tenets of the Precautionary Approach is, therefore, that lack of scientific evidence shall not be used as an excuse for inaction. This does not mean a recipe for stopping everything and it does not lessen the need for scientific advice and research. It does mean that where there are reasonable grounds to conclude, for example, that a stock is declining or that sea lice are causing losses in wild stocks or that habitat is being lost, remedial action must be taken. The excuse “there is no evidence that...” is not allowed under the Precautionary Approach if there are reasonable grounds to believe that conservation measures are required. But it has to be reasonable. One could hardly halt all dam building in Spain because of a decline in Russian salmon stocks.

First, I should make it clear that I will discuss North Atlantic Salmon. The North Atlantic Salmon Conservation Organization (NASCO) is not involved at all with Pacific salmon, although we are trying to work much more closely with our colleagues here. For those of you who are not familiar with the international aspects of salmon management in the Atlantic, NASCO is an inter-government treaty organization established in 1984. Members are Canada, Denmark (in respect of the Faroe Islands and Greenland), the European Union, Iceland, Norway, Russia and the USA. We also have about 30 Non-Government Organizations who bring much experience to our work.

I will not discuss the concerns about the state of the stocks discussed by Kjetil Hindar and Fred Whoriskey, Chapters 5 and 6. In spite of the restrictions on harvest introduced all around the North Atlantic, abundance has not improved. It is widely believed that the factors responsible for the decline in abundance relate to the marine phase of the life-cycle; evidence from a number of monitored rivers indicates that marine mortality has doubled since the 1970s. Focusing only on the fisheries is simply not enough. A broader, more holistic approach is needed if we are to fulfill our objectives of conserving, restoring and enhancing Atlantic salmon. We need new principles to help us to achieve these objectives.

It is for this reason that NASCO and its Contracting Parties have adopted and are now applying the Precautionary Approach to a wide range of activities.

The first hurdle when introducing the Precautionary Approach is to agree on a definition. NASCO adopted the basic philosophy that we should be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.

Implementation of the Precautionary Approach

It was further agreed that implementation of the Precautionary Approach requires:

- a) consideration of the needs of future generations and avoidance of irreversible changes;
- b) prior identification of undesirable outcomes and of measures that will avoid them or correct them;
- c) initiation of corrective measures without delay;
- d) priority to be given to conserving the productive capacity of the resource;
- e) appropriate placement of the burden of proof.

These principles draw heavily on those developed by the FAO. We now have a new 'lens' through which to re-examine our management measures. You will see that the lens has a number of faces but perhaps the most important is that irreversible change must be avoided because future generations have rights to the resource. To tell you the truth, it is not too difficult to agree on definitions, they all sound very reasonable and sensible. It is a little more difficult to turn these definitions into agreements. Nevertheless we have made progress which I will outline now. We have so far examined eight elements:

- scientific advice;
- management of salmon fisheries;
- habitat protection and restoration;
- aquaculture, introductions and transfers, and transgenics;
- stock rebuilding programmes;
- socio-economic issues;
- unreported catches; and
- by-catch.

There is one element that we have not yet looked at in detail and that is predation. Furthermore, in the light of the previous papers and dialogue (Chapters Lackey 13, Rees 14, and Dialogue 17) we might also need to consider major issues including population control and human attitudes to the environment if we are going to conserve Atlantic salmon for future generations. NASCO does not have such a wide remit but there is no doubt that developments in these fields constitute huge uncertainties.

A major and obvious problem is that many of the adverse impacts on wild salmon stocks come not from management of the fisheries but from external factors. Over some of these external factors such as climate and ocean temperature we have no influence and for others such as pollution, hydroelectric schemes, aquaculture practices, forestry practices, the influence is often beyond the direct hand of the fishery manager. In our view the Precautionary Approach must be seen as a holistic concept. For this reason we have assembled in our Action Plan all the elements that go to make up this whole. They are presented in Figure 24.1, but as you will notice the whole sphere of precautionary actions is floating upon a sea of uncertainty.

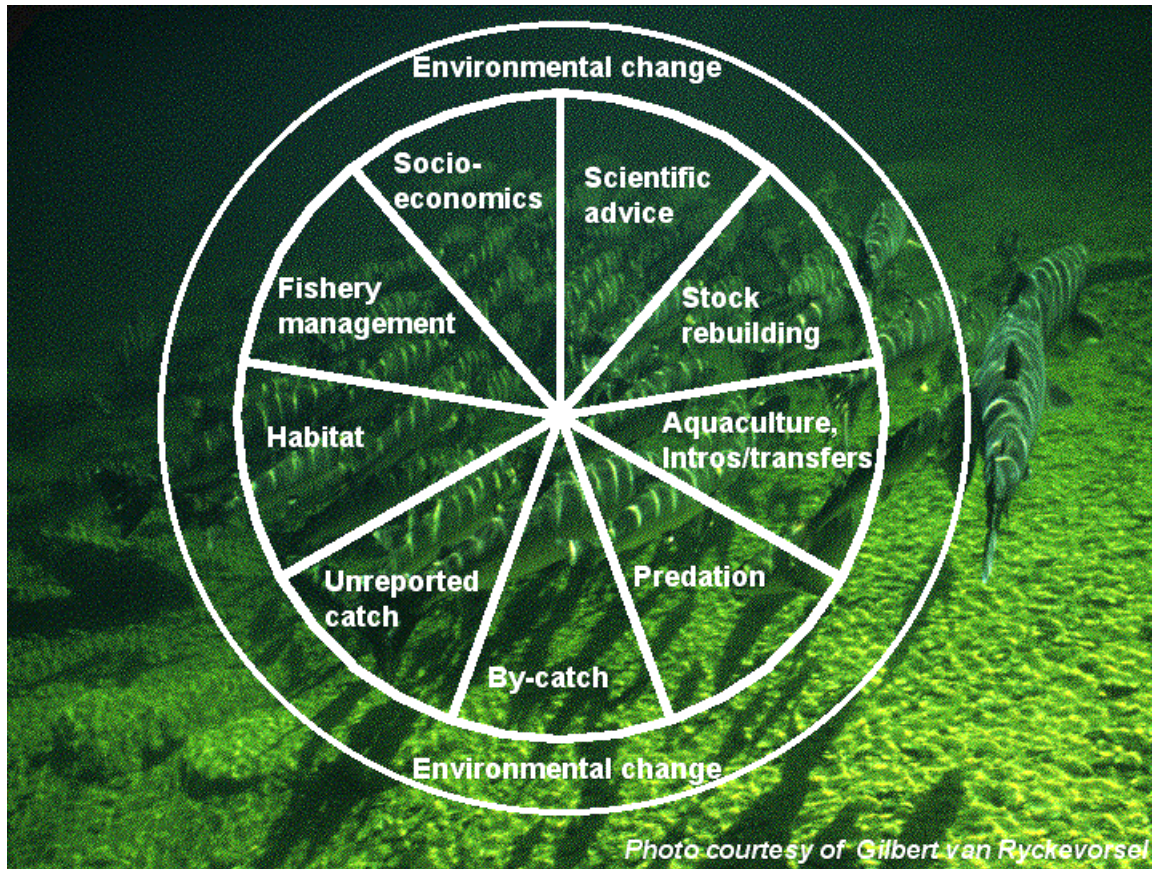


Figure 24.1. Elements of the NASCO Precautionary Approach Action Plan.

Scientific advice

It is very important to agree on the role of science in the implementation of the Precautionary Approach. 'Precaution' is not a scientific concept - we decided in NASCO that we did not want to ask our scientific advisers to answer questions involving how precautionary we want to be. "Precaution" is more of a management issue and it is not appropriate, in our view, to "pollute" science with such concepts. We want science that is independent and free of politics. We invoke the Precautionary Approach because we do not have scientific certainty. Therefore, the first task is to take the necessary steps to try to get the scientific advice needed, but in the meantime it is vital to act cautiously. Science plays a vital role in advising on catch options with assessment of risks and on conservation limits and management targets.

One important new initiative, intended to increase understanding of the causes of marine mortality of salmon, is the establishment by NASCO of an International Atlantic Salmon Research Board. The Board has developed an inventory of research on salmon at sea, identified research priorities and is currently embarking on fund-raising activities.

Management of salmon fisheries

How salmon fisheries are conducted is an element that managers do have direct control over. For this we developed a Decision Structure that will ensure that managers and stakeholders are led through a series of logical steps which should guide them through the process of managing salmon under a Precautionary Approach.

In NASCO, consistent with the Precautionary Approach, more risk averse catch options have been adopted. For example, for the two distant water fisheries managed internationally harvests have been

dramatically reduced to the extent that at West Greenland this year there will be a subsistence harvest only, while at the Faroes there has been no harvest at all for a number of years.

In a simplified form, the Decision Structure involves:

- Establishing reference points or other measures of abundance and diversity;
- Establishing pre-agreed procedures for management;
- Monitoring compliance;
- Introducing appropriate management measures; and
- Monitoring effectiveness of the management measures.

We are currently evaluating this Decision Structure internationally. Each Party to NASCO is trying it out and reporting back on problems and benefits with its use.

Habitat Protection and Restoration

The next subject we tackled was habitat. It is clear that salmon stocks can only be conserved, enhanced and restored if their habitat is also conserved, enhanced and restored. This is an area where decisions are often made not by salmon managers but by other agencies such as those concerned with hydroelectric schemes, road building, etc. Our first precautionary step here was to try to measure what salmon habitat we now have. How else will we know whether we are succeeding or failing in future years? Then we agreed on a policy of “no net loss” and gains where possible. We agreed to:

- Establish inventories of salmon rivers (containing river, salmon production and habitat impact data);
- Protect all existing habitat through a policy of no net loss and:
 - identify risks to habitat and develop corrective measures;
 - place the burden of proof on proponents of activities which may impact habitat;
- Restore lost habitat where possible; e.g. remove dams.

Certainly, there will be a strong need to develop better communications with all the interested parties; e.g. hydro-electricity, forestry, agriculture industries, and road building, and to introduce evaluation and monitoring systems and update them. The most important element is to protect against further loss and make gains wherever possible.

Aquaculture, introductions, transfers, and transgenics

The next areas that we turned to were aquaculture, introductions and transfers, and transgenics. We asked: How can these activities be operated in a manner that gives protection to wild stocks?

First, government agencies which exist to promote salmon farming are often also those that exist to protect wild stocks. Then there is the basic conflict between those whose life and income come from wild salmon and the industries that produce farmed salmon. One way to approach this, of course, is to attack those other sectors privately and publicly with the aim of forcing them to act. In NASCO we have not taken that route. Instead, we have sought to persuade those concerned that it is certainly not in their interest to be seen as causing threats to the wild stocks. This is a slower process but one which should yield lasting results.

When the salmon farming industry started 30 years ago there was a belief that it would have beneficial impacts on wild salmon because prices would fall and exploitation would decline. This was correct, but in addition to the benefits there are now growing concerns about the genetic impact of escapees and of transmission of diseases and parasites, particularly sea lice, to the wild stocks. Salmon farming has grown so rapidly that it has outpaced the scientific understanding of impacts and implementation of

regulations. Also, there has not been appropriate placement of the burden of proof. NASCO, in cooperation with the North Atlantic salmon farming industry, has developed a number of agreements including Guidelines on Containment designed to significantly reduce the number of escapees, since these may cause genetic and other damage to wild stocks. The Guidelines we have developed are now being used by each country to draw up national or regional action plans on containment. The data that will be reported under these plans will enable us to determine how well we are doing in reducing the level of escapees. But the industry has grown so fast that we will have to improve containment significantly each year just to keep the number of escapees from rising.

We have recently reviewed all of our agreements in relation to aquaculture, introductions and transfers and transgenics to ensure consistency with the Precautionary Approach. Although the work done does strengthen existing measures by focusing on implementation, and placement of the burden of proof, it still means that millions of fertile farmed fish are out there and, through interbreeding with wild stocks, they may be altering the millennia-old genetic stock structure in the rivers flowing into the North Atlantic. They may also be causing loss of genetic diversity. That is hardly precautionary. For these reasons we may need to focus more on the use of sterile fish as soon as the research has been done on any ecological impacts they might have. Wild salmon protection areas are also being introduced. We are engaging with the industry in cooperative projects so as to build confidence and trust. We are also stressing to them the likely economic impacts on their industry if they are shown to damage the wild stocks. As well, we have developed guidelines on stocking where it has to be used, since poorly planned hatchery practices can result in adverse genetic impacts and risk the spread of diseases and parasites.

In the case of introductions and transfers we support the establishment of epidemiological zones which are considered free of, or subject to, certain specified diseases and parasites. It obviously makes sense to stop movement from an infected zone to one free of infection. The big issue here is how does one protect against unknown diseases and parasites. For example, we were completely unaware that the parasite, *Gyrodactylus salaris*, which has been associated with Baltic salmon, probably for thousands of years, would have such a terrible effect on Atlantic salmon. In more than 40 rivers in Norway salmon are almost extinct due to this parasite. Therefore, just moving salmonids around within fairly short distances can cause unforeseen serious damage. The Precautionary Approach should not allow that but there is a particular problem of countering a threat of which you are unaware. This also raises trade issues.

Transgenic Atlantic salmon are a new development. They could be the first transgenic animal available for human consumption and they could bring major advantages to the salmon farming industry. But there are significant risks to the wild stocks of irreversible change. A highly precautionary tactic would, of course, be to require that all salmon farming is carried out on-land in secure facilities. That does not seem to be an economic option at present, though if transgenic salmon are approved for use on land it would mean that the industry could have the benefits of much faster growth whilst wild stocks are protected because the transgenics are grown in secure facilities on-land. We are, however, far from that stage. The nightmare scenario would be that transgenic salmon escape to the wild and interbreed with the wild stocks causing irreversible genetic changes.

Stock rebuilding programmes

Currently, approximately three quarters of monitored Atlantic salmon rivers in North America are below their conservation limit. NASCO's agreement on the Precautionary Approach requires that stocks be maintained above conservation limits through the use of management targets and that stock rebuilding programmes (including habitat improvement, fishery management actions and stock enhancement) be developed for stocks below their conservation limits. We have developed guidelines on stock rebuilding programmes.

Socio-economic issues

The latest element that we are looking at is the thorny question of how social and economic issues can interact with implementation of the Precautionary Approach. It is clear that if social and economic issues are given a high precedence then the Precautionary Approach could be negated. Our first step here has been to start the process of estimating all the elements which make up the values of wild salmon stocks. Some of these are fairly easy to measure, the values of commercial and recreational fishing for example. But the wild salmon has significant “existence” or “heritage” values in the public mind (see also Chapters 18 and 19, Farber and Narcisse). These values can get lost when the value of salmon is compared with other industries, yet they could be huge. For example, a study of Londoners indicated that they were willing to spend about CAN \$25 million a year to restore salmon to the Thames. We have decided that we need to do much better on this and have agreed on a template internationally so as to measure all of these values. Once we have this we will be better able to study how social and economic values and the Precautionary Approach can interact positively. To do this we will:

- identify all the elements of social and economic value associated with the wild stocks; e.g. fisheries, ecotourism, the salmon itself, genetic diversity;
- agree on consistent methods to assess these values in monetary terms and list values that cannot be assessed in monetary terms;
- consider all these values so as to ensure the wild salmon are ‘fully punching their weight’; and,
- incorporate social and economic information in all decisions recognising the need to avoid irreversible change, giving priority to conserving the productive capacity of the resource and protecting the rights of future generations.

We are fortunate that people in general care about the wild salmon. In future we will need to focus more on the public relations and educational aspects in order to maintain and increase support for conserving the resource in the face of increasing pressure on salmon habitats as a result of a growing population’s needs for water and electricity, etc. The aim must be to help people without harming salmon.

Unreported catch

Unreported catches amount to about 40% of the reported catches. We need transparent reporting of information giving estimates of unreported catch, a breakdown of sources of unreported catch, and details of measures taken to minimise unreported catch. We are making good progress in this area.

By-catch

There are very large fisheries for mackerel, herring and other pelagic fish in the North-East Atlantic. They are taking salmon as a by-catch but we do not know the extent of this. We need to:

- encourage and seek funding for research on the distribution of salmon at sea, their overlap with pelagic fisheries and on the by-catch;
- encourage pilot studies on technical adjustments to fishing gear in pelagic fisheries so as to minimise by-catch of salmon; and,
- request other fishery commissions to encourage adjustments to fishing methods so as to minimise by-catch of salmon.

Conclusion

This is a brief summary of how, at least in one international fisheries organization, we are grappling with the Precautionary Approach. In some ways it is only organized common sense but it is perhaps a common sense that has been missing. Adopting the Precautionary Approach calls for something of a revolution in the short-term way that we and our political masters have thought. It is not an easy process to do this but I am convinced that we have to do it. There is simply no future in continuing along the present course. We have already lost too much that way. The abundance of wild stocks has declined

markedly and there have been major habitat losses in the last 150 years. Today we have threats that were simply unheard of even 20 or 30 years ago, including loss of genetic diversity from inter-breeding with aquaculture, transfers of parasites from one ocean to another, transgenic salmon and re-stocking practices that can do damage rather than improve. If marine conditions are unfavourable, all the more reason to batten down the hatches until the storm passes and conditions improve.

Future generations have a right to wild salmon stocks but it is us, the present generation here on this earth now, that have to take the tough decisions that will deliver these rights to our descendants. As one angler and conservationist wrote 'if the wild salmon should ever cease to go about its migrations, then our demise may not be far behind'. The Precautionary Approach might be seen as the first step in changing our collective mind sets so that we begin, even if they are uncomfortable, to take the right decisions.

