Seafood Watch®
Farmed Atlantic Salmon Fact Sheet
April 2014

The four new assessments referred to below cover Atlantic salmon produced in net pens in Norway, Chile, Scotland and British Columbia. The assessments were conducted using the Seafood Watch Aquaculture Criteria which consider ten key potential environmental impacts of aquaculture production.

How do these recommendations differ from the past farmed Atlantic salmon recommendation?

Seafood Watch previously assessed the global production of farmed Atlantic salmon in a single report, but has begun to assess farmed salmon by country or region. Since the environmental impacts of salmon farming are so complex, and each region or country takes different approaches to management, assessing by region allows Seafood Watch to identify environmental impacts and concerns specific to each country. The first four regional farmed Atlantic salmon assessments are Norway, Chile, Scotland and British Columbia (Canada). Although some aspects of aquaculture production have improved, as with the earlier farmed Atlantic salmon assessment, all four 2014 regional assessments yielded "Avoid" ratings.

Why are farmed Atlantic salmon rated "Avoid"?

The salmon farming industry has made improvements in the past decade to reduce its environmental impact, but additional work is needed in order to address remaining concerns. Though the scope of problems varies by country, chemical use and disease are two areas of environmental concern that exist across each assessment.

Salmon farmed in open net pens are highly vulnerable to infection from diseases, or parasites such as sea lice, and as a result require treatment with antibiotics and pesticides. The use of antibiotics in salmon farms increases the risk of antibiotic resistance in human diseases, and there is a high concern regarding the use of antibiotics that are listed as critically or highly important to human health by the World Health Organization.

Sea lice parasites and viral and bacterial diseases can be passed between farmed fish and wild fish populations, and are a high concern in Norway, Scotland and British Columbia where wild salmon or sea trout populations are vulnerable to such impact.

How does production vary by region?

Norway and Chile are the top suppliers to the North American marketplace. In Norway, the scale of production is very large (1.24 million tons per year). The industry farms native Atlantic salmon and is located in important environments for wild Atlantic salmon and sea trout. There are many times more salmon in farms in Norway than there are in the wild.

In Chile, the industry is also large (650,000 tons per year) and expanding. Atlantic salmon are not native in Chile. There have been — and continue to be — major disease problems on the

farms, but unlike the other three regions, there are no natural wild salmon populations in Chile that could be affected.

In Scotland, the scale of production is smaller (150,000 tons per year), but like Norway, the industry farms native Atlantic salmon and is located in important environments for wild Atlantic salmon and sea trout. There are also many more salmon in farms in Scotland than there are in the wild populations.

In British Columbia, the scale of production is smaller (80,000 tons per year). Atlantic salmon are non-native here, and this is the only region where Atlantic salmon farms are located in important natural environments for wild Pacific salmon populations.

How do environmental impacts and concerns vary by region?

Conducting science-based regional farmed Atlantic salmon assessments enables Seafood Watch to identify environmental concerns specific to each country, each of which has a different set of governance and rules regarding these operations:

In Norway, major concerns include the overuse of sea lice pesticides, the use of antibiotics critically important to human health, the impact of escaping farmed salmon on wild salmon populations (i.e. the loss of genetic fitness of wild salmon populations due to interbreeding, and direct competition and predation), and the impact of sea lice transfer on wild salmon and sea trout populations.

In Chile, major concerns include the overuse of sea lice pesticides, very high use of antibiotics that are highly important to human health, and the continued expansion of the industry into pristine environments in southern Chile. The high use of chemicals in Chile is a critical concern.

In Scotland, major concerns include the large number of sea lice pesticide treatments, the impact of escaping farmed salmon on wild salmon populations, and the impact of sea lice transfer on wild salmon and sea trout populations.

In British Columbia, while the use of sea lice pesticides is low, major concerns include the use of antibiotics that increase the risk of antibiotic resistance in human diseases, and the ongoing risk and uncertainties surrounding disease and parasite transfer between farmed and wild salmon.

Chemical use is a common concern and none of the four regions have regulations in place to limit the total use of antibiotics should a disease outbreak occur.

What types of improvements has the farmed salmon industry made?

Technological and management advances in salmon aquaculture have contributed to improvements in several key areas of concern:

- Data availability: Public availability of information on salmon farming has greatly improved, and while important data gaps remain in all regions, salmon farming transparency represents an example for all aquaculture industries to follow.

- Feed: The industry has significantly reduced the amount of fish meal and fish oil used in feed, which continues to reduce the amount of wild fish needed to produce farmed salmon. In 2000, approximately five or six pounds of wild fish were used to produce one

pound of farmed salmon. Currently, between 1.5 to 3 pounds of wild fish are needed to provide the fish oil necessary to grow one pound of farmed salmon.

- Escapes: The industry has improved the construction and management of net pens to reduce escapes, but there's still a risk of large escapes events (e.g. due to storms) in all regions. This remains a high concern in Norway and Scotland in particular where Atlantic salmon is a native species and there is documented evidence of impacts on the genetic structure of wild salmon populations due to interbreeding between wild fish and farm escapees.

- Waste (effluent and habitat): The industry has improved the monitoring and management of net pen farm sites to limit the impact of fish wastes on sea floor habitats or in the water column. There also has been considerable scientific study into understanding the nature and extent of these impacts.

How can better performers be recognized?
Seafood Watch recognizes that within any one region there may be better performing farms. As part of a broader eco-certification benchmarking study, Seafood Watch has been assessing various international aquaculture standards to identify those that are equivalent to at least a Seafood Watch yellow "Good Alternative" rating. Those farms certified to the equivalent aquaculture standards are recognized by Seafood Watch as environmentally responsible purchasing options.

Currently, no farmed salmon standards have been found to be equivalent. However, with the completion of the regional farmed salmon assessments Seafood Watch can now compare these assessments to the benchmarking results to see if any areas of concern have been addressed by the standards. If so, farmed salmon certified to those standards in the regions assessed by Seafood Watch will also be recognized as purchasing options.

Seafood Watch will continue to work with aquaculture certification programs to improve their standards allowing for a global equivalence to its yellow "Good Alternative" recommendation.

What salmon should I buy?
Seafood Watch has published recommendations regarding a range of salmon options, from wild to farmed. View our salmon recommendations here.

For what other countries or regions is Seafood Watch assessing farmed salmon?
The four regions assessed represent the large majority of global farmed salmon, but Seafood Watch is currently working to complete assessments for other regions that supply significant amounts of farmed salmon to the U.S. market: the Atlantic coast of North America (Atlantic salmon farmed on the U.S. and Canadian east coasts), New Zealand (Pacific King salmon) and the Faroe Islands (Atlantic salmon).

Why is Verlasso® farmed salmon from Chile rated a "Good Alternative"?
Verlasso® farm operations use a unique feed ingredient that reduces its dependence on fish oil and fishmeal from wild-caught fish sources, but the main reasons for the "Good Alternative" recommendation are that the fish are stocked in the pens at lower densities than in other open-net pen operations and documents show both limited pollution (effluent) levels at its farms, and lower use of antibiotics than the industry average in Chile.