

composition for lobsters (Robert Scheibling).

Fisherman Vincent Boutlier would like to know reasons for variation in patch structure of *Codium* vegetation, and asks that answers be submitted to Lobster Fishermen's Associations.

The occurrence of invasive *Codium* in St Margaret's Bay

was coincident with increase of aquaculture operations in the same area (Boutlier). The movement of *Codium* northwards from Long Island Sound (point of introduction to NW Atlantic) was likely related to aquaculture and boat traffic rather than to naturally occurring ocean currents (Paul Fofonoff).

Use of exotics in the east coast salmonid sea cage industry

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Sea cage farming of salmonids has grown from nothing to an industry worth over \$150 million per year. The industry is concentrated in a region where wild Atlantic salmon populations are in danger of biological extinction.

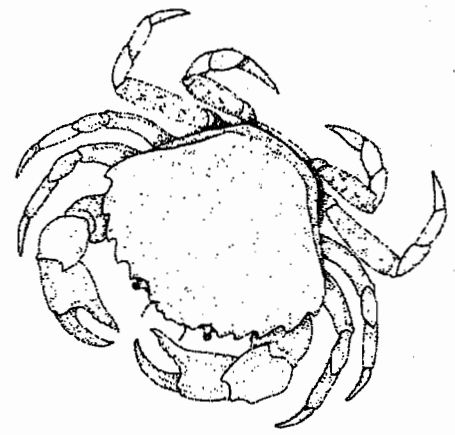
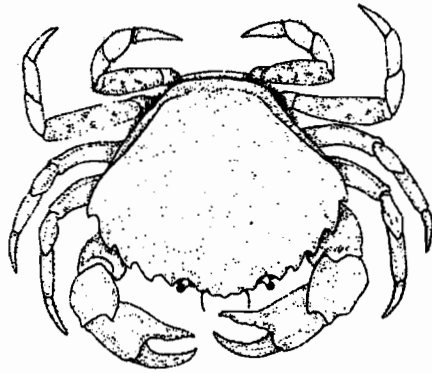
Most of the cultured fish are Atlantic salmon. The escape of these fish from sea cages poses a risk for wild salmon. Wild Atlantic salmon populations are river specific, and each has genetically adapted to the conditions in its home river. The fish used in the aquaculture industry have been subjected to a domestic selection program to alter their characteristics.

In addition, they also come from a small group of rivers, some of them European in origin. The straying of these exotics into endangered rivers poses a risk to the genetic integrity, and future survival, of the populations. Exotic rainbow trout are also cultured in some areas, and are escaping and entering Atlantic salmon rivers. Rainbow trout and the salmon have similar life cycles and biologies. The rainbows' possibility of colonization will be favored by the

depressed status of wild salmon stocks.

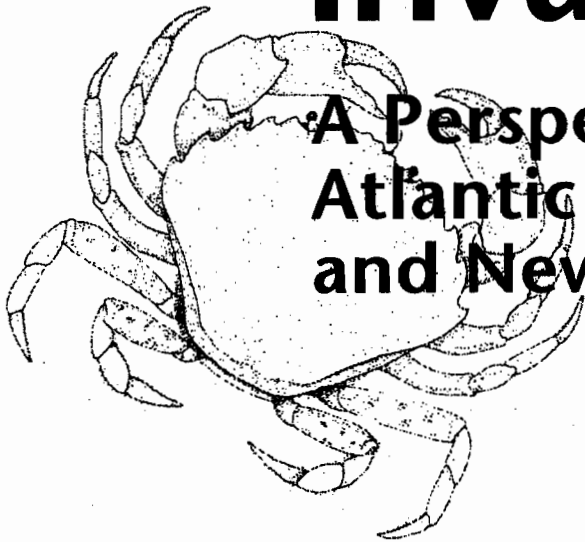
Discussion: Juvenile hybrid salmon escapees from aquaculture cages can survive in the wild, but they do not do well and reproductive success is very low in crosses between wild and cultured stock. However, escapees are an acknowledged problem (Whoriskey). In St Margaret's Bay (Nova Scotia), escaped steelhead salmon were caught within the Hubbards River system in year 2000, and escapes related to seal damage of culture cages have been ongoing for 7 or 8 years (Vincent Boutlier). However, in spite of these many problems, it is unlikely that salmon farming will be transferred to land-based operations because of enormous costs involved. With education, it should be possible to contain fish properly so that escapes are reduced (Whoriskey).

The allowable density for salmon farming is set at a biomass of 15-20 kg m⁻³. Current cages hold 15,000 to 20,000 fish, and cages must be 3 km apart. These densities may seem inhumane, but have been approved by university animal ethics committees (Whoriskey). Such dense stocking seems related to an increase in sea lice in wild salmon of the Bay of Fundy. This will be examined in catches of wild smolts (Whoriskey).



Marine Biological Invasions:

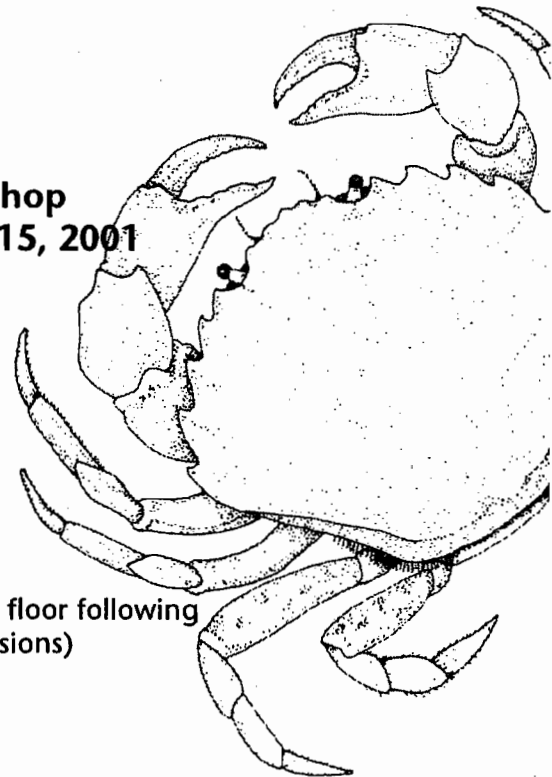
**A Perspective on
Atlantic Canada
and New England**



**Abbreviated* Proceedings of a Workshop
held in Halifax, Nova Scotia, May 13-15, 2001**

**Edited by Anthony RO Chapman
Assisted by Lara Gibson, June Hall
& Heidi Schaefer**

(* includes Abstracts, Discussion from workshop floor following presentations, and Recommendations & Conclusions)



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