SPEAKING NOTES
Brief to the Senate Standing Committee on Fisheries and Oceans

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Sustaining Canada's Marine Biodiversity: Responding to the Challenges Posed by Climate Change, Fisheries, and Aquaculture
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THE ROYAL SOCIETY OF CANADA (RSC) EXPERT PANEL REPORT ON CANADIAN MARINE BIODIVERSITY

I am the Chair of a recent national report on oceans prepared in response to a request by the Royal Society of Canada (RSC) that an independent expert panel be convened to advise on a series of questions related to the sustainability of Canada's marine biodiversity.

Following its deliberations from June 2010 to January 2012, the Panel released its report on 2 February 2012 entitled *Sustaining Canada's Marine Biodiversity: Responding to the Challenges Posed by Climate Change, Fisheries, and Aquaculture* (rsc.ca/documents/RSCMarineBiodiversity2012_ENFINAL.pdf).

Pursuant to the current interests of this Standing Committee, the Report attempts:

- to describe trends in Canada's oceans and marine biodiversity;

- to describe and forecast how fisheries have affected, and are likely to affect, Canadian marine biological life;
- to determine whether Canada has fulfilled its national and international commitments to sustain marine biodiversity; and
- to provide broad, strategically based recommendations to establish Canada as an international leader in oceans stewardship and marine conservation.

THE INFLUENCE OF FISHERIES ON MARINE BIODIVERSITY

OVERVIEW

Fisheries have multiple consequences for marine biodiversity. The most direct is through reductions in the numbers of individuals directly targeted as catch by a fishery or caught incidentally, as bycatch. Such an effect need not be problematic from a biodiversity perspective. It depends on the extent to which the population is reduced, relative to the levels at which it is predicted to be sustainable in the long term, both from a single-species and multi-species (or 'ecosystem') perspective.

THE SEVERITY OF SOME FISH STOCK DEPLETIONS

Marine fishes in Canada's oceans are estimated to have declined by an average of 52% from 1970 to the mid-1990s and have remained stable thereafter. Most commercially fished stocks remain well below conservation targets. When compared to other developed fishing nations and jurisdictions, such as the US, Norway,

Australia, New Zealand, South Africa, and increasingly in the EU, Canada's record at achieving long-term sustainability in its fisheries has been less than stellar.

The severe overfishing that occurred in Canadian Atlantic waters from the 1960s through the mid-1990s severely reduced the abundance of many species, often by more than 90%, and dramatically altered marine food webs and interactions between species.

FISHERY-INDUCED CHANGES TO MARINE FOOD WEBS

Fishery-induced changes to predator-prey interactions might be responsible for significantly retarding, or even preventing, the recovery of depleted marine fishes. At least three species in the southern Gulf of St. Lawrence, for example, are experiencing unsustainably high levels of natural mortality, meaning that they will be extirpated, or lost, from the southern Gulf if mortality rates do not decline.

White hake in this area might be the most endangered marine fish in Canada. In the 1970s and 1980s, approximately 18% of adult hake were dying annually; in the past decade, this annual level of mortality has increased to as much as 91%. White hake might disappear from the southern Gulf within the next decade.

High mortality is predicted to prevent winter skate from increasing, following its 98% decline in the southern Gulf. Atlantic cod in the southern Gulf, once (in 1987) the

largest spawning population of cod in the world, is currently experiencing such high mortality that the stock is projected to be extirpated from the southern Gulf by 2050.

INFLUENCE OF GREY SEAL PREDATION ON RECOVERY OF ATLANTIC COD

One factor thought to be inhibiting cod recovery is the increase in abundance of species that cod formerly preyed upon, such as mackerel and herring. These are species that feed upon cod eggs and larvae. In recent years, the recovery of cod is also thought to be affected by predation by grey seals, whose abundance has increased dramatically since the 1960s.

There is credible scientific analysis to indicate that the unsustainably high mortality of some fish in the Southern Gulf, including cod, can be partly attributed to predation by grey seals. There is also credible scientific analysis to indicate that grey seals might prey upon Southern Gulf *adult* cod to a greater extent than previously believed, particularly during winter.

However, there are also credible scientific analyses which suggest that the culling of grey seals, by whatever means, might not be sufficient to allow for the recovery of Atlantic cod, and other depleted fishes, in the Southern Gulf.

One key reason for this conclusion is that the marine food web is not comprised of only 2 species (i.e., cod and seals). Rather, there are multiple species that interact with

one another (such as competing with one another for food, or preying upon one another at different life stages). This makes it very difficult to draw firm conclusions about how changes in one species will affect the abundance of any other species in the ecosystem.

SHOULD GREY SEALS BE DELIBERATELY KILLED FOR THE PURPOSE OF IMPROVING FISHERIES?

In my view, a cull of grey seals for the purpose of 'improving fisheries productivity' would represent an insufficient reason for initiating such a cull because:

- the effects of such a cull on the recovery of cod, or of other species, cannot be credibly predicted from a science perspective; and
- the deliberate killing of one species native to Canada because of the human-induced depletion of another native species -- ultimately caused by politically expedient but scientifically unjustified management decisions -- would be difficult to defend from a variety of perspectives.

UNDER WHAT CIRCUMSTANCES MIGHT A CULL OF GREY SEALS IN THE SOUTHERN GULF BE DEFENSIBLE?

There is compelling evidence that, with some exceptions, Canada has not operationalized and fulfilled its numerous national and international commitments to sustain marine biodiversity either in spirit or in practice. Canada's progress has been unduly slow in both an absolute sense (some commitments still having not been met almost two decades after they were agreed upon) and in a

comparative sense, noting that substantive progress has been achieved by other western industrialized nations in meeting, and often exceeding, their national and international commitments to sustain marine biodiversity.

One of these key deficiencies is reflected by the absence of recovery plans, recovery targets, conservation limits, and recovery harvest rules for depleted species, contrary to Canada's obligations to do so.

In my view, a cull of grey seals in the Southern Gulf could potentially be deemed defensible:

- if it was formally acknowledged that the heightened extinction risks faced by marine fishes in the Southern Gulf were caused by human-induced overfishing, predicated by political expediency;
- if appropriate recovery plans existed for currently and previously exploited fishes in the Southern Gulf;
- if additional scientific analysis supports the hypothesis that predation by grey seals on adult cod is higher than previously believed; and
- if the cull was deemed to be the *only* possible action that could be taken to prevent the extirpation, or loss, of endangered marine fishes in the Southern Gulf. In other words, the cull would be a last-ditch attempt to recover species at risk of extinction. And as with all recovery actions, the feasibility of the action, and a scientific assessment of the possibility that a cull might have no effect, or even a negative effect, on fish species recovery, would need to be undertaken.

SUMMARY POINTS

The logical necessity of establishing target and limit reference points and associated harvest control rules cannot be over-stated. Put simply, if there are no recovery targets or timelines for recovery (there are neither for Southern Gulf Atlantic cod), there is no recovery plan. In the absence of targets or harvest control rules, neither society nor industry can inquire as to whether a proposed management action, such as a seal cull, is consistent with the objective of achieving a particular target within a pre-defined period. In the absence of reference points or control rules, there is no means of being able to audit the effectiveness, or to track the record, of fisheries management actions.

As the Supreme Court of Canada ruled, it is the Minister of Fisheries and Oceans' duty to manage, conserve, and develop the fisheries on behalf of Canadians and in the public interest. In effect, the Minister is responsible for investing (in biological reproductive capacity) and spending (exploiting) the marine biological capital held by *all* Canadians. A 'budget' for spending this capital, complete with quantitative objectives or targets, is as necessary for the Minister as it is of a financial manager responsible for managing an investment portfolio.

In the absence of a recovery plan for cod and other marine fishes in Canadian waters – one that includes targets for rebuilding, conservation limits, and rules for governing

harvest – the culling of grey seals would be appropriately interpreted to be an *ad hoc* management measure. While such *ad hoc* measures were characteristic of many past Canadian fisheries management practices, such a measure would be viewed as being inconsistent with existing Canadian sustainable fisheries policies and would be deemed to be contrary to the national and international obligations Canada has made to recover, conserve, and sustainably utilize marine biological life for the benefit of Canadian society and for the global community.