The Future Fight for Fish

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> Be fruitful and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea. Genesis 1:28

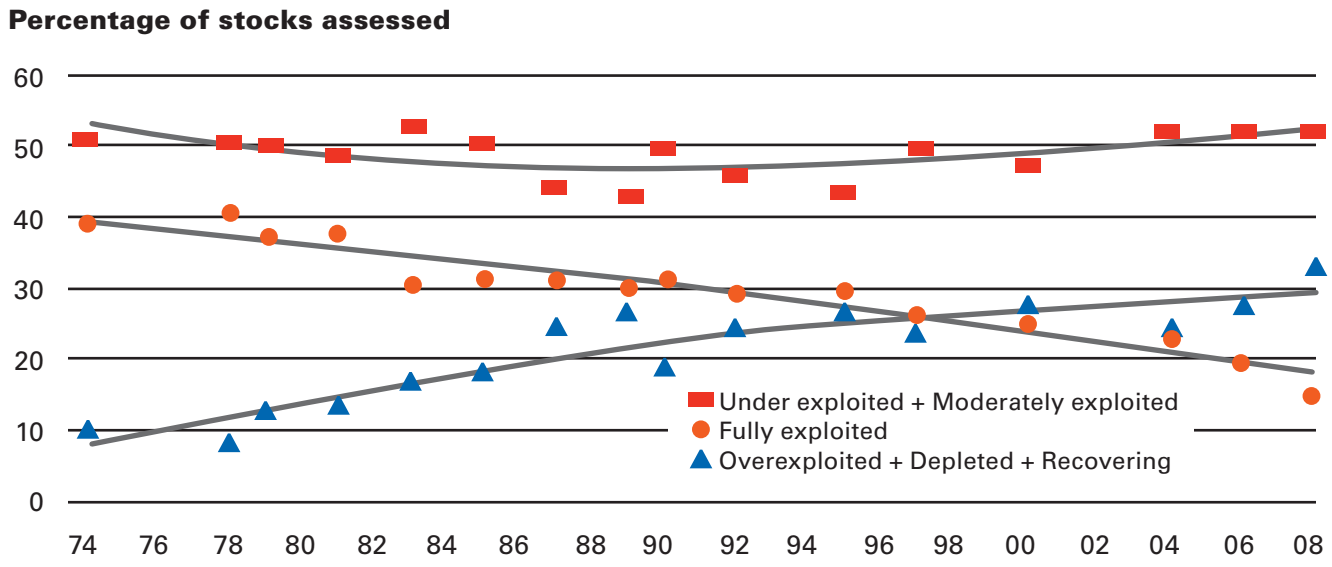
When the Chief of Naval Operations of the US Navy starts rattling off global fishing statistics without notes, it should attract attention – after all, what does the world's most powerful navy care about fish. Yet, with barely a ripple of acknowledgement, that's exactly what Admiral Gary Roughead did in a meeting with the *Boston Globe* editorial board last year. Noting the explosive growth of China's fishing operations running in parallel with the growth of its navy, he also stated that the potential for conflict over commercial fishing is growing, with fishing fleets of many states now sailing around the world to plunder distant waters after depleting stocks at home.

Canada has one of the world's most valuable commercial fishing industries, worth more than $5 billion a year and providing more than 120,000 jobs to Canadians. It is the economic mainstay of approximately 1,500 communities in rural and coastal Canada. With fishing a significant contributor to Canada's economy, should we be paying more attention to Admiral Roughead's statistics and the implications for Canada – a country all too aware of the consequences of a catastrophic collapse in fisheries – of competition for fish?

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) establishes a general framework for the conservation and management of all living marine resources. Even though it has been strengthened by an additional agreement on straddling and highly migratory fish stocks, this general framework has not, however, prevented the precipitous decline of several key fisheries which, in turn, has threatened the stability of marine ecosystems. The Food and Agriculture Organization (FAO), an agency of the United Nations, says that 53% of the world's fish stocks are already fully exploited and another 32% are either over-exploited or depleted.[1] Overfishing is the foremost problem facing the world's oceans. There has also been significant environmental degradation as a result of a toxic mix of pollutants, acidification and excessive noise caused by combinations of coastal development, farming practices, offshore drilling and the like, but it is illegal, unregulated and unreported fishing that is at the root of the decline of fish stocks. (Figure 1 illustrates the trends in marine fish stocks.)

Oceans are literally the source of life on earth. Alongside the rain forests, they shape the climate, cleanse the air that we breathe and feed the billions of people who rely on protein-rich seafood for their diet. The world's seas have always been farmed for these resources, but as the bounty

Figure 1. Global Trends in the State of the World Marine Stocks since 1974



Source: Food and Agriculture Organization, United Nations, "The State of World Fisheries and Aquaculture 2010," Rome, 2010, available at http://www.fao.org/docrep/013/i1820e/i1820e.pdf.

Photo: Mike Markovina/Marine Photobank

A trawler fishes off the coast of Gabon. Illegal fishing can threaten the livelihood of coastal communities.

of coastal waters has dropped, in large part due to unsustainable oceans management policies and the influence of a powerful alliance of corporate fishing fleets, technology has permitted the appetite of the world population to remain satisfied – at least until now. Humanity nowadays has the ability to harvest at will; we can fish anywhere, at any depth, for any species. As a result, unchecked, unrestrained and destructive methods, like the extensive use of large driftnets, have been calamitous for many fish stocks and their very existence is now severely threatened. Writing in the journal *Science*, an international team of researchers says that there will be virtually nothing left to fish from the seas by the middle of the century if current trends continue.[2] One of the scientists on the project, Steve Palumbi, from Stanford University in California, added "[u]nless we fundamentally change the way we manage all the ocean species together, as working ecosystems, then this century is the last century of wild seafood." This is a prospect that is truly frightening.

UNCLOS establishes the right of states bordering the seas (coastal states) to create an exclusive economic zone (EEZ) extending up to 200 nautical miles from their shores. Within its EEZ, each coastal state enjoys full authority over fisheries, subject to general obligations to prevent over-fishing and to allocate surplus fish to other states. Beyond the EEZ are the high seas, where each state has the right for its nationals to fish, subject to certain important limitations, including the duty to conserve. By custom and convention, the high sea and its resources are considered to be governed by *res communis*, law of the commons. The sea belongs to everyone and the freedom to travel on and to use it is a sentiment still pervasive in our global cultural consciousness.

Principles of the high sea include:

- the sea cannot be misappropriated, possessed and ruled by any private person/entity or state; and
- the use of the high sea and its resources by any state must not impede the same usage by other states.

The 1995 Code of Conduct for Responsible Fisheries established by the FAO states that "[t]he right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources."[3] However, there have been corporations and independent operators within the industry who have not lived up to this code of conduct and have successfully exploited loopholes and oversights, particularly where enforcement mechanisms do not match policies.

With controversial and wasteful shark finning – the process of cutting a fin off a shark to meet Asian demand for shark fin soup and traditional medicines – on the rise and a steady decline in plankton being observed,[4] the marine food chain is under unrelenting assault from both ends and virtually all points in between. The full consequences to the finely balanced marine ecosystem remain unknown but it is doubtful it will result in any good news least of all for those who are reliant on the sea as a food source. Indeed, a recent study by the University of British Columbia concludes that the inexorable expansion into new fishing grounds during the last several decades has left only the relatively inaccessible waters in the Arctic and Antarctic remaining as commercial fishing's final frontiers.[5]

Photo: Wolcott Henry/Marine Photobank

A finned shark lies at the edge of a dock on Komodo Island, Indonesia.

Inevitably, therefore, Canada's north, which makes up over half of the total Canadian EEZ, and the waters adjacent to it will become not only the focus for new sources of energy products but also for the other maritime resource – fish. With equal certainty, the opportunities presented by the presence of fish in quantity will appear on the radar scopes (or sonar sets) of many interested parties, some legitimate and others more nefarious. History tells us that if we do not look after and protect what we have then others will come and take it. As the novelist Pearl S. Buck once wrote, "[h]unger makes a thief of any man." Will Canada have both the capability and capacity to look after its interests, in this case fish stocks?

High sea fish stocks are managed by regional fisheries management organizations (RFMOs) composed of members from different fishing states. These regional regimes are responsible for the conservation and protection of fish stocks. RFMOs set and allocate quotas for the fish stocks under their management within the boundaries set out in their conventions. They are also responsible for enforcing their quotas through control, monitoring and surveillance activities. Canada belongs to several RFMOs and through the Department of Fisheries and Oceans Canada (DFO) it manages fisheries to provide Canadians with an economically viable and sustainable fishery resource. Historically, Canada's track record is not spotless in this regard – there are still only pitiful amounts of cod in the North Atlantic – but protection and conservation of fisheries resources are now a key focus of DFO. This is not just in Canadian waters, but also in international waters as the main international priorities of DFO are to stop over-fishing and to improve how the world manages high sea fish stocks.

Canada has taken a number of steps to indicate its seriousness about protecting and conserving fish stocks, and these steps affect a variety of federal departments from DFO (including the Canadian Coast Guard) to the Department of National Defence and Public Safety Canada (including the Royal Canadian Mounted Police). Thus, for example, in its 2004 National Security Policy the government of Canada pledged to strengthen marine security through the implementation of a six-point plan that included direction to "increase the Canadian Forces, RCMP, and Canadian Coast Guard on-water presence and Department of Fisheries and Oceans aerial surveillance."[6] In March 2005 DFO published Canada's National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing that laid out plans, programs and projects to address the problem. Complementing this, DFO also signed a Memorandum of Understanding (MOU) with DND to help with the task of monitoring, protecting and conserving fish stocks, and receives help from the Canadian Forces to execute it. In addition, the Canada First Defence Strategy (CFDS) states that "the Forces must be available to assist other government departments in addressing such security concerns as over-fishing,"[7] and thus DND provides 90 sea days of support to DFO on an annual basis. Considerable success has been achieved in recent years; over-fishing by foreign vessels in the region has largely been halted and the Northwest Atlantic Fisheries Organization (NAFO) is becoming highly effective. Maritime forces also provide long-range air surveillance patrols – dubbed *Operation Driftnet* – to contribute to important multinational fisheries

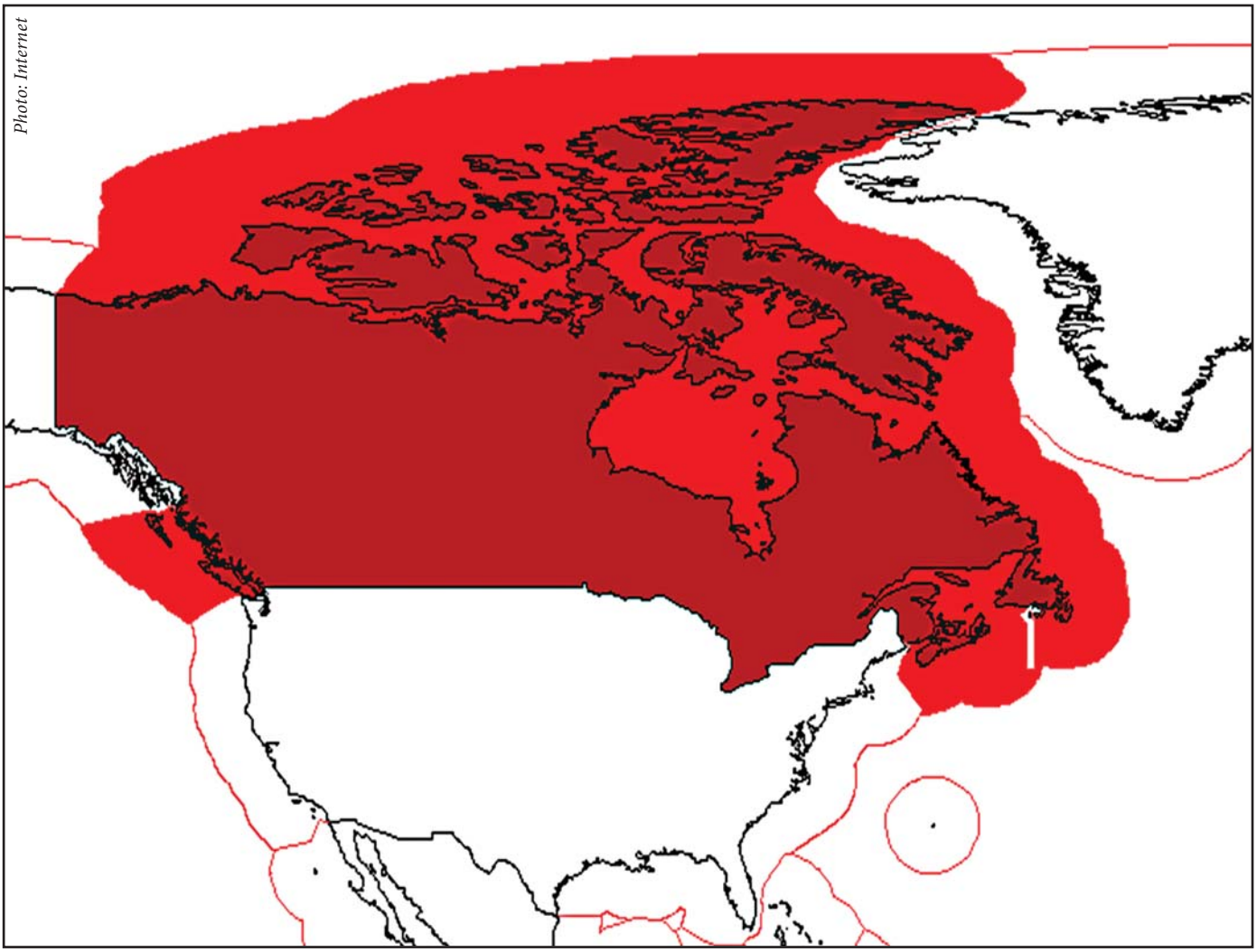


Photo: Internet

Canada's Exclusive Economic Zone is depicted here, shaded in red.

enforcement activities in the north Pacific Ocean to protect high sea fish stocks from illegal fishing.

These measures have been introduced and formalized because, sprinkled over the last 30 years or so, there has been a string of fishing disputes, from many different quarters, that have tested Canadian resolve. Perhaps the so-called 'Turbot Crisis' in 1995 brought the issue of over-fishing most strikingly into focus, with images of the fishing vessel *Estai*, taken from a Canadian submarine, making headlines. Nonetheless, before this Canada had spats with the French via St. Pierre-et-Miquelon and a 'war' with the United States over fishing rights in the Georges Bank area, off Massachusetts. Since the Turbot Crisis there has been another dispute between American and Canadian fishermen over salmon fishing rights near the border between Washington state and British Columbia, and in 2010 Canada closed its ports to all fishing vessels from Greenland and the Faroe Islands in an escalation of a dispute concerning quotas for northern shrimp.

The navy's principal contribution, particularly that of maritime air, is a comprehensive surveillance capability, something for which maritime forces are ideally equipped. Additionally, surveillance is a function that is conducted routinely anyway in building domain awareness. Naval forces also help establish a federal presence, which is coercive in stature, and a means to transport fisheries officers into areas of fishing activity where, if necessary, they will make arrests for violation of both domestic and international law. Legally, pursuant to the *Fisheries Act*, all officers and non-commissioned members of the Canadian Forces serving in Her Majesty's Canadian Ships and Submarines are designated as fishery officers. However, this authority is rarely used and the preference is for a DFO officer to be embarked. The process is well honed and coordinated but current capacity covers only the eastern north Atlantic and stretches of the Pacific. Canada's Arctic EEZ is some 3,232,544 km^2 and, by the admission of Chief of Defence Staff General Walt Natynczyk, logistically more difficult to operate in than even Afghanistan. Thus it is questionable whether a hard-pressed and budget-constrained DFO, even with assistance from its own Special Operating Agency, the Canadian Coast Guard, the Department of National Defence and a Provincial Airlines Limited (PAL) aerial surveillance contract, is equipped to monitor, control, survey and enforce such an area, in addition to

current commitments, without further enhancement.

As an example of why such vigilance is required, in 1999 the Chinese research icebreaker MV *Xue Long* arrived unannounced in Tuktoyaktuk with authorities unaware of its presence prior to that.[8] In the 12 years since then, arguably, Canadian maritime domain awareness, assisted by space-based surveillance, mandatory reporting regulations and ship-tracking technologies such as Automatic Identification System (AIS) and the Vessel Monitoring System (VMS), has improved. Even with an enhanced monitoring capability, there will be those prepared to exploit the waters if the potential prize is sufficiently attractive. At the Tsukiji Central Fish Market in Tokyo in January 2011 a record $396,000 was paid for a single tuna, up from the previous record of $173,688 two years ago.[9] This has alarmed conservationists and is indicative of the direction in which fisheries are heading; increased prices to match increased scarcity. With 240 different species of fish recorded in the Arctic and coupled with ever-diminishing ice, there is no doubt that the area will become a focus when other sources become exhausted and vessels go further afield to satisfy growing domestic demand. Enforcement is the key and a robust, highly adaptive and flexible response will be required in order to retain rights over Canada's indigenous fish.

Almost daily there are instances around the globe whereby fishermen come into conflict with authorities and the net result, pun intended, can be deadly. In mid-December 2010 a Chinese fisherman was killed in a clash with the South Korean Coast Guard. Of note is that China now accounts for nearly a quarter of the world's fishing, capturing 17 million tons annually, as much as the next three countries combined.[10] In January 2011 an Indian fisherman was allegedly killed during a confrontation with the Sri Lankan Navy. In the summer of 2010 in a scenario reminiscent of the Cod Wars of the 1970s, tensions arose between the United Kingdom and Iceland over the latter's unilateral decision to increase its mackerel quota and a 'Mackerel War' was briefly on the cards.

It has been argued that the piracy off the Horn of Africa has its roots in the issue of over-fishing in Somali waters. When the government of Somalia collapsed in the 1990s, the combination of rich fishing opportunities and a complete inability of the government to police the country's waters drew fleets from countries far and near. This may have helped worsen the instability by depleting stocks and denying the local populace a source of livelihood. According to some accounts, Somali fishermen began capturing fishing boats in their home waters as an angry protest against the assault on their livelihood. This

Photo: DND

A CP-140 Aurora overflies a fishing vessel during ***Operation Driftnet****.*

Photo: Internet

*HMS **Bacchante** was rammed by an Icelandic patrol vessel in the 1970s during the 'Cod War'.*

soon mutated into the piracy we see today. Faced without an income-generating resource and going hungry in the process, local Somalis took the most convenient and lucrative recourse open to them. Although over-fishing was not the sole cause of Somali piracy, it is undeniable that the pillaging of local fish populations, largely by foreign vessels, played a key role.

The imperative to take action in the Arctic is not immediate – there are no fleets of foreign fishing vessels sailing into the Beaufort Sea. That does not mean, however, that we should not be preparing for the day we must take action. The answer to the question of whether Canada will have the capability and capacity to act lies with the Arctic/Offshore Patrol Ship (AOPS) that the navy has on the books to be ready for initial deployment by 2015. A non-combatant, constabulary ship, one of the primary tasks of the AOPS will be to assist other government departments, on a routine basis, in meeting various national mandates in such areas as fisheries protection, drug interdiction, illegal immigration and the support of oceans management by watching, detecting and reporting hazards to the marine environment and participating in environmental emergency response.[11] Undoubtedly an adjustment to the DFO/DND Memorandum of Understanding will be required in terms of number of sea days and aircraft hours committed. However, the ability of the AOPS to operate a helicopter and the capacity to embark additional personnel for mission-specific reasons will enable it to undertake the task, though servicemen will likely be called upon to act as fisheries officers. Furthermore, given its considerable experience in maritime interdiction operations, there is little doubt that the Canadian Navy could execute the role with aplomb. Let's not forget that the need for a force to protect Canada from American interests in Canadian waters a century ago was a factor in the creation of the Canadian Navy in the first place.

In summary, illegal fishing in Canadian waters is a threat to the country's livelihood and well-being and must be incorporated into inter-agency planning. A number of options exist for policy-makers considering future safeguards. With the predicted opening up of the Arctic, there will be a vast new maritime area which is, by all accounts, filled with fish that a hungry world will want. Once they are built, the Arctic/Offshore Patrol Ships will be valuable in supporting other government departments in the fulfilment of their law enforcement and regulatory mandates throughout the EEZ and will help ensure that national fish stocks are sustained.

Notes

1. Food and Agriculture Organization (FAO), Fisheries and Aquaculture Department, *The State of World Fisheries and Aquaculture 2010*, United Nations, Rome, 2010, p. 35, available at http://www.fao.org/docrep/013/i1820e/i1820e.pdf.
2. Boris Worm, et al., "Impacts of Biodiversity Loss on Ocean Ecosystem Services," *Science*, Vol. 314, No. 5800 (November 2006), pp. 787-790.
3. FAO, "Code of Conduct for Responsible Fisheries," Rome 1995, Article 6.
4. Daniel G. Boyce, Marlon R. Lewis and Boris Worm, "Global Phytoplankton Decline Over the Past Century," *Nature*, Vol. 466, Issue 7306 (2010), pp. 591-596.
5. Wilf Swartz, Enric Sala, Sean Tracey, Reg Watson and Daniel Pauly, "The Spatial Expansion and Ecological Footprint of Fisheries (1950 to Present)," *PLoS ONE*, Vol. 5, No. 12 (2010), available at www.plosone.org/article/info:doi/10.1371/journal.pone.0015143.
6. Canada, *Securing an Open Society: Canada's National Security Policy* (Ottawa: Privy Council Office, April 2004), p. x.
7. Canada, Department of National Defence, "Canada First Defence Strategy: Roles of the Canadian Forces," Ottawa, 2008, p. 7, available at www.forces.gc.ca/site/pri/first-premier/index-eng.asp.
8. See Nancy Teeple, "A Brief History of Intrusions into the Canadian Arctic," *Canadian Army Journal*, Vol. 12, No. 3 (Winter 2010), pp. 45-68
9. Yuka Hayashi, "The World's Most Expensive Tuna," *The Wall Street Journal*, Japan Real Time, 5 January 2011, available at http://blogs.wsj.com/japanrealtime/2011/01/05/fish-market-giant-tuna-fetches-record-396000.
10. FAO, Fisheries and Aquaculture Department, *The State of World Fisheries and Aquaculture 2010*, p. 13, Figure 4.
11. Director General Maritime Force Development, "Arctic/Offshore Patrol Ship Concept of Employment," 12 January 2011, paragraph 11c.

After 32 years service in the Royal Navy, Lieutenant-Commander Ray Snook is currently with the Directorate of Maritime Strategy, National Defence Headquarters, Ottawa, as a member of the Canadian Forces.