

*Maritime Non-state Actors: A Challenge for the Royal Canadian Navy?*¹

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Introduction

Global security and prosperity depends in part on good order at sea, with its attendant flow of licit maritime commerce. While challenges to that order have existed since the earliest sea-farers, new players have emerged in recent decades that inhibit the ability of nation-states to regulate domestic and international maritime activity. The challenge is accentuated by the downward pressure on defence and security budgets which negatively affect the ability of most Western navies to provide the expanding range of services required by their governments. While governments still expect that their navies stand ready to protect national interests through deterrence and power projection, new 'peacetime' missions are being imposed – ones that might otherwise have been the preserve of constabulary maritime forces. The missions could include, *inter alia*, maritime policing, counter-terrorism, peace support, and humanitarian/disaster relief. One of their distinguishing features is that they are more likely to bring navies into contact with non-state actors than peer competitors, whether inshore or on the high seas. These encounters could range from the relatively benign to the adversarial.

This paper is intended to provide a brief exploration of the nature of maritime non-state actors (MNSAs) and the challenge they pose to national and international maritime security. It will examine the types and motivations of MNSAs and identify some of the ways in which a

¹ This essay is an updated version of an internal DRDC-CORA report published in April 2015. The views expressed are those of the author and do not necessarily represent those of the Government of Canada, the Department of National Defence, or the Canadian Armed Forces.

navy may interact with them. In doing so it will help to shape decision-making on how allied navies in general and the Royal Canadian Navy (RCN) in particular might theoretically align their capability-development efforts with these trends. As the paper is intended to be an overview of a complex and evolving phenomenon, it proceeds from the premise that the strategic/policy, doctrinal, and tactical questions raised herein will require more study.

Nature of maritime non-state actors

Who are they and why do they operate?

Non-state maritime actors may be regarded as a sub-set of non-state actors – private or quasi-private entities that pursue diverse political and/or socio-economic goals. In rare cases they may be fully maritime-focussed, with all operations confined to the seas. In other cases they may serve as a division of their land-centric parent organizations. Examples of exclusively maritime-focussed groups are rare - the environmental group Sea Shepherd Conservation Society being one. The maritime commando wing of the former Liberation Tigers of Tamil Eelam (LTTE) – the Sea Tigers – provided additional muscle to what was essentially a terrestrially-focussed organization.

Like their land-bound counterparts, MNSAs will have a basic command structure and maintain capabilities outside the effective control of the state(s) in which they are based. (The state itself may be weak or non-existent, allowing the actor to flourish.²) Unlike traditional non-state entities, MNSAs pursue goals on or near major waterways, although they are necessarily based on land. While not all MNSAs use either violence or confrontational tactics in pursuit of their objectives, this study will focus on those that have the capacity to do so.

Goals and methods are probably the easiest way of categorizing MNSAs, as they cover all entities ranging from cause-driven or single-issue groups – which usually have an overtly political agenda – to financially-driven ones. The former may include terrorists or insurgents who routinely employ armed violence, to activists and non-government organizations who do not but might still practice unarmed confrontation. The latter may include pirates, traffickers, smugglers or other criminal syndicates, or illegal fishers who may use non-lethal tactics to secure what they believe are their fishing ‘rights’. In certain cases there may be a nexus between the politically- and economically-motivated MNSA, where criminal activity at sea is used to fund a political agenda ashore. According to *The Economist*, “the worry is that piracy [in the

² Dan Miodownik and Oren Barak, eds., *Nonstate Actors in Intrastate Conflicts* (Philadelphia: University of Philadelphia Press, 2014), pp. 3-4.

Gulf of Guinea] is becoming enmeshed with drugs- and arms-smuggling networks linked to violent jihadist groups in the Sahel.”³

Two types of MNSA are worthy of mention here. First, private military and security companies (PMSC) have in recent years expanded their remit from land-based operations and have been employed to assume a portion of the maritime security burden.⁴ However, as they are state-regulated providers of security, are typically employed to facilitate good order at sea, and are subject to the laws of the flag state as well as international maritime law, they are not likely to come into *adversarial* contact with navies and will not be examined here.

A second type of MNSA is maritime state proxies. Unlike paid-up PMSCs, these entities act as unofficial arms of a government. Using civilian vessels they may gather intelligence on foreign naval activity or assert state claims to disputed waters, providing their government with a degree of plausible deniability if they use confrontational means to muscle out rival claimants. In recent years Chinese fishing fleets have been accused of being unofficial enforcers of Beijing’s controversial territorial claims in the South China and East China Seas,⁵ and to the resources contained therein.⁶ Beijing values these proxies to such a degree that it has organized them into what US Naval War College researchers call a “maritime militia”:

Mariners retaining civilian jobs in large fishing companies or fishing collectives are recruited into military organizations and undergo military training, political education, and mobilization [drills] in defence of China’s maritime interests...The most advanced units are even training to confront foreign ships, if necessary, in a guerilla-style “People’s War at Sea” with sea mines, and anti-air missiles.⁷

³ See “The ungoverned seas,” *The Economist*, November 29 – December 5, 2014, p. 44.

⁴ These include companies which provide armed security guards on board merchant ships to prevent them from being seized by pirates.

⁵ Tactics include navigating dangerously and occasionally ramming fishing boats from other Southeast Asian nations. This is followed by the deployment of Chinese coast guard vessels to ‘protect’ fishers, but which is viewed by others as a form of creeping annexation or anti-access warfare.

⁶ Wendell Minnick, “Fishing Vessels in China Serve as Proxy Enforcers,” *Defense News*, 18 August 2014, p. 14. See also, *The Japan News*, “Senakus see rise in China’s fishing forays,” 18 September 2014. Accessed 24 October 2014 at <http://www.asianewsnet.net/Senkakus-see-rise-in-China%E2%80%99s-fishing-forays-64602.html>

⁷ Andrew Erickson and Connor Kennedy, “Meet the Chinese Maritime Militia Waging a ‘People’s War at Sea,’” *The Wall Street Journal*, 31 March 2015. Accessed 13 April 2015 at <http://blogs.wsj.com/chinarealtime/2015/03/31/meet-the-chinese-maritime-militia-waging-a-peoples-war-at-sea/>

This is significant because control over these bodies of water raises two important issues for China and its neighbours: food and energy security (in the form of fish and petroleum under the seabed). Thus if competing interests in strategically important waters are left unaddressed, they might result in the deployment of navies – not just those of the claimants, but of third parties who may be drawn into a conflict either due to alliance commitments or as a result of a determination to preserve freedom of navigation.

These developments speak to another important characteristic of MNSAs: their level of ambition. They may seek local, regional, or broader strategic effects. They work against the interests of a target state or challenge the broader international order. By either controlling or achieving a certain freedom of action in a given waterway, they may flout international law and pose a threat to good order at sea. Local or regional effects are demonstrated by the actions of Somali pirates or Chinese fishers who seek control of adjacent waterways for economic reasons. Regional and strategic effects are sought by groups such as Lebanese Hezbollah, who have employed sophisticated kinetic means to challenge neighbouring Israel's command of the Eastern Mediterranean littoral,⁸ and thereby undermine Israeli hegemony ashore.

Where do MNSAs operate?

As noted above, MNSAs operate in the littorals⁹ – while residing on land they operate along shorelines, close to internal waterways, within the 200-mile Economic Exclusion Zone (EEZ) of the 'host' nation, and, in exceptional cases, on the high seas. They may be found in all major regions of the globe, although attention is often focussed on those areas where MNSAs employ violence as a means to an end. According to one study, ungoverned or poorly governed waters provide MNSAs with room to grow and to operate.¹⁰ To that one might add ill-governed spaces ashore, where MNSAs have the freedom to organize operations, build a sea-going capability and draw logistical support for it. It is important to note that while poor or insufficient governance may be a necessary condition for the existence of MNSAs, this does not necessarily denote state fragility/failure. While a failed state is by definition unable to exercise effective control over littoral space, an insufficiently-governed maritime area may simply be a

⁸ In 2006 Hezbollah used what is believed to be a Chinese C-802 missile to disable the Israeli corvette INS *Hanit*.

⁹ The littoral is defined as a coastal region consisting of the coastal sea areas and that portion of the land that is susceptible to influence or support from the sea. See Department of National Defence, *The Future Security Environment 2013-2040*. Ottawa: Chief of Force Development, p. 143.

¹⁰ Christian Le Mière, "All at sea – Illicit activity thrives in ungoverned maritime areas," *Jane's Intelligence Review* (November 2013): pp. 30-35.

function of the size or accessibility of the waters relative to the resources available to patrol them effectively. Thus it may be fairly argued that Arctic or Antarctic waters could be subject to various types of illicit activity (i.e. drug smuggling, illegal fishing), as they are both vast and remote from the security apparatus of the otherwise politically stable countries bordering them.

Local geography/topography may also facilitate the activities of MNSAs. Large archipelagic states and those with long and indented coastlines can make maritime domain awareness difficult for local security forces. These areas, to say nothing of the high seas, give MNSAs plenty of space to hide from authorities, elude them when they give chase, and/or to disguise their activities as licit. Likewise, areas with contested maritime borders may inhibit co-operative policing, and may actually be a disincentive to security collaboration if the contested area is rich in maritime resources and there are no immediate prospects of settling the border dispute.¹¹

How do MNSAs operate?

The tactics employed by MNSAs will vary according to their objectives. As noted above, many groups will exploit geography (i.e., “terrain masking”) to hide themselves, or use legitimate shipping to camouflage their movements until they are ready to strike. Weather or darkness can also be used to the same effect. Most groups will seek close-quarter engagements with their targets, but encounters will generally be of the kinetic or non-kinetic kind. Some groups will employ asymmetric or guerilla tactics – i.e., hit-and-run, “swarming” – not only to compensate for technological shortcomings, but because such tactics are more likely to confound the unsuspecting target and reduce its reaction time, thereby making an effective response more difficult.¹² Insurgent groups will likewise seek to surprise their opponents, but might employ more extreme measures including the use of waterborne improvised explosive devices (WBIED) in which the watercraft is not just a weapons carrier, but the weapon itself.¹³

One example of kinetic but non-lethal force may be employed by protest movements who see civil disobedience as a way of furthering their cause. Tactics may include the use of

¹¹ Carolin Liss, “New Actors and the State: Addressing Maritime Security Threats in Southeast Asia,” *Contemporary Southeast Asia* 35, no. 2 (2013): p. 149.

¹² ‘Swarming’ is defined as the combination of speed, mass, co-ordinated manoeuvre, low radar signature, and concealment. See Scott, p. 20.

¹³ One example is the attack by Al-Qaeda militants against the USS Cole on 12 October 2000 in the port of Aden. The LTTE also maintained a naval wing during the Sri Lankan civil war and used fibreglass suicide boats to sink many units of the Sri Lankan navy.

vessels as battering rams against target ships, or the use of non-lethal weaponry by ships' companies and passengers against security forces sent out to intercept them. The intent is not to claim territory, but to draw attention to an issue (usually the alleged misbehaviour of a government) in the hope of mobilizing international public opinion.¹⁴ According to one analyst, confrontational or sensational tactics are intended to "invoke an intentional reaction, or better still, an over-reaction, by corporate or maritime law enforcement agencies, coast guards or navies."¹⁵

If the MNSA chooses to employ several vessels at once, and if there is a modicum of command and control (C2), it could theoretically carry out an operation more effectively, or at least complicate the task of those charged with reacting to their provocations. Quantity can substitute for quality – if the MNSA uses small boats with short range and poor stability for their lethal or non-lethal weapons, multiplying the number of boats (i.e., in a "swarm") could increase the chances that the target can be successfully prosecuted.

Aside from tactics, MNSAs are increasingly being empowered by technology. Access to communications and multi-media may be secured through commercially-available technologies and can be used to direct operations, recruit, raise funds, and publicize successful operations. Navigation aids (i.e., global positioning system, or GPS) are also readily available, as is marine radar which can be installed on smaller vessels for counter-surveillance.¹⁶ Meanwhile, the vulnerability of computer networks to non-state hackers raises the possibility of shipping schedules being covertly or otherwise illegally accessed. MNSAs would thus be able to choose the time and place of attack with more precision, avoiding maritime patrol forces and potentially seizing vital cargo. That same information could also allow politically-motivated MNSAs to plan in advance for attacks on ships destined for port calls.

¹⁴ Small, nimble rigid-hull inflatable boats launched from 'mother' ships have been employed by Greenpeace to obstruct the dumping of nuclear waste at sea from larger vessels. Battering tactics employed by vessels from the Sea Shepherd Conservation Society have similarly obstructed the activities of Japanese whaling ships in the southern Pacific Ocean. The Society openly claims to be a maritime non-state actor, its activism the result of a perceived dearth of state-based enforcement of anti-whaling norms.

¹⁵ Claude Berube, "Para-Navies in the 21st Century", Working paper, Maritime Security, Seapower, & Trade Symposium, 24-26 March 2014, US Naval War College, Newport, RI. Accessed 26 August 2014 at <https://www.usnwc.edu/Academics/Faculty/Derek-Reveron/Workshops/Maritime-Security,-Seapower,---Trade/Maritime-Working-Papers/berube.aspx>.

¹⁶ China has noted that some terrorists have strong anti-reconnaissance capabilities – i.e., fishing boats and yachts equipped with radar - and that coastal states must look to patrol ships with stealth capabilities in order to counter this. (See China Military Online, "China's Export-Oriented F91 Stealth Warship Completes Sea Trial," Accessed 29 October 2014 at <http://www.defense-aerospace.com/article-view/release/158390/chinese-export-frigate-completes-sea-trials.html>).

In terms of watercraft there is almost no limit to what MNSAs may employ, although they are typically confined to civilian-pattern ships whose logistical requirements are less sophisticated than those of larger, purpose-built naval vessels. Civilian-pattern ships include speedboats, small whalers, and converted pleasure craft. All of these are suitable for inshore operations and emphasize speed, although most may prove unstable platforms for unguided, direct-fire weapons.¹⁷ Fishing boats of various sizes may also be used, as can small merchant ships which can function either as the weapons carrier or as a “mother ship” to several smaller direct-action craft. This latter model is employed by Somali pirates who have graduated from inshore attacks on merchant shipping to the ability to carry out the same on the high seas.¹⁸ In the same vein, Al Qaeda in the Islamic Maghreb (AQIM) has been identified by Russian intelligence as seeking increased range for its operations into southern Europe. One leaked report has stated that the group has established a 60-strong “marine unit” that seeks to employ small, fast watercraft as suicide boats and to engage in underwater sabotage by attaching explosives to the hulls of ships in harbour.¹⁹

One particularly notable development has been the use of semi-submersible and submersible vessels by drug syndicates. Known as “narco-subs”, they are capable of long range at low speed, are virtually invisible to radar, and have low acoustic signatures. Capable of transporting significant quantities of narcotics, they have appeared on the west coast of South America (i.e., Colombia) and are constructed away from prying eyes in hard-to-access coastal or riverine areas. It should not be difficult to imagine the technology proliferating to well-financed insurgent groups who may wish to strike at state targets.

In terms of weaponry, MNSAs may employ a variety of small arms and light weapons, including assault rifles, light or heavy machine guns, and unguided, shoulder-mounted rocket launchers. However, recent operations have seen the introduction of more sophisticated shore-to-sea weapons provided by sponsoring states. Iran is suspected to have furnished Hezbollah with Chinese-pattern anti-ship missile technology, while Syria is suspected to have transferred Russian-made guided anti-tank weapons which may theoretically reach several kilometres out to sea. While the Islamic State (IS) is not a littoral-based organization, its use of heavy weaponry captured from the Iraqi army further illustrates the potential technical proficiency of non-state

¹⁷ For a useful typology of fast inshore attack craft (FIAC), see Richard Scott, “Surviving the swarm: navies eye new counters to the FIAC threat,” *Jane’s Navy International*, March 2014, pp. 20-21.

¹⁸ Le Mièrè, p. 2.

¹⁹ Seamus Milne and Ewen MacAskill, “Al-Qaida planning kamikaze attacks on ships in Mediterranean, cable claims,” *The Guardian*, 25 February 2015. Accessed 9 March 2015 at <http://www.theguardian.com/world/2015/feb/25/al-qaida-planning-kamikaze-attacks-ships-mediterranean-russian-cables>.

actors. This, combined with the availability of drone technology for surveillance and possibly weapons delivery, means that lethal encounters with state parties do not necessarily have to be at close quarters. According to one analyst:

To date, there have been relatively few cases of other countries and, more important, non-state actors, employing drones. But they are coming...The proliferation of drones could radically alter the tactical battle space. For the first time, non-state adversaries would have an air force.²⁰

Clearly, this trend of “super-empowerment” of individuals and organizations - through the use or transfer of military technology and the innovative use of commercially-available technologies - will create major challenges for states and their maritime security organizations. Navies should not be under the impression that MNSAs lack the means to undermine good order at sea, or to challenge a navy’s ability to sail unmolested through contested waters. In the words of one academic: “Para-navies have been but should not be underestimated.”²¹

Allied navies and MNSAs

Strategic considerations

While most Western navies adhere to their traditional roles as the defenders of the state’s maritime interests and configure themselves for operations at the higher end of the conflict spectrum, their governments are not averse to assigning them tasks in support of domestic and international law enforcement. Yet due to resource constraints and the distortive effect that repeated non-combat operations can have on what is (or should be) a combat-capable arm of the state, is it likely that navies will resist calls to stand in for constabulary maritime forces as a matter of routine. For example, western navies are unlikely to be called to address incidents of simple ‘sea robbery’, as the effects are highly localized. Only when, say, piracy strikes major commercial shipping lanes, resulting in the seizure and ransom of entire vessels and their crews, and constabulary forces (if they exist) are overwhelmed or out-gunned, will the grey hulls of the navy be called into action.

That said, it may be assumed that naval forces will continue to be ordered to provide support to humanitarian crises, counter-terrorism, stability operations in the littorals, or to

²⁰ Daniel Gouré, “The IEDs of the Next War: Small Drones,” Lexington Institute, 10 October 2014. Accessed 13 October 2014 at <http://www.defense-aerospace.com/article-view/release/157899/drones-are-the-ied-of-the-next-war.html>.

²¹ Berube.

uphold freedom of navigation. In each case a navy might come into contact with MNSAs, although of what type may not be known in advance. Criminal syndicates are unlikely to want to draw attention to themselves, and will not pick fights with naval forces deployed in or close to “their” territory. Confronted by superior forces, they are more likely to make the tactical decision to jettison illicit cargo and/or submit to arrest.

On the other hand, politically-motivated groups will have to be handled delicately. In the case of state proxies, a naval vessel may find itself confronting civilian vessels serving para-military purposes. The latter may be armed and under orders to obstruct or harass the ‘interloper’. In the case of humanitarian operations, a guerilla group may not object to foreign navies aiding the state against which they themselves are fighting. They may even suspend operations for a period of time to allow aid to flow to civilians.²² But they will be sensitive to any indication that humanitarian action enhances the legitimacy of the state or its ability to resist their demands. Measures taken by intervening parties (including navies) which are perceived to shore up state power or control could bring those forces into conflict with indigenous MNSAs. Due to the capabilities of most MNSAs, the prospect of large-scale kinetic conflict would probably be low, although various forms of obstruction or harassment should not be ruled out.

At the far end of the conflict spectrum, ambitious terror groups may target allied naval vessels as a way of striking at visible symbols of Western power. Such attacks could happen while target vessels are in port, as attacking a ship underway will give the latter the ability to manoeuvre and bring onboard defences to bear. Successful attacks - which are sure to be posted online - could prove to be potent recruiting/fund-raising tools. Port security – both at home and on foreign stations – will therefore require constant attention.

Operational considerations

It is beyond the scope of this paper to delve deeply into concepts and doctrine, or tactics, techniques and procedures to deal with MNSAs. However, it may be fairly assumed that navies will want to maintain an expeditionary posture to the greatest extent possible, as the broadening mission set may call them into service in distant waters. Various forms of co-operative maritime security to spread burdens and increase interoperability between navies and

²² The LTTE temporarily suspended operations against the Sri Lankan government following the 2004 tsunami, and sought to co-operate with the latter in the distribution of aid to the territory it sought to control.

coast guard forces will also need to be explored to maximize the chance of identifying and intercepting malefactors as early as possible. Opportunities to train local forces to assume responsibility for maritime security in their own neighbourhood will also need to be pursued – if for no other reasons than to lessen the long-term burden on resource-challenged Western navies. Efforts to adopt widely-acceptable rules of engagement (RoE) will also be critical, as they will vary according to the context in which the maritime operation is taking place. In the words of one naval commentator:

The potential for miscalculation is a constant risk...This risk also mandates regular and rigorous training for command and warfare teams. It is not just a matter of understanding the 'kinetic' aspects of close-in defence. It equally is essential that commanders make sound judgments on intelligence and cueing, the RoE, tasking of assets, planning, manoeuvring, sending out warnings and establishing intent, and, as a last resort, engagement.²³

This will be particularly important in contested waters such as the South China Sea, where “a low-intensity conflict could see China’s weaker neighbours face to face with a guerilla-style melee meant to keep navies out of the fight.”²⁴

Other considerations include how best to achieve an acceptable degree of maritime domain awareness and to deal with any geographical constraints that could limit manoeuvrability the closer one gets to shore. Naval force planners will want to ensure some form of “defence in depth” involving local intelligence and law enforcement (if available), in addition to the navy’s own resources – be they sailors patrolling a harbour in small boats or standing watch on the bridge. The need for this will not be diminished if a vessel is in port, as shown by the terrorist attack on the American destroyer USS *Cole* in Aden harbour in 2000.

Operations to combat MNSAs in their havens ashore have received less attention until recently. The European Union (EU) naval task force engaged in counter-piracy in the Indian Ocean launched a limited airstrike on shore facilities in May of 2012, rendering inoperable several pirate craft and damaging fuel stores.²⁵ More recently, the EU has debated the merits of mounting limited strikes against vessels used by human traffickers from the shores of strife-torn Libya. This suggests that tactics to carry out pre-emptive yet limited strikes involving air,

²³ Scott, p. 22.

²⁴ Erickson and Kennedy.

²⁵ Mike Planz, “EU anti-piracy forces strikes Somali targets,” *The Telegraph* (UK), 12 May 2012. Accessed 20 November 2014 at <http://www.telegraph.co.uk/news/worldnews/africaandindianocean/somalia/9266849/EU-anti-piracy-force-strikes-Somali-targets.html>.

special forces, or amphibious units will have to be fine-tuned to deal with asymmetric opponents.

For non-kinetic operations, techniques to ensure safe boarding and arrest of non-compliant vessels will be required in order to safeguard the lives of civilians on board and to protect the navy from criminal liability.

Force development considerations

Since most naval deployments in the face of MNSAs will emphasize *security* rather than *defence*, establishing and maintaining a cost-effective presence in troubled waters is a rational approach for cash-conscious navies who are compelled to respond to constabulary-type demands, yet sensitive to the distortive effects of shifting their operational focus to the lower end of the conflict spectrum. Such a presence may be enabled through the use of satellites and other intelligence-collection technologies and distribution networks that can empower smaller fleets to cover a wider ocean space. Cost-effectiveness might also favour vessels that do not possess the full range of combat capabilities of a traditional surface combatant – that is, a balanced suite of anti-air, anti-surface, and anti-submarine warfare capabilities. Such vessels would have to possess good range, station-keeping, C2, and sensors for situational awareness and evidence collection, but their (self-)defence capability would have to be scaled in such a manner as to over-match what is in most (but not all) cases an unsophisticated threat.²⁶ The United States Coast Guard (USCG) also maintains a robust constabulary posture and has recently introduced the well-armed National Security Cutter into its inventory. Meanwhile, some allied navies have opted for ocean-going patrol vessels or “light” frigates for these purposes. The French navy (*Marine nationale*) maintains a fleet of second-tier warships including the LaFayette-class light frigate and the Floréal-class sentry frigate. Both have a more austere suite of sensors and weapons, but are equipped with cost-effective propulsion and carry a helicopter. The Netherlands has replaced four of its M-class general-purpose frigates with the Holland-class patrol ship for security duties far from home (i.e., around the Netherlands Antilles). It carries a sophisticated above-water sensor suite and gun armament, plus a helicopter.

²⁶ In a military/security context, ‘over-matching’ denotes a level of capability that exceeds by a certain margin that used by adversaries. A second-tier navy may therefore over-match a MNSA in terms of firepower, mobility, C2, provided that the latter’s capabilities are rudimentary.

With regard to embarked technologies, a combination of lethal and less-than-lethal effectors to control escalation would merit examination. Less-than-lethal capability would be particularly important if the MNSA is a state proxy or civilian organization. In the former case, the intervening naval vessel will not want to spark a political row with the state party on whose behalf the proxy was acting. In the latter case, determination to apprehend the vessel must be balanced with the imperative to do so with minimal force, and to transfer its occupants to the custody of law enforcement agencies along with evidence of their actions.

The range of sensor technologies that are relevant to the MNSA challenge is expansive. Detection and identification of surface and shore targets will require good intelligence, surveillance, and reconnaissance (ISR) capability. In addition to the ship's organic sensors, off-board sensors located in unmanned air and surface vehicles (UAV/USV) may be of significant utility. Given the possible threat from highly-trained insurgents to ships in port, technologies to thwart low-acoustic signature swimmers and their delivery vehicles may also be necessary.

Fast, manoeuvrable manned watercraft will also be required in cases where apprehension of MNSAs is required. Organic armament (i.e., beyond personal weapons) mounted on these craft could prove a useful deterrent, although it may be of limited utility if the firing platform is unstable at high speeds and in anything other than calm seas.

In terms of effectors, on the less-than-lethal side, water cannon or directed energy weapons (i.e. microwave projectors, long-range acoustic devices, portable laser "dazzlers") can be used to warn malefactors before they approach the ship or thwart their activities if they do not disengage.²⁷ These need to be backed up by lethal effectors: medium-calibre automatic guns mounted on the ship to provide a deterrent or, if necessary, an escalation potential.²⁸ Careful consideration would have to be given to the *number* and *position* of these effectors aboard ship if multiple/simultaneous (or "swarm") attacks are anticipated.²⁹

The emergence of more powerful lasers to destroy incoming targets may also be worthy of consideration, not least because of the alledged cost-effectiveness of such systems compared to guided weapons. However, there are doubts as to whether escort-type vessels will be able to

²⁷ For a list of current and emerging less-than-lethal technologies, see Massimo Annati, "Non-lethal weapons – maritime security forces want more than just CS gas and slime," *Naval Forces* 3 (2014): pp. 33-36.

²⁸ Medium-calibre weapons of 25-30mm would provide greater effective range than heavy-calibre machine guns that have been mounted on riverine craft and pick-up trucks by non-state actors.

²⁹ For an account of USN efforts to reach a decision on the appropriate secondary-gun caliber for a major surface combatant, see Christopher Cavas, "Is a Smaller Gun Better?" *Defense News*, 13 October 2014, p. 6.

generate the power needed to generate and maintain good beam quality to neutralize a fast boat – especially in cases of fog, rain or sea spray where water droplets refract light.³⁰

Another useful asset is manned aviation in the form of a maritime helicopter. The size of the machine may vary; some allied navies carry smaller aircraft configured for surface action (i.e. the Royal Navy's *Wildcat*) while others are multi-purpose (i.e., the US Navy MH-60R *Seahawk* or the Royal Navy's *Merlin*). Suffice to say that manned rotary-wing aviation provides a significant measure of flexibility to a commander. While unmanned systems allow him to engage in ISR, manned helicopters also provide that capability, but also limited vertical lift and direct action (i.e., deployment of naval boarding parties or special operations forces). Arming the helicopter with guns and/or a cost-effective precision-guided weapon would provide a degree of over-match in terms of range and kinetic effects.³¹

Should budgets or competing operational demands preclude the deployment of allied ships and crews to handle security tasks themselves, building local capacity may be a worthwhile alternative. This could take the form of supplying partner states with new or used vessels appropriate for local needs and sea conditions, or training of local forces through bilateral agreements or multi-national exercises.

Possible implications for the RCN

While the RCN has recently participated in international efforts to suppress piracy in the Indian Ocean and counter narcotics-trafficking in the Caribbean, it is an open question how seriously the Government of Canada (GoC) views MNSAs as a threat which must be met with specific or tailored capability development efforts. To be sure, the RCN is capable of performing all manner of constabulary tasks at home or abroad with its current (and projected) fleet, backing up other government departments as necessary. Canada has dealt with MNSAs in the past – from foreign fishing fleets to state-sponsored vessels challenging Canadian sovereignty in

³⁰ The US Navy claims that each 'shot' from its new Laser Weapons System (LaWS) costs less than a dollar. See David Smalley, "Historic Leap: Naval Shipboard laser Operates in Arabian Gulf," Office of Naval Research Public Affairs, 10 December 2014. Accessed 3 March 2015 at http://www.navy.mil/submit/display.asp?story_id=84805. For skeptical take on the utility of shipborne lasers using current technology, see Subrata Ghoshroy, "Navy's new laser weapons: Hype or reality?" *Bulletin of the Atomic Scientists*, 18 May 2015. Accessed 26 May 2015 at <http://thebulletin.org/navys-new-laser-weapon-hype-or-reality8326>.

³¹ Low-cost air-to-surface weapons might include laser-guided rockets or a member of the Future Anti-Surface Guided Weapons currently under development by the United Kingdom and France. At the lower end of this class of weapon is the 13-kg Martlet missile, of which several will be carried on the *Wildcat*.

legally-contested waters.³² But since the perceived *kinetic* threat from MNSAs to *home* waters is probably low, Canada will have a high degree of discretion as to whether to configure its navy to meet the particular challenges they pose to waters further afield. Calls to handle these tasks are sure to come and at short notice. But unless there is a clear and present danger to vital maritime interests (i.e., trade flows) – in which case the GoC would want to deploy naval forces as a sign of determination – there may be little reason to adopt the practice of some allies and invest in a new class of ship to tackle the MNSA challenge.

The resources available for the RCN's current build program – comprising the Arctic/Offshore Patrol Ship (AOPS) and the Canadian Surface Combatant (CSC) – leaves little or no room for another class of vessel purpose-built for overseas constabulary operations.³³ Thus while demands on Canada's limited naval resources are potentially unlimited, it may be prudent to do what one analyst suggested and "...respond [to maritime perturbations] on a scale commensurate with their geo-strategic importance."³⁴ If nothing else, this provides a degree of discipline on the state's resources and level of maritime ambition, and guards against the distortive effects of short-termism. In the meantime, the RCN could explore training opportunities with partner nations to empower the latter to deal with the MNSA threat themselves. For example, the navy could seek to help partners establish "best practices" for apprehending malefactors at sea using the latest naval boarding tactics, techniques, and procedures.

It is worth asking, however, what permutations of ship classes might have to be considered by the RCN if the CSC program does not deliver on the desired quantity of vessels. Should the latter come to pass, RCN planners might consider making up quantitative shortfalls with a more austere vessel not unlike those currently in French or Dutch service. Given the increasing threat level from technologically-empowered MNSAs, an "offshore patrol

³² The 'Turbot Wars' of the 1980s pitted the Government of Canada against Spanish fishermen off the east coast, while the American oil tanker SS *Manhattan* and the US Coast Guard icebreaker *Polar Sea* began their journeys through the Northwest Passage (in 1969 and 1985, respectively) without adhering to Canada's insistence that permission be sought to transit what Ottawa considered to be an internal waterway.

³³ Once delivered, the AOPS may go through a period of tactical development whereby its capabilities in an asymmetric setting are evaluated and, over time, improved. However, their limited speed and specialized configuration mean that it is unlikely that they will be deployed far outside North American waters.

³⁴ Martin Murphy, "The Evolving Role of Seapower in Peacetime: Bad Times Follow Good," Working paper, Maritime Security, Seapower, & Trade Symposium, 24-26 March 2014, US Naval War College, Newport, RI. Accessed 26 August 2014 at <https://www.usnwc.edu/Academics/Faculty/Derek-Reveron/Workshops/Maritime-Security,-Seapower,---Trade/Maritime-Working-Papers/Murphy-bad-times-follow-good.aspx>.

combatant” – one capable of a variety of security tasks and built to a combination of military and merchant standards to control costs - may be worthy of consideration.

Assuming that re-capitalization plans proceed as expected/desired, it is still worthwhile to raise certain tactical and technological issues that could enhance the CSC’s ability to deal with MNSAs. The first and most obvious is the overall size of the RCN’s surface fleet (and the maritime air arm), and whether the current and projected fleet size is adequate to handle potentially multiple requests for maritime security assistance. If re-capitalization plans are carried through, Canada will have a fleet in 2030 roughly the same size as it had in 2010 – 15 surface combatants. It will therefore be a matter of defence policy dictating what level of effort should be invested in maritime policing versus other naval tasks. Should lightly-armed RCN vessels be deployed in contested littorals, planners must grapple with the issue of how damage to a ship (i.e., from direct or indirect fire from shore) could affect its staying power.³⁵ Light damage could affect critical systems and cause the ship to be re-positioned or even re-assigned within a larger task force. Moderate damage inflicted by a semi-sophisticated threat could theoretically sideline the ship for several months, affecting other naval operations at home and abroad.

If building a special class of vessel for overseas security tasks is out of the question in a resource-constrained environment, and if a CSC is too valuable to be put at risk by a non-existential threat, steps should be taken to increase the ability of the CSC to counter armed MNSAs. These could include lethal and/or less-than-lethal directed-energy weapons. As such weapons could take up deck space and require significant power generation, their addition to the CSC should be considered by designers sooner rather than later.

Another useful design feature is the inclusion of a flexible mission bay under the helicopter deck. This can be used to house, launch and recover fast watercraft and unmanned surface vehicles for interceptions and ISR. A helicopter hangar of sufficient size to accommodate not only the new ship-borne helicopter, but also one or more unmanned air vehicles would provide a potentially useful alternative to the use of the helicopter for ISR tasks, or as a supplement to it if greater capacity is required. As with the USV, the UAV would protect the ship by identifying and prosecuting threats at long range, exposing a swarm to a high level of attrition before any surviving constituents could bring their own weapons to bear. The use of a UAV as a weapons-carrier in the manner of the US Navy’s MQ-8C Fire Scout may be worthy of

³⁵ On 30 May 2011 HMCS *Charlottetown* was subject to a barrage of 122mm BM-21 ‘Grad’ rockets while sailing off the coast of Libya. No damage or injuries were sustained on that occasion. The origin of the fire is unknown, although the only plausible candidates are the remnants of the Libyan army, or one of many pro- or anti-government militias.

study, knowing that additional specialist crew may need to be embarked and space reserved for ordnance.

A sensor suite capable of detecting and tracking small targets, distinguishing them from surface/background clutter, will also be essential, as MNSAs will continue to develop tactics and exploit technology to elude their opponents. To this end, the CSC program might consider incorporating enhanced passive detection through electro-optical means. An interesting development on this front is the achievement of “panoramic” ISR on the Royal Netherlands Navy’s new Holland-class patrol ships. Through the installation of “staring arrays” the bridge crew does not need to point a sensor at a target; a 360-degree view around the ship is constantly maintained.

Close-in defences covering *all* angles and providing overmatch capability in terms of range and striking power mandate a combination of rapid-fire weapons. Consideration should be given to embarking stabilized remote weapons stations (RWS) mounting weapons of *medium* calibre (i.e., 25-30mm) so as to prevail over sea-borne threats mounting heavy-calibre machine guns.³⁶ Linked to advanced detection and tracking systems, these effectors should also be able to engage maritime targets as close to the ship as possible, since attacks may leak through outer defences or be staged at close quarters with little or no warning. Angles of elevation and depression, and the degree to which these systems could be incorporated into automated ship-defence networks, should be carefully considered by ship designers.³⁷

Other considerations for the still-evolving CSC design could include consideration of how automation affects crew size, and therefore the number of available sailors to crew fast boats and form naval boarding parties. If a high degree of automation is sought, consideration should be given to providing extra berthing spaces for additional sailors or special operations forces who could be embarked as necessary to handle close encounters with MNSAs either at sea or ashore.

Given the utility of off-board sensors and effectors, attention should be paid to the functionality of the CAF’s future ship-borne helicopter fleet. At the time of writing the CH-148 Cyclone maritime helicopter had been grappling with a number of developmental challenges and its date of entry into full operational service was unknown. To deal with MNSAs, it must

³⁶ These weapons would be distinct from close-in weapons systems (CIWS) such as Phalanx. Although the latter have applications against sea-borne targets, their extremely high rate of fire would make them less cost-effective against MNSAs in small boats, which may be deterred by single warning shots.

³⁷ The Sea Rogue remote weapons system manufactured by Reutech in South Africa can accommodate a variety of weapons and is known for its ability to steeply depress its line of fire so as to engage very close-in targets.

demonstrate a degree of technical maturity such that it can operate safely from RCN vessels in conditions of reduced visibility and in a variety of wave conditions. Its suite of mission systems (i.e., radar, electro-optical sensors) must be able to reliably detect and process multiple surface contacts. As the MNSA challenge is not amenable to the effectors slated for deployment on the Cyclone (i.e., anti-submarine torpedoes) the integration of air-to-surface weapons will have to be explored. Laser-guided rockets and/or fixed, forward-firing heavy-calibre guns could provide a cost-effective solution while ensuring that the helicopter keeps out of range of any counter-fire from the ocean surface.³⁸ Given the Cyclone's large sponsons and the small size of the aircraft's side door, it is doubtful that adequate arcs of fire can be maintained for that door. The down-wash of the rotor blades might also render small-calibre door-mounted guns ineffective at anything greater than very short ranges. Thus anything other than heavier, fixed, forward-firing weapons would be impractical.

Consideration may be given to the size and capabilities of the RCN's future afloat logistics force. Properly configured, it could effectively support far-distant operations of RCN surface units or act as a potential "mother ship" for a variety of manned and unmanned systems.

One final area for consideration is the training of RCN sailors in threat recognition and ship defence while in foreign ports or while underway in regions of instability. Efforts to maintain or enhance the capabilities of the force protection duty watch on HMC ships might be considered in the context of the expanding capabilities and ambitions of politically-motivated MNSAs.

Conclusion

Although maritime non-state actors have existed for some time they have proliferated in recent decades, expanded their range of goals beyond the purely financial, and have challenged the ability of the nation-state to maintain good order at sea. Emboldened by ideology or operational successes against weak states, they have shown themselves to be resilient and crafty employers of commercially-available technologies. Some have even benefitted from state sponsorship; they are either part of an unacknowledged campaign of territorial aggrandizement or a proxy for the strategic ambitions of their sponsor. In extreme cases the latter may transfer military-grade technologies to be used against other states and their navies.

³⁸ Wayne Tunick and Michael Weaver, "Arm All Navy Helicopters," *US Naval Institute Proceedings* 129, No. 12 (December 2003): pp. 36-39.

Although Canada and its allies have many options for dealing with MNSAs, it is an open question how much effort can or should be devoted to maritime security as opposed to maritime defence. Where there is insufficient local capacity to handle what is in most cases a constabulary matter, allied navies may be compelled to render assistance. This may take the form of patrolling insecure waters and/or improving the ability of local forces to do so. Navies will have to carefully consider what concepts, doctrine, tactics, and technology are most appropriate to counter the MNSA in question, bearing in mind its strengths, weaknesses, and motives. At the same time, navies will be obliged by their governments to maintain the ability to take on tasks at the higher end of the conflict spectrum. This potentially broad range of obligations will present significant challenges as long as defence budgets are constrained and ship-building plans take longer to come to fruition.

If the RCN is mandated to assume a degree of responsibility for (or visibility in) future maritime security operations, its current re-capitalization plans present a good opportunity to debate how and to what degree new tactics can be adopted and what new technologies can be incorporated into vessels which will soon enter service. Further research on MNSAs and the means of countering them could bring value to these discussions, ensuring that the RCN of the future, despite its modest size, is employed effectively and judiciously.