



Canadian Maritime Aviation: Missions and Capabilities

Maritime aviation is central to the operations of naval forces. While this environment is witnessing more drone operations, it still revolves around rotary-wing (helicopters) and fixed-wing (airplanes) assets. These platforms conduct missions from either the shore or from aboard vessels plying the waters. Both fixed- and rotary-wing aircraft supplement naval capabilities and enhance a navy's capacity to perform a variety of functions and missions. First, a navy's use of maritime aviation enhances its domain awareness. When aviation assets are attached to a warship, they enable the vessel to expand its sensing far beyond the horizon. As surveillance assets, aircraft can also travel much faster than a vessel, and cover more area, making them particularly useful for determining the presence and location of hostile forces (or criminal forces, if engaged in counter-narcotic or counter-piracy operations). The speed and range of maritime aviation assets also facilitates search and rescue (SAR) operations. The ability of aircraft to transmit real-time data and information directly to vessels through data links has further enhanced the capacity of such assets to perform critical reconnaissance and surveillance functions in support of naval operations.

In addition to this ability, to vastly expand a vessel's surveillance over the horizon, helicopters also constitute capable anti-submarine warfare (ASW) assets. Notably, modern helicopters have tremendous submarine detection capabilities. Equipped with sonobuoys (radio transmitters and acoustic receivers affixed to a buoy that can be dropped from a helicopter or fixed-wing aircraft) or a "dipping sonar" (a transducer attached to a long cable that thus enters the water as the helicopter hovers above the surface and utilizes sound pulses to detect objects), they are capable of identifying submarines and transmitting that data back to the vessel. Moreover, in addition to identifying submarine threats, helicopters also can directly engage with those threats with their own weapons. For instance, Canada's Cyclone helicopters can carry two MK-46 anti-submarine torpedoes. They are also equipped with jammers and flares for self-defence.

From a logistical standpoint, ships equipped with a helicopter also benefit from the aircraft's ability to transport material ashore, particularly in situations in which the vessel is unable to dock, due to security concerns or the absence of facilities altogether. For instance, when the RCN was dispatched to Somalia in 1992 to support a United Nations mission, vessels were unable to dock in Mogadishu, as the port was not secure. As a result, the transportation of supplies ashore for the Canadian Army units stationed in Somalia relied on the ship-based helicopters. Similarly, in the aftermath of the 2010 earthquake in Haiti, water, supplies, personnel, and the Disaster Assistance Relief Team were frequently transported via helicopter, given that the port facilities available to the RCN were either destroyed or insufficient. Otherwise, helicopters are also capable of performing medevac or medical evacuation operations, transporting divers to a scene, and conducting aid-to-the-civil-power operations in support of other Canadian government departments.

For the RCN, maritime airpower is provided by both fixed-wing and rotary-wing aircraft, operated by the Royal Canadian Air Force (RCAF). Since the RCN no longer possesses aircraft carriers,

fixed-wing aircraft are operated from the shore. In Canada, this fixed-wing, shore-based maritime aviation asset is provided by its Maritime Patrol Aircraft, namely its Aurora (CP-140). These aircraft are principally tasked with ASW and maritime situational awareness. They are also capable of providing vital aid in maritime SAR responses, performing sovereignty patrols, monitoring fisheries, and conducting surveillance in the Arctic. As Canada's sole Intelligence Surveillance and Reconnaissance (ISR) aircraft, the Auroras are thus responsible for undertaking a variety of long-range operations over maritime, land, and the littoral regions. Both the Aurora Incremental Modernization Project (AIMP, aiming to update their technology and electronics) and the Aurora Structural Life Extension Project (ASLEP, upgrading their body and framework) were completed by 2022. A future replacement comes in the form of the P-8A Poseidon, which were purchased by Canada in 2023, with the first delivery expected in 2026.

For over five decades, the RCN's rotary-wing asset was the Sea King (CH-124) helicopter.¹ Having come into service in 1963 it has since been retired and replaced with the CH-148 Cyclone, which successfully completed its first operational deployment for the RCN in 2018. While the Cyclones' incorporation into the RCN has not been seamless, marked by the tragic loss of six CAF personnel when one of the helicopters crashed in April 2020,² the helicopters have provided an undeniable boost to the RCN's maritime aviation capabilities. Their communication systems are vastly improved over those of their predecessors, in some respects surpassing those of the vessels from which they operate. They are capable of undertaking operations around the clock and in poor weather, aided by auto-tracking and infra-red technologies. They can perform over-the-horizon targeting and, thanks to their long-range radar, can acquire a complete image of a contact up to 200 miles ahead, with far superior resolution on the consequent signals. The Cyclones are also able to detect submarines at significantly greater ranges than the Sea Kings before them.

While the RCN expands and modernizes its traditional maritime air, it will certainly expand in new directions as well. Uncrewed surface vessels, sub-surface vessels, and aerial vehicles will undoubtedly be brought into service. The CU-170 Heron unmanned aerial vehicle (UAV) has already been in use in the RCN for several years, and the integration of such assets will only quicken as the UAVs become more capable. Developments in autonomous technology, too, will provide access to further maritime aviation capabilities and options. As such, the relevance of maritime aviation assets – and navies' reliance on them – will only increase further in the coming years.

References

¹ For more on the Sea King, see John Orr, "Perseverance: Some Reflections on 50 Years of the Canadian Sea King," *Canadian Naval Review* 9, no. 2 (2013): 11-16, and Jeff Tasseron, "Sailing to Byzantium: A Eulogy to the Sea King," *Canadian Naval Review* 15, no. 1 (2019): 5-10.

² Master Corporal Matthew Cousins, Sub-Lieutenant Abbigail Cowbrough, Captain Kevin Hagen, Captain Brenden MacDonald, Captain Maxime Miron-Morin, and Sub-Lieutenant Matthew Pyke were killed in the crash.