

The Ships of Canada's Navy 1910 - 2010

*Researched and Written by Capt. (N) (Ret'd) Michael Braham
Illustrations from Ready Aye Ready Web Site*

Foreword

This project started out as an effort to provide Canadian War Museum Volunteer Interpreters with some basic reference material on the guns used by the Royal Canadian Navy and the Maritime Forces of the Canadian Forces since 1910.

It became clear after that initial product was circulated for comment that some contextual information was required pertaining to the ships and classes of ships that carried these weapons. As a result, it has grown into a two-volume "briefing note" with pride of place being given to the ships in this Research Paper.

It will probably be eminently clear that I am not an historian, nor for that matter, one given to deep research. My 'fish-head' readers may also question the qualifications of a former 'pusser' to take on this task. However, this is intended only as a guide and hopefully one that will stimulate some more informed opinion that will allow it to be amended from time to time to improve its veracity.

I have tried to list the ships (when they were one of a kind) or classes in rough chronological order. I have also been a bit selective and deliberately omitted some of the lesser combatant ships which may stir some controversy that I will be pleased to right by adding any others that readers think should be included. Among the omissions are submarines which are left out since Canadian submarines did not participate in the major wars of the period covered and are not mentioned in the War Museum displays.

The information has been gathered from a variety of sources, both electronic and hard copy and despite an effort to assure accuracy, some errors will undoubtedly have crept in and readers are encouraged to provide the author with any corrections so that the document can be amended, thereby providing a useful and reliable source of reference. The principal source has been that seminal history by Ken Macpherson and John Burgess, "*The Ships of Canada's Naval Forces 1910-1981*", and I have used their chronological breakdown for this paper.

Entries that pertain to a specific display in the Canadian War Museum are indicated in bold italics.

M. Braham michaelbraham@rogers.com
Capt (N) (Ret'd)

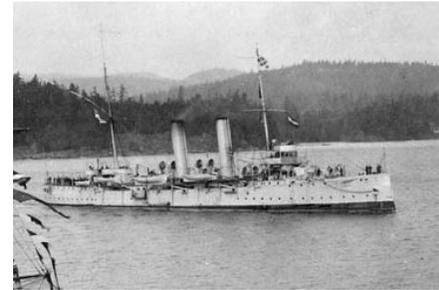
The Ships of Canada's Navy 1910 - 2010

From 1910 to 1939

HMCS *Rainbow* (Apollo Class Cruiser)

HMCS *Rainbow* formerly HMS *Rainbow* was an Apollo class protected cruiser built for Britain's Royal Navy by Palmers at Hebburn-On-Tyne in England. She was launched on the 25th of March, 1891 as HMS *Rainbow* and entered service in 1893.

HMS *Rainbow* was presented to Canada in 1910, and was re-commissioned HMCS *Rainbow*. HMCS *Niobe* and *Rainbow* were the first two ships of the Royal Canadian Navy and were purchased from the Admiralty. She entered Canadian service on 4 May 1910. Her initial duties included training, ceremonial visits and fishery patrols. *Rainbow* served Canada's west coast from Esquimalt, British Columbia. She was decommissioned in 1920.

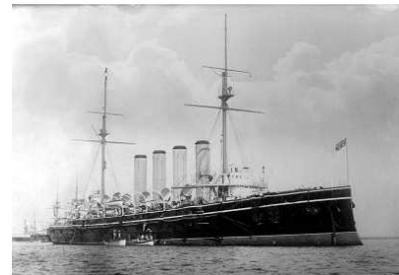


The ship's wheel from Rainbow can be seen in Gallery 2.

HMCS *Niobe* (Diadem Class Cruiser)

HMS *Niobe* was a ship of the *Diadem*-class of protected cruiser in the Royal Navy. She served in the Boer War and was then given to Canada to form part of their first independent navy as HMCS *Niobe*.

She was transferred to the RCN on September 6, 1910, commissioning at Devonport Dockyard and reaching Halifax on October 21 that year. After running aground off Cape Sable, Nova Scotia, on the night of 30-31 July 1911, repairs took 18 months and she had a permanently reduced maximum speed as a result.



With the outbreak of the First World War she joined the Royal Navy's 4th Cruiser Squadron on the North America and West Indies Station. She was engaged in intercepting German ships along the American coast for a year until she was paid off on 6 September 1915 to become a depot ship in Halifax.

The Halifax Explosion of 1917 caused serious damage to upper works, and the deaths of several of her crew. However she remained in use as a depot ship until disposed of in 1920, decommissioned and sold for scrap. She was broken up in 1922 in Philadelphia.

"M" Class Destroyers

HMS *Patrician* and her sister ship HMS *Patriot* were Thornycroft "M" class destroyers that served in the Royal Navy in World War I.

The Ships of Canada's Navy 1910 - 2010

They were decommissioned after the war but reactivated in 1920 and outfitted for transfer to the Royal Canadian Navy. They were commissioned in the RCN on 1 November 1920 and became HMCS *Patrician* and HMCS *Patriot*.



Along with HMS *Aurora*, they were offered by the Royal Navy to replace the RCN's HMCS *Rainbow* and HMCS *Niobe*.

Both saw service with the RCN through the 1920s and were decommissioned and scrapped in 1929.

"S" Class Destroyers

HMCS *Champlain* was a Thornycroft S class destroyer, formerly HMS *Torbay* built for the Royal Navy in 1917-19.

This ship, along with her sister HMS *Toreador*, renamed HMCS *Vancouver*, were donated by the British Government to Canada in March 1928 to replace their two existing destroyers, HMCS *Patrician* and HMCS *Patriot*. *Champlain* and her sister HMCS *Vancouver* were paid off and broken up in 1937



Battle Class Trawlers



Battle Class trawlers were fishing trawlers used by the Royal Canadian Navy. Most of these ships served during World War I, and some were re-commissioned for use in World War II. Twelve were built. These vessels served in various tasks between the war years on both coasts as: harbour patrol ships, hospital ships, fisheries patrol ships

The picture is of HMCS *Arleux*.

Fundy Class Minesweepers

HMCS *Fundy*, one of four small trawler minesweepers patterned off a Royal Navy design that were built for the RCN just before the Second World War. The guns mounted on these ships were recycled from *Vancouver* and *Champlain*. The four ships were *Fundy* (in the picture), *Comox*, *Gaspe*, and *Nootka* (later re-named *Nanoose*).



The Ships of Canada's Navy 1910 - 2010

From 1939 to 1945

HMCS *Uganda/Quebec* (Colony Class Cruiser)

HMS *Uganda* (C66) was a Second World War-era Royal Navy Crown Colony-class light cruiser. She was one of the *Ceylon* sub-class (the second group of three ships built in 1939) and built by Vickers-Armstrong at their Walker yard.

HMS *Uganda* was commissioned on 3 January 1943.

The official transfer to the RCN took place on Trafalgar Day, 21 October 1944 and she was redesignated HMCS *Uganda* (C66).



As the flagship for the RCN, *Uganda* served in the Pacific War with the British Pacific Fleet and the United States Third Fleet. She received battle honours for operations during the Battle of Okinawa and was involved in attacking Formosa and Sakishima Gunto. Controversially, her RCN crew was polled by the Canadian government on 7 May 1945 to determine whether they would volunteer for further duties in the Pacific War; the result saw 605 of her crew of 907 refuse to volunteer and HMCS *Uganda* withdrew to Esquimalt, arriving back in the Canadian port on 10 August 1945, the date of Japanese surrender.

On 1 August 1947, HMCS *Uganda* was paid off into the RCN reserve. She was reactivated on 14 January 1952 as a result of the Korean War and was re-commissioned as HMCS *Quebec* (C66), serving two tours in the Korean War theatre, as well as taking part in the RCN task force attending the review of the fleet at Spithead for the coronation of Her Majesty Queen Elizabeth II.

She was paid off in June 1956 and scrapped in Japan in 1961.

HMCS *Ontario* (Minotaur Class Cruiser)

HMCS *Ontario* was a *Minotaur* class light cruiser built for the Royal Navy as HMS *Minotaur*, but transferred to the Royal Canadian Navy on completion and renamed *Ontario*.

She was built by Harland & Wolff of Belfast; laid down on 20 November 1941 and launched on 29 July 1943. She was transferred to the Royal Canadian Navy in July 1944, and completed and commissioned on 25 May 1945.



She sailed to join the 4th Cruiser Squadron in the Pacific Theatre, but was too late to see active service. She returned home for refit, arriving at Esquimalt on 27 November 1945.

The Ships of Canada's Navy 1910 - 2010

She was used for training duties postwar until paid off on 15 October 1958. She arrived at Osaka for breaking up on 19 November 1960.

Armed Merchant Cruisers



Originally liners for Canadian National Steamships, these formerly 3-funnelled ships were purchased in 1939-40 and extensively converted.

All three, *Prince David*, *Prince Robert* and *Prince Henry* spent some time intercepting merchant traffic, and *David* & *Robert* were put under US command for operations in the Aleutians.

Prince David (pictured above) and *Prince Henry* were converted to Troop Landing Ships and served on D-Day and the invasion of Southern France, as well as additional service in the Mediterranean.

Prince Robert was converted to an AA ship, and escorted convoys in the Mediterranean. In July 1945, she went to join the British Pacific Fleet, and in August arrived in Hong Kong in order for her Captain to represent Canada at the surrender ceremonies. *Prince David* hit a mine off Greece ending her wartime service, *Prince Henry* (as a British ship) and *Prince Robert* repatriated soldiers. *Prince David* and *Prince Robert* were sold back into mercantile service.

HMCS *Nabob** (Bogue Class Escort Carrier)

HMS *Nabob* (D77) was a *Bogue*-class escort aircraft carrier which served in the Royal Navy during 1943 and 1944. The ship was built in the United States as USS *Edisto* (CVE-41) but did not serve with the United States Navy.

She was laid down on 20 October 1942, launched 22 March 1943, and transferred under Lend-Lease to the United Kingdom on 7 September 1943 prior to her commissioning as HMS *Nabob* (D77) into the Royal Navy. She served as an anti-submarine warfare carrier and the ship's crew was drawn from personnel provided by the Royal Canadian Navy. Flight crew were Royal Navy personnel (852 and 856 Naval Air Squadrons of the Fleet Air Arm).



On 22 August 1944, while returning from a strike against the German battleship *Tirpitz*, she was torpedoed by *U-354* in the Barents Sea and sustained heavy damage. Five days later she steamed into Scapa Flow under her own power but had lost 21 men.

She was eventually judged not worth repairing, was beached and abandoned, then cannibalized for other ships and decommissioned on 30 September 1944. She was returned to United States custody and sold into merchant service 26 October 1946 as the merchant *Nabob* (later renamed *Glory*). She was sold for scrap in Taiwan in 1977.

The Ships of Canada's Navy 1910 - 2010

* Although manned by Canadians, I cannot determine if there was ever an **HMCS Nabob** or if it remained **HMS Nabob**. (The same applies to **Puncher**).

HMCS *Puncher* (Bogue Class Escort Carrier)

USS *Willapa* (AVG-53/ACV-53/CVE-53) was a *Bogue* class escort aircraft carrier (originally an auxiliary aircraft carrier) in the United States Navy, leased to the United Kingdom.



Willapa was laid down on 21 May 1943 at Seattle, Washington, by the Seattle-Tacoma Shipbuilding Corporation and reclassified CVE-53 on 10 June 1943. Launched on 8 November 1943, the ship was transferred under lend-lease to the Royal Navy on 5 February 1944 to be manned by a Canadian crew.

Renamed HMS *Puncher* (D79), the carrier served the Royal Canadian Navy except for Fleet Air Arm personnel in the Atlantic and Mediterranean for the duration of hostilities. Stationed with the Home Fleet at Scapa Flow, *Puncher* initially served in a training role, but was re-tasked to strike and convoy air protection (CAP) after her sister ship, HMS *Nabob* was torpedoed off Norway in 1944. *Puncher* also provided convoy air protection on the Murmansk /Archangel convoy route which she did six times. Strike operations included German occupied Norway against industrial and shipping targets such as the steel works at Narvik on the west coast of Norway.

Fleet Air Arm squadrons assigned to *Puncher* included Fairey Barracuda torpedo/bomber/reconnaissance aircraft, Fairey Firefly fighter/bombers, American-built Hellcat (Wildcat) fighters and Avenger torpedo bombers. The Barracuda was one of the largest carrier-borne aircraft in the Royal Navy Fleet Air Arm and required rocket assistance to take flight from the small flight deck.

The Admiralty had determined that, in the post-war world, Canada would have her own aircraft carriers. Both HMS *Puncher* and HMS *Nabob* were crewed by RCN crews to establish the knowledge base for the future carriers assigned to Canada, HMCS *Warrior* (ex HMS *Warrior*), HMCS *Magnificent* (ex HMS *Magnificent*) ("The Maggie"), and HMCS *Bonaventure* (ex HMS *Powerful*) ("The Bonnie").

Decommissioned on 16 February 1946 at Norfolk, Virginia, and returned to American custody on that day, the escort carrier was struck from the Navy Registry on 12 March 1946, having never seen active service with the United States Navy.

River Class Destroyers

The *River* class was far from being a homogeneous class of ships, consisting of Royal Navy "C", and other similar classes of ships. *Saguenay* and *Skeena* were the first ships of

The Ships of Canada's Navy 1910 - 2010



the class laid down for the Royal Canadian Navy, and were adapted from the RN's "A" class. The rest of the ships were purchased used from the RN.

Most or all of the ships started the war off much the same as they were built, and their equipment was gradually revised as the war progressed. First to go was the "Y" mounting 4.7" gun (to make room for additional depth charge storage and Mk.II depth charge throwers) and the aft torpedo tubes (replaced by a 3" HA (high angle) anti-aircraft gun). In some ships, the 3" HA was later relocated to replace the X mounting.

The aft mast was removed, but was later replaced with a new lattice mast to support a HF/DF (high frequency direction finder) antenna which was used in concert with other ships to locate U-boat positions when they broke radio silence. In some ships "B" mounting was replaced with a single Hedgehog anti-submarine mortar, although other ships received two smaller Hedgehog mountings to either side of a forward gun and retained both forward 4.7" guns. In some ships, the "X" mounting 4.7" gun was replaced with a relocated 3" HA gun. Several different radars were fitted starting with the Type 286 followed by the Type 271 and 291 sets. Two ships had their Type 271 radar replaced with the newer Type 277 set.

These ships were the backbone of the RCN's destroyer fleet throughout the Battle of the Atlantic. Worn out by the end of the war, all of the River class were paid off soon thereafter.

Ships in the Class were *Saguenay*, *Skeena*, *Fraser* (pictured above), *Ottawa*, *Restigouche*, *St. Laurent*, *Assiniboine*, *Margaree*, *Chaudiere*, *Gatineau*, *Kootenay*, *Ottawa* (2nd), *Qu'Appelle*, *Saskatchewan*. (Note: All these names reappear in later classes of ship).

There is a picture of Fraser in Gallery 3 citing her sinking following a collision on 25 Jun 40. HMCS St. Laurent, H83, can be seen in the Convoy video in Gallery 3. The sinking of U210 by HMCS Assiniboine is featured in the tribute to CPO Max Bernays in Gallery 3.

Town Class Destroyers

This class of overage WWI US destroyers were among the 50 such ships given to the RN under the Lend-Lease program, six of which almost immediately reverted to the RCN, with two transferred later. The RN ships were named after British towns, but the RCN examples were named after border rivers with the exception of *Annapolis*, *Buxton* (pictured below), and *Hamilton*. At a desperate time in the Battle of the Atlantic, these ships helped to fill a great void in both the Royal and Royal Canadian Navies.

These ships, alternatively called "flush-deckers" and "four-stackers", were not a homogenous class and consisted of the two main *Wickes* and *Clemson* classes with various sub-classes built in different shipyards to differing



The Ships of Canada's Navy 1910 - 2010

designs, and there was a variety of equipment and machinery fitted.

The *Wickes* class in particular was made up of *Bath*, *Little*, and *Lamberton* sub-classes. Although good for their day, these ships were very wet in heavy seas, were top heavy necessitating the removal of some equipment before assuming their new ASW role, and had very poor turning circles. They were also quite worn out by the time they entered service with the RCN.

As originally laid down by the USN, they carried up to four 4"/50 guns, the forward gun ahead of the bridge with a gun shield, two port and starboard aft of the bridge (midships), and one right aft at the stern. The latter gun was replaced with depth charge rails when they entered Canadian service, and some ships lost the midships pair as well, to have them replaced with AA armament. The twelve torpedo tubes were arranged in triple mountings, in two port and starboard sets aft of amidships. Most of the torpedo tubes were removed, leaving only one triple mounting relocated to the centreline in order to save weight and make room for a 3" AA mounting.

On September 20, 1943, *St. Croix* was sunk by a torpedo, and only 81 men were saved by HMS *Itchen*. When *Itchen* was sunk two days later, only Stoker William Fisher from *St. Croix* survived. **(See display in Gallery 3).**

Many of the class suffered from mechanical problems, and were relegated to the torpedo training role. All were paid off soon after the war's end.

Canadian Town Class ships were Annapolis, Buxton, Columbia, Hamilton, Niagara, St. Clair, St. Croix, and St. Francis.

Tribal Class Destroyers

The *Tribal* class, or *Afridi* class, were a class of destroyers built for the Royal Navy, Royal Canadian Navy and Royal Australian Navy that saw service in World War II. They were built to a different concept than other Royal Navy destroyers built up to the time, with more emphasis on guns than torpedoes, and were meant as a response to the new, much larger destroyers being built by potential adversaries.

The original Canadian order was for four ships from British yards in 1940 (completed in 1942 and 1943) and another four from Canadian yards at Halifax in 1942. The latter were not completed until after the war.



Twenty-three Tribal class destroyers were constructed during World War II; sixteen for the Royal Navy, four for the Royal Canadian Navy, and three for the Royal Australian Navy. Thirteen were lost during the war; six British Tribals to aircraft attack, four British and one Canadian Tribal to torpedo attacks, one British Tribal to shore

The Ships of Canada's Navy 1910 - 2010

batteries off Tobruk, and one British Tribal in a collision with a British battleship.

In April 1944, *Athabaskan* and *Haida* (see picture) engaged two Elbing class torpedo boats in the Channel. *Athabaskan* was sunk by a torpedo from the Elbing class torpedo boat T24 while *Haida* pursued and forced T27 aground. Afterwards, *Haida* returned and managed to rescue 42 personnel from *Athabaskan*. (**Gallery 3 – D-Day exhibit**)

One of the under-construction Canadian Tribals was renamed *Athabaskan* as a tribute to the lost ship.

Post war, survivors of the class met different fates; Royal Navy Tribals were retired by the 1950s, while Tribals in service with the Australian and Canadian navies continued in service, with many refitted as anti-submarine destroyers. The British-built Canadian Tribals landed their 4.7-inch guns, and received a pair of QF 4 inch Mk XVI naval guns in twin mounts in the 'A' and 'B' positions (**Gun in Gallery 4**) instead, improving anti-aircraft capabilities, a pair of Squid mortars for anti-submarine warfare, and a twin 3 inch/50 Mark 33 gun on the 'X' position as a anti-aircraft weapon. Sensors were also upgraded for their new roles, and as refitted, Canadian Tribals continued to serve until the 1960s.

Four *Tribal* destroyers were still under construction in Canada when World War II ended. They were completed and then modernised, while five ships under construction in Australia were cancelled. Technically, the last four should be mentioned in the post-1945 section of this paper, however, they are included here in the interests of simplicity.

The Australian and Canadian ships, with the exception of *Micmac*, served during the Korean War (**Display in Gallery 4**). The Australian and Canadian Tribals continued in service until the late 1950s and early 1960s, when they were gradually decommissioned and sold for scrapping.

Only one ship of the class has been preserved. HMCS *Haida* was restored and is docked in Hamilton harbour, Canada as a museum ship.

The original four Canadian Tribals were *Athabaskan* (1), *Haida*, *Huron*, and *Iroquois*. The post-war Tribals were *Athabaskan* (2), *Cayuga*, *Micmac*, and *Nootka* (2) *

*Nootka (1) was a Fundy Class Minesweeper.

"V" Class Destroyers

HMCS *Sioux* (ex-HMS *Vixen*) and HMCS *Algonquin* (ex-HMS *Valentine*) were laid-down as Royal Navy 'V' class destroyers, but were commissioned into the RCN upon completion as primarily all-gun destroyers, with secondary armament in the form of torpedoes. When they arrived, they were similar to the two 'C' class destroyers (see page 16) that the RCN acquired at the very end of WWII, with the primary difference being the slightly heavier main armament (4.7" versus 4.5") and additional



The Ships of Canada's Navy 1910 - 2010

torpedo launchers. The 'V' Class had a riveted hull, while the 'C' Class had welded construction.

Both took part in escorting aircraft carrier attacks on *Tirpitz* and escorting convoys on the Murmansk run. *Algonquin* took off part of HMS *Nabob's* crew after the latter was torpedoed.

Sioux (pictured above) was sent to Halifax in 1945 for a major refit, and was then transferred to the West Coast where she was paid off into reserve in February 1946.

After minor modifications, she was re-commissioned in 1950 and did three tours of duty in Korea between 1951 and 1955. *Sioux* was the last ship to leave Korean waters, and upon her return to Canada, she reverted to a training role in which she remained until October 1963 when she was paid off for a final time at Halifax. She was sold for scrap, and was broken up in Italy in 1965.

Algonquin was also paid off into reserve soon after arrival in Canada, and was taken in hand a few years later for conversion to what the British called a "fast ASW frigate". *Algonquin* re-entered service in 1953 in this greatly altered form, and carried much of the equipment that was fitted to the new *St. Laurent* class, including a 3"/50 twin gun forward, a new enclosed bridge, US pattern radar, and two Limbo ASW mortars. She also had a "new" 4"/45 Mk.16 twin mounting aft. The gun arrangement was the exact reverse of *Crescent*.

Algonquin served until she was finally paid off in 1970.

River Class Frigates

The *River* class frigate was a class of 151 frigates launched between 1941 and 1944 for use as anti-submarine convoy escorts in the North Atlantic. The RN ships were named after rivers, hence the name of the class. Perversely, the Canadian ships were named after towns and cities. 67 *River* class frigates served in the RCN with 59 of them being built in Canadian yards. HMCS *St Pierre* is pictured below.



The majority served with the Royal Navy and Royal Canadian Navy, with some serving in other Allied navies; the Royal Australian Navy, the Free French Navy, the Royal Netherlands Navy and, post-war, the South African Navy. Ten ships built in Canada were assigned to the United States Navy to cover for a shortage of suitable convoy escorts until American built ships became available.

These ships were designed primarily to remedy what were considered defects in the Corvette design, such as a lack of range, speed, and seakeeping ability. In order to do this, the basic Corvette hull was widened and lengthened, and was given twin screws. This resulted in a faster ship with twice the range.

These ships received the new Hedgehog ASW mortar from the outset, as well as the advanced Type 271 radar, plus advanced sonar. Some ships were upgraded to the SU type

The Ships of Canada's Navy 1910 - 2010

radar later on in the war, and many received sonar upgrades as well. More powerful gun armament, in the form of twin 4" guns and 3" guns aft, with 20mm powered twin mountings as secondary AA guns were also incorporated.

There is a model of HMCS Swansea in Gallery 3 and HMCS Magog is mentioned as having been sunk by U-1223 in the Gulf of St Lawrence.



Other than the war-built destroyers, these ships were the only ones to see service after the war in any great numbers, as 21 were converted into *Prestonian* class frigates (HMCS *Stettler* is pictured above on the right as she appeared after conversion) in the 1950s, and served until the mid-1960s.

Flower Class Corvettes

There are two distinct groups of vessels in this class: the original *Flower*-class which was a group of 225 vessels ordered during the 1939 and 1940 building programs; and the modified *Flower*-class which followed with a further 69 vessels ordered from 1940 onward. The modified *Flower*'s were slightly larger and somewhat better armed.

Flower-class corvettes were used extensively by both the RN and RCN during the Battle of the Atlantic. The RCN operated 111 Canadian-built *Flowers* and 4 British-built vessels during WWII. Many more were built in Canada for use by the RN and other allies.

Service on *Flowers* in the North Atlantic was typically cold, wet, monotonous and uncomfortable. Every dip of the fo'c'sle into an oncoming wave was followed by a cascade of water into the well deck amidships. Men at action stations were drenched with spray and water entered living spaces through hatches opened to access ammunition magazines. Interior decks were constantly wet and condensation dripped from the overheads. The head (toilet) was drained by a straight pipe to the ocean; and a reverse flow of the icy North Atlantic would cleanse the backside of those using it during rough weather.

By 1941, corvettes carried twice as many crewmen as anticipated in the original design. Men slept on lockers or tabletops or in any dark place that offered a little warmth. They had a reputation of having poor sea-handling characteristics, most often rolling in heavy seas, with complete 80-degree rolls (40 degrees each side of the normal upright position) being fairly common; it was said they "would roll on wet grass". Many crewmen suffered severe motion sickness for a few weeks until they acclimatised to shipboard life. It should be noted however, that no Allied sailor was ever lost overboard from a *Flower* during World War II, outside of enemy action. HMCS *Sudbury* is pictured above.



A typical action by a *Flower* during convoy escort duties should she encounter a surfaced U-boat was to run directly at the submarine to force it to dive (thus limiting the

The Ships of Canada's Navy 1910 - 2010

speed and manoeverability of the U-boat). The corvette would then keep the submarine down and pre-occupied with avoiding depth charge attacks long enough to allow the convoy to safely pass. This tactic was hampered when the *Kriegsmarine* began deploying its U-boats in "wolf-pack" attacks, which were intended to overwhelm the escort warships of a convoy and allow at least one of the submarines to attack the merchant vessels. The low top speed of the *Flower*-class ships made effective pursuit of a surfaced U-boat impossible. It also made rejoining a convoy difficult, and often impossible.

Upgrades in sensors and armament for the *Flowers*, such as radar, HF/DF, depth-charge projectors, and asdic (an early version of sonar), meant these small warships were well equipped to detect and defend against submarine attacks.

Success for the *Flowers*, however, should be measured in terms of tonnage protected, rather than U-boats sunk. Typical reports of convoy actions by these craft include numerous instances of U-boat detection near a convoy, followed by brief engagements using guns or depth-charges and a rapid return to station as another U-boat took advantage of the initial skirmish to attack the unguarded convoy.

Continuous actions of this kind against a numerically superior U-boat pack demanded considerable seamanship skills from all concerned, and were very wearing on the crews.

Thirty-six ships in the class were lost (10 Canadian) during World War II, most due to enemy action, the rest to collision with Allied warships and merchant ships. Of the vessels lost to enemy action, 22 were torpedoed by U-boats, five were mined, and four were sunk by enemy aircraft. The *Flower*-class corvettes are credited with participating in the sinking of 47 German and four Italian submarines.

Construction of the *Flower*-class was superseded toward the end of the war as larger shipyards concentrated on *River*-class frigates, and smaller yards on the improved *Castle*-class corvette design.

The *Flower* class represented fully half of all Allied convoy escort vessels in the North Atlantic during World War II, and is considered the quintessential ship of the RCN during WW II.

HMCS *Sackville* (K181) is the only member of the class to be preserved as a museum ship.

There is a model of HMCS Chambly in Gallery 3. There is also a picture and the medals of Petty Officer Bertrand who was lost in the sinking of HMCS Shawinigan. Finally, there are references to the boarding of U-744 and U-94 by HMCS Chilliwack and Oakville respectively.

The backdrop at the entrance of the naval section in Gallery 3 is a picture of HMCS Arrowhead, K145.

The picture to the left of the Convoy video includes HMCS Battleford, K165. The video includes footage of HMCS Trentonian, K368.

The Ships of Canada's Navy 1910 - 2010

Castle Class Corvettes

The *Castle*-class corvettes were an updated version of the much more numerous *Flower*-class, and started appearing during late 1943. They were equipped with radar as well as asdic, an early version of sonar, named after the **Allied Submarine Detection Investigation Committee**.

The Admiralty had decided to cease *Flower* class construction in favour of the larger *River*-class frigates as the *Flower* class had originally been intended for coastal escort work and was not entirely satisfactory for Atlantic convoy service.

In particular, they were slow, poorly armed, and rolled badly in rough seas which quickly exhausted their crews. However, many shipyards were not large enough to build frigates and so the *Castle* class was designed to be built on small slipways. HMCS *Copper Cliff* is featured opposite.



Their appearance was much like the later "long forecastle" variant of the *Flowers* and they were a little larger (around 1,200 tons — about 200 tons more than the *Flowers*, and 40 ft (12 m) longer).

The most obvious difference was the lattice mainmast instead of the pole type fitted in *Flowers*. There was also a more "square cut" look to the stern although it was still essentially a cruiser spoon type. Armament was similar except that the depth charge fitment had been replaced by one for the Squid anti-submarine mortar (**there is an example of a Squid mounting in the Lebreton Gallery**).

Propulsion machinery was identical to the *Flowers*, and experienced officers felt that they were seriously under-powered, having a tendency to turn into the wind despite everything the helmsman could do. The fact that attacks with Squid required a fairly low speed compared to depth charge attacks only made matters worse.

Most were operated by the Royal Navy, but twelve were assigned to the Royal Canadian Navy and one to the Royal Norwegian Navy. Three *Castles* (none Canadian) were sunk through enemy action, and *Castles* participated in the sinking of seven U-boats.

Bangor Class Minesweepers

The *Bangor*-class minesweepers were operated by the Royal Navy (RN), Royal Canadian Navy (RCN) and Royal Indian Navy (RIN) during World War II.

The class derives its name from the lead ship, HMS *Bangor* (J00), launched on 19 February 1940 and commissioned on 7 November 1940. 54 were operated by the RCN during WWII, with all but 6 of them being built in Canada. Three were lost due to enemy action. HMCS *Chignecto* is in the picture.



The Ships of Canada's Navy 1910 - 2010

Their small size gave them poor sea handling abilities, reportedly even worse than the *Flower* class corvettes. The diesel-engine versions were considered to have poorer handling characteristics than the slow-speed reciprocating-engine versions.

Their shallow draft made them unstable and their short hulls tended to bury the bow when operating in a head sea.

The *Bangor*-class vessels were also crowded, cramming over 90 enlisted sailors and 6 officers into a vessel originally intended for a total of 40 officers and sailors.

There is a model of HMCS Caracat in the D-Day section of Gallery 3. HMCS Blairmore, J314 is clearly seen in the Convoy video.

Algerine Class Minesweepers

The *Algerine* class were minesweepers of the Royal Navy and the Commonwealth. 110 ships of the class were launched between 1942 and 1944 and served in World War II. HMCS *Rockcliffe* is pictured.

They were designed as small vessels that could serve in several roles, not just as minesweepers. In practice, the desperate shortage of convoy escorts in the Battle of the Atlantic meant that they served mainly in the escort role, including the twelve *Algerines* of the Royal Canadian Navy that consequently never had minesweeping gear fitted.



All of the RCN *Algerines* were built in Canada. None were lost in action.

From 1945 to 1990

HMCS *Warrior* (Light Fleet Carrier)

HMCS *Warrior* served in the RCN from 1946 to 1948 while on loan from the Royal Navy. When it was determined that she was not suited for conditions on the North Atlantic, she was transferred to the West Coast and served her remaining time with the RCN there. In 1948, she was exchanged back to the RN for a slightly larger carrier, HMCS *Magnificent*. After leaving the RCN, she was altered to include an angled flight deck and served in the RN until 1958, at which point she was transferred to Argentina and renamed *Independencia*.



HMCS *Magnificent* (Light Fleet Carrier)

HMCS *Magnificent* (CVL 21) was a *Majestic* class light aircraft carrier that served in the Royal Canadian Navy from 1946–1956.

The Ships of Canada's Navy 1910 - 2010

The third ship of the *Majestic* class, *Magnificent* was built by Harland and Wolff, laid down 29 July 1943 and launched 16 November 1944. Purchased from the Royal Navy (RN) to replace HMCS *Warrior*, she served in a variety of roles, operating both fixed and rotary-wing aircraft. She was generally referred to as the *Maggie*. Her aircraft complement included Fairey Fireflies and Hawker Sea Furies.

On 20 March 1949, while on fleet manoeuvres in the Caribbean, thirty-two aircraft handlers on the *Magnificent* briefly refused an order to turn to morning cleaning stations to protest various grievances.

The captain acted with great sensitivity to defuse the crisis, holding an informal discussion with the disgruntled crew members and carefully avoiding using the term "mutiny" which could have resulted in severe legal consequences for them.



At almost the same time, similar incidents happened in *Crescent*, at Nanjing, China and in *Athabaskan* at Manzanillo, Mexico, both of whose captains acted similarly to that of the *Magnificent*

Her last role was as a transport during the Suez Crisis, carrying a large part of the Canadian peacekeeping force to Egypt with its vehicles parked on her deck.

Magnificent was decommissioned by the RCN in 1956 and was returned to the RN in 1957 and placed in reserve. She was stricken by the RN in 1965. *Magnificent* was replaced in RCN service by HMCS *Bonaventure*.

HMCS *Bonaventure* (Light Fleet Carrier)

HMCS *Bonaventure* was a *Majestic* class aircraft carrier, originally laid down for the Royal Navy as HMS *Powerful*.

As HMS *Powerful*, she was laid down at Harland and Wolff in Belfast on 21 November 1943, and launched on 27 February 1945. Work was suspended after the end of World War II, and was not resumed until the ship was bought by Canada. She was acquired in the early 1950s by the Royal Canadian Navy, which was looking to replace its aging World War II-vintage light carriers *Magnificent* (another *Majestic* class carrier) and *Warrior*, which were deemed unsuitable for the jet age. Several surplus U.S. and U.K. ships were considered, and the then-incomplete HMS *Powerful* was purchased in 1952 from the Royal Navy on the condition that she be refitted with an angled flight deck and steam catapult.



Bonaventure—named after Bonaventure Island, a bird sanctuary in the Gulf of St. Lawrence—was commissioned into the Canadian Navy on 17 January 1957, upon completion of its refit and modernization. The navy's new flagship, affectionately known as the

The Ships of Canada's Navy 1910 - 2010

"Bonnie", carried 34 aircraft in a mix of McDonnell Douglas F2H-3 Banshee jet fighters, Grumman CS2F Tracker ASW aircraft (built by de Havilland in Toronto), and Sikorsky HO4S (*Horse*) helicopters.

Even with the refit, landing a Banshee on the *Bonaventure's* relatively short flight deck was pushing the envelope. The wide-winged Trackers were also a tight fit. Despite this, and because of the hard work and dedication of her crew, the *Bonaventure* was able, by 1958 to conduct around-the-clock sustained operations, keeping four Trackers and two HO4S's in the air at all times, saturating an area of 200 square nautical miles (690 km²) with anti-submarine warfare (ASW) aircraft. This made the Royal Canadian Navy the only one in the world at the time other than the US Navy capable of conducting around-the-clock air operations for sustained periods.

The Banshees were retired in 1962. In 1964 new CHSS-2 Sea King helicopters were added to *Bonaventure's* complement. In 1966 the carrier docked in Quebec for a mid-life refit. This second refit took 18 months and cost \$11 million. After the 1968 unification of the Canadian Forces, the *Bonaventure* was decommissioned, in Halifax, on 3 July 1970 and was scrapped in Taiwan in 1971. Components from *Bonaventure's* steam catapult were used to rebuild the catapult aboard the Australian aircraft carrier HMAS *Melbourne*.

There is a picture of the "Bonnie" in the centre frame of the backdrop in the naval section of Gallery 4.

'C' Class Destroyers

The C class was a class of 32 destroyers of the Royal Navy that were launched from 1943 to 1945. The class was built in four flotillas of 8 vessels, the Ca, Ch, Co and Cr classes, ordered as the 11th, 12th, 13th and 14th Emergency Flotillas respectively. The class names are derived from the initial 2 letters of the member ships' names, although the Ca class was originally ordered with a heterogeneous mix of traditional destroyer names. A fifth flotilla, the Ce class, was planned but was cancelled in favour of the *Weapon* class. HMCS *Crescent* (pictured) and *Crusader* were acquired by the RCN in 1945 and 1946 respectively.



During the Korean War, HMCS *Crusader*, homeport Esquimalt, BC, was the UN Force's top train buster with five to her credit. **(See Gallery 4 Korean War section).** Stopping a Communist supply train was no easy feat.

The railway hugged the east side of the Peninsula; the tracks were laid inside mountain tunnels with open space between them. The trick was to fire at the precise time a train came hurtling out of a tunnel as it sped across the gap before entering the next tunnel. The train engineers would stop their trains inside the tunnels, build up a head of steam, release the brakes and go hell-bent-for-leather across the gap. The gaps were mostly rather short and the time to nail one of the supply trains was limited. In all, Canada's navy led the way among the UN Force with *Crusader* top gun.

The Ships of Canada's Navy 1910 - 2010

Upon arrival in the RCN, HMCS *Crescent* was extensively modified as a "fast A/S frigate". *Crusader* was scrapped in 1963, and *Crescent* in 1971.

St. Laurent Class Destroyer Escort (DDE)/Destroyer Helicopter Escort (DDH)

The *St. Laurent* class destroyer was a class of destroyers that served the Royal Canadian Navy and later the Canadian Forces from the mid-1950s to the mid-1990s. This was the first major class of warship entirely designed and built in Canada. They were similar to the British Type 12 *Whitby* class frigate, but used more American equipment than British. There were seven ships of the class commissioned between 1955 and 1957.

They were originally intended as destroyer escorts (DDE) but were later refitted and re-classified as destroyer helicopter escorts (DDH). The picture below is of HMCS *St. Laurent* as a DDH.

The need for the *St. Laurent* class came about in 1949 when Canada joined NATO and the Cold War was in its infancy. The RCN was assigned responsibility for anti-submarine warfare and controlling sea space in the western North Atlantic.

The *St Laurent* class was built to an operational requirement much like that which produced the British Type 12. They were powered by the same machinery plant, but otherwise were strikingly different. The rounded deck-edge forward was adopted to prevent ice forming during operations in harsh Canadian conditions. They were built to counter nuclear, biological and chemical attack conditions, which led to a design with a rounded hull, a continuous main deck, and the addition of a pre-wetting system to wash away contaminants. The living spaces on the ship were part of a "citadel" which could be sealed off from contamination for the crew safety. The ships were sometimes referred to as "Cadillacs" for their relatively luxurious crew compartments.



Other innovative features not found in other ships of the time included an operations room separate from the bridge, from which the captain could command the ship while in combat, 12 separate internal telephone systems, air conditioning, and the latest advances in radar and sonar technology.

The *St. Laurent* class originally called for 14 vessels to be commissioned no later than 1955, however changing design specifications due to the rapidly changing Cold War naval environment, as well as Canada's wartime priorities during the Korean War saw only the first 7 completed by 1957. The remaining 7 vessels were built as the follow-on *Restigouche*-class to incorporate advancements in naval warship design in the preceding years.

The *St. Laurent* class was fitted with twin 3 inch 50 calibre guns for engaging both surface and air targets. Her anti-submarine armament consisted of a pair of triple- barrelled Limbo ASW mortars in a stern well.

The Ships of Canada's Navy 1910 - 2010

The RCN acquired a fleet of 41 CH-124 Sea King anti-submarine warfare helicopters in 1963. At this time it was decided to refit and reclassify the *St. Laurent* vessels from Destroyer Escort (DDE) to Destroyer Helicopter (DDH).

With the advent of the nuclear submarine, it became apparent that the ships needed to be further upgraded and all seven ships of the *St. Laurent* class were fitted with helicopter platforms and the towed SQS 504 Variable Depth Sonar (VDS).

When ships were fitted with the helicopter platform, the single funnel was altered to twin stepped funnels to permit the forward extension of the helicopter hangar. Stabilizing systems were added to allow for helicopter recovery in any sea conditions, and a single CH-124 Sea King was carried. To make room for the helicopter deck, the rear 3 inch gun mounting and one of the Limbos were removed.

Assiniboine was the first vessel in the class to receive the full upgrade, re-commissioning as a DDH on 28 June 1963.

In the late 1970s, under the Destroyer Life Extension (DELEX) program was commissioned to upgrade ten of the *St. Laurent* and *Restigouche*-class ships with new electronics, machinery, and hull upgrades and repairs. The intent of DELEX was to extend the life of these ships for another 15 years of service while the *Halifax*-class frigates were being designed and built as the Canadian Patrol Frigate Program.

DELEX included the installation of a Naval Tactical Data System (NTDS) known as the Automatic Data Link Plotting System (ADLIPS), as well as the Canadian Electronic Warfare System (CANEWS), and a new communication suite.

The DELEX program was very successful as it allowed older ships to participate in a modern electronic battle field using tactical data links between ships and aircraft.

Ships in the class were HMCS *St. Laurent* (DDH 205); HMCS *Saguenay* (DDH 206); HMCS *Skeena* (DDH 207); HMCS *Ottawa* (DDH 229); HMCS *Margaree* (DDH 230); HMCS *Fraser* (DDH 233); and, HMCS *Assiniboine* (DDH 234).

The left backdrop to the naval section in Gallery 4 is a picture of HMCS Assiniboine as a DDH. The right panel of the backdrop shows three St. Laurent class in line without the weather shield on their forward 3"50 gun mountings. There is also a photograph of HMCS Skeena using her pre-wetting system.

Restigouche Class Destroyer Escort (DDE)

The *Restigouche* class was a natural follow-on to the original *St. Laurent* class, and indeed only had a few minor improvements. The most noticeable were the replacement of the forward 3"/50 gun with a 3"/70, and the presence of a fire control director atop the bridge superstructure. In order to see over the new gun mount, the bridge was raised one full deck higher than on the previous ships.



The Vickers 3"/70 Mk.6 was developed by the Royal Navy and fitted to their *Tiger* class cruisers. The RCN was the only other customer. It was designed to fire up to 120 rounds per

The Ships of Canada's Navy 1910 - 2010

minute per barrel (although this was limited in service to 90 to reduce barrel wear), and the magazine for this gun was referred to as the "bottling plant" for its handling of ammunition. It took several years to work out the bugs in this weapon, however.

In the late 1960s, four ships of this class were refitted to what was known as the *Improved Restigouche* (IRE) class, which replaced the aft 3"/50 gun with an octuple Anti-Submarine Rocket (ASROC) launcher and the old mast with a new, taller lattice mast. The stern was also altered to accommodate variable depth sonar. The ships that did not receive this refit were paid off into Category "C" Reserve soon afterward, during the manpower shortages of the early- to mid-1970s. Of these,

Chaudiere was used as a parts hulk and donated her bow to *Kootenay* after a collision, *Columbia* became a dockside engineering training platform (with no-thrust wheels replacing her propellers), and *St. Croix* had her weapons and propellers removed and her machinery spaces converted into classrooms.

The IRE ships remained in service until the mid- to late 1990s. In 1969, *Kootenay* (pictured above) suffered the Canadian Navy's worst peacetime accident when her starboard gearbox exploded, killing 9 crew members. In 1989, she collided with a freighter and suffered damage to her bows. In August of 1990, *Terra Nova* was hastily re-equipped and deployed as part of Canada's contribution to Coalition forces during the Gulf War. *Restigouche* was similarly refitted for possibly service in the Persian Gulf, but did not deploy there until after the end of hostilities.

The remaining four of these ships were paid off during the 1990s, as the new *Halifax* class frigates entered service. *Terra Nova* was the last to go in 1997, after 38 years of service. After being paid off, *Terra Nova* appeared in the movie "*K-19 - The Widowmaker*" starring as a USN destroyer.

Ships in the Class were: HMCS *Chaudiere* (DDE 235); HMCS *Gatineau* (DDE 236); HMCS *St Croix* (DDE 256); HMCS *Restigouche* (DDE 257); HMCS *Kootenay* (DDE 258); HMCS *Terra Nova* (DDE 259); and, HMCS *Columbia* (DDE 260).

There is a picture of Terra Nova in the Cuban Missile Crisis section of Gallery 4.

MacKenzie Class Destroyer Escort (DDE)

The six ships of the *Mackenzie* and *Annapolis* classes were originally supposed to have comprised the *Mackenzie* class, but the last two were built to the *St. Laurent* DDH design. These ships spent most of their time on the West Coast, and never saw any major conversions other than DELEX. All four ships were used primarily in the training role.

The *Mackenzie* class was superficially similar to the previous *Restigouche* class ships, including the mounting of the 3"/70 Mk. 6 gun on the foc'sle.

This mounting was not available when *Qu'Appelle* (pictured) was built, and she therefore received a 3"/50



The Ships of Canada's Navy 1910 - 2010

gun mounting forward instead.

After being paid off, *Mackenzie* was used in an episode of "The X-Files" before being scuttled as an artificial reef off Sidney, BC. *Saskatchewan* was sunk off Nanaimo on June 14/97. *Yukon* was sunk off San Diego as an artificial reef during 2000.

Ships in this class were HMCS *Mackenzie* (DDE 261); HMCS *Saskatchewan* (DDE 262); HMCS *Yukon* (DDE 263); and, HMCS *Qu'Appelle* (DDE 264).

There is a model of HMCS Mackenzie in the naval section of Gallery 4.

Annapolis Class Destroyer Helicopter Escort (DDH)

This class of destroyers was a follow-on to the *St. Laurent* class of ASW destroyer escorts of the 1950's. They were built late enough to incorporate the helicopter hangar retrofitted to the *St. Laurents*, along with VDS. HMCS *Nipigon* remained in the fleet as a trials ship for the ETASS Mod 5 gear until paid off in 1998.

ETASS is a continuing project to improve the towed array sonar gear used by the Canadian Navy, and the ETASS Mod 4 was the precursor to CANTASS (Canadian Towed Array Sonar System).



In 1982 *Nipigon* underwent a DELEX (DEstroyer Life EXTension) refit, which replaced various combat, radar, and weapon systems. *Annapolis* (pictured) followed in 1984. *Nipigon* was the last of the steam-powered frigates to serve the Canadian Navy.

Ships in this class were HMCS *Annapolis* (DDH 265) and HMCS *Nipigon* (DDH 266).

Iroquois Class Destroyer Helicopter Escorts (DDH)

These destroyers (more commonly known as the 280s) were all launched in the early 1970's, primarily as anti-submarine destroyers. The first Canadian warships (other than AORs) to carry multiple helicopters, they were also the first ships to be powered entirely by gas turbines in a COGOG (COmbined Gas Or Gas) arrangement. Well suited to sea conditions in the North Atlantic, they are very effective anti-submarine platforms, and also designed as command and control ships for task force commanders.

During the late 80's and early 90's, they underwent major refits under TRUMP (Tribal Class Update and Modernization Program) and emerged as area air defence destroyers. TRUMP saw the "playboy bunny" funnels replaced with a single large funnel, the addition of new search and fire control radars, the replacement of the old 5" gun with a new 76mm one, the addition of Mk.41 VLS, and other changes. Although hampered slightly by the lack of a 3-D radar (cut as a cost saving measure), it is nevertheless reported that they can shoot down aircraft within 50 nautical miles with their Standard SM-2 (MR) missiles.

The Ships of Canada's Navy 1910 - 2010

Due to manpower shortages, HMCS *Huron* has been laid up on the West Coast, with minimal crew on board. She did not receive the new communications systems fitted to the other three ships of the class, and several systems have been removed from her while she is laid up.



Athabaskan underwent a refit during late 2001 / 2002, and *Iroquois* (pictured above) completed a refit during the summer of 2005. Although these ships should probably be replaced by 2010, they are currently not slated to be replaced until 2017. They are not expected to receive the new Cyclone helicopters, and will continue to operate Sea Kings as long as they are available.

Ships in this Class are: HMCS *Iroquois* (DDH 280); HMCS *Huron* (DDH 281); HMCS *Athabaskan* (DDH 282); and HMCS *Algonquin* (DDH 283).

Bay Class Minesweepers

The *Bay*-class minesweepers were a class of minesweepers operated by the Royal Canadian Navy (RCN) and Canadian Forces (CF) during the Cold War.

The class derives its name from bays in Canada and was designed by the RCN as a replacement for World War II-era minesweepers. Fourteen were laid down in 1951–1952, however six were subsequently transferred to the French Navy in 1954.



These ships were replaced by six of the same name in 1956–1957 but were assigned new pennant numbers. HMCS *Fortune* is pictured above.

They were reclassified in CF service as patrol escorts in 1972 and six vessels remained in service until the late 1990s, providing ship handling experience for junior officers with Maritime Forces Pacific.

HMCS Provider (Operational Support Ship)



This ship was the first dedicated replenishment ship built for the Canadian Navy. She was paid off during the summer of 1998, immediately after participating in the MARCOT exercise for that year. Originally posted on the East coast, her exposed lower deck made her unsuited for this placement, and she was transferred to the West coast when the first of the two new replenishment vessels became available.

In the summer of 2002, *Provider* was taken under tow for the Greek islands where she was supposed to be used as a towed supply barge.

The Ships of Canada's Navy 1910 - 2010

HMCS *Protecteur*/HMCS *Preserver* (Operational Support Ships)

Built in the late 1960s, these ships benefitted from the lessons learned from Canada's first postwar replenishment vessel, HMCS *Provider*. Once the new ships were available, *Provider* was sent to the West Coast where she would stay until the late 1990s. They were originally fitted with a 'bowchaser' twin gun mount, but these were removed due to the maintenance involved with a gun in such an exposed position on the foc's'le. During the 1990/1991 Gulf War, this mount was replaced on *Protecteur*, and removed again once she returned. Both ships have ice-strengthened hulls. They are the largest ships ever built for the Canadian Navy.



When *Protecteur* was sent to the Gulf, two Phalanx CIWS guns were fitted as a temporary measure to guard against missiles; this addition was made permanent in post-Gulf war refits on both ships of the class. *Protecteur* was the only supply ship in the Gulf War to conduct her own boardings as a part of the arms embargo against Iraq. These ships are due for replacement, but no final announcements have been made.

From 1990 to PRESENT

Halifax Class Frigates (FFE)

As early as the late 1970's, it was clearly apparent that Canada's aging fleet of ASW destroyer escorts would desperately need replacing in the near future. The *Halifax Class*, or Canadian Patrol Frigate (CPF), resulted from this requirement and the first ships started to appear in the early 1990's. These large multi-purpose frigates are excellent in the heavy seas found in the North Atlantic, and are tailored to Canadian requirements in other respects as well. Various members of the class have deployed to the Persian Gulf and Northern Arabian Sea, most recently in support of Operation Apollo and the war against terrorism.



Although large ships, they were designed with a low profile and a reduced radar signature, which results from sloping many surfaces away from the vertical. Engines are raft mounted to reduce noise transmission to the hull, and extensive heat emission reduction has resulted in a low heat signature.

A single diesel engine provides economical cruising propulsion, while two GE LM2500 gas turbines (basically jet engines) provide sprint speeds in excess of 28 knots. Although principally designed for ASW (anti-submarine warfare) with good sonars and Mk.46 torpedoes (both ship- and helicopter-launched), these ships carry a good balance of weapons giving them anti-surface (Harpoon and the 57mm gun) as well as anti-aircraft self-defence (Sea Sparrow, 57mm gun, and Phalanx CIWS) capabilities.

The weapons are coupled with good sensor systems in the form of the SQS 510 hull mounted sonar, SQR 19 towed array sonar with CANTASS computer processors, SPS 49 long range air search radar, and the Sea Giraffe air/surface search radar system. These

The Ships of Canada's Navy 1910 - 2010

ships also continue the Canadian tradition of operating large helicopters from small decks, and are fitted with the Canadian developed Beartrap helicopter haul-down system which allows Sea Kings to take-off and land from these ships in most weather conditions.

There is an explanation of Beartrap in the naval section of Gallery 4 beside the model of Mackenzie. (see pages 18-21)

Around 1998, HMCS *Montréal* came out of refit with new propellers and anechoic tiles on the hull in an attempt to further reduce radiated noise levels. The whole class was originally fitted with the Prairie Masker systems, which released air bubbles from the hull around noise-generating regions of the ship; these systems were deactivated when the Navy determined that the operating costs of this system outweighed the benefits. *Jane's Fighting Ships* reported that the whole class was to receive Towed Integrated Active/Passive Sonar (TIAPS) starting in 2002, although this does not appear to have come to pass. The Phalanx CIWS (Close-In Weapons System) is being upgraded to Mod 1B, which upgrades the radar system and adds an infrared camera to allow for capability against small surface targets. Furthermore, these ships are slated to undergo a mid-life refit under the FELEX program, although the details have yet to be established. The Sea King helicopter is to be replaced with the Sikorsky H-92 in the coming years.

There is a model of HMCS Toronto in Gallery 4 opposite the T-72 tank. There is an error in the posted description of the vessel – citing a 75 mm gun vice 57 mm.

Ships in this class are: HMCS *Halifax* (FFE 330); HMCS *Vancouver* (FFE 331); HMCS *Ville de Quebec* (FFE 332); HMCS *Toronto* (FFE 333); HMCS *Regina* (FFE 334); HMCS *Calgary* (FFE 335); HMCS *Montreal* (FFE 336); HMCS *Fredericton* (FFE 337); HMCS *Winnipeg* (FFE 338) (pictured above); HMCS *Charlottetown* (FFE 339); HMCS *St John's* (FFE 340); and, HMCS *Ottawa* (FFE 341).

Kingston Class Maritime Coastal Defence Vessels (MCDV)

The *Kingston* Class maritime coastal defence vessels were built by Halifax Shipyards Ltd owned by Saint John Shipbuilding of Canada. The first of the twelve ships was commissioned in September 1996 and the twelfth was commissioned in April 1999.

The ships are named *Kingston* (pictured), *Glace Bay*, *Nanaimo*, *Edmonton*, *Shawinigan*, *Whitehorse*, *Yellowknife*, *Goose Bay*, *Moncton*, *Saskatoon*, *Brandon* and *Summerside*. Six ships are stationed on the east coast for operations in the Saint Lawrence and the Atlantic and six ships are based on the Pacific Coast.



The 12 *Kingston* Class ships provide a single class of vessels for multi-function use by the Canadian Naval Reserves. The main roles of the ships are: coastal surveillance, naval reserve force training, mine countermeasures for route survey, minesweeping and mine inspection operations.

The Ships of Canada's Navy 1910 - 2010

The ship is equipped with a Bofors 40mm Model 60 Mk 5C rapid fire gun, and two 12.7mm machine guns. The Bofors gun is mounted on the forecastle deck and the arc of fire extends forwards by +/- 120°. The machine guns are mounted one either side at the front of the bridge deck. In a depressed position each machine gun fires in an arc of fire of 118°

The ship is equipped with one of three modular mine countermeasures systems which are the deep sea Thales MMS mechanical mine sweeping system, the route survey system and the Sutech remotely operated vehicle (ROV) mine inspection system.

The ship is equipped with four main Wartsila UD 23V12 diesel motors and four alternators and two Jeumont electric motors (600 V DC). The two LIPS Z drive azimuth thrusters are fitted with fixed-pitch reversing propellers. The propulsion system provides 15 knots maximum continuous speed. The range at the economical cruising speed of 9 knots using two engines is 5000 nautical miles with a 20% margin in tank capacity. Mechanical Minesweeping is carried out at 8 knots. The crash stop length is 5 ship lengths from a speed of 15 knots.

There is a picture of HMCS Brandon (MCDV 710) in the backdrop behind the model of HMCS Toronto in Gallery 4

Navy Terminology

Some terms in this paper may be unfamiliar. Consequently, here are a few explanations:

Laid Down: When construction of a ship begins, it is "laid down" (from the laying down of the keel); it is then "launched" which is usually when it is christened and enters the water for the first time.

Commissioned: When launched it is not usually fully completed with internal and external work and builders trials to be completed. When they are done and the ship is handed over to the navy it is "commissioned" or activated as an operational vessel in the navy.

Decommissioned: The ship then remains in commission for as long as it is active service. During that period, however, it may be decommissioned to undergo a major manufacturer's refit. It would then be "recommissioned" on its return to service.

Paid Off: A ship is finally "paid off" when it is retired from service and handed over to be "**broken up**" or scrapped.

There are some exceptions to decommissioning when a ship leaves active service such as HMS *Victory* and HMCS *Haida* and *Sackville* that remain in commission as special memorials or museums.