

Seaplane



A [DeHavilland Single Otter](#) floatplane in [Harbour Air](#) livery.

A **seaplane** is an [aircraft](#) designed to take off and land (correctly, though less commonly termed, "alight") upon water.

These aircraft are occasionally called **hydroplanes**, based on usage in several [Romance languages](#), which is rare in [English](#).

Types of seaplane

There are two types of **seaplane**: the **float plane** and the [flying boat](#).

- A float plane has slender [pontoons](#) mounted under the fuselage. Two floats are common, but many float planes of [World War II](#) had a single float under the main fuselage and two small floats on the wings. Only the "floats" of a float plane normally come into contact with water. The fuselage remains above water. Some small land aircraft can be modified to become float planes.
- In a flying boat, the main source of [buoyancy](#) is the fuselage, which acts much like a [ship's hull](#) in the water. Most flying boats have small floats mounted on their wings to keep them stable.

It should be noted that some people feel that the term "seaplane" should only be used to refer to aircraft with floats in place of landing gear, with a flying boat being a distinct type in its own right. For convenience, the above definitions and assumption that flying boats are a type of seaplane are used herein.

An [amphibious aircraft](#) can both take off and land on conventional runways and take off and land on water, whereas a true seaplane can only take off and land on water. There are amphibious flying boats and amphibious float planes, as well as some hybrid designs, e.g., a seaplane with retractable floats. However, most modern aircraft that are seaplanes that are made, are amphibious and of traditional design.

Seaplane uses and operation

Numerous modern civilian aircraft have a floatplane variant, usually for light duty transportation to lakes and other remote areas. [Flying boats](#) have remained in service for fire-fighting duties. Often an amphibious aircraft that can land on land as well as land on water has supplanted a pure water plane.



A [DeHavilland Twin Otter](#) floatplane in [West Coast Air](#) livery.

Seaplanes can only take off and land on water with little or no [wave](#) action and, like other aircraft, have trouble in extreme weather. The size of waves a given design can land depends on how big the aircraft is, and the specifics of its shape. Flying boat seaplanes can handle rougher water, and are generally more stable than the float planes on the water.

Some of the largest users of seaplanes are [rescue](#) organizations such as [coast guards](#) because the same aircraft can be used for spotting and rescuing survivors. Seaplanes are much more fuel-efficient than [helicopters](#) and, unlike helicopters, can land when they run out of fuel, weather permitting.

Seaplanes are often used in remote areas such as [Alaska](#) (which has the highest per capita number of floatplanes in the United States) and the [Canadian](#) outback, especially in areas with a large number of [lakes](#) convenient for takeoff and landing. They may operate on a [charter](#) basis, or provide scheduled service.

History of seaplanes

Early development was carried out at [Hammondsport, New York](#) by [Glenn Curtiss](#) who had beaten [Alexander Graham Bell](#) and others in the [Aerial Experiment Association](#).



The [H-4 Hercules](#) makes a demonstration flight in 1947.

During [World Wars I and II](#), many [navies](#) used seaplanes for [reconnaissance](#) and [anti-submarine warfare](#). Most [battleships](#) carried one or two catapult-launched seaplanes to spot targets over the horizon for the big guns, or to fight off enemy reconnaissance planes. The failure of the [German battleship Bismarck's Arado 196](#) seaplane to hunt down a [PBY Catalina](#) reconnaissance aircraft is said to have contributed to the ship's demise.

One of [Howard Hughes'](#) best-known endeavors was the H-4 Hercules (nicknamed the "Flying Lumberyard" and, more famously, the "[Spruce Goose](#)" — although its frame was built predominantly of birch), a massive flying boat completed just after the end of World War II. The Hercules only flew once (with Hughes at the controls) in [1947](#). The plane was originally commissioned by the U.S. government for use in World War II, but was not completed until after the War.

Today, seaplanes are mostly considered obsolete for military purposes; [seaplane tenders](#), such as [HMS Engadine](#), fell out of use after the [1950s](#) with the general demise of the seaplane, the advent of the first stable, fully-controllable [helicopter](#), and continued development of the modern [aircraft carrier](#).



Seaplane airbase at Natal (Rio Grande do Norte), Brazil

Amphibious aircraft



[Bombardier CL-415](#) water bomber

An **amphibious** or **amphibian aircraft** is an [aircraft](#) that can land on either land or water. This has the obvious advantage of flexibility, but incurs great penalties as well: The aircraft will have to handle the extra drag, and weight, of the hull-shaped [fuselage](#), or the [floats](#) (see [seaplane](#)), and the associated hardware, plus the weight of the [landing gear](#) (which normally is retractable, or, on smaller aircraft, semi-retractable). This leads in turn to the use of bigger, more powerful, engine(s) than comparable land aircraft, which in turn escalates weights and/or reduces range.

The amphibian aircraft have their uses, not least as transport aircraft in remote areas, where there are few [airstrips](#), but plenty of lakes and rivers. And they are more versatile than normal seaplanes and [flying boats](#), as they can be flown to a big [airport](#), or [airfield](#), to get service, or just to be able to land, or take-off, when a storm makes the waves too big to handle.

By necessity, amphibian aircraft are heavier, more complex and more expensive to buy and run than comparable landplanes, but are very versatile. And yet, on the whole, cheaper to buy and operate, and simpler, than the helicopters that compete for the same types of jobs, if not quite as versatile. Amphibious aircraft have longer range than a comparable helicopter, as an aircraft's wing is more effective than a helicopter's lifting rotor. The main weakness of amphibians compared to seaplanes and landplanes is less performance, because of their increased weight. This means that an amphibian [Cessna 206](#) would carry less passengers or goods, and have a decreased range compared to a seaplane Cessna 206 - which in turn underperforms compared to a pure landplane of the same model Cessna.

Almost no flying boats are manufactured today, but numerous land aircraft are each year converted to amphibious seaplane configuration by exchanging their fixed landing gear for amphibious floats. A handful of manufacturers around the world still produce amphibian aircraft (flying boats with retractable landing gear), but their numbers are dwindling. One example is the [Lake Aircraft](#).

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