

# DRONE SAFETY: Even the Sky Has Limits

By AHS Staff

**K**now Before You Fly™ is an education campaign founded by the Association for Unmanned Vehicle Systems International (AUVSI) and the Academy of Model Aeronautics (AMA) in partnership with the US Federal Aviation Administration (FAA) to educate prospective users about the safe and responsible operation of unmanned aircraft systems (UAS).

In March, the Know Before You Fly campaign launched a new initiative to educate the public about the existing drone laws they must follow and the consequences of knowingly or unknowingly breaking the law. The new advertising campaign — “Even the Sky Has Limits: Learn the Drone Laws” — is targeted at consumers who have recently purchased or have an interest in drones.

AHS International is a Know Before You Fly supporting organization (see [www.vtol.org/drones](http://www.vtol.org/drones)). Like many other groups, AHS is concerned about the increasing threat to manned aircraft from UAS and consumer drones that are not flown responsibly. There are an estimated 1.1 million drones in the US today and that number is predicted to more than double within the next five years.

## Crazy Drone Pilots Threaten Airliners

The number of accidents and near-misses of drones and manned aircraft continues to rise at a frightful rate. The UK Airprox Board noted that the number of reported drone sightings by pilots in Great Britain tripled from 29 in 2015 to 92 last year. A British Airways A320 pilot claimed that he had hit a drone at 1,700 ft (520 m) on approach to Heathrow Airport in April 2016. The UK rules for drones are to stay below 400 ft (120 m) and away from airfields.

In October, Canada had its first drone collision when a Beech King Air A100, flying at an altitude of about 1,500 ft (450 m) — five times the legal limit for UAS in Canada — hit a drone on approach to the airport at Quebec City, causing minor damage to the wing. The Federal Transport Ministry said that 1,596 drone incidents had already been reported to Transport Canada in 2017 and 131 were deemed aviation safety concerns. Canadian law forbids drone

**The blades of the UH-60 are legendary for their damage tolerance, so hitting a quadcopter drone in the New York bay was largely uneventful, but could have been fatal in other circumstances.**

flights within 3.4 miles (5.5 km) of an airport or above 300 ft (90 m). Another suspected drone collision in February caused \$4,000 in damage to a Cessna 172 in British Columbia.

In July 2016, a man was arrested for flying a drone 20 ft (6 m) below an airliner landing at John F. Kennedy Airport in New York. In September 2017, pilots on a Boeing 737 taking off from Chicago O’Hare International Airport spotted a drone at 9,000 ft (2.7 km). And in February 2018, a video came to light with a small drone flying above an airliner that was landing at McCarran International Airport in Las Vegas, Nevada; the UAS was at an altitude of around 1,500 ft (460 m). The US prohibits flights above 400 ft (120 m) or within 5 miles (8 km) of an airfield without permission.

Numerous studies had indicated that the impact of even a small drone — as well as distracting pilots during takeoff or landing and requiring evasive maneuvers during near misses — could result in fatal consequences.

## Drone Threats to Rotorcraft

A Robinson R22 apparently hit something in flight in November 2015 over Santa Monica, California, shattering the windshield, in what may have been the first drone to hit a helicopter. But the first confirmed drone impact in the US was on Sept. 21, 2017, when a US Army UH-60M Black Hawk hit a DJI Phantom 4 quadcopter near Staten Island, New York. The drone was launched after sunset, and hit the Black Hawk 2.5 miles (4 km) away. At the time, there was even a temporary flight restriction (TFR) in place prohibiting all flights in Class B airspace.

On Feb. 9, a Blue Hawaiian Helicopter reported hit a drone while flying above Nā Pali Coast State Park; state officials noted that it is illegal for drones to fly at state parks.

On Feb. 14, a Robinson crashed on Daniel Island near Charleston, South Carolina, after reportedly swerving to miss a “white DJI Phantom quad-copter drone.” The Holy City Helicopters R22 was being flown by the student who was practicing low-altitude hovering, when the drone was spotted heading towards them. The instructor took over to conduct evasive maneuvers, but the tail rotor struck a tree and crashed. The two individuals were uninjured but the aircraft was totaled.

Near misses — where helicopter pilots have to conduct evasive maneuvers to avoid drones flying at them — are reported all too frequently. Notably, recent potentially fatal collisions with police helicopters have been narrowly avoided. These have included: in April 2017 at a building fire in College Park, Maryland; in June during a night flight near Charlotte, North Carolina; and in August in Boston, in restricted airspace and at well above 400 ft. A US Coast Guard MH-65 Dolphin helicopter from Air Station Port Angeles, Washington, reported a close call with a drone on March 17, 2018; the crew missed the drone by an estimated 50 ft (15 m). And on April 8, a drone came close to a Royal New Zealand Air Force SH-2G(I) Seasprite at 3,000 ft (900 m).

### Help Promote Drone Safety


Various industry groups have recommended changing or adding regulations. While that might be part of the solution, there are multiple constituencies and perspectives. Geo-fencing and other technologies can also play a role, for instance, to keep aircraft away from airports, helicopters, etc. Manufacturers and retailers have been stepping up information and warnings and to consumers.



**Drone Safety Resources** 

Know Before You Fly website:  
• [www.KnowBeforeYouFly.com](http://www.KnowBeforeYouFly.com)  
FAA UAS webpage: • [www.faa.gov/uas](http://www.faa.gov/uas)  
AHS resource page: • [www.vtol.org/drones](http://www.vtol.org/drones)  
Mobile App: **B4UFLY** is a smartphone app for iOS and Android that helps drone operators determine whether there are any restrictions or requirements in effect at the location where they want to fly.

Through social media and other means, AHS has conducted outreach to help promote the Know Before You Fly initiatives and resources. You can help too! First of all, if you have a drone, be sure you register it and fly responsibly. Help other operators understand the potentially deadly risk to helicopters and other aircraft. Drones must be kept away from fires and other emergency operations. Help get the word out!

The AHS Unmanned VTOL Technical Committee has also been active, and recently made a call for additional unmanned technology professionals and drone enthusiasts to join the committee and help AHS tackle more of these pressing issues. 



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