



As unmanned aerial vehicles, or UAVs, become a staple of modern military operations, their uses and forms have grown more varied. Today they range from slingshot-launched spybots to global guardians. In fact, the acronym itself may be morphing into UAS (unmanned aerial systems) to indicate that these are not just aircraft, but systems that include ground stations and other elements. It's not just the military that uses them -- police use the same technology for surveillance, while terrorists build flying suicide bombers. Check out the stealthiest, deadliest and highest flying drones in use today, and the UAVs that are most likely to be making tomorrow's headlines. WASP is the smallest UAV in use today, weighing less than 300 grams. The miniaturization is achieved by the use of multifunctional components, like the combined wing/battery. WASP is nearly silent and, when flown at night, it's almost undetectable. The Air Force has just ordered several hundred for reconnaissance and bomb-damage assessment.

Photo: U.S. Navy



Most Famous

The MQ-1 Predator was an evolution of the earlier Gnat-750. Originally intended purely for reconnaissance, it was later armed with a single Hellfire missile. This combination appears to be extremely effective at precision strikes according to the Department of Defense, which claims a success rate of "nearly 100 percent." Predators are used by both the Air Force and the CIA.

Photo: U.S.Air Force



Deadliest

The MQ-9 Reaper is a scaled-up version of the Predator, larger, faster and more powerful. Reaper was designed from the outset as a hunter- killer. It can carry up to 14 Hellfire missiles or other weapons such as the 500-pound, laser-guided bombs shown. The 432nd Wing of the U.S. Air Force was activated to operate MQ-9 Reaper on May 1, 2007.

Photo: U.S.Air Force



Widest Range RQ-4A Global Hawk is the Air Force's endurance drone, able to cruise at around 400 mph for 35 hours. It has an operational ceiling of 65,000 feet, and from this altitude it can scan an area the size of Illinois (40,000 nautical square miles) in just 24 hours. It is equipped with radar and infrared, as well as optical sensors.

Photo: U.S.Air Force



Stealthiest The Joint Unmanned Combat Air System demonstration program, or J-UCAS-D, is intended to be the forerunner of the next generation of stealthy robot-strike aircraft. Its geometry and radar-absorbent materials make it difficult to impossible to spot on radar, as well as making it look "badass." Operating from aircraft carriers, the UCAS-D could fulfill the Navy's goal of an aircraft that can carry a payload (such as bombs) of up to 2,000 pounds, plus an extra 2,500 pounds externally when stealth is not required. A typical use would be to send unmanned drones in as a first wave to take out enemy air defenses and clear the way for manned aircraft. Photo: U.S.Navy



Most Welcome

The CQ-10 Snow Goose is a parafoil-wing UAV for carrying medical equipment or other urgent supplies to Special Forces operating in unfriendly territory. The flexible wings are made of textile, like a parachute. The Snow Goose can be launched from the ground or from the loading ramp of a transport aircraft. Range and payload are inversely proportional; the CQ-10 can carry a 75-pound payload for 200 miles, or 500 pounds for a shorter distance depending on launch altitude and wind speed.

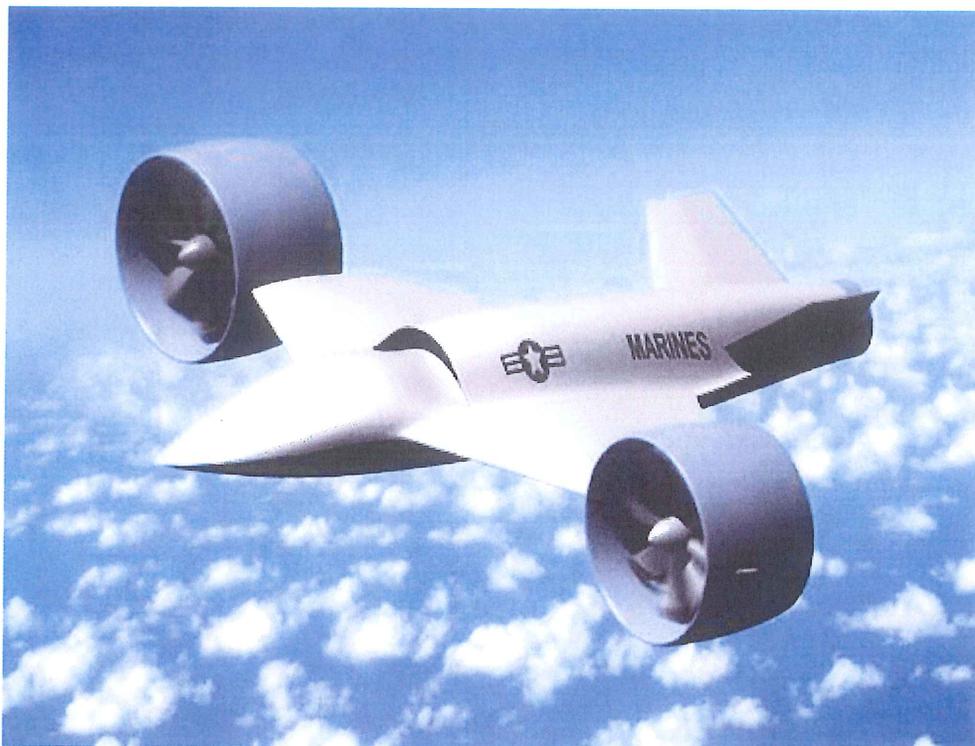


Most Alarming The MIRSAD-1 drone has been flown over Israel by the Lebanese militia group Hezbollah (*mirsad* means "ambush" in Arabic). It may be armed; Hezbollah has claimed that it can be loaded with a warhead of 40 to 50 kilos (90 to 110 pounds) of explosives, turning it into a flying suicide bomber able to reach anywhere. The Israeli Defense Force shot down two similar drones in 2006. Image: Hezbollah



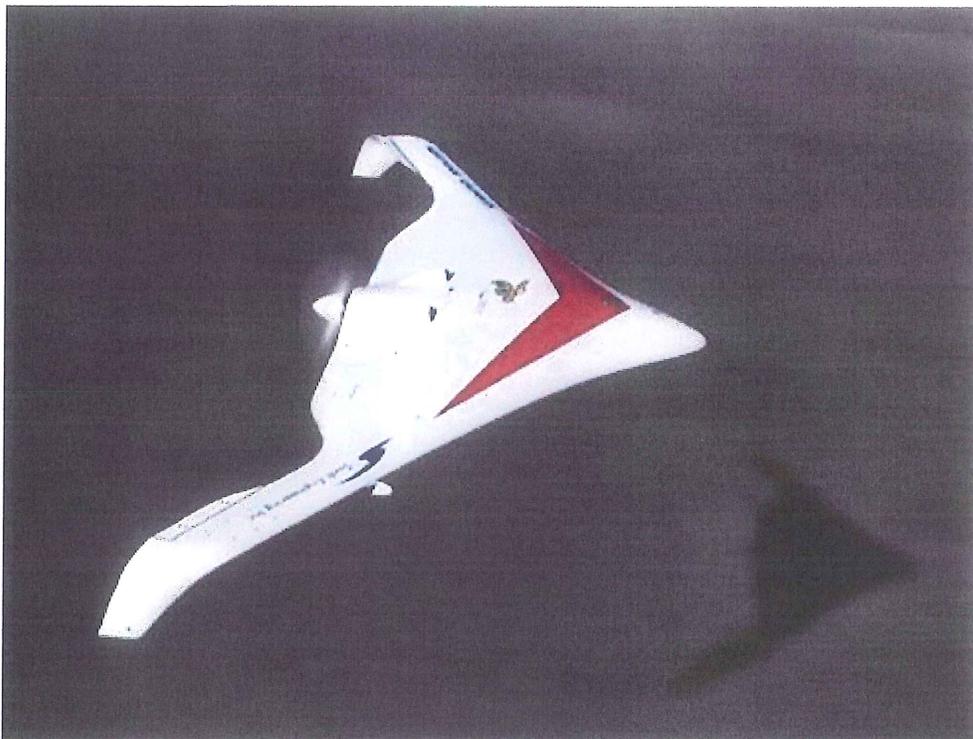
Highest
HELIOS was NASA's record-breaking solar-powered flight demonstrator. It achieved an altitude of more than 96,000 feet -- the highest for any aircraft not powered by a rocket. A combination of

solar cells and fuel cells meant it could, in principle; stay aloft for days, weeks or even months at a time. The vehicle broke up in 2003 during a flight near Hawaii when it hit turbulence, but the military is rumored to be continuing research into solar-powered UAVs with ultra-long endurance (vehicles capable of many hours in flight)



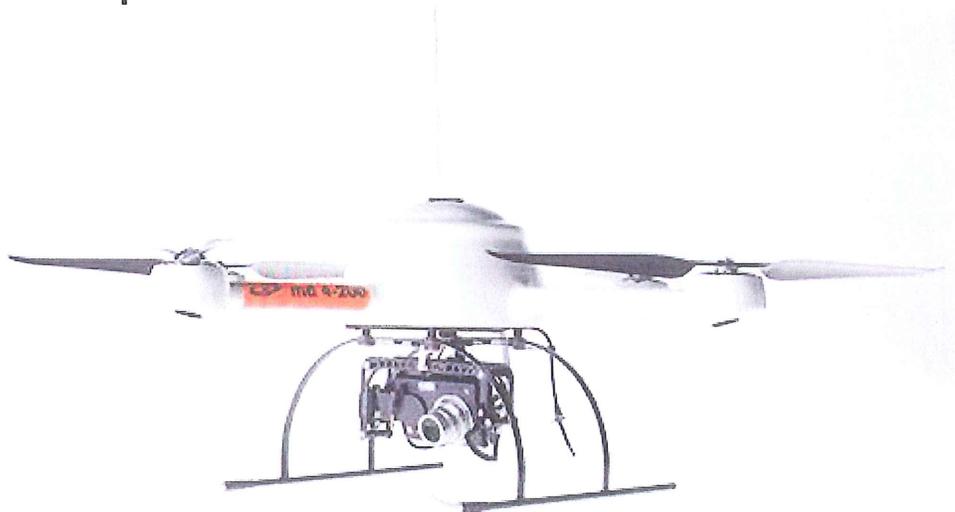
The Toughest

The Battle hog 150 is intended to meet the Marine Corps requirement for a vertical takeoff drone capable of operating from aircraft carriers. It can fly at over 300 mph with a payload of 500 pounds, with armaments likely to include Hellfire missiles, rocket pods and 7.62-mm mini-guns. The Battle hog series is designed to be as robust as possible, being able to withstand small-arms fire from close range. The drone is steered entirely by moving the two wingtip fans, so there are no vulnerable flight controls. Image: American Dynamics Flight Systems Wingspan



Most Modular

The Killer Bee is part UAV, part missile. It's intended to be deployed in 'constellations' of many vehicles working cooperatively. These swarms can be used for either reconnaissance or for attack with up to 30 pounds of weapons per drone. The Killer Bee is designed so several can be stacked together in the cargo bay of an aircraft or in a truck, maximizing the number that can be carried. Photo: Northrop Grumman



Most Local

The German-made Micro drone is equipped with GPS, a camera and a loud-hailer to give instructions to those on the ground, and is currently being tested by police in the UK . This type of UAV is the one you're most likely to see hovering around your neighborhood. Its quad-rotor design is intended to make it resilient -- Micro drone can return to base with just two rotors. Law-enforcement officials hope the Micro drone can carry out some of the tasks of police helicopters, but at a fraction of the cost. Photo: Micro drones GmbH



ALREADY SUCCESSFULLY DEPLOYED.

Carrier Copter The MQ-8 Fire Scout made by Northrop Grumman is operated by the U.S. Navy and can make an automated landing on a moving aircraft carrier. Typical missions include surveillance, locating targets and directing fire. There have also been weapons tests with a Firescout armed with 2.75-inch rockets. The U.S. Army has now shown interest in having its own version. Though nine MQ-8 vehicles are in the flight-test stage, the model is not yet operational. The Navy plans to eventually have a fleet of 168. Photo: U.S.Navy



Future Force

The Honeywell MAV, or micro air vehicle, will be an integral part of the U.S. Army's Future Combat System, giving reconnaissance capability to front-line troops. The small 'Class I' version seen here will be back-packable. It has a planned weight of 20 pounds, and is capable of a 50-minute mission spying on locations up to half a mile away. The vertical takeoff and hovering capability make it well-suited to the urban canyons of the modern battlefield. Photo: U.S.Army



Most versatile The morphing micro air/land vehicle, or MMALV, is a hybrid that can fly, then land, fold up its wings and crawl around buildings or other tight spaces. The MMALV project is lead by Bio Robots, in collaboration with the Biologically Inspired Robotics Laboratory at Case Western Reserve University , the University of Florida and the Naval Postgraduate School . Photo: Richard Bachmann, President of Bio Robots



Marine's Friend

Originally used for tracking schools of tuna, the Scan Eagle drone is used by the Marine Corps in Iraq , where various versions of the model have flown several thousand hours of missions. It has a stabilized, gimballed camera turret that can be fitted with either daylight or infrared imagers. No runway is required; instead it is fired aloft by a pneumatic launcher and retrieved by a rope-and-hook arrangement where a crane snags it out of mid-air. Photo: U.S.Air Force