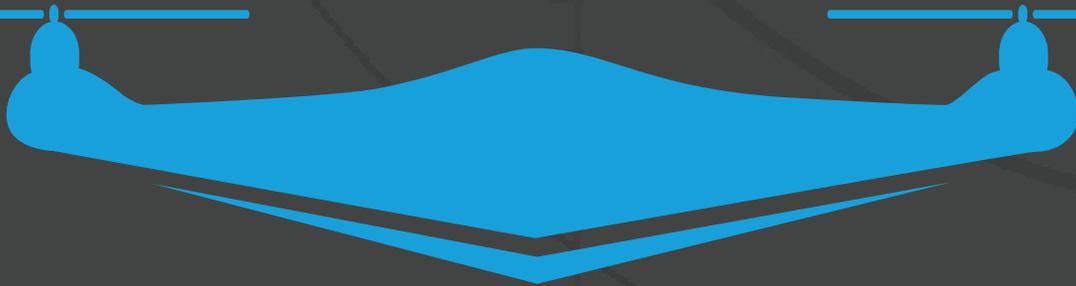


DARTDRONES



**THE LIVES SAVED USING
SEARCH AND RESCUE DRONES
2017**

When the call comes in for lost hikers, trapped skiers, or missing children, time is of the utmost essence. Foot searchers, ATVs, water rescue dive teams, and K9 Units comb mountains, rivers, and fields to locate missing individuals, but with technology rapidly evolving, another division is joining the ranks and taking to the sky to cut down response time by hours. Small Unmanned Aircraft Systems (sUAS), or drones, are revolutionizing the way Search and Rescue teams around the world are conducting missions. From rapid day time SAR to night operations aided by thermal imaging cameras, lives are saved, response time is reduced, and teams on foot are aided by this phenomenal technology. Here are some of the top sUAS search and rescue missions from 2017.



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6 People Stranded on the Yellow River

Date: August 20, 2017

Location: Yellow River, Iowa

Incident: Six people lost and disoriented by darkness on the Yellow River

Responding Units: Allamakee County Sheriff's Office, Iowa Department of Natural Resources, Iowa State Patrol, Harpers Ferry Fire Personnel, Decorah Fire Department

Nearing dusk on August 20th in Eastern Iowa, multiple departments responded to a report of six people lost on the Yellow River — a 53.5 mile-long tributary of the Mississippi River. Alongside the County Sheriff's Office, the Department of Natural Resources, the Iowa State Patrol, and Harpers Ferry Fire Personnel, the Decorah Fire Department arrived on scene with their drone in hand. It was the first time the Sheriff's office called on the Decorah Fire Department to deploy their UAV in a rescue mission and it proved to be a worthwhile decision.

Pilot-in-Command, Zach Kerndt, noted that on-foot rescue teams were challenged by decreased visibility as night was falling, heavy vegetation on the river banks that was blocking access to the water, and a vast search radius to cover. The area was so heavily vegetated that rescue teams had to move slowly with a UTV to access the river.

Kerndt used the drone to loft a thermal imaging camera above the river. Despite the darkness, he was able to pinpoint exactly where the individuals were along the river in just 10 minutes. He then hovered above the boat and dropped a radio to the group. The Search and Rescue team communicated with the crew and guided them towards safety.

Without the drone, the only option for the team would have been to search for the missing individuals by boat. The boat would have taken valuable time to get on the river and once there, the rescue team would have to decide whether to move upstream or downstream, hoping that they are traveling in the right direction and the missing persons were still on the water rather than making their way on to dry land.

Thanks to the unique vantage point provided by the drone, the Decorah Fire Department has used their UAV in twelve rescue missions in the past year alone.

▶▶▶ Elderly Woman Lost in Rural Town

Date: November 5, 2017

Location: Randolph County, North Carolina

Incident: An 81-year-old woman wandered off and became disoriented in a dense cornfield

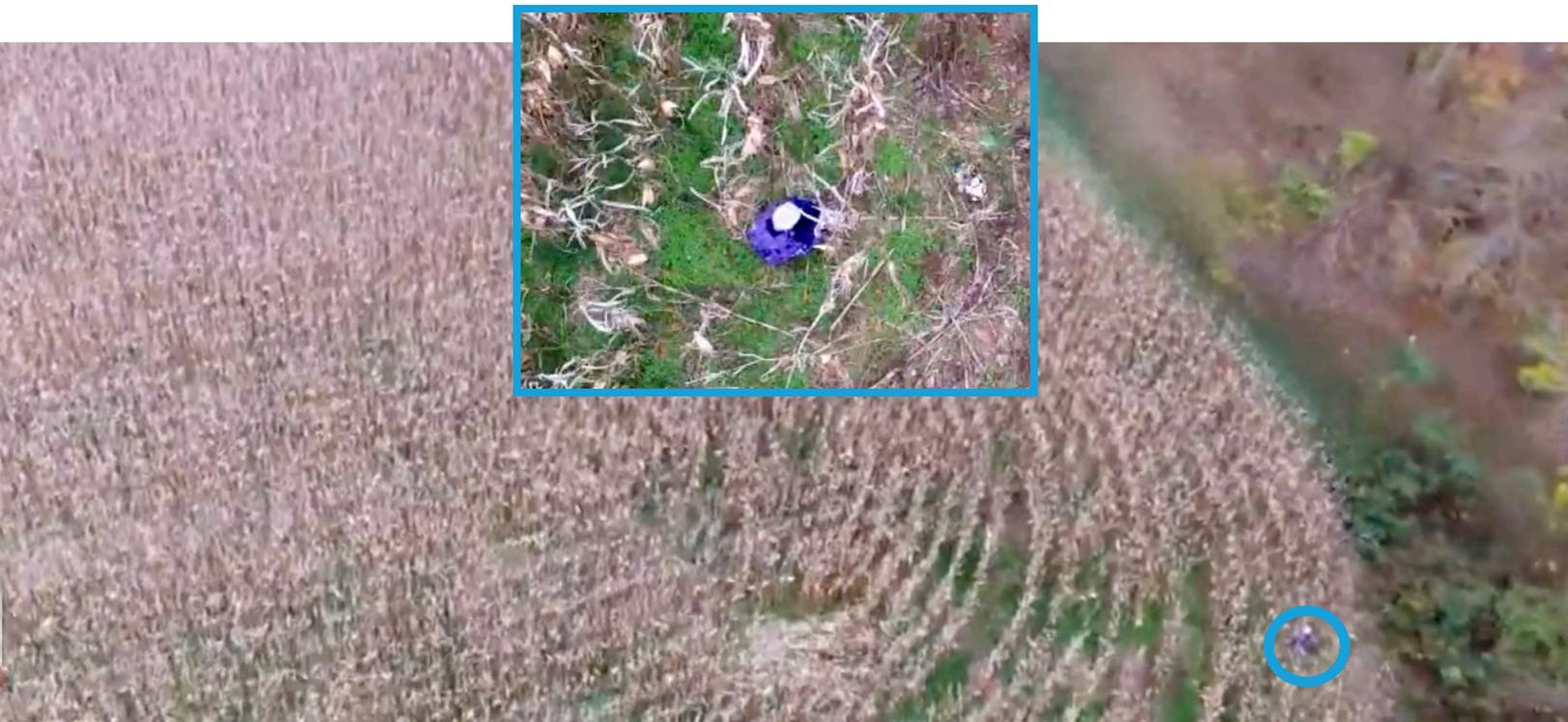
Responding Units: Randolph County Sheriff's Office

Mary Brown, an elderly woman of 81 suffering from dementia, strayed from her home during the afternoon of November 5th. After being reported missing, the Randolph County Sheriff's Office responded immediately with their new UA. Although their UAV program was only a month and half old, the Randolph police launched the aircraft to locate Brown after the search was slowed by difficult terrain.

Officer Adam Krolfifer piloted the sUAS and located Brown in a massive cornfield near a riverbank within 25 minutes of beginning the search. Officers were then able to enter the cornfield and safely return Brown to her residence.

The Randolph County Sheriff's Office posted video footage of the rescue on the department's Facebook page. In less than two months, the office has already used their new drone to film two homicide scenes and caught a suspect who ran away from a drug arrest.

In the coming months, the office intends to invest in a second drone as well as a thermal camera to advance their response and rescue time.



▶▶▶ Seven Go Missing at a British Columbia Ski Resort

Date: February 21, 2017

Location: Sun Peak Mountain, Canada

Incident: 7 skiers and snowboarders go missing on a mountain

Responding Units: Kamploon Search and Rescue Team

After seven skiers and snowboarders ventured off the marked trails of the Sun Peak Ski Resort, they found themselves lost and stranded in a gully deep in the British Columbia backcountry as night was falling. Over the course of the next 12 hours, the skiers were found with help from a UAV unit equipped with a thermal imaging payload. The last two individuals were not located until 3AM. The search could have gone on much longer with less promising results had the search team not been able to scan the vast terrain from a bird's eye view. All seven individuals were found in good condition. The Kamploon SAR team claimed the rescue was the "first documented missing person being located by a search-and-rescue team using infrared cameras in British Columbia".

Eye in the Sky and Nose on the Ground

Many Ski Resorts are turning to UAVs for search and rescue purposes. The Swiss Alpine Search and Rescue Team is no stranger to these types of missions. They've begun complementing their rescue dogs with aerial searches. While canines run through wooded areas, the team uses a fleet of Matrice 600s to scan cliffs and other terrain too dangerous for dogs or people to search on foot.



▶▶▶▶ Film Crew Lost in Remote Turkey

Date: February 16, 2017

Location: Aladag Forest, Turkey

Incident: Ten film crew members are stranded in a remote snow-covered forest

Responding Units: Adana Municipality Rescue Team

Located in Turkey's southern Adana region, a ten man film crew became stranded in the Aladag forest while scouting locations to film a movie. With snow falling in the cold, desolate location, the crew gave up hope of finding their way back to civilization and made an emergency phone call to authorities.

A local Adana rescue crew had difficulties finding the film crew on land and made a decision to deploy a UAV unit. The drone was able to identify their location deep in the forest. The rescue team on the ground had to bring in bulldozers to clear the snow-covered road to extract the men. All ten individuals were rescued and returned safely in good health.



▶▶▶ Surfers Warned of Shark

Date: April 26, 2017

Location: New South Wales, Australia

Incident: Sharks are spotted below surfers off the coast of Australia

As photographer David Finlay was exploring the New South Wales beach with his brand new drone, he noticed something terrifying lurking under the water. While his drone circled three surfers relaxing on their boards from above, he noticed a large shark circling the surfers from below.

David ran to get the attention of a life guard so they could bring the surfers in to safety, but fortunately the shark moved on in the meantime. This is not the only story of this kind though.

Several Australian beaches are now using UAVs to spot danger before it gets too close. The Australian organization Surf Life Saving Western Australia (SLSWA) has begun using drones to identify sharks and protect nearby surfers and swimmers. The SLSWA has already been successful finding sharks and relocating swimmers appropriately.

According to Taronga Conservation Society Australia, in 2017 there have been a reported 19 total shark attacks, one of which was fatal. In 2016, 26 shark attacks were reported, two of which were fatal. The number of shark attacks in 2017 has greatly reduced from the 33 reported attacks in 2015.

The SLSWA has spotted sharks within 300 feet of the shore and nearby surfers. National Geographic reports that the majority of shark attacks occur within 100 feet of the shore, and listed Australia as a “popular” shark attack location. A traditional lifeguard would not be able to accurately determine how many predators are lurking in the waters.



▶▶▶ Two Hikers and their Pup Lost in the Woods

Date: June 15, 2017

Location: Douglas County, Colorado

Incident: Two hikers and their dog are lost in the woods

Responding Units: Douglas County Search and Rescue

Devil's Head Trail is a popular travel destination for many of Colorado's hikers, and the Search and Rescue Team gets multiple calls every year of lost hikers who wandered off the path. One of those calls came in at 4:15 on a Thursday evening when two hikers and their dog managed to find limited cell service in the woods.

Traditionally, the volunteer rescue team would set a line of individuals to walk straight and comb the 10 square mile area. As technology developed, they made efforts to improve their techniques, and now with the aid of a UAV, they cut down their search time from what would have been an all night search down to just an hour and a half before spotting the hikers.

Bruce Fosdick, the incident commander and 50 year member of the volunteer team explained that alternative aerial tactics are far to expensive for a volunteer team. Hiring a helicopter for an hour can cost \$1000-\$2000. The drone allows them to take to the sky on a far lower budget.



▶▶▶ Swimmers Saved from Drowning

Date: January 18, 2018

Location: New South Wales, Australia

Incident: Two boys struggle under the riptide

Responding Units: Little Ripper UAV

While two teenage boys, age 15 and 17, were swimming in the ocean off New South Wales, they began to struggle in the sea. An individual on the beach spotted the two and found help in the form of Little Ripper UAV. The drone is equipped with an inflatable pod and was able to reach the boys three times quicker than any lifeguard or boat.

Lifeguard supervisor, Jai Sheridan, piloted the device during the rescue mission. He explained that the UAV would give the rescues a flotation device with live vision back to the shore and notify them of any potential hazards.

The drone will also be used to protect beach goers from sharks in the water as well. The New South Wales government committed \$430,000 towards putting this technology in the air. Given New South Wales's reputation for frequent shark attacks (13 in 2017) and drowning incidents at the beaches (average 20 per year), this new technology will hopefully decrease those numbers significantly this year.



▶▶▶ Hunter Located in Shenandoah Woods

Date: December 19, 2017

Location: Shenandoah County, Virginia

Incident: A 92-year-old hunter was lost in the woods

Responding Units: Loudoun County Sheriff's Department

When 92-year-old William Luther McDonnell didn't return after a day spent hunting, several law enforcement agencies began searching for McDonnell including a D.C. area police department responded with their new Project Lifesaver Program's Drone Unit.

The Loudoun County Sheriff's Office launched their new drone near the woods and were able to make visual contact within 20 minutes. Once the man was spotted, teams were able to access him on foot. This was the first successful drone mission since the force added the unit three months prior. The Project Lifesaver Program was developed to find people with medical conditions (autism, dementia, etc.) who wander away from their homes. The department was happy to note the benefits of having an aerial view during the rescue missions. Needing less manpower, minimizing the on-the-groundwork, covering a larger area at higher speeds, and utilizing thermal technology cuts down response time by hours.



Delivering Blood in Rwanda

Search and rescue operations are not the only ways in which drones have been used to save lives. A United States startup company, Zipline, has teamed up with the Rwandan government to deliver blood supplies by drone. Zipline operates the world’s only drone delivery system at a national scale to send urgent medicines like blood to patients, no matter where they live.

According to Zipline, “more than two billion people lack adequate access to essential medical products, such as blood and vaccines, due to challenging terrain and gaps in infrastructure.” Zipline improves access to these supplies by flying over impassable mountains and washed-out roads, delivering directly to remote clinics. Zipline provides a seamless delivery system at an affordable price, obsessing over every detail, so you can focus on patient health. Since the launch of Zipline in 2016, thousands of units of blood have been delivered to people in need.

Flying Defibrillators

Additionally, the idea of attaching a defibrillator to a drone is becoming a very likely possibility. According the American Heart Association, an estimated 359,400 cases of cardiac arrest occur in the United States outside of a hospital setting each year. Less than 10% of such victims survive.

Drone delivery company Flirtey partnered with Reno ambulance service REMSA to deliver defibrillators by air as part of every response to a cardiac arrest emergency.

“We have the ability to deliver lifesaving aid into the hands of people who need it — why aren’t we as a society doing it already?” Flirtey CEO Matthew Sweeny said. “This is one of the most important uses of drone delivery technology, and we believe that by democratizing access to this lifesaving aid, our technology will save more than a million lives over the decades to come.”



Launching Your Drone Unit

Interested in launching a drone unit for your department? We can help you get started! DARTdrones offers a number of courses and services to get your program off the ground:

- Basic Flight Training
- Part 107 Test Prep (Online or In-Person)
- Rapid Daytime Search and Rescue
- Night Operations
- Thermal Imaging
- Accident Investigation
- Aerial Disaster Response
- Public Safety SOP
- COA Application Writing
- Waiver Application Writing
- Consultation

Still considering the possibilities? Check out these DARTdrones free resources online:

- Starting a Drone Program with your Police Department
- Starting a Drone Program with your Fire Department

Have questions? We love to talk!
Give us a call for your **free** consultation today

1.800.264.3907