Marshland Rescue Provides Valuable Lessons

BY JACK FLYNN AND JERRY KNAPP

RESCUES TAKE PLACE IN A VARIETY OF emergencies—structure fires, collapsed buildings, high angle, trenches, and vehicle extrications. One of the most difficult rescues is in wetlands and marshlands. Site conditions such as high and low water, deep mud and muck, dense vegetation, and hot and cold weather conditions as well as adverse weather (i.e., fog, snow, rain, heat, cold, wind) can turn a simple lost kayaker rescue into a life-and-death hyper- or hypothermic situation for both victims and rescuers. These same conditions make our mission that much more difficult.

As people become more environmentally aware and want to get out and commune with nature, the number of rescues of people, especially those visiting wildland areas from inner cities who are not aware of the dangers, has increased dramatically. This article will share some lessons learned from a dangerous, difficult, and long-duration rescue conducted in Sullivan County, New York.

(1) Airboats had to be dropped into the marsh after being unloaded on pavement. (*Photo by Jack Flynn.*)

The Call

The Orange County (NY) Battalion 8 (BAT 8) water rescue team consists of fire/rescue units from the towns of Port Jervis, Sparrowbush, and Huguenot. This multidepartment water rescue team frequently responds to the Delaware River for lost hikers, overturned boats (rafters, tubers, and kayakers), and drowning victims. Typically, Pennsylvania departments that border the river also respond to the surrounding towns of Matamoras and Westfall. BAT 8 was established so no single fire company's boats would be working alone; this is based on experience with the river, with numerous calls there proving too dangerous to attempt swiftwater rescues with limited resources. Additionally, dispatch information is often vague, and a search operation must be started even before the rescue operation can proceed. A lot of planning has gone into the river operations and continues to be fine-tuned based on accumulated experiences.

The primary purposes of the Basha Kill wildlife management area (WMA) are for wildlife management, wildlife habitat management, and wildlife-dependent recreation. This 3,107-acre WMA contains the largest freshwater wetland in southeastern New York and is a state-designated bird conservation area.

At 2251 hours on October 11, 2022, BAT 8 was toned out for mutual aid to Sullivan County, more specifically to the Basha Kill Wetlands Preserve, located in the Wurtsboro (NY) Fire District. As part of BAT 8, we trailered our 550-hp airboat to the launch site on Haven Road. On arrival, Wurtsboro Fire Department (WFD) Chief Dustin Graham and Sullivan County Coordinator William Lothrop briefed us that a neighboring company's airboat from Lumberland, New York, had been dispatched and was operating three hours earlier, attempting to locate and rescue a 44-year-old female in a kayak who had become disoriented in the maze of the wetlands. The Lumberland airboat had located the victim, but because of the intense darkness and the maze of channels in the wetlands, they had become lost and were unable to move the victim to awaiting emergency medical services (EMS). At this point, the victim was slightly hypothermic from being wet.

This rescue was complicated from start to finish. The New York State Department of Environmental Conservation (DEC) has banned powered boats (with the exception of electric motors) from the wetlands because there are no launch sites available except those for small, trailered boats, rafts, and kayaks. This made launching even Sparrowbush's airboat difficult; it had to be off-loaded on a paved highway and then dropped over an embankment into the wetlands.

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(2, 3) First-due rescuers became lost in the featureless wetland and stuck on difficult vegetation. (*Photos courtesy of the New York State Department of Conservation.)*

The Operation Begins

Our assignment from command was to proceed into the wetlands and attempt to locate the missing Lumberland airboat and its occupants, including the female kayaker, and bring them to safety.

Many environmental issues hampered the operation. Although the airboats are designed with a slightly curved bottom and coated with friction-reducing material, low water levels resulted in the mud and muck causing high levels of friction on the boats' wide bottom. Grass hammocks and thick vegetation can stop the airboat and cause it to get stuck on top of these masses. Trees and dense vegetation slowed the boat with friction along the sides, and darkness made identifying clear routes difficult. Cold temperatures were also a limiting factor throughout the entire rescue operation. Heat would be a factor in later phases of the recovery of Lumberland's airboat. Clearly, this was not going to be easy.

As the search began, low water levels were the first issue we encountered during the treacherous journey, followed closely by darkness, heavy fog, muck and mire, trees, shrubs, and beaver dams. While en route from the command post toward the victim's last reported position, we encountered an inflatable raft that was involved in the initial rescue operation. We picked up Rock Hill (NY) Fire Department Chief Robbie Green, who wanted to assist.

After approximately one hour of skillful operating by Sparrowbush (NY) Engine Company (SEC) Deputy Chief Jack Flynn, assisted by SEC First Assistant Chief Carl L. Van Horn, Sparrowbush's airboat was finally able to locate the Lumberland airboat, which had become tightly lodged in thick brush and bogs. The victim's condition was deteriorating because of hypothermia and exhaustion.

Sparrowbush's airboat could only get within 400 feet of Lumberland's airboat or risk getting stuck by the same muck, mud, and vegetation. We were only able to pin down their relative location through voice and light communication. Realizing that we could not reach them at this time, we decided to move out of our precarious position. We were in a water-filled channel where the boat could operate effectively. However, airboats do not have reverse ability, so, with no reverse, the only means of getting out of the *narrow* channel (turning the boat around) was to attempt to throw our anchor onto the brush, get a good grip, and pull the line hard to attempt to spin the airboat some; this would push the semi-floating vegetation aside for a few inches. The water and mud were waist-to-chest deep, eliminating the option to simply push or pull the boat around with dismounted members. Additionally, to reduce weight and conserve space on the boat (we were planning to pick up the victim and two Lumberland members), we did not bring additional dry suits, so putting someone in the water/mud was also not an option.

After about 30 minutes of intense work by the boat crew, the pilot was able to apply full power and push out of the narrow channel into a wider one. The paddles onboard were useless, as they just sank into the mud.

Rescuing the Rescuers

Although WFD command had used a hovercraft, large rafts, a multi-wheeled utility terrain vehicle, drones, and helicopters to locate the missing airboat, all were unsuccessful. When the Sparrowbush boat crew made contact with the stuck airboat, it was one of the first successes of this long and frustrating operation. Throughout the operational rescue and recovery, Sullivan County Coordinators John Hauschild and Jack Halchak were actively assisting in a unified command structure with WFD command.

A Life Net helicopter (Air 2) had been on scene for about 50 minutes, attempting to assist with locating and guiding the Lumberland crew out of the marsh, but they ran low on fuel before getting a precise location and had to return to their base. Fog had rolled into the wetland, preventing the return of the helicopter. Their original mission was to simply fly the victim to the trauma center after the fire department rescue.

A second helicopter was requested by command, which was then dispatched and en route from the Westchester County Police Department, better equipped and with an infrared camera. This aircraft's mission was to assist us and Lumberland to possibly guide us back through the maze of channels to an airboat landing site at the command post. In a wildland rescue, the use of maps is especially important. In the case of the marshland, channels vary from year to year and often month to month based on the amount of water, beaver activity, and rate and type of vegetation growth.

Heavy fog had now set in, which, in addition to previously mentioned factors, made navigation of the airboat more difficult. The Sparrowbush airboat crew

had decided to stop in one of the nearby channels and await the helicopter, which arrived approximately one hour later. By now, the temperature had dropped into the low 30s, and the fog was very thick. The helicopter crew could not see us visually, so they tried their infrared camera; this proved unsuccessful as well because of the dense fog. As a desperate measure, we turned on all our airboat lights, hoping the air crew could see us. However, this only caused the light to be defused in the atmosphere, similar to high-beam headlights in fog, with negative results.

At this point, all occupants of the airboats where suffering from the cold, damp weather. The airboat had a semi-enclosed cab with a windshield and no doors and was open at the rear and sides. At the urging of SEC Chief Jeremy Swingle, we were directed to attempt to reach safety for rest and rehab.

It is often the little but important, experienced-based factors that make or break an operation. Flynn, the boat operator, determined that there was a slight flow of water to the south by watching some leaves pass by his stationary boat. Navigation was difficult, but we started in that direction, with the boat operator having to lean outside the windshield to see. Fog and condensation on the windshield almost completely obstructed the view; the only way the boat operator could navigate was with Van Horn and the boat's crew cleaning the windshield. We attempted to get a global positioning system fix with a cell phone with limited results, and we eventually wound up in a dead-end channel and could go no further.

Since multiple ground-based methods of finding and rescuing the victim had failed, command was attempting to secure an airlift/hoist mission through Sullivan and Orange, New York, 911 centers for both the victim and the members of the stranded airboat. Dispatchers reached out to the New York City Police Department, the U.S. Coast Guard, and an air national guard rescue unit on Long Island, New York, but all declined because of the heavy fog.

At this point, we had been working this rescue for about three hours. Exposure to the wind from the boat prop as well as dropping temperatures caused us all to move toward becoming hypothermic and less effective as rescuers, becoming possible victims ourselves.

While waiting on the second aircraft, we all hunkered down in the airboat to stave off the cold. Suddenly, we saw lights poking through the dark along an old, abandoned railroad track located several hundred feet to our east. We made voice contact with several volunteer firefighters from the Walker Valley (NY) Fire Department (WVFD) in Ulster County, and they waded out to pull our airboat closer to shore to off-load Van Horn and Green, as by now they were extremely cold. The victim was now with the stranded airboat and crew.

The boat operator and crew members were getting very tired and cold. Flynn intended to join his exhausted crew members, but we received communication that the victim was becoming more critically hypothermic and might not survive until daylight. Flynn decided to stay as the airboat operator and make one more attempt to rescue the victim with a fresh crew of SEC firefighters, including Edward Ted "Master Rigger" Brebbia and Jeff Hillriegel. With Brebbia standing in the front of the airboat using hand signals, we once again attempted to reach the victim by making our way back through the same narrow waterway that brought us to within 400 feet of Lumberland's airboat and the victim.

Under pressure to rescue the victim, who was now becoming dangerously hypothermic, we developed a new action plan. Hillriegel, who had a dry suit, was placed in the water with a rope tied around his waist and a handlight with the goal of getting to Lumberland's airboat. We kept adding rope from several throw ropes to Hillriegel's line until he made contact by the 400-foot mark. The rescue plan was to lay the female victim on top of her kayak and pull her and Hillriegel back to our airboat slowly. The victim was barely conscious. Crew members outfitted her in a life jacket and placed her lengthwise on her kayak. Hillriegel kept her and the kayak stabilized for the move back to Sparrowbush's airboat.

After a tense 30 minutes of effort by the boat's operator, Hillriegel and Brebbia were successful and elated! The victim


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(4) The sides of the airboat were wedged between stubborn brush, causing it to become stuck. *(Photo by Jack Flynn.)* **(5)** Rescuers prepare to enter the marshland to retrieve the stranded airboat. *(Photo by Jack Flynn.)* **(6)** Crews attempt to use plastic pallets to place under the stuck airboat. *(Photo by Jack Flynn.)*

was now on our boat, and we could transport her to EMS.

The next big hurdle was to try to work our way out of this maze and get the victim to Mamakating EMS personnel. With Brebbia in the bow, again guiding the boat operator with hand signals to navigate through the marshland, we notified Wurtsboro command that we were on the way.

With the addition of the victim, our two crew members, and the operator, our boat was at maximum capacity. Unfortunately, we could not take Lumberland Fire Department (LFD) rescuers—Chief Eric Robles and Firefighters David Fein and Phillip Talley—in our airboat, so they remained in theirs. We promised to return once we safely made it out of the maze of unmapped channels. The urgent need now was to get the victim to EMS as quickly as possible. Command again inquired where to stage EMS units; Flynn replied that, at this point, he did not know where we might wind up, so he told them to stand by.

After 45 minutes of plying our way slowly through the heavy fog in the waterways, we requested command to sound sirens; with this, we began to get orientated to their location. Shortly after, we pulled ashore, and EMS personnel took over—a welcome relief to all.

By the time we got the victim to EMS, her body temperature had dropped to 93°F; thus, her survival was debatable. The victim was conscious, but her alertness level was low. Fortunately, she had no other injuries. It was now 0630 hours, and we had been operating since about 2330 hours the night before.

Rescues, especially extended operations, can be physically and emotionally draining. After turning the victim over to EMS, Flynn relayed his sudden relief from stress and simultaneous flooding of fatigue. Flynn, like most rescuers, was driven by the desire to save a life, fueled by adrenalin and an intense desire to complete the mission. A lesson learned here is commanders must relieve crews at the end of operational periods or when they become significantly fatigued and replace them with fresh and well-equipped and rested members so the operation can function efficiently and safely. However, in this case, there was no qualified airboat relief operators or airboats available.

After the victim was transferred to EMS, Swingle, who was in charge of the boat launch site on Haven Road, requested the airboat return to the launch site. With the victim rescue complete, the goal now was to formulate a plan to rescue the stranded boat crew and extricate the airboat. This planning meeting was attended by Orange County Deputy Coordinator John Tunney, Swingle, SEC Assistant Chief Michael Reiser, Port Jervis (NY) Fire Department (PJFD) Chief Keith Brown, Huguenot (NY) Fire Department Assistant Chief Jeff Elder from Orange County BAT 8, LFD Assistant Chief Jake Nibbs, as well as individuals at the WFD command site.

When changing crews at extended operations, it is especially important to get the correct situation report from rescuers who were downrange; they have the best and most accurate information. At the unified command post, Flynn briefed the details of the rescue he just completed. Flynn had not slept for 22 hours and had been working the rescue for about nine hours. He was replaced by Van Horn, who now had been warmed sufficiently and was willing to try to reach the Lumberland crew and bring them to safety.

Van Horn, along with two WVFD firefighters and PJFD Firefighter Shane Fuller, elected to move forward with the rescue of the Lumberland airboat personnel of Robles, Fein, and Talley. Conditions were improving and daylight made operations much easier, but the fog remained a challenge. The Sparrowbush airboat was now fueled, serviced, and dispatched to rescue the Lumberland crew and boat.

With good direction and intelligence from the previous foray into the marshland, the operation to rescue the stranded boat crew began. The plan was to drive the airboat into the previous location, dismount a pair of members in wet suits, and wade in 400 feet to the stranded boat crew, just as they had done during the night.

The rescue boat team brought two extra dry suits for the stranded crew, who by now was quite tired and cold. The

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(7, 8) Crews worked in difficult conditions, finally using a haul system to free the airboat. (*Photos courtesy of the New York State Department of Conservation.)*

(9) The boat was wedged against numerous plants that were about one to two inches in diameter. (*Photo courtesy of the New York State Department of Conservation.)*

airboat stopped at the point where the previous rescue was made, dismounted the rescue crew, and started wading to the stranded crew. Rescuers assisted the Lumberland chiefs to suit up and slowly wade back to Sparrowbush's airboat. They were very cold and eager to get to land, so, while they picked up a little warmth in the now clear sunshine, Van Horn moved the airboat slowly through the marshy maze to the launch support site where EMS checked their vitals. Although cold and tired, they were unharmed.

Airboat Recovery

Unified command decided to delay the recovery of the Lumberland boat until the following morning. All airboat, command, and supporting personnel were exhausted, and all life safety issues had been successfully resolved. The stranded airboat was abandoned until fresh crews could develop a better plan. Additional time would allow equipment to be better organized for an efficient and effective operation. Unified command decided to resume the next morning at 0800 hours and work on recovery of the Lumberland airboat.

Learning from the experience of the previous night, unified command decided that the Sparrowbush airboat was going to be the primary responder. However, it was also decided that a second airboat was needed to act as safety and ready reserve. The safety boat could help free the primary boat and provide overwatch, communications, and additional staffing and equipment for the prime crew if they had difficulty. Command requested an airboat from Mahwah, New Jersey, which arrived in about two hours.

Supporting the operation were firefighters from the Highland Lake (NY) Fire Department (HLFD), White Lake, the WVFD, the LFD, and the WFD at the launch site to assist with off-loading the Sparrowbush airboat. This call just never seemed to get a positive break! On arrival at the road launch site used the previous day, we were surprised to find an artist painting a landscape of the Basha Kill. He remarked that approximately 50 additional artists from the northeast were going to be convening at this location in the next few hours for an artist's meeting.

A quick scramble ensued to secure the command and launch sites by blocking off both ends of the road to hold the artists at bay until our launch was successful and then coordinate with

the artists for the least disruption of our operation and our return. Though it may sound funny, if the returning airboats blew partially finished paintings off the easels, the community relations effect would not be positive.

Refreshed and rested, Flynn prepared to operate the boat with Brebbia onboard; he was our best local resource for onsite recovery of the Lumberland airboat since he was originally from the area and had previously fished the Basha Kill. We then proceeded by airboat to the WFD command site, staffed by Graham and Lothrop to load additional firefighters and equipment. Mamakating and Lumberland EMS were also on site.

During the previous planning process, we prepared a list of tools we thought we may need to free the airboat. The list included air bags, air tanks, chain saws, plastic sheathing, fuel, wooden planks, food, hydration, portable radios, ropes, and so on. Several trips by both airboats were required to bring all this equipment and staffing to the scene.

While returning for additional staffing and equipment, Flynn, in the Sparrowbush airboat, encountered two New York State DEC rangers wading in the muck, coming from the railroad bed, en route to assist in the rescue. We notified command, and they were folded into the operations plan. To their credit, they had been watched over by a DEC drone controlled by DEC's John Franceschina, located on the railroad. The drone was then built into our plan and moved with us to record and provide overwatch during rescue efforts for the remainder of the day.

As the operation was unfolding, so was our delegation of responsibilities and effectiveness. After the first trip out, Flynn asked former LFD Chief Jay Steimle to accompany him on the airboat to assist with navigating, with HLFD Chief Warren Wagner onboard for maintaining steady communications from the rescue boat to command and other units at the scene.

Mahwah's airboat had arrived and began to assist with logistics. After numerous trips, eventually 20 personnel were on site to work on freeing the airboat. After hours of considerable effort, we were uncertain if the airboat could be freed. Unified command explored other options. The cost of rigging and airlifting the airboat with a helicopter with enough lift capacity to hoist the boat was around $100,000, with no viable alternative.

Since there was no way forward for the stuck airboat, it was decided to somehow lift the airboat and spin it on its axis to eventually work its way out with a tow rope using the most thrust the props could muster. Crews cut this heavy brush and moved tons of mud/muck and several grass hammock clumps. Although this sounds simple, members were up to their waists in mud and water, making moving around nearly impossible.

After six hours of members cutting heavy brush, moving muck, pushing, and tugging with ropes, the boat came free! Although the boat was rooted in the mud at the bottom, wind and water currents moved and pushed the semi-floating vegetation around, creating maze-like conditions that can constantly change.

Since the channel in which the airboat had come on had tended to close in, hours more of cutting brush and similar steps as noted previously had to be accomplished. Difficult work in a difficult environment caused two members to be medically evacuated because of overheating in the dry suits. Others were also beginning to tire. Now, heat on a sunny fall day was our foe, not the cold. After many frustrating stops and starts and unsuccessful attempts with all the aforementioned tools, we decided to attach a rope from the Mahwah airboat to the stuck boat and try to tow it.

Mahwah's boat had a double prop that provided more thrust, geared more for pulling/towing. Although the Lumberland boat was free, it was still trapped by 40 feet of vegetation. We decided to do a full power pull to get it out into the free waterway, where it could proceed under its own power. After nearly six hours of labor-intensive work, out popped the airboat, like a cork out of a champagne bottle! Luckily, the Lumberland airboat suffered no significant damage, so now the logistics shuttle of staff and material started in reverse.

The final hurdle was recovering all three airboats successfully at the launch site by driving them up onto the road surface from the water and then powering them down the road and up onto their trailers. This is a tricky process, so this time we requested the WFD to send a pumper to wet down the roadway to cut friction. Mission accomplished! We then all headed home after some "high fives" and remembrance of a story we will never forget.

Lessons Learned

Following are lessons learned from this difficult rescue.

- Rescuers must bring blankets or other methods to warm hypothermic victims. We now have a cache of blankets wrapped in waterproof bags to keep them dry on the ingress of any victims. Chemical heat packs are also included. This seems obvious, but most of our rescues are during the summer months on the Delaware River, so keeping victims warm is usually not an issue. Environmental conditions and what they do to victims and rescuers must also be considered, and the proper resources provided. As an alternative to blankets, we load up additional wet or dry suits on the boat to place the victim in, in case of or to prevent hypothermia. If heat exhaustion is an issue, basic first-aid measures such as water, sports drinks, and electrolytes are also included in our kit.
- Preplan from above. Recent photos of the channels taken from above by helicopter or drone would have been very valuable as a map to guide us in and out of the unremarkable terrain. However, with the mobility of the floating vegetation, this will be of limited help. Drone overwatch turned out to be extremely helpful.
- Placing chemical lights at key channel turn points may have helped mark a path in and out for the victim. These could be attached to vegetation or placed on poles brought in on the boat and stuck into the mud, much like driveway snowplow markers. One had a light for left turn and two lights for right turn. Just like marching, start off with your left foot.
- Floodlights that were mounted on each side of the airboat offered improved illumination.
- Use bullhorns or whistles (if radios do not work or become inoperable by

water). Although we depend on portable radios for many rescues in this electronic age, water rescues are not conducive to this technology, and radios are not effective when used while wearing wet or dry suits. Other options to get a fix on a location could be handheld lasers, a distressed flare gun, or sounding sirens.

- Always have a backup airboat on scene. Although the airboat is a valuable tool, it has limitations. Additionally, we are usually operating in swift flowing river currents with rocky obstacles or in open water lakes without the specific difficult conditions we encountered in this preserve.
- Overall, for an out-of-county operation involving crews from three counties and two states, communications went rather smoothly, but there is always room for improvement.

This operation showed the value of preplanning, good communication, and unified command. Because of an onslaught of negative site conditions, the rescue ran into critical problems that, in fact, stopped the rescue effort. The unified command post, using standard planning meetings and decision making, overcame the complex obstacles. When a life is in danger, rescuers must take immediate action; this often gets us into unanticipated dangers, as evidenced by this rescue.

As the complexity/difficulty of the operation manifests itself, we learned it is important to have a reserve component of both personnel and equipment to rotate during a long-duration rescue. Continually seeking alternatives or modification to your original plan is also required. ■

JACK FLYNN is a 53-year member of the Sparrowbush (NY) Engine Company (SEC) and its deputy chief for safety. He also served as the SEC's chief of department on three separate occasions. Flynn has been involved in SCUBA diving and boat operations for the past 50 years and is certified as a SCUBA Schools International Advanced Open Water Diver and a National Association of Underwater Divers Swiftwater Rescue 1 Technician. He is also the director of emergency management for Deerpark, New York, and is experienced in the fields of structural and crash/rescue. Flynn served the federal government for 43 years as a counterterrorism/ counterintelligence/ emergency management official, including as a member of FEMA's Rapid Needs Assessment Team, which included responding to the Northridge (CA) Earthquake, the Summit of the 8's, numerous hurricanes, and 9/11, carrying top secret clearances during those years. He has coauthored several articles for *Fire Engineering* and has been a guest speaker at the FDIC International and NYS Association of Fire Chiefs conferences

JERRY KNAPP is the chief of the Rockland County (NY) Hazmat Team, has a degree in fire protection, is a 46-year veteran firefighter/ emergency medical technician (EMT) with the West Haverstraw (NY) Fire Department, and is a former paramedic. He served on the technical panel for the UL residential fire attack study. Knapp is the co-author of *House Fires* and *Tactical Response to Explosive Gas Emergencies* (Fire Engineering). He is the author of numerous feature articles in *Fire Engineering* and state, national, and international fire service trade journals and the author of the Fire Attack chapter in *Fire Engineering's Handbook for Firefighter I and II*. He retired from the U.S. Military Academy, West Point, where he served as the plans and operations specialist at the Directorate of Emergency Services.