



Wounded Veterans in Parks and the Joint Recovery Team: American Veterans in Underwater Archaeology

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ABSTRACT

Recent underwater archaeology projects undertaken by the National Park Service (NPS) and East Carolina University (ECU) involving American military veterans offer a mutually beneficial opportunity for archaeologists and veteran participants to conduct meaningful archaeological work. Research has shown the psychological and physiological benefits of participation in outdoor activities, scuba diving, and connection with peer support groups for veterans with service-related injuries. Participation in underwater archaeology projects allows veterans to use many of their professional abilities and experiences, which in turn advances the overall goals of the projects organized by the NPS and ECU. Ongoing work in National Parks and in the Pacific with ECU allows veterans to use military skills and training to work towards a common goal with peers in a rehabilitative environment. These projects have also allowed veteran participants to form a significant connection to the past, often engaging with their own heritage on submerged military sites, such as the USS *Arizona* or World War II aircraft crash sites.

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Recent underwater archaeology projects undertaken by the National Park Service (NPS) and East Carolina University (ECU) involving American military veterans offer a mutually beneficial opportunity for archaeologists and veteran participants to conduct meaningful archaeological work and learn new skills. Research has shown the psychological and physiological benefits of participation in outdoor activities, scuba diving, and connection with peer support groups for veterans with service-related injuries. Veteran participants are often adaptable, mission oriented, active, purpose driven, and capable individuals. Diving as a form of sightseeing is rewarding, but archaeological-project diving also taps into the mission-oriented, purpose-driven aspects of the military experience that many veterans keenly miss after leaving active duty. Participation in underwater archaeology projects also allows veterans to use many of their professional abilities and experiences, which in turn benefits the overall goals of the projects.

Careful documentation and meticulous record keeping are integral to archaeology. This challenge is often even greater with the many variables involved in working underwater. Communication may be limited to hand signals and writing slates, further impeded in dark, murky water. Scuba diving requires the use of specialized equipment and may risk exposure to extreme temperatures and surroundings. Such challenges limit the number of people properly trained and capable of completing scientific work under these conditions. Veteran participants often thrive in difficult conditions and possess the necessary skills and mindset to properly complete tasks. Coupled with an atmosphere of camaraderie and a mission focus, underwater archaeology projects with veteran participants have been successful on all fronts.

The recent increase in veteran-focused archaeology field projects began in 2011 with the UK's "Operation Nightingale, an initiative to assist the recovery of wounded, injured and sick military personnel and veterans by getting them involved in archaeological investigations" (Ministry of Defence, 2019, n.p.). British military veterans assisted Wessex Archaeology and English Heritage with the excavation of the East Chisenbury Midden. In 2012, the Defence Archaeology Group was established, leading to additional opportunities for veterans to engage in archaeological activities, which spurred the creation of similar organizations outside the UK, such as the United States-based American Veterans Archaeological Recovery (AVAR; Everill et al., 2020).

AVAR, the American Battlefield Trust, and the NPS began working together in 2018 through a partnership project to excavate the Barber Wheatfield, a 1777 Saratoga battlefield historic site at Saratoga National Historic Park (NPS, 2020). Participants cited the unique skillset and

work ethic many veterans may bring to archaeology projects. One such veteran participant reflected on the purpose-driven element of the project, stating, "Being in the military, working with small teams brings back to me what I always feel when on deployment. We have a mission and objectives, agreed upon together. And that struck me reading about AVAR..." (American Battlefield Trust, 2019, n.p.). Prior to AVAR, there existed a lab-based program called the Veterans Curation Program (VCP), which has operated since 2009 under the auspices of the US Army Corps of Engineers Mandatory Center of Expertise for Curation and Management of Archaeological Collections. VCP runs 6-month paid training and work programs that provide a variety of job skills within archaeological and historical collections labs (Arendt, 2013).

Recently, several veteran-support organizations have begun incorporating underwater archaeology into part of their programming through partnerships with organizations that conduct underwater archaeology. One such organization is Wounded American Veterans Experience Scuba (WAVES). The WAVES Project offers scuba training and opportunities, as well as camaraderie and purpose, to veteran participants with the goal of using scuba to rehabilitate various injuries such as amputations, post-traumatic stress (PTS), and traumatic brain injuries (WAVES Project, 2018). In 2017, WAVES began working with the National Park Service's Submerged Resources Center (SRC) at Lake Mead National Recreation Area (NRA), offering veteran participants an opportunity to receive training in underwater archaeological mapping techniques. WAVES and SRC continue to work together to provide meaningful scuba diving opportunities for veterans.

Paralyzed Veterans of America (PVA) was founded in 1946 with the mission to empower veterans that were seriously injured during their time in the military to regain what they fought for: freedom and independence. PVA is an organization dedicated to serving individuals with injuries, defending their civil rights, and supporting medical research. Over the years, PVA has established an expertise on the array of special needs of veterans who have experienced spinal cord injuries. PVA supports research, educational programs, and other initiatives that unite people and activities toward improved quality of life for everyone with spinal cord injury or disease (SCI/D). One avenue PVA pursues this end is through the weightlessness and rehabilitative effects of scuba diving. Veteran divers from PVA and the WAVES Project first joined forces with SRC in 2018 conducting scientific research at Pearl Harbor National Memorial (NM) See **Figure 1**.

Another organization that incorporates underwater archaeology in its rehabilitative programming is Task Force Dagger Foundation (TFDF). TFDF assists wounded,



Figure 1 Veteran participants and NPS divers at the USS Arizona Memorial. NPS photo by Luis Lamar.

ill, or injured US Special Operations Command members and their families. They respond to urgent needs, conduct Rehabilitative Adaptive Events (RAE), and provide health solutions for service members. As part of their RAE programming, TFDF hosts a yearly veteran family scuba-diving event in the Florida Keys and veteran-only events in the Cayman Islands. During those events families and veterans get certified or recertified to dive, spend time together, and share experiences with their families and each other. TFDF first began providing underwater archaeological opportunities to its members in partnership with ECU in 2017. Together TFDF and ECU formed the Joint Recovery Team (JRT), which conducts archaeological investigation of sites related to missing US service members of past conflicts. TFDF worked on sites related to the WWII Battle for Saipan with ECU in 2018 and 2019 and began working with SRC and WAVES at Lake Mead in 2019 to assist in ongoing documentation projects.

Archaeological programs like those under AVAR, WAVES, TFDF, and PVA can also have significant emotional impacts on participants. These programs allow veterans to transition between military and civilian culture by providing a military-like atmosphere, with military peers, in which veterans work towards a shared mission (Humphreys,

2019). “With archaeology, they (veterans) see a tangible example of their skills being useful and relevant. Veterans need this because it shows them they can still accomplish incredible things even though they’re no longer wearing the uniform” (Humphreys, 2019, n.p.). Veterans may also find an emotional connection between their military service and archaeology through participation in JRT projects, in hopes they might be able to help bring home the remains of a fallen military member from a past conflict. One participant in a JRT project stated, “These lost service members gave their today so we could have a tomorrow. It’s an incredible honor for us to be a part of this humbling mission of attempting to find, recover and ultimately repatriate our lost” (Task Force Dagger Foundation, 2019, n.p.).

THE JOINT RECOVERY TEAM

The Joint Recovery Team (JRT) was conceived of and created by a relationship between ECU’s Program in Maritime Studies faculty and nonprofit veterans’ organization TFDF in 2017. Fortuitously, a beneficiary of TFDF’s diving RAE, Patrick Smith retired US Army Special Operations Forces PSYOP regiment, applied to the ECU graduate program in

2016. Jennifer McKinnon, an associate professor at ECU who has worked on conflict and battlefield archaeology sites for over a decade, began discussing with Smith the possibility of offering veterans programming in underwater archaeology on WWII sites related to the Battle for Saipan in the western Pacific. For many years McKinnon had wanted to incorporate veterans into her research on battlefield sites, seeing their potential participation as a significant contribution to the study of the materiel of war. Additionally, ECU is a veteran-friendly campus having been awarded several military-friendly awards and developing a Green Zone training for university faculty and staff that familiarizes them with veteran issues. McKinnon participated in one of the first trainings, since the program in maritime studies has attracted several veteran students over the years. Smith linked McKinnon with TFDF leadership, and an immediate relationship developed with a plan to create a training and run a field program for veterans. TFDF leadership visited ECU's campus and met with program personnel and university administration and an memorandum of understanding was developed.

ECU and TFDF partnered with Della Scott-Ireton of the Florida Public Archaeology Network (FPAN) to apply for an NPS Maritime Heritage Program grant, which would support the development of underwater training for veterans and the first application of the program in Saipan. It was in 2015 at a Society for Historical Archaeology Conference that McKinnon and Scott-Ireton first discussed the idea of creating and running a veteran-specific training program for inclusion in field work, and as luck would have it, the partners began coming together.

In another serendipitous turn of events, ECU began discussions with and signed a memorandum of agreement (MOA) with the Department of Defense's Defense POW/MIA Accounting Agency (DPAA) to assist with their mission to search for and recover lost service members. When this occurred, McKinnon reached out to TFDF to ask if they would be interested in partnering on DPAA missions, to which the answer was an absolute affirmative. Thus began the creation of what became the JRT, which would consist of veterans who would undertake training in underwater archaeology and participate in a DPAA mission as part of rehabilitative therapy. The connection with DPAA missions became critically important because it provided veterans with a real-world mission that has a high return on investment for both the veterans and the lost service members' families.

The "joint recovery" is a double entendre: joint forces members (Army, Navy, Air Force, and Marine) or former members of SOCOM recovering their sense of self and gaining tools to transition to civilian life and the mission to recover remains for those families who have lost loved ones in the service of our country. (David et. al., 2020, p. 3)

With sustainability of programming in mind, McKinnon endeavored to introduce TFDF to other organizations that might assist them in developing their underwater archaeology RAE interests. As such, TFDF leaders travelled with McKinnon to DPAA lab headquarters in Hawaii where they were introduced to DPAA and began their own discussions which eventually led to a DPAA-TFDF MOA. They were also introduced to NPS Submerged Resources Center underwater archaeologists and National Oceanic and Atmospheric Administration (NOAA) underwater archaeologists, expanding their network further within the field of underwater archaeology and eventually working on NPS projects.

The first JRT project was held in summer 2018 in Saipan and was part of a larger summer-long DPAA mission focused on identifying previously surveyed magnetometer and side scan sonar targets in search of WWII aircraft losses. The project began with 13 veterans travelling to the DPAA lab in Hawaii to tour the facility and become familiar with the mission. A stopover in Hawaii also allowed for rest and respite during a long journey for those with injuries. Upon arriving in Saipan, the group toured the island before beginning a two-day veteran-specific training in underwater archaeology.

The veteran-specific training was developed from FPAN's existing Submerged Sites Education and Archaeological Stewardship (SSEAS) training, which is offered regularly to the general public in Florida. SSEAS is intended to train sport divers in the methods of non-disturbance archaeological recording and is also equivalent to part one of the internationally recognized Nautical Archaeology Society's training program. For the purposes of the JRT, the training was catered to cover Saipan's maritime history and heritage, WWII-specific sites, and methods in search and identification of targets. PowerPoint lectures were followed by hands-on terrestrial practice and the following day was spent practicing skills in the pool (see [Figure 2](#)). Veterans learned how to use underwater cameras to take scientific photos, prepare recording forms for target testing, and operate underwater metal detectors in searching for magnetic anomalies. In addition, they learned basic search techniques including the circle search. Unsurprisingly, many of them had used similar search techniques and equipment during their military training and service and adapted perfectly to the task at hand.

Considerations were made related to veterans' needs and having a close partner veteran organization to help identify those needs in the early stages of planning was critical to the success of the program. For example, room accommodations that were ADA complaint (Americans with Disabilities Act) were required for some veterans.



Figure 2 Task Force Dagger Foundation veteran Ryan Murphey during underwater archaeology pool training.

Note: Photo by Jennifer McKinnon, East Carolina University.

Additionally, the survey vessels, platforms, and entry/exit strategies were considered for veteran injuries and illnesses. Dive-buddy teams were carefully chosen to ensure diver abilities matched or were complimentary and consideration was even given to pairing like forces to avoid any potential inter-forces friction.

Leadership had regular meetings to discuss issues that might arise or need to be addressed. In addition to the 13 veterans, there were several university faculty, staff, and graduate students from ECU and FPAN as part of the support and scientific team. This difference in culture between university and military (at times) created learning opportunities for team members. For example, what was standard language and joking in the military community was at times uncomfortable for university members that adhere to specific codes of conduct. This provided an opportunity for a conversation about the comradery and brotherhood of the military and differences in socialization. This conversation was fruitful and positive, largely due to the open communication leadership had with each other and with their respective teams. Despite some differences, it was found that the cultures were more similar than dissimilar and great bonds and friendships were made that have lasted beyond the fieldwork. Similarities between

groups included mission-focused attitudes, adherence to strict schedules and extensive planning, and strong work ethics.

When the training was complete, fieldwork began during which veterans worked alongside archaeologists to investigate potential targets and record anomalies. This is where other synergies were identified between underwater archaeology and veterans, specifically both are task-oriented which allowed for clear communication and understanding of intentions. Additionally, many veterans have great experience with the identification of war materiel and some even had insight into aircraft crash investigation. These shared skills created a team that many of the participants did not imagine would develop or work as well as it did.

In addition to the fieldwork, the educational programming continued for the full 2 weeks on island, during which participants visited the NPS American Memorial Park, toured museums, viewed WWII films, visited historic WWII and Indigenous sites on land (i.e. caves, rock art sites, a traditional canoe house, etc.), and generally became familiar with the island's maritime heritage and history. Some of this was undertaken as a group during weather days or in afternoons or evenings after getting off

the water, while some was by smaller groups or individuals taking a rest day from the field. Evening meetings were conducted in which participants shared their daily activities and more was shared about the history and archaeology of the maritime heritage and island. TFDF participants were given reflective journals in which they could record both archaeological data as well as their experiences throughout the project. The final program was assessed utilizing a participant survey and the results were positive with helpful advice provided for future iterations of the program. In fact, the response to the program was so encouraging, fundraising began for a second program in summer 2019.

Upon return home, and at the request of participants, an online group share platform was created using Slack where historical and archival research was shared and conducted through chat groups and continued communication. The entire team remained in contact with each other through social media and other forms of communication, and several veterans continued with valuable historical research into the MIA cases.

Plans for a second JRT mission in 2019 began with confirmation of a specific target identified during the 2018 survey: a Grumman F6F-3 Hellcat fighter aircraft. DPAA had identified Hellcat losses associated with lost service members in Saipan and thus the next mission was to focus on that site. As such, the 2019 mission was designed to conduct test excavations on the newly located site to delineate site extent, determine site integrity, and potential for future recovery. An additional remote sensing and target diving project was also planned and executed with the veteran team but will not be discussed here.

The Hellcat site included setting up full-scale excavation operations. The same veteran crew returned in 2019 and undertook training in DPAA excavation and survey methodologies and archaeological excavation. One and a half days of classroom training was followed by a training in the pool, which included setting up a water dredge and learning how to take excavation notes and photography. The training ended and excavation on site began (*Figure 3*).



Figure 3 Task Force Dagger Foundation Veterans Conducting Archaeological Excavation of a World War II Aircraft Site in Saipan.

Note: Photo by Jennifer McKinnon, East Carolina University.

A large barge was moored over the site each day making diving and excavation operations relatively easy and safe. Divers could exit and enter the water with ease via a dive ladder and the vessel was large enough for supporting the full crew and screening stations. Once excavation was set up and sediment began to be retrieved for sorting on the surface, the veterans were trained to identify aircraft wreckage and other material culture. Veterans' familiarity with military materiel proved useful as they participated in the screening process.

Excavation continued for the full 2 weeks. Overall, the project was a success. The site was delimited with metal detection surveys, evidence was recovered for assessment at the DPAA laboratory, and the veterans had a sense of purpose and accomplishment. Plans are in development for future projects in 2021 and 2022, as COVID-19 stalled fieldwork in 2020. Additionally, ECU is continuing to develop the veteran-specific training in underwater archaeology with TDF and FPAN.

WOUNDED VETERANS IN PARKS (WVIP)

In 2016, the Submerged Resources Center began engaging with the veteran community. SRC is tasked with managing the location, documentation, interpretation, and preservation of underwater resources in America's National Parks. To accomplish this, SRC utilizes diving as a necessary tool for assisting parks in the management of resources, ensuring visitor protection, and developing interpretation programs to enhance visitor understanding and appreciation of the full range of submerged resources within the NPS. SRC's history, experience, and relationship with National Parks places the Center in an ideal position to bridge the needs of both veterans' organizations and National Parks. In 2017, NPS began connecting veterans' organizations with National Parks to create opportunities for veterans to participate in projects with underwater tasks. This vision would become the Wounded Veterans in Parks (WVIP) program.

Early on, SRC shared its vision with Scott Taylor, owner of a dive shop in Littleton, Colorado, and a friend of SRC. Taylor is a pioneer of adaptive scuba and is nationally recognized as a leader in the development of training and safety protocols for divers with injuries. In early 2017, Steve Rubin, an avid diver and veteran advocate, as well as the president of the WAVES Project, attended one of Taylor's Handicapped Scuba Association (HSA) instructor programs in Colorado. These introductions led to the first collaborative dive project between WAVES and NPS at Lake Mead NRA in November 2017. With the invaluable support of park staff, Rubin, Thompson, and

other members of WAVES joined SRC team members for a week of training and diving in Lake Mohave, downstream from the Hoover Dam. WAVES divers were briefed and trained in underwater archaeological mapping techniques and practiced their newfound skills on submerged sites in the lake. The challenge of working together underwater to achieve a common goal for the park upheld WAVES' core values of comradery, service, and purpose.

The 2017 Lake Mohave work blossomed into a longer-term partnership at Lake Mead NRA. SRC had long desired to document a large, submerged industrial complex known as the Boulder Basin Aggregate Classification Plant in Lake Mead. The historical purpose of the plant was to wash and sort raw aggregate for use in concrete poured into the massive Hoover Dam. The "Agg Plant" was a key component in the construction of the Dam, processing nine million tons of aggregate over 3 years between 1932 and 1935. The plant was gradually dismantled and removed in 1935, but piles of aggregate and some equipment and structure foundations remain. With completion of the Hoover Dam, Lake Mead began to form, and the plant was underwater by the summer of 1936. It now rests under 28 meters of water and sprawls over six acres of lakebed. The primary mission of the WVIP multi-year project was to compile archaeological mapping data and ultimately provide Lake Mead NRA with a detailed map of the features located at the Aggregate Classification Plant site for park and visitor use.

In March 2018, WAVES began mapping the submerged Aggregate Plant alongside SRC (*Figure 4*). One SRC archeologist was paired with two WAVES divers to work cooperatively during both the in-water mapping operation as well as during tabletop drafting of data acquired on each dive. With fundamentals in-hand and working dives under their weight belts, the volunteer veterans quickly made the mapping effort their own. Asking clarifying questions, planning and executing dives, reconfiguring dive gear, and offering alternative approaches was indicative of their dedication to efficient, safe dives and the successful completion of the mission.

In April 2019, two members of Task Force Dagger Foundation joined the dive teams at Lake Mead NRA. TDF members have participated in every Agg Plant mapping project since. WVIP dive teams have returned to Lake Mead a total of five times to continue mapping efforts. The site map is quickly becoming reality with more detailed portions added during every two-week project. The volunteer veterans take this time off work and leave families at home to not only contribute to the NPS mission of sharing resources with visitors, but to get the dose of



Figure 4 Wounded American Veterans Experience Scuba Divers Carefully Collecting Measurement Data on Structural Remains of the Aggregate Plant at Lake Mead National Recreation Area in April 2019.

Note: NPS photo by Susanna Pershern, Submerged Resources Center.

“dive therapy” the deep, cold, silent, green waters of Lake Mead offers.

Pearl Harbor National Monument, one of the most important military heritage sites in the nation, is another NPS unit that welcomes the WVIP program and veterans with service-connected injuries. Pearl Harbor National Monument is a reverential and sacred place for civilians and military personnel alike, as it interprets and preserves sites and artifacts of the attack on Oahu, which killed more than 2,300 military and civilian personnel. The park is also the final resting place of over 1,000 crew members of the USS *Arizona* and USS *Utah*.

There is much meaningful scientific research to be done at Pearl Harbor National Monument, and the facilities at the Memorial are also equipped with ingress and egress points for paraplegic veterans who assist with the diving and science (**Figure 5**). After some discussion between SRC, Pearl Harbor National Monument, and partner veteran organizations, a three to five-year plan was developed to provide opportunities to veterans with injuries and illnesses to conduct underwater archaeological work at Pearl Harbor. With the support of the park, SRC, and

funding from Pacific Historic Parks, veteran participants from the WAVES Project and PVA were soon diving the deck of the USS *Arizona*.

The inaugural WVIP project at Pearl Harbor National Monument took place in March 2018. The primary objective was to design, construct, and deploy an apparatus to collect oil leaking from the USS *Arizona*. Moored, but battle ready, the battleship went down with a full complement of Bunker C fuel oil on December 7, 1941. Much of the ship’s oil stores burned off in the days immediately following the attack, but an estimated 600,000 gallons remain in the hull. Slowly escaping through cracks and weak points, the oil remains separate from the seawater and floats to the surface as droplets producing a sheen on the surface visible from the Memorial. As part of its preservation, management, and stewardship responsibilities, the park monitors the rate of oil release.

Based on past observations and sampling techniques, the WVIP project set up fabricated subsurface oil tents on the deck of the USS *Arizona* to collect a sample over the course of 24 hours. The catchment devices were designed to cover the surface area of a deck hatch and act



Figure 5 Paralyzed US Army Veteran Laura Jeanne Exiting the Water At the USS Arizona Memorial After A Scientific Dive On The Vessel.

Note: NPS photo by Brett Seymour, Submerged Resources Center.

as an inverted funnel, directing floating oil droplets into a collection jar suspended at its peak (see [Figure 6](#)). Despite inherent challenges presented by the shallow water depths on site, slope of the oil tent walls, dwell time of the oil against the tent, and the slight oleophilic properties of the tent materials, escaping oil was successfully collected for measurement and analysis. However, the challenges observed in measuring a quantitative oil release provided a means for improving oil collection methodologies and future research. WVIP returned to conduct research dives and oil collection at Pearl Harbor in late 2018 and again in 2019.

By their own admission, participants in the WVIP program are more interested in a mission driven and task focused underwater objective than merely being underwater. This concept, observed at Lake Mead NRA, was further demonstrated at Pearl Harbor National Monument. The historical and environmental contexts in which the veterans worked at Pearl Harbor and on *USS Arizona* were impactful. Participants affirmed that they felt a deep connection to the place and its fallen through military service and personal injuries. It offered them a powerful emotional experience and dovetailed with their own desire

to engage in mission driven and task focused objectives while underwater.

In addition to recurring projects at Lake Mead NRA and Pearl Harbor National Monument, veterans with service-connected injuries have also contributed to projects at Dry Tortugas National Park in south Florida and Channel Islands National Park in southern California. In July 2019, eight veterans from WAVES joined Dry Tortugas and SRC staff for a week of NPS maintenance diving, assisting with navigation and mooring buoy assessment, servicing, and replacement. The help of capable veterans, both on boats and underwater, made quick work of repairing buoys and buoy tackle. In addition to buoy work, veteran divers assisted NPS marine biologists in coral nursery maintenance, as well as invasive lionfish removals.

In October 2019, Channel Islands National Park hosted the first all-women WVIP project. Women veterans from WAVES, an all-women NPS ship crew, and women scientists from NPS set out for a week of diving and healing off the coast of Anacapa Island in park waters. The all-women project was created in recognition that there is little programming intended specifically for women veterans, and that women veterans may have significantly different

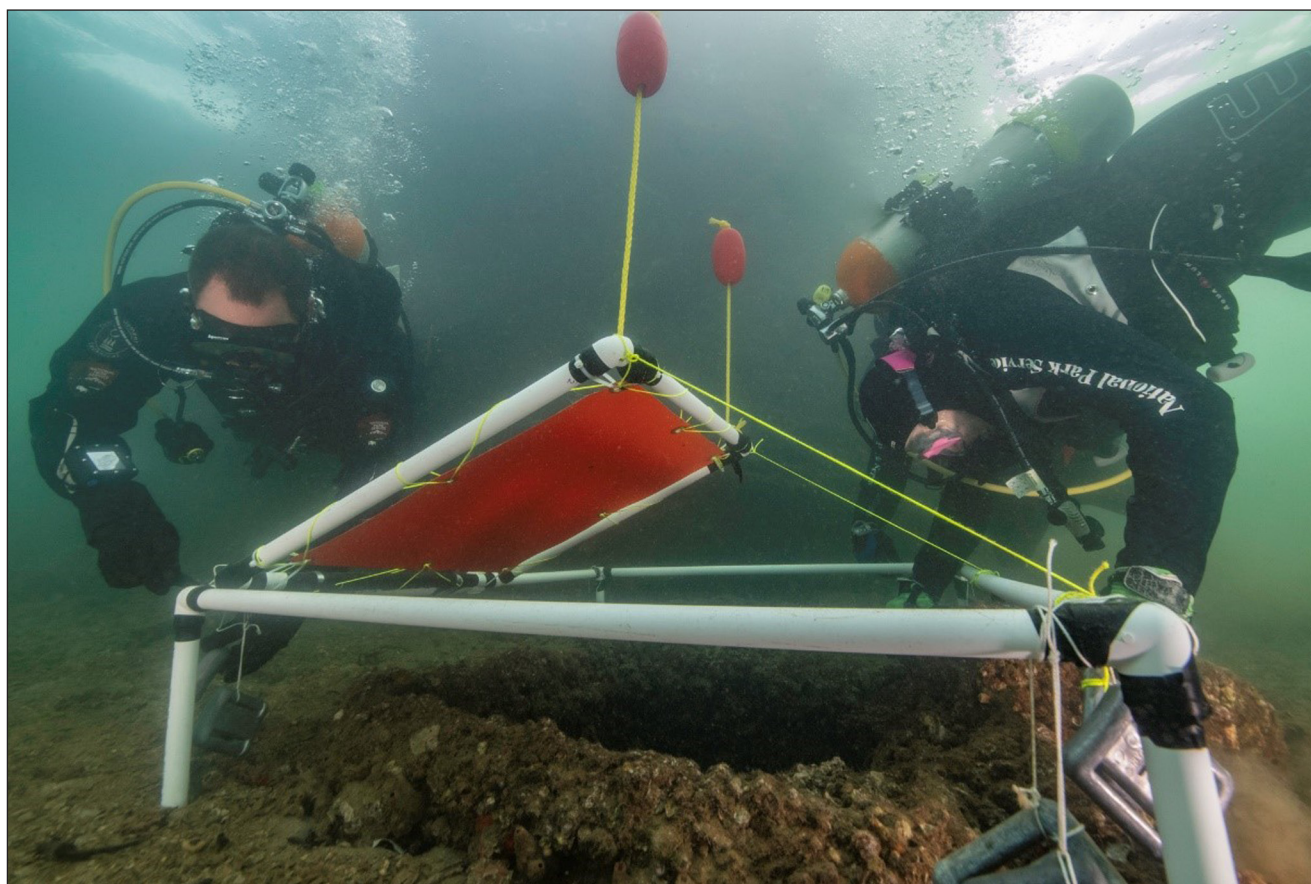


Figure 6 Paralyzed Veterans of America and National Park Service divers securing a bunker C fuel oil collection tent on the deck of the USS Arizona in Pearl Harbor, Hawaii.

Note: NPS photo by Brett Seymour, Submerged Resources Center.

experiences and needs after their time in military service. The NPS felt that by creating an all-women project, aspects of past service that were troubling to the veterans, but could not be comfortably shared in mixed company might be shared. Future WWIP programs plan to integrate all genders into NPS projects, and to continue with all-women WWIP program projects.

WHY VETERANS?

Numerous studies have found a measurable benefit between participation in outdoor activities and improvement in mental health among veterans (Anderson et al., 2018; Caddick & Smith, 2014; Duvall & Kaplan, 2013; Duvall & Kaplan, 2014; Lundberg et al., 2018; Vella et al., 2013). Duvall and Kaplan (2013) found a correlation between the overall improvement of mental health in veterans and participation in group outdoor recreation, particularly in those that participated in multiple day programs, ranging from 4–7 days. Additionally, research shows peer support intervention also has numerous

benefits on the mental health of veterans (Drebing et al., 2018; MacEachron & Gustavsson, 2012; Weier et al., 2017). Participation in field-based archaeology projects with a veteran-participant focus encompasses both benefits, giving participants access to outdoor recreation and support from a group of veteran peers. In an assessment of the benefits and shortfalls of the role of archaeological fieldwork in the improved wellbeing of veterans, Finnegan (2016) found veteran participants working in a team at an outdoor archaeological site reported improved self-esteem and confidence.

When divers are properly trained and dive within their training limitations, scuba diving presents relatively few risks. Therefore, when trained properly and cleared by a doctor to participate in scuba diving activities, any potential risk-related negatives are far outweighed by the positive effects of diving on the psyche. Research shows scuba diving provides mental health benefits for veterans and non-veterans alike (Blumhorst et al., 2020; Krpalek et al., 2020; Morgan et al., 2018; Unser et al., 2011). In fact, Morgan et al. (2018) found veterans who participated in organized scuba diving activities reported an improvement

in levels of anxiety, depression, and social functioning, as well as a reduction in insomnia. Furthermore, all veteran participants in a study conducted by Krpalek et al. (2020) reported significant improvement in occupational performance and satisfaction, reduced symptoms of PTS, depression, and stress. Some experienced significant reductions in anxiety and learned applied interventions to daily life from scuba diving activities (Krpalek et al., 2020).

Blumhorst et al. (2020) also found that veterans with mental or physical health issues who participated in organized scuba diving activities reported significant increases in mindfulness. A Johns Hopkins University (2011) study found that veterans with spinal cord injuries saw significant improvement in muscle movement, increased sensitivity to touch, and reduction in stress symptoms after participation in a four-day scuba certification course. To date, no research has been published on the benefits for veterans specifically participating in underwater archaeology projects, but it can be reasonably assumed that the proven benefits of spending time outdoors with a group of military peers can also be applied to participants in these projects.

Finnegan (2016) also asserts that the skills acquired by some soldiers during their military training are similar to those of a professional archaeologist. These may include, surveying, geophysics (for ordnance recovery or revealing cultural heritage sites), scrutiny of the ground (for improvised explosive devices or artifacts), site and team management, mapping, navigation and the physical ability to cope with hard manual work in often inclement weather conditions. (p. 2)

This concept is also cited anecdotally in the veteran rehabilitation archaeology community in support of its programming. The combination of health benefits for veterans coupled with the added value of individual's military skills, and an ability to work with discipline within a hierarchical command structure, makes veteran participants in archaeology projects the ideal volunteer.

CONCLUSIONS

Underwater archaeological projects undertaken by East Carolina University, the National Park Service's Submerged Resources Center (NPS SRC), and partner organizations Wounded American Veterans Experience Scuba, Task Force Dagger Foundation, and Paralyzed Veterans of America result in mutually beneficial opportunities for both archaeologists and veteran participants. Ongoing work in

National Parks and in the Pacific allows veterans to use military skills and training to work towards a common goal with peers in a rehabilitative environment. These projects have allowed veteran participants to form a significant connection to the past, often engaging with their own military heritage as service members on military-related sites, such as the USS *Arizona* and World War II aircraft crash sites. Veterans on the Joint Recovery Team (JRT) in Saipan indicated that they formed a personal connection with the archaeological sites that may contain the remains of MIA or KIA personnel. One veteran felt that participating in the recovery mission was part of fulfilling the promise he made to never leave a fallen soldier behind and saw the mission as a continuation of that personal promise. Another participant described connecting with the materiel of war including aircraft parts, as he was a pilot and had experience with aircraft crash investigation. Finally, others had family members or close connections to personnel that served in the Pacific during World War II and saw the project as a personal or familial mission. These connections, while anecdotal, reveal how each participant connects with the heritage and process of investigating past battles and war.

The JRT was designed with the idea that veterans could contribute considerable skills in the field of underwater archaeology, specifically on military-related sites. It became evident early in the formation of these veteran underwater archaeology programs that the organizations and individuals volunteering their time to travel and support these missions would have more to offer than simply a source of labor. Veteran men and women with different occupations, educations, and backgrounds have all contributed to projects, offering valuable insight. A veteran Marine on the Aggregate Plant projects at Lake Mead NRA had spent years working in concrete production and offered insights into the workings and processes of the complex. Others dove as part of their military service, nearly all have some level of first aid and trauma training, others have knowledge of fabrication and construction, mechanics, and engineering. These skills translate well into working in the field of underwater archaeology, often operating in remote places with limited resources. This trend was reinforced through the various projects as new participants contributed their knowledge from a vast array of life experiences to accomplish objectives safely, efficiently, and enjoyably.

NPS SRC and East Carolina University have plans to continue and expand work with the Wounded Veterans in Parks program and the Joint Recovery Team. Doing so allows both organizations to advance the ultimate goal of bringing the past to the public through archaeology, while developing meaningful programming for veterans.

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COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS

Matthew Hanks wrote the section on the Wounded Veterans in Parks program. Anne E. Wright wrote the introductory section and the section on “Why Veterans?” Jennifer McKinnon wrote the section on the Joint Recovery Team. All authors have planned, led, and participated in the veteran archaeology projects described here.

Ethics approval was not required for this paper.

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