# Hero Dogs White Paper
# Working Dogs: Building Humane Communities with Man's Best Friend

## INTRODUCTION

Humankind has always had a special relationship with canines. For thousands of years, dogs have comforted us, protected us, and given us their unconditional love. Time and time again through the ages they have proven why they are considered our best friends. Yet, not only do dogs serve as our beloved companions, they are also a vital part of keeping our communities healthy, safe and humane.

American Humane Association has recognized the significant contributions of working dogs over the past five years with our annual Hero Dog Awards® national campaign. Dogs are nominated in multiple categories from communities across the country, with winners representing many of the working dog categories. The American Humane Association Hero Dog Awards are an opportunity to educate many about the contributions of working dogs in our daily lives. This paper provides further background into their contributions to building humane communities.

Dogs have served as extensions of human senses and abilities throughout history and, despite advancements in technology, they remain the most effective way to perform myriad tasks as working dogs. According to Helton (2009a, p. 5), "the role of working dogs in society is far greater than most people know and is likely to increase, not diminish, in the future." Whether it's a guide dog leading her sight-impaired handler, a scent detection dog patrolling our airports, or a military dog in a war zone searching for those who wish to do us harm, working dogs protect and enrich human lives.

Why are canines so well-suited for this role in enriching and safeguarding human life? Through domestication over time, dogs have become skilled in reading human communication cues such as understanding our nonverbal gestures. For example, if a human points at an object, a dog will direct his/her attention toward the object (Kirchhofer, Zimmermann, Kaminski, & Tomasello, 2012). Dogs are predisposed to attend and respond to human action (Udell, 2008). They inspect our faces and watch our body language to look for cues that will reassure or guide their behavior (Horowitz, 2009).

Furthermore, it has been shown that dogs understand the relationship between the direction a person is facing and their attentional state (e.g., if you turn your back after throwing a ball, the dog will walk around your body and bring the ball back to the front of you) (Hare, Call, & Tomasello, 1998). Other studies have demonstrated that dogs look at pictures of human strangers' faces longer than familiar humans' faces, indicating the recognition of a social relationship with their companions (Nagasawa, Murai, Mogi, & Kikusui, 2011). Studies even show that dogs are able to discern a human smiling face from a blank expression (Nagasawa, Murai, Mogi, & Kikusui, 2011). This ability to interpret human communication makes dogs desirable and uniquely well-suited as working and social companions.

However, not all dogs are effective as working dogs. Certain traits and behaviors are required, along with copious amounts of training, for dogs to succeed as working companions. Data suggests that success rates average only 50% across the various working dog sectors (Arnott, Early, Wade, & McGreevy, 2014a, 2014b). This statistic underscores the need to have an enhanced understanding of what it takes to be a working dog and how we can ensure the health and well-being of these important animals. As such, this white paper focuses on the different types of working dogs, how they are trained, and how they benefit society.

## SERVICE DOGS

The roles of service dogs are as varied as they are complex and demanding. Also known as "assistance dogs," service dogs are trained to perform quantifiable tasks to ease the challenges associated with their owner's particular physical, psychiatric, intellectual, sensory, developmental, and/or other disability (Phillips, 2015; Sutton, 2015). According to the Americans with Disabilities Act of 1990 (ADA), legally covered disabilities among service dog owners include, but are not limited to: visual and hearing impairments, physical mobility issues, multiple sclerosis (MS), diabetes, epilepsy, autism, and post-traumatic stress (PTS) (United States Dog Registry, 2013). At the turn of the century, it was estimated that approximately 10,000 dogs were service dogs, with these numbers growing steadily with each passing year (Sandler, 1996).

Having a service dog by their side can benefit a person in numerous and diverse ways. First and foremost, the dog's presence and guidance offer their owners the freedom of independence and the confidence and security to leave their home. This, in turn, may decrease isolation and loneliness via more opportunities to meet and socialize with others, as well as reduce their reliance on other people for everyday needs and enhance their ability to enter or re-enter the workforce (Canine Companions for Independence, 2015; McNicholas & Collis, 2006; Wirth & Rein, 2008). Additionally, like all dogs, service dogs provide their owners with the love and support that comes from loyal and reliable companionship.

Currently, there are no nationally or legally recognized service dog training, certification, or identification standards, and both professional trainers/organizations and laypersons may train and provide service dogs (Tedeschi, Pearson, Bayly, & Fine, 2015). At a minimum, service dogs should be individually trained in basic obedience (e.g., "sit" and "stay"), as well as essential functions or tasks that a person could not otherwise perform due to his/her disability (e.g., alerting a person with epilepsy when s/he is close to having a seizure or waking a person with PTS from a nightmare) (Tedeschi et al., 2015; U.S. Department of Justice, 2011). In addition, service dogs should be well behaved and under control (i.e., leashed) in the community and with strangers, as specified by the Public Access Test (Psychiatric Service Dog Partners, 2015), the American Kennel Club's (2015) Canine Good Citizen Test, and/or other canine behavior evaluations or standards.

The ADA protects the rights of people with disabilities to bring their service dogs with them to most public places, including restaurants, theaters, shops, hotels, government agencies, and non-profit organizations (U.S. Department of Justice, 2011). Likewise, the Air Carrier Access Act (ACAA) of 1986 ensures that service dogs may travel with their owners on airplanes, and the Fair Housing Act of 1968 stipulates that housing with a "no pets policy" must make an exception or reasonable accommodations for people with service dogs (Service Dog Central, 2014a). In some instances, owners may be required to provide documentation stating that their dog is a service dog that performs tasks directly related to their disability, as well as what tasks the dog performs (Service Dog Central, 2014a; Sutton, 2015). However, businesses, airlines, and landlords cannot inquire about the particular disability, ask for service dog certification, or request that the dog perform any tasks (Service Dog Central, 2014a; Sutton, 2015).

The most common types of service dogs include guide dogs, hearing dogs, medical alert dogs, mobility dogs, autism service dogs, and psychiatric service dogs (including PTS service dogs). Each of their specified roles, and the benefits they provide to their owners, are described below.

### *GUIDE DOGS*

Guide dogs are trained to help their owners with legal blindness and other visual impairments by leading them safely through crowded, unfamiliar settings. While many breeds can serve as effective guide dogs, Labrador Retrievers are the most common due to their range in appropriate size, gentle behavioral temperament, high intelligence, overall good health, low maintenance grooming needs, and public acceptance (Service Dog Central, 2014b). Many guide dogs are trained as puppies (i.e., six months of age), with the primary foci of walking in close proximity to the trainer; socializing with people; and preparing for subsequent behavioral and obedience training (Koda, 2001).

Guide dogs are specifically trained to lead their owners by walking in a straight line while maneuvering around obstacles, such as light posts, benches, pot holes, people, and approaching vehicles (Audrestch et al., 2015; Wirth & Rein, 2008). In fact, guide dogs are trained to avoid collisions with oncoming traffic either by halting abruptly or refusing to move forward even if commanded by the handler to do so. Likewise, guide dogs sit or stop moving to alert their handlers to any change in elevation, such as a curb, step, platform edge, or other drop-off (Audrestch et al., 2015; Froling, 2001). Finally, guide dogs may retrieve objects (including dropped items) on command, and may be able to locate certain entryways, exits, or appropriate seating areas for their handler (Froling, 2001).

### *HEARING DOGS*

People who are deaf or hard of hearing can also greatly benefit from the assistance that service dogs provide. Hearing service dogs are specially trained to physically alert their owner to respond to common environmental or household sounds, such as a smoke or gas alarm, an oven timer, a telephone ring, an email alert, a door knock, someone calling their name, or even a child's cry (Assistance Dogs

International, 2015a). For the purposes of safety, hearing dogs are trained to respond to particular types of audible sound within seconds. After responding, the dog's tasks include warning their owner through physical contact (i.e., nudging or pawing), and leading him/her to the source of the sound or alarm (Assistance Dogs International, 2015b). In addition, hearing dogs may also be trained to respond to American Sign Language cues or commands if their owner is non-verbal (Paws With A Cause, 2013). Along with affectionate companionship, hearing dogs provide their owners and their families with a sense of security and freedom, as well as life-saving assistance in emergency situations.

*MEDICAL ALERT DOGS*

Medical alert or response dogs play a very important role in the lives of many people with medical disabilities (e.g., epilepsy, diabetes, hypertension, migraines, and fainting). These dogs are highly trained to do a number of tasks, including alerting their owner to an imminent health event or crisis before it occurs, as well as retrieving medication or reminding their owner to take their medication (Audrestch et al., 2015; Service Dogs for America, 2015a). Trained medical alert dogs are able to both recognize when their owner is in trouble (i.e., about to have a seizure or experience dangerously low or high blood sugar levels) through subtle changes in the person's smell, body language, respiratory rate and/or unknown factors, as well as respond to the event by acting quickly to help the person recover (Audrestch et al., 2015; Please Don't Pet Me, 2015).

Once the dog detects a medical need, they warn their owner through physical contact (e.g., nudging or pawing). If their owner is unable to retrieve medication, go to a safe place and/or call for help on their own, the dog may be trained to perform any or all of the following tasks: retrieve the necessary medication; locate a specific person by name to assist (if available); help the person be in a comfortable or safe position; retrieve the telephone so that the person (or the dog itself) may call 911; and/or press an alert button to send an emergency alarm to other areas of the house and/or to the paramedics (Service Dogs for America, 2015a; Tedeschi et al., 2015). Once these tasks are complete, the dog is then trained to stay close to their owner to provide comfort until the episode has passed or emergency help arrives (Service Dogs for America, 2015a). These specific tasks, as well as the dog's overall presence, give their owners security, life-saving assistance, and the comfort of knowing they have a supportive partner to help manage the complexities of their disability.

*MOBILITY ASSISTANCE DOGS*

Mobility assistance dogs help people with physical disabilities who have trouble moving, standing, and staying balanced on their own. In order to support their owners, these service dogs are usually comprised of large breeds who wear special harnesses or vests equipped with handles that enable stabilization, counterbalance, and guidance (Winkle, Crowe, & Hendrix, 2012; Service Dog Central, 2014c). Mobility assistance dogs may also be trained to open or close doors, retrieve dropped or needed items, help with dressing and undressing, carry certain items in a harnessed bag, and operate lights and

elevator buttons (Winkle et al., 2012). Training the dog to pull a person in a wheelchair may also occur, although this practice is somewhat controversial given its potential risks to the dog's wellbeing (Coppinger, Coppinger, & Skillings, 2010). Finally, in emergency situations, a trained mobility assistance dog can also locate another person to assist the individual in need (Service Dogs for America, 2015b).

*AUTISM SERVICE DOGS*

Autism service dogs provide a wide array of services for people who are on the autism spectrum, particularly children. Autism is recognized as a neurobiological, behavioral, and sensory processing condition marked by characteristic symptoms that often present challenges to both the diagnosed individual and those around them (Berry, Borgi, Francia, Alleva, & Cirulli, 2013). According to the American Psychiatric Association (2013), people with autism often present with difficulties in socialization, including interpreting non-verbal behaviors (e.g., facial expressions) and engaging in reciprocal peer relationships; in communication, including initiating or sustaining conversation; and in repetitive behavior or thought patterns, including intense preoccupation with certain subject areas and strict or inflexible adherence to routines.

One of the primary tasks that autism service dogs are trained to perform is to alert their owners to situations that require focused attention. Individuals with autism often find it difficult to prioritize their attention, and thus may be overwhelmed with many competing pieces of sensory information at the same time. For example, in an effort to process the loud sound of a smoke alarm, the warm texture of an oven mitt, the smell and taste of a freshly baked cookie, and the sight of melting chocolate, a person with autism may find it difficult to recognize the alarm as the most salient piece of information. This lack of recognition could potentially place the person and others at significant risk. However, autism service dogs are trained to physically alert their owners to focus first on the most urgent or pressing situation at hand (i.e., preventing a fire or exiting the home) before other situations (i.e., enjoying a cookie) (Service Dog Central, 2014d).

Autism service dogs may also be trained to alert their owners when they are engaging in repetitive and potentially harmful or unsafe behaviors, such as banging their heads against objects during times of stress (Service Dog Central, 2014d). According to Burrows, Adams, and Spiers (2008), children with autism who had a service dog experienced less anxiety and anger; a reduction in behavioral and emotional outbursts; and more manageable bedtime routines. Autism service dogs are also trained to apply deep body pressure to their owner (i.e., lying across their owner's body) when he/she is over stimulated or having a "meltdown" in order to calm them down (Service Dog Central, 2014d). Likewise, touching and petting the dog can be very relaxing in times of turmoil and anxiety.

Having a service dog with them in public may also be very advantageous for children with autism. Dogs are known to increase social integration and language skills by providing a relaxed and enjoyable topic of conversation (Autism Service Dogs of America, 2010; Berry et al., 2013). In addition, some children with

autism have a tendency to wander away from their families in public settings. If a child is with their service dog, it may not be as easy to wander or it may be easier for the child's family to spot them in a crowd. Moreover, some service dogs are specially trained to track the child in instances where he/she becomes lost, which can provide an extra level of solace and security to the child's family (4 Paws for Ability, 2015, Burrows et al, 2008).

*PSYCHIATRIC SERVICE DOGS*

Psychiatric service dogs are trained to assist individuals with psychiatric disabilities, such as post-traumatic stress (PTS) and other mental health diagnoses. PTS can result from a variety of traumatic events, including war, assault, abuse, and sudden loss. Hallmark symptoms/diagnostic criteria of PTS include: re-experiencing the traumatic event (e.g., through intrusive flashbacks or nightmares); avoidance (e.g., of things reminiscent of the traumatic event and/or previously enjoyable activities and relationships); and increased emotional arousal and anxiety (e.g., hyper vigilance, distress, and irritability) (American Psychiatric Association, 2013).

One of the main applications of psychiatric service dogs is to be paired with veterans who are struggling with PTS associated with military combat. Recent research advancements indicate that service dogs may be able to help veterans confront PTS symptoms by providing a sense of security and serving as a motivator to get out and engage positively with people and the world (U.S. Department of Veterans Affairs, 2014). In addition, programs focused on having veterans train service dogs for fellow veterans with disabilities are currently demonstrating that instructing and praising service dogs through training can help those with PTS overcome emotional avoidance or numbness, and could even improve communication skills (Colin, 2012). Similarly, dogs may also provide a way for veterans to feel safe and accepted when showing affection, which could serve to help them reconnect with the people and things they love (Colin, 2012; U.S. Department of Veterans Affairs, 2014). Currently, the U.S. Department of Veterans Affairs (VA) and others are conducting groundbreaking research to rigorously measure the effects of PTS service dogs for veterans in need.

Like all service dogs, PTS service dogs are trained to perform specific tasks for their handler to mitigate symptoms and challenges associated with the disability. Examples of these tasks include (Service Dog Central, 2014e):

- "Blocking" the handler from the front or behind to create a secure space
- Guiding the handler back to a familiar place if he/she becomes disoriented or lost during a flashback or dissociative episode
- Locating an exit strategy if the handler experiences a panic attack
- "Sweeping" a room for potential danger and turning on the lights before a handler enters
- Waking the handler from a nightmare, flashback, or dissociative episode
- Retrieving medication, especially in emergency situations

**THERAPY DOGS**

While the terms “service dog” and “therapy dog” are often used interchangeably, these two types of working companions have very distinct roles and responsibilities. Therapy dogs are personal pets of individuals who have been certified or registered to provide brief visitations to people in need (Fine, 2015). While trained in basic obedience skills, therapy dogs are not required to perform essential functions for those they serve (i.e., “tasks”), or specialize in any particular area of need. In addition, they serve people other than their owners/handlers, and their role is often to complement more traditional modes of treatment or therapy through comforting, supportive, calming, and engaging interactions (Fine, 2015). This is frequently done through the work of volunteers, but professionals (i.e., psychotherapists and social workers) may also incorporate a therapy dog into their practice with clients (Fine, 2015). While many types of animals can be therapy animals (e.g., horses, guinea pigs, cats, and rabbits), dogs are by far the most common species and any canine breed is eligible (Friedmann, Son, and Tsai, 2010).

Animal-assisted therapy (AAT) is defined as targeted interventions that incorporate a therapy animal to help clients or patients meet their specific treatment goals, such as learning and displaying prosocial behaviors among children with autism or improving balance among stroke patients via fetch and other physical activities (Fine, 2015; O’Haire, McKenzie, Beck, & Slaughter, 2013). AAT sessions typically include a therapist or doctor, and the client is often matched with the same handler-dog team over the course of treatment (Fine, 2015). In contrast, animal-assisted activities (AAAs) are less structured and formal, and are often characterized by brief therapy animal visits in hospital, clinic, school, and other settings. AAA visits, which tend to be more spontaneous in nature than AAT sessions, seek to mainly provide people with support, comfort, and enrichment (Fine, 2015).

Both AAT and AAAs (as well as applications provided by service animals) are included under the umbrella term of “animal-assisted interventions (AAIs),” and are designed primarily as adjunctive therapeutic options for people with diverse physical and/or psychosocial needs (Fine, Tedeschi, & Elvove, 2015).

Reported benefits of AAIs with therapy dogs may include (Banks & Banks, 2002; Braun, Stangler, Narveson, & Pettingell, 2009; Fine, 2015; Geisler, 2004; Nimer & Lundahl, 2007;):

- Relaxation and reduced anxiety
- Decreased blood pressure and heart rate
- Lessened pain or distraction from pain and worry
- Unconditional support and acceptance
- Increased sensory stimulation and opportunities for physical touch
- Reduced loneliness and more opportunity for socialization
- Enhanced self-esteem, confidence, and joy

- Decreased use of psychotropic medication
- Increased motivation to actively participate in the healing process

Examples of common settings that therapy dogs serve include: hospitals and long-term care facilities (to help cheer patients or distract them from their anxiety over treatment); schools and libraries (to help children feel comfortable when reading aloud); courts (to support children when they provide testimony); natural disaster or emergency sites (to comfort people who have experienced the trauma of extreme weather, violence, or crisis); and therapy practices and treatment centers (to complement traditional modes of individual or group psychotherapy).

Those interested in certifying or registering their pet to be a therapy dog can do so through national organizations, such as Pet Partners (formerly Delta Society), Therapy Dogs International, and Alliance of Therapy Dogs (formerly Therapy Dogs Incorporated). Select states may also have their own local organizations where therapy dogs may be certified or registered. Liability insurance coverage is typically provided through the team's certifying/registering organization, however handlers may also practice under their own homeowner's insurance policy.

## EMOTIONAL SUPPORT DOGS

Emotional support dogs are companion animals who help their owners cope with the challenges associated with emotional and mental health conditions (i.e., depression, anxiety, bipolar diagnoses, etc.) by providing needed comfort; increased socialization; and distraction from pain, anguish and/or worry (Tedeschi et al., 2015). Unlike service and therapy dogs, emotional support dogs are not expected to perform specific tasks related to their owner's condition or adhere to any AAI guidelines or standards. Their presence alone is what provides their owner with solace and therapeutic benefit (Tedeschi et al., 2015).

While emotional support dogs are not typically allowed in public places, the Fair Housing Act requires that most housing units accommodate them as long as the owner provides the appropriate documentation (usually in the form of a note from a physician or other mental health professional). They are also allowed to fly with their owners with similar documentation provided at least 48 hours prior to traveling (courtesy of the ACAA Act) (Tedeschi et al., 2015).

## WORKING DOGS AND SCENT DETECTION

In addition to being instrumental in providing service and therapy to people in need, dogs' amazing sense of smell makes them unsurpassed in tasks that require scent detection. Dogs have 20 to 40 times

more nasal receptors than do humans and as a result, their sense of smell is estimated to be 100,000 times more sensitive than humans. Dogs have been trained to detect a wide variety of scents, from insect infestations to contamination in water tanks (Helton, 2009b). Since 9/11, the use of scent detection dogs has dramatically increased, specifically in the areas of explosives, narcotics, and human detection (Lorenzo et al., 2003). Although all scent detection tasks rely on dogs' superior olfactory function, the training of scent detection dogs varies widely in terms of the scents detected, the commands used, and the alerts the dogs exhibit (Lit, 2009). Some of the primary working dog jobs that utilize scent detection include arson dogs, law enforcement dogs, military dogs, search and rescue dogs, and recently, cancer detection dogs.

*ARSON DOGS*

Arson dogs, also known as accelerant detection canines, are highly trained dogs used to detect traces of accelerants (such as gasoline, lighter fluid, and other ignitable liquids) that may have been used to start a fire. Studies have found that dogs are capable of learning to respond to at least ten different odors and maintain those odors in their working memories (Williams & Johnston, 2002).

It is estimated that there are over 200 active arson dogs; the majority of which are certified under the auspices of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) or the State Farm Arson Dog Program. By covering the $23,000 training costs for each dog, The State Farm Arson Dog Program has worked in conjunction with the Maine State Criminal Justice Academy to place more than 350 arson dogs and handlers in the U.S. and Canada since 1993 ("Welcome to the State Farm Arson," 2010). The ATF began training accelerant detection dogs in 1986 and, currently, there are 50 ATF arson dog teams active for national responses ("Accelerant and Explosives Detection Canines," 2015).

According to the National Fire Protection Association, during 2007-2011, an estimated 282,600 intentional fires were reported to U.S. fire departments each year, with associated annual losses of 420 civilian deaths, 1,360 civilian injuries, and $1.3 billion in direct property damage ("Printable fact sheets," 2015). Recertified annually, arson dogs are employed by fire departments and law enforcement agencies and the dogs typically work and live with their handler who is trained to investigate fire scenes ("Standards for Accelerant Detection," 2014). Not only can arson dogs detect whether or not a fire was set intentionally, they can help determine who may have set the fire by detecting flammable liquids on a suspect's clothing or inside a vehicle.

In terms of breed, both the ATF and State Farm generally certify Labrador Retrievers or Labrador Retriever Mixes, due to their energy level, trainability, and sociability. In an effort to keep the dog's skills sharp, these agencies prefer that arson dogs are strictly hand-fed by his/her handler and fed only when working (Wogan, n.d.). As with all working dogs, canine health and safety is a priority. For example, in addition to knowing canine first aid, the handler must ensure the fire scene is safe before having the arson dog perform an accelerant search. Post-search, the arson dog should be bathed immediately to

protect against any chemicals to which s/he may have been exposed, and the dog's transport unit should be thoroughly cleaned after a deployment ("Standards for Accelerant Detection," 2014).

*LAW ENFORCEMENT DOGS*

Another type of working dog that utilizes scent detection, along with other remarkable skills, is the law enforcement or police dog. According to the United States Police Canine Association, there are over 7,000 police canine teams in the U.S. These specialized teams may be trained in areas of drug detection, crowd control, suspect apprehension, and officer protection ("Taking a Real Bite," 2015).

Dogs have been utilized by law enforcement agencies for over 100 years and became common in the U.S. in the 1970s. Today, these canine heroes are considered part of the police force and many have their own badges. The most common breed used in law enforcement is the German Shepherd. Other common breeds include the Labrador Retriever, Belgian Malinois, and the Dutch Shepherd ("Dogs for Law Enforcement," 2013).

As is true across all working dog sectors, only a small portion of the general dog population is suited for law enforcement work. To be successful in patrol or detection work, a dog must be comfortable in new environments and exhibit a high prey drive. Police dog trainers look for dogs who will chase and tirelessly search for objects ("Taking a Real Bite," 2015). In addition to temperament testing, potential candidates are thoroughly screened for physical conditions that could prevent their service, such as hip or elbow dysplasia, eye problems and allergies.

According to the North American Police Work Dog Association, tasks that police canines may perform include searching buildings and large outdoor areas and apprehending fleeing suspects and protecting their handlers from attack ("About Us," 2015). Law enforcement dogs may also specialize in narcotics detection. The most common narcotics that law enforcement dogs are trained to detect are marijuana, cocaine, heroin and methamphetamine (Lorenzo et al., 2003).

A special subset of law enforcement dogs are the explosive detection dogs who are employed by the Transportation Security Administration (TSA) to ensure the safety of U.S. transportation systems. Currently, more than 800 teams are deployed across the country to search for explosives in aircraft, airport terminals, baggage and cargo. These TSA explosives detection canine teams undergo a two-month training course at Lackland Air Force Base, Texas and maintain their skills through weekly training at airports and mass transit systems ("TSA explosives detection," 2014).

Patrol and explosives detection are the primary task of another specialized working dog category – military dogs.

*MILITARY DOGS*

Canines have been utilized by the U.S. military since as early as the Civil War. They continued to perform essential roles during World War I, World War II and the Vietnam War, such as serving as messengers, sniffing out the enemy, and leading patrols. It is estimated that the U.S. military employed nearly 2,500 military dogs during the height of the wars in Afghanistan and Iraq, and a dog was even a part of the Navy SEAL team that brought down Osama Bin Laden (Paterniti, 2014). Today, military dogs continue to be a vital asset to our military, performing such life-saving tasks as patrol duties, suspect apprehension, and explosives detection (Sinn, Gosling & Hillard, 2010).

Many of the U.S. military working dogs are trained through the 341st Training Squadron at Lackland Air Force Base, Texas. Dogs trained here are then dispersed to the U.S. Air Force, Army, Marines, and Navy. The most common breeds of military dogs are German Shepherd, Belgian Malinois, and Dutch Shepherd. These dogs are typically bred in Europe and procured based on a behavioral test instrument. Once a dog is selected for the program, they undergo training and certification where they may be patrol-certified, detection-certified, or dual-certified (Sinn, Gosling, & Hillard, 2010).

In addition to obedience skills, military dogs that perform patrol duties excel in agility (jumping, walking on catwalks, going through tunnels), controlled aggression (pursue, release on command), and searching for humans. Scent detection military dogs hone their skills by performing searches of explosives in areas such as vehicles, barracks, and aircraft.

Military personnel interested in becoming a dog handler must complete specialized training. For example, the U.S. Army requires handlers to complete 18 weeks of advanced individual training on how to train and care for a military dog ("Careers and Jobs," n.d.). A military dog will likely work with several handlers throughout his/her career.

In 2005, a new type of scent detection dog was introduced within the Department of Defense inventory to augment the existing Explosive Detector Dogs (EDDs). Due to the increase in the number of homemade or improvised explosive devices (IEDs), Specialized Search Dogs (SSDs) are now able to detect both conventional and homemade arms and explosives. These dogs primarily work off-leash and under voice command of their handlers ("341st Training Squadron," 2011). Two types of rewards or reinforcements are used in training military dogs – play and food, with play being the most prevalent (Goldblatt, Gazit, & Terkel, 2009).

American Humane Association secured a major victory for military dogs everywhere following the bipartisan passage of the 2016 National Defense Authorization Act (NDAA) by both the House of Representatives and Senate. For the first time, language in the bill mandates that our heroic military working dogs will be returned to U.S. soil upon retirement, and that their human handlers and their families – to whom these dogs mean more than anyone else – will be given first right of adoption. Prior

to the passage of this groundbreaking act, military working dogs were not guaranteed retirement on the home front, and some were retired overseas, making them civilians and rendering them ineligible for transportation home on military aircraft.

The passage of the 2016 NDAA is the second major victory for military dogs in the past year accomplished with the help of American Humane Association. In its July briefing, the organization called on the private sector to provide veterinary care for all retired military dogs. On Veterans Day 2014, American Humane Association and the United States War Dogs Association announced an arrangement with New Jersey's Red Bank Veterinary Hospital to provide free specialized veterinary care to all retired canine veterans.

*SEARCH AND RESCUE DOGS*

Humans carry a distinctive scent that is created by the continuous shedding of tiny flakes of skin/cells that are mixed with perspiration, as well as the odors from shampoo, soap, lotions, clothing and other materials. These chemicals combine to form a unique scent fingerprint for every person that search and rescue (SAR) dogs are trained to detect (Jones et al., 2004).

There are two major subcategories of SAR dogs – tracking/trailing dogs and air scenting dogs. Tracking dogs work on-leash and follow the physical track or path of the missing person. These dogs require a scent article from the missing person in order to obtain the unique scent that they are to find. Trailing dogs also follow a physical path and require a scent article, but they may work off-leash and stray a few feet from the path. Both tracking and trailing dogs are "nose-to-the-ground" since they are following the human cells that are cast off by the missing person which may be on the ground or on nearby foliage ("Dogs in Search and Rescue.," n.d.).

Conversely, air scenting SAR dogs find people by picking up on scents that are drifting in the air. These dogs are typically used to cover large areas of land and are not hindered by a leash. Air scenting SAR dogs are trained to pick up the scent of any person, not one specific person. A number of environmental factors can impact the scent cone or area in which the scent is dispersed, including wind conditions, temperature, humidity, and terrain (Jones et al., 2004). Air scenting SAR dogs can find live survivors as well as cadavers, and may search for people in water.

In the U.S., canine SAR teams commonly consist of a volunteer handler (often police or firefighters) and a dog that is their personal pet and has received specialized training. SAR dog handlers must be physically fit and proficient in areas of land navigation, survival techniques, and first aid ("Canine Fact Sheet," 2015). These teams work locally with organized search groups or nationally with FEMA task forces (Jones et al., 2004).

SAR dogs must have a high hunt, prey, or ball drive so that they will search for prolonged periods without giving up (Jones et al., 2004). They are highly trainable, agile, friendly, and may need an outlet for their energy. Common SAR breeds are typically larger working and sporting breeds like Bloodhounds, German Shepherds, Doberman Pinschers, Rottweilers, Golden Retrievers and Labrador Retrievers ("Canine Fact Sheet," 2015).

SAR dogs must undergo extensive training and standards vary by the certifying organizations, including the National Association for Search and Rescue Inc. and the Federal Emergency Management Agency Urban Search and Rescue. To initiate a search, a SAR dog is given the command to "go find," and the dog essentially plays a game of hide and seek. The dog is trained to alert the handler once the person is found by giving a series of focused barks, sitting, digging, or returning to his/her handler and leading them back to the victim. The dog is then rewarded with food or play with a toy (Jones et al, 2004).

Some SAR dogs are specially trained to search for people in disasters, such as collapsed buildings and areas affected by tornadoes and hurricanes. These dogs, called Urban Search and Rescue (USAR) dogs, are trained to work in confined spaces and on unstable surfaces ("Dogs in Search and Rescue.," n.d.). USAR dogs are trained on rubble piles and obstacle courses designed to acclimate them to using their hind legs to climb and jump between surfaces (Ferworn, 2009). These dogs are expected to be able to climb ladders, navigate tunnels and rappel with their handler from buildings (Jones et al., 2004). SAR dogs may be transported to sites by helicopter or lifted in harnesses (Schneider & Slotta-Bachmayr, 2009). As with all working dogs, these specialized tasks can create stress and strain on the dogs, so it is essential that the dogs be carefully selected and well trained before attempting this type of work (Schneider & Slotta-Bachmayr, 2009).

If a search does not result in any survivors, USAR handlers will often ask volunteers to hide in the rubble for the dog to find. This encourages the dog's interest in the game and his/her important work (Ferworn, 2009). USAR dogs' performance continues to be enhanced through technology by equipping the dogs with safe sensing and communication systems to increase their likelihood of a successful search (Ferworn, 2009).

### *CANCER DETECTION DOGS*

Scent detection in canines has recently expanded from sniffing out accelerants, narcotics, explosives, and human presence to detecting the presence of cancer in humans. Undetectable by the human nose, malignancies produce volatile chemicals that specially trained canines can detect in breath or urine (Gordon et al., 2008).

According to McCulloch et al. (2006), cancer sniffing dogs can sense cancer earlier than traditional methods of detection. There are many advantages to cancer detection by dogs, since breath samples can be easily obtained from patients and this type of detection does not require uncomfortable x-rays or

other procedures (Helton, 2009c). The first report of dogs detecting cancer occurred in 1989 (McCulloch, et al., 2006) and to date, studies have demonstrated the ability of a variety of breeds of dogs to detect breast, lung, melanoma (Pickel, Manucy, Walker, Hall, & Walker, 2004), and bladder cancers (Willis, et al., 2004). Today, more studies are underway to demonstrate that dogs may provide an efficient, pain-free, and low-cost way to diagnose cancer.

## CONCLUSION

*"Dogs are not our whole life, but they make our lives whole" – Roger A. Caras*

When reflecting upon the essential and complex roles of working dogs, it is difficult not to be awestruck by their largely unique abilities and dedication to those they serve. Through a special combination of training, intelligence and innate skills, working dogs enrich and protect the lives of countless people and animals on this planet, with many more still in need of their assistance. Further research in this field will hopefully open doors for many seeking the benefits of working dogs' support, companionship and expertise, as well as highlight the importance of continually ensuring their welfare and quality of life. With ever-growing interest in working dog applications, their job responsibilities will likely multiply and become even more advanced and impactful than they are today.

Hero dogs are man's best friends.

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