Introduction to Working Dogs

Our canine companions have helped shape the world, as we know it, by serving in roles that enabled humans to advance throughout history. From the earliest domestication where their abilities to effectively and efficiently hunt were harnessed, to present day where their serving of complex roles, improving our safety, security, awareness, productivity, and mobility, is seen. Working dogs have continued to prove themselves an invaluable asset with application and capabilities in areas well beyond their current use. The world of working dogs and working dog health is explored throughout the following 15 articles. Collectively, these articles provide insight into these unique animals, how they are selected, bred, and trained, what makes them good at their job, their various applications, associated occupational risks and medical considerations, and the ever-changing legal landscape related to working dogs.

In the “Considerations in Preventative Health Care” article, Dr Ridgway goes in depth into the essential aspects of prevention that are unique for working dogs as well as specific equipment that veterinarians and handlers should be familiar with. She covers breed disposition to certain diseases, specific injuries more common in working dogs, identification options, immunization protocols, as well as orthopedic soundness and physical exam considerations. Dr Ridgway, a Clinical Professor of Small Animal Internal Medicine and Coordinator of the Working Dog Wellness Program at the University of Illinois College of Veterinary Medicine, is also a search and rescue (S&R) K9 handler. She specializes in the discipline of trailing and further supports K9 first responders through her K9 field first aid training and continuing education presentations related to working dogs, as well as serves as an on-site veterinarian for K9 training seminars.

In the “Anesthetic Considerations in Working Dogs” article, Drs Mitek and Johnson outline the important safety concerns for personnel when working with working dogs as well as the handler presence during anesthesia. They delve into monitoring and essential anesthetic equipment and offer several anesthetic protocols specific to working dogs. Dr Mitek became interested in working dogs during her anesthesiology residency at the University of Illinois, where these patients often present for emergent and elective procedures requiring anesthesia. She is currently a Teaching Assistant Professor at the University of Illinois College of Veterinary Medicine, where she is passionate about advancing the field of working dog veterinary care and teaches students about the best practices in treating these unique patients. She’s helped develop the college’s working dog policies and has created online and in-person training programs for K9 handlers to help them recognize and treat opioid overdose as well as other life-threatening conditions in their K9s. Dr Johnson is an Associate Professor of Anesthesia and Pain Management at Auburn University. He has served in the US Army Veterinary Corps since 1998 and has been the chief clinical consultant for anesthesia since 2007.

In the “Dentistry for Working Dogs” article, Drs Juriga and Bilyard cover the most common dental injuries and conditions affecting working dogs as well as diagnostic criteria and treatment options. They discuss the importance of handler examinations and veterinarian to handler education since most veterinary physical exams on
security canines do not include an oral exam unless the canine is under general anesthesia. Dr Juriga is the owner of the Veterinary Dental Center, a 3-doctor American Animal Hospital Association–accredited referral dental/oral surgical practice in Aurora, Illinois. He has provided dental and oral surgical services as well as oral health educational seminars for handlers of working dogs since 2005. His goals are to increase awareness of incidence of tooth trauma in working dogs and encourage early identification of tooth injuries through daily handler examinations and annual veterinary examinations. Dr Bilyard was commissioned into the US Army Veterinary Corps in 2007 and served on active duty until 2014. She currently serves as a Lieutenant Colonel in the US Army Veterinary Reserves and is the clinical consultant on working dog oral health within the Department of Defense (DOD). She is pursuing board certification in small animal veterinary dentistry and has provided clinical and emergency care for military and civilian working dogs for over 15 years. Dr Bilyard also manages the Chicagoland Working Dog Veterinary Group, where she and 2 other veterinarians train civilian police and DOD handlers on basic and advanced canine first aid.

In the “Nutrition in Working Dogs” article, Dr Zoran discusses the nutritional considerations of working dogs with an emphasis on security and S&R canines. Dr Zoran, a Professor in the Department of Veterinary Small Animal Clinical Sciences at Texas A&M University, helped found the Texas A&M Veterinary Emergency Team (VET) in 2009. She has been one of the supporting veterinarians for Texas A&M Task Force 1 since 1997, where she provided predeployment and postdeployment canine examinations, first aid training for canine handlers and medics, and programmatic support of the canine program through nutritional and fitness consultations. In her role on the VET and in over 20 deployments, she has been the primary veterinary point of contact with the Urban S&R working dogs in theater and has helped foster advanced training and understanding of working dogs within the Center for Veterinary Medicine. She has also been actively engaged in working dog nutrition and clinical research into hydration and heat tolerance in working dogs, as well as working canine decontamination. In 2019, Dr Zoran was accepted onto the FEMA Incident Support Team as one of 3 veterinary specialists in support of working dogs deployed to large-scale disasters across the United States.

In the “Current Rules and Regulations for Working Dogs” article, the complicated legal logistics are discussed. Drs McMichael and Smith-Blackmore attempt to elucidate the essential aspects that are pertinent to working dogs to provide veterinarians clarification on what may be asked of them. Dr McMichael, a Professor of Emergency and Critical Care at Auburn University, has been dedicated to keeping working dogs healthy since 2001 and has received special recognition from Texas Task Force 1 for her work with their K9s. She has taught K9 first aid and CPR to S&R groups, bomb squads, SWAT teams, emergency medical service (EMS) teams, Arrow Ambulance personnel, and the canine handlers at the Springfield Police Training Institute. She was honored to speak at North American Police Work Dog Association in 2017. She created a Web site to disseminate safety information (www.workingdoghq.com) to help first responders administer emergency first aid for injured K9s in the field. Dr Martha Smith-Blackmore is a veterinarian and Visiting Fellow at Harvard Law School with a focused interest in matters at the intersection of animals and the law. Dr Smith-Blackmore is also an Adjunct Assistant Clinical Professor and a Fellow of the Center for Animals and Public Policy at the Cummings School of Veterinary Medicine in North Grafton, Massachusetts, where she teaches Animal Law & Veterinary Medicine and Veterinary Forensics. Martha also leads Forensic Veterinary Investigations, LLC based in Boston, Massachusetts.
In the “Canine Sensory Systems” article, Drs Singletary and Lazarowski discuss the critical senses of olfaction, audition, and vision in relation to working dogs. The elements of dysfunction in these key sensory systems, significant impacts on performance, and compromising efficacy of these dogs are discussed. Dr Singletary, the Assistant Director of the Auburn University Canine Performance Sciences (AUCPS) program, is also an Assistant Professor of Neuroanatomy at Auburn University College of Veterinary Medicine, Department of Anatomy, Physiology, and Pharmacology. The CPS program is internationally recognized for research and development (R&D) in detection canine sciences. Dr Singletary served as a veterinary officer in the US Army Veterinary Corp, where she supported the military working dog (MWD) mission across multiple locations under her care. She returned to Auburn University to complete a PhD program in biomedical science with a focus in olfactory neuroscience. Dr Lazarowski is a research scientist at the CPS program and Research Assistant Professor in the Department of Anatomy, Physiology, and Pharmacology at the Auburn University College of Veterinary Medicine. She has 13 years of experience in animal olfactory learning and cognition, and 8 years of experience studying olfaction, cognition, and behavior specific to detection dogs. Her research focuses on cognitive and behavioral assessments of detection dog suitability, puppy development, and olfactory learning. She is an affiliate member of the National Institute of Standards and Technology Organization of Scientific Area Committees (OSAC) Dogs and Sensors Subcommittee.

In the “Sports Medicine and Rehabilitation in Working Dogs” article, Drs Otto, Farr, and Ramos discuss performance enhancement, injury prevention, and return to work after injury or illness. They include a discussion of rehabilitation, foundational fitness, behavioral enrichment, and body composition optimization. Dr Otto was involved with the medical care of Urban S&R Dogs as a member of FEMA’s Pennsylvania Task Force 1 between 1993 and 2010. She deployed to Hurricane Floyd and 9/11. As a member of the Veterinary Medical Assistance Team, she cared for search dogs during Hurricane Katrina. She has followed the health and behavior of the search dogs of 9/11 for 15 years. In 2012, she founded the Penn Vet Working Dog Center, a research, teaching, and training facility for all types of detection dogs. She has testified before Congress and served on national committees to develop protocols and standards for the care and utilization of working dogs. Dr Farr is an active-duty Army Veterinary Corps Officer and resident in Canine Sports Medicine and Rehabilitation at the Penn Vet Working Dog Center. His primary interest is developing methods suitable for handlers, trainers, and veterinarians to assess and develop working dog physical and mental performance. Dr Ramos is currently a Sports Medicine and Rehabilitation resident at the Penn Vet Working Dog Center. She received her VMD in 2018 from the University of Pennsylvania School of Veterinary Medicine. Following graduation, Dr Ramos began her veterinary specialty internship at Penn Vet while simultaneously pursuing a National Institutes of Health–funded Master in Translational Research through the Institute for Translational Medicine and Therapeutics at the University of Pennsylvania Perelman School of Medicine. Dr Ramos has provided veterinary care and educational seminars focused on preventative medicine, physical fitness, first aid, rehabilitation, and return to work training programs for S&R, law enforcement, single-purpose detection, and medical detection working dogs and their handlers. Dr Ramos is dedicated to advancing the field of canine sports medicine by implementing scientifically valid clinical trials and translational medicine methodologies that not only will benefit elite working dogs but also will impact the canine community at large.

In the “Hunting Dog” article, Dr Ridgway discusses the history and function of hunting dogs. She explores ways that these translate into unique environmental and
occupational exposures. There is a thorough discussion of the specific risks associated with hunting, including trauma, infectious diseases, and zoonotic risks. This article is an extensive introduction to understanding the roles and risks of these working dogs. Dr Ridgway also wrote the “Considerations in Preventative Health Care” and the “Herding Dog” articles.

In the “Breeding Management and Production in Working Dogs” article, Dr Wilborn and Ms Haney discuss the optimization strategies involved in managing a colony of high-quality, purpose-bred working dogs to maximize production success. They delve into the capture and organization of population data and discuss appropriate tests and breed-specific health conditions, replacement of breeding stock, and ideal structure of puppy development programs. Dr Wilborn is an Associate Professor at the AU College of Veterinary Medicine and has provided specialty care for the AUCPS breeding program since 2010. Pamela Haney is the Canine Performance R&D Manager for the CPS Program at the Auburn University’s College of Veterinary Medicine. She has 10 years’ experience contributing to detection dog R&D and has managed the CPS detection dog breeding program for the past 5 years. Pamela Haney has been involved in detection dog research for breeding and selection, early puppy development, nutrition, olfaction, thermoregulation, behavior, physical conditioning, and biomechanics. She has a MS in Exercise Physiology and is currently pursuing a PhD, focusing on Performance Canine Biomechanics, at Auburn University’s School of Kinesiology.

In the “Development and Training for Working Dogs” article, Drs Larzarowski, Waggoner, Singletary, and Mr Rogers discuss behavioral suitability, selection, and importance of environmental influence and experience during early development. They highlight critical aspects of puppy development, ideal timing of separation from the dam, and essential factors that affect training and performance later in life. This article introduces Mr Rogers and Dr Waggoner. Bart Rogers is a Chief Canine Instructor of the AUCPS breeding program. He oversees the development and training of candidate detection dogs as well as their selection, evaluation, and placement. Bart has been working with dogs professionally for over 10 years, having trained dogs for various working roles, including explosives detection, wildlife conservation, and service/therapy work. Dr Waggoner is the Co-Director of the CPS Program and Adjunct Associate Professor in the Department of Anatomy, Physiology, and Pharmacology at the Auburn University College of Veterinary Medicine. He is a behavioral scientist with 30 years of experience conducting detection dog–related R&D, test and evaluation, breeding and production, and innovation of operational technology. He is a coinventor of Auburn’s patented Vapor Wake detection dog technology. He is a member of the Dogs & Sensors Sub-committee of the National Institutes of Standards and Technology, OSAC, was an original member of the former Scientific Working Group on Dogs and Sensors, and is co-chair of the HR 302 Domestic Detection Dog Production Working Group.

In the “Military Working Dogs” article, Drs McGraw and Thomas discuss the procurement process for how MWDs are sourced, preventative medicine policies, common disease conditions as well as injuries specific to both domestic and deployed MWDs. Dr McGraw is currently medical director at the Auburn Veterinary Specialists–Gulf Shores, Alabama after serving 17 years as a Veterinary Corps Officer in the US Army. He served in 8 separate assignments, 2 of which were combat deployments rendering care to MWDs. He served as principal consultant to the Director of the DOD Military Working Dog Veterinary Service, drafting policy statements on preventive health care for all MWDs. He served as co-editor for the Handbook of Veterinary Care for Military Working Dogs. His career culminated as
the Director of the DOD Military Working Dog Veterinary Service, the US Army Veterinary Corps Chief’s designated subject matter expert for MWD policy and decision making, and the lone veterinary consultant to the DOD’s Joint Service Military Working Dog Committee. Dr Todd Thomas, associate clinical professor at Auburn Veterinary Specialists–Gulf Shores, Alabama, spent 20 years on active duty in the US Army Veterinary Corps. He provided care for a variety of working dogs, including MWDs, Department of Homeland Security canines, Transportation Security Administration canines, and contract working dogs. He was assigned to the DOD Military Working Dog Veterinary Service, LTC Daniel E. Holland Military Working Dog Hospital twice while on active duty, and as an Oak Ridge Institute for Science and Education Knowledge Preservation Program Fellow following retirement in 2016. He was deployed to Afghanistan in 2013 as part of Operation Enduring Freedom. He also spent over 7 years as an instructor in MWD veterinary care at the Army Medical Department Center and School.

In the “Operational Canines” article, Dr Palmer discusses civilian law enforcement, force protection, S&R, and humanitarian operational canines. Specific risks for these canines as well as new laws related to prehospital treatment and transport for these dogs are discussed. Dr Palmer has over 20 years of military, tactical, and operational medicine experience. He has served in the military since 1996 and is currently assigned as the Group Veterinarian for the 20th Special Forces Group, Alabama Army National Guard. Dr Palmer provides training and consultation nationally and internationally in the field of K9 Tactical Casualty Care to military, law enforcement, S&R, and tactical EMS communities. Dr Palmer is a K9 consultant for various military and nonmilitary organizations to include the USAF Pararescue group, US Marshals Service, DHS Federal Protective Services, Domestic Highway Enforcement, and High Intensity Drug Trafficking Areas working group. Dr Palmer is the lead and founder of the K9 Tactical Emergency Casualty Care working group, Medical Education Director for Penn Vet’s Working Dog Practitioner program, and active working group member for the Defense Committees on Trauma Canine Combat Casualty Care Committee and K9 TCCC Education and Training Subcommittee.

In the “Assistance, Service, and Therapy Dogs” article, Drs McMichael and Singletary discuss the rapid proliferation of dogs working with individuals with disabilities, impairments, or chronic medical conditions. They also attempt to clarify the confusion about the terminology used to describe these dogs and how to objectively assess the benefits they may provide. An overview of the variety of ways in which these dogs are employed for medical, psychiatric, and social and emotional conditions is given along with some specific examples for use with autism spectrum disorder, diabetes, seizures, and posttraumatic stress disorder. The role of veterinarians in facilitating the successful employment of these working dogs is discussed.

In the “Herding Dog” article, Dr Ridgway discusses the history, breeding, and function of herding dogs. The specific environmental and occupational exposures are discussed as well as the infectious disease and zoonotic risks associated with herding dogs. This article is an extensive introduction to understanding the roles and risks of these working dogs. Dr Ridgway also wrote the “Considerations in Preventative Health Care” and the “Hunting Dog” articles.

We have endeavored to compile current, essential knowledge in one issue to facilitate optimal care and management of these amazing dogs. As best practices, logistical and legal information is constantly changing, and veterinarians need to stay up-to-date. We have provided multiple Web sites throughout the issue to assist in this task in real time. We believe this issue will be an asset to veterinarians and veterinary personnel that treat working dogs in their practices.
Sincerely,

The authors report no conflicts of interest. This document represents current rules and regulations as of the time of this writing. Local, state, and national legislation changes frequently, and veterinarians are advised to remain up-to-date on the changes by accessing real-time data via individual or collective Web sites mentioned in this article.

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