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# SCENT ARTICLES

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Search and Rescue Dogs of Colorado, Inc. P.O. Box 1036 Ft. Collins, CO 80522-1036

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May 2001

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## Congratulations

Congratulations to Allen Weaver and Rosie (**Larimer County SAR**) and Sandy Witte and Schwar (**Routt County SAR**) who completed their avalanche certification tests the beginning of April.

Several handlers are in the midst of getting tests scheduled. Thanks to all of the individuals involved in getting members through the testing procedure.

*For people wanting to take the support tests or handler tests, please remember to send in a copy of your **completed Member Requirements Form** to Bill Young when you ask for the written test and confidence forms. If you need the form, let Bill know.*

## SARDOC logo embroidered

If you are interested in having the SARDOC logo embroidered on your clothing, Best Friends Embroidery Monogramming in Loveland is set up to do so. Carolsue Jones has two sizes of SARDOC logos (one will work great on a ball cap) and will embroider items you send to her or she can order items to be embroidered: shirts...t-shirts...sweatshirts...vests, about anything..doggy vests. Contact Carolsue Jones at (970)667-7130 or at [cjbesfrnd@aol.com](mailto:cjbesfrnd@aol.com) for more information and prices.

**New Phone Number!!!**

**To request SARDOC Search Dogs:**

**Call (970)416-1985 and ask to have the SARDOC dispatcher paged**

## Wilderness medicine classes

Crested Butte Outdoors offers the highly successful and well-respected Wilderness Medicine programs developed by Wilderness Medical Associates. Courses include Wilderness First Responder, Wilderness Advanced First-Aid, Wilderness EMT, and Wilderness Advanced Life Support. These courses are dedicated to developing competence, confidence, and common sense in wilderness medicine.

**Wilderness First Responder Courses** (9 days with 1 day off)

September 10-18 Mt. Crested Butte Fire Station \$525  
October 15-23 Mt. Crested Butte Fire Station \$525

**Recertification Course** (2 days)

October 11-12 Crested Butte International Hostel \$200

**Wilderness EMT Upgrade-Refresher** (6 days)

July 8-13 Irwin Lodge \$525  
August 5-10 Irwin Lodge \$525

Contact Sue Purvis for more information at [suep@cboutdoors.com](mailto:suep@cboutdoors.com) or call her at (970)349-0277.

## Feature article

This issue of *Scent Articles* features an article submitted and written by John Shivik. It is the summary of a research project he did utilizing several of our search dogs.

The printing and distribution of *Scent Articles* is supported by  HESKA™

# Studying the ability of search and rescue dogs

by John Shivik, National Wildlife Research Center, and Northern Regional Director, SARDOC

There are many anecdotes about the amazing capabilities of scenting dogs for law enforcement and search and rescue work. One study reported on a dog that could distinguish between twins and even track a subject through a field that has been contaminated by the subject's identical twin and three other family members. Other reports and opinions, however, highlight the limits of dogs' tracking and scent discrimination capabilities. For example, some studies showed that scent discriminating dogs are able to correctly identify a subject based on scent much better than by random chance, but that they are not perfect: error rates are usually around 10-20%. Another study using explosive detection dogs found that they had an impressive, but far from perfect, 86% detection rate of explosive mines. Most authors agree that dogs have the ability to detect small quantities of scent, but some scientists have recently questioned the use of scenting dogs, especially scent discriminating dogs, in important forums such as criminal court. Understandably, anyone who is the defendant in a court case, the handler behind a mine detection dog, or the subject of a search effort wants to be confident that scenting dogs indicate only correct evidence and don't miss any important clues.

When training dogs for search and rescue, we also need to be confident of our dogs' ability to efficiently find the correct subject. Therefore, we need to determine what conditions are likely to influence search dog abilities. We must ask two questions: 1) what is the limit of our search dogs' abilities (how far and well can they detect a subject under optimum conditions, i.e., the maximum ability to detect) and 2) what are the factors that limit the dogs' ability (what things, e.g. subject clothing or weather factors, can keep the dog from detecting a subject and how much do these factors affect search dog ability)? With this knowledge we can form strategies in training, searching, and estimating probability of detection that will allow us to maximize our effectiveness by counteracting the factors that limit our dogs.

I initiated this study for a few reasons: 1) to improve my knowledge of search dog capability, 2) because studying the sensory capability of canids is part of my job, 3) because of an honest curiosity about the subject, and 3) because Jayne was wondering if she should add one of these flattering suits to her hunting wardrobe and needed advice. Therefore, I performed a study to determine if odor-adsorbing clothing could hide people from the noses of search and rescue dogs. I purchased a suit that is touted as something that can conceal hunters from animals and is sold in many outdoor stores and catalogues. The suit is reportedly lined with activated charcoal that binds organic vapors released from the human body, making a human undetectable to mammalian noses.



Subject wearing an odor-adsorbing suit. Subjects wore the jacket, pants, gloves, breath mask, and hood.

## Study design

The study design was relatively simple: I established two 100 x 100 m plots in an open field in Fort Collins. Each plot contained 10 randomly placed 53 x 61 x 122 cm cardboard boxes. Subjects were placed in randomly chosen boxes and plots, and were randomly assigned the experimental treatment (i.e., wearing a suit or wearing normal clothing). The boxes were used to conceal the subject so the handlers did not know where the subjects were or if they were wearing a suit or not. A trial consisted of placing the subject by driving them to the box they were to occupy, having them wait inside for 5-10 min, and then having the dog team work the area in a fine-grid search pattern. Each of the seven dogs used was tested three times during January-April, 2001 using a different subject (two female and one male) for each trial. I measured the time it took for the dogs to indicate which box contained the subject and recorded weather data during the trial (temperature, wind speed, relative humidity, atmospheric pressure, percent cloud cover, and the circular standard deviation of wind direction—a measure of wind variability).

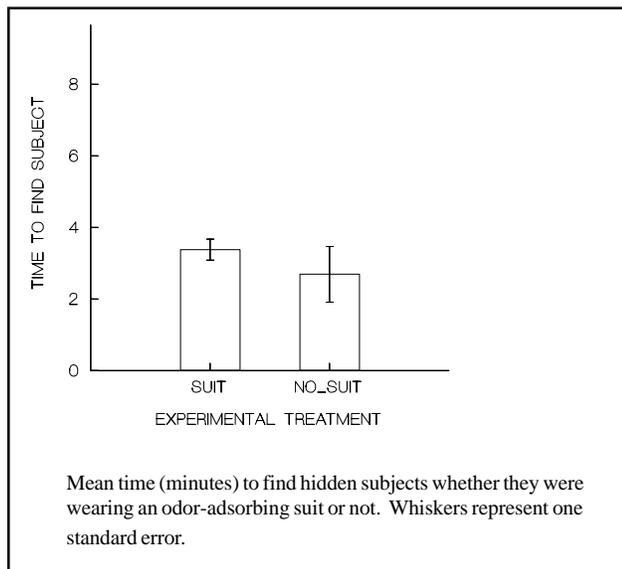
## Results

The results were interesting. Of the 42 trials run, I was happy to determine that none of the dogs ever indicated an incorrect box. Trials lasted between a few seconds and the duration of the 10-minute trial. The average time it took to find the subject, whether or not they were wearing the suit, did not vary significantly. Sometimes the dogs found the person wearing the suit faster, and other times they found the plain-clothed subject more quickly. Therefore, I concluded that the suits did not limit the dogs' ability to find the subject.

I did some fairly fancy statistics to determine which weather factors had the most influence on the dogs, and found that the wind variability was the most important factor, accounting for as much as 58% of the time it took to find a subject in some trials. Other weather data, such as atmospheric pressure, was also positively correlated with the time it took to find the subject, but did not seem to be as important as wind variability. Overall, there were no obvious trends in dog performance: the time it took to find the subjects was statistically indistinguishable between dogs.

## Implications for handlers

In regards to the odor-adsorbing suit, the results may provide an interesting story to relay during public demonstrations. Also, in an actual mission, if the subject was a hunter wearing an odor-adsorbing suit, handlers should not worry about the ability of the dogs to detect the subject. If the suits are effective at all, it's likely to be too little to keep the dogs from detecting the lost person. I suspect that they won't limit deer ability to smell people either, and that it's probably best for Jayne not to buy one (unless she likes the alluring appearance of the garment as opposed to its supposed scent-adsorbing capability).



The weather analysis may be a little more useful for handlers. Although the geographical scale of this study was small (many times handlers had to hold back the dogs, which were alerting before we could get to the boundary of the study plots), I was able to determine that wind variability was positively and strongly correlated with the time it took to find a subject (i.e., the more swirly the winds were, the longer it took to make the find). Handlers who have suffered through days when wind-indicator flagging swirled in every direction and an efficient search strategy and find were difficult probably expected this result. There was some evidence that atmospheric pressure was also positively correlated with the time it took to find the subject; the chemists that I've talked to feel that lower

atmospheric pressure may make the odiferous chemicals more apparent to the dogs; just as the lower pressure at higher elevations makes water release vapor and boil easier, lower atmospheric pressure should make the compounds the dogs detect more volatile. For handlers, the variability of the wind (and perhaps atmospheric pressure) is an important factor to monitor before choosing grid size and estimating the probability of detection.

This study was successful in that it helped me to formalize and quantify search dog ability scientifically. Because the *Scent Articles* is not the most appropriate forum for a detailed description of the study methods and results, I plan to publish a technical paper about the experiment in a scientific journal. I will be certain to provide reprints to SARDOC, but the peer-review process is long and arduous, so if anyone would like to discuss details of the study before then, please contact me and I can provide more information.

Relaying information to the public is important too, and when speaking at demonstrations, it is important to acknowledge the amazing capabilities and usefulness of well-trained dogs. For handlers, however, it is also extremely important to strive to identify the weaknesses in capability that may be due to individual or environmental variability or training. By testing ourselves constantly, and pushing the limits of training, we will be able to produce the most capable dogs that will perform flawlessly when it really counts—when lives are at stake.

## Acknowledgements

I appreciate the help from the handlers and dogs who took the time to participate in the study: Jen Mackler and Chara, Estelle Purvis and Echo, Rita Stern and Bounty, Allen Weaver and Rosie, Julie Weibler and Zephyr, Jayne Zmijewski and Miriah. I also very much appreciate the patience of the subjects: Danny Martin, Susan Jojola-Elverum, and Heather Kullas. This study was funded as part of the project, "Alternative capture systems and aversive stimulus applications for managing predation" at the National Wildlife Research Center.

### Newsletter editor's last edition

by Julie Weibler

After having been involved with the content, distribution, and/or production of *Scout Articles* since early 1993, I have decided to move on to other projects. This edition of the newsletter is the last issue I will be producing. I will continue to summarize the mission reports for the newsletter, so please keep sending me copies of your mission reports. I would like to give a big "Thank You" to those who have helped me with various aspects of getting out the newsletter over the years—I would have relinquished this position much sooner without their assistance.

## Training

### National Training

May 24-27, 2001, NASAR's 28<sup>th</sup> Annual Conference and Exhibition, SAR 2001, Sheraton, Colorado Springs, CO. The conference was rescheduled from the original dates during Fall 2000. The conference will still be held at the Sheraton in Colorado Springs, and all scheduled events, room rates and registration fees remain the same. More information is posted on the NASAR website. Several SARDOC members will be serving as instructors.

June 3-5 and June 7-9, 2001, Jack Shuler Mantrailing Training Wilderness Challenge, Norwood, Colorado. The Wilderness Challenge will consist of both Mantrailing I and II courses. These courses will be customized by our staff to challenge the abilities of every participating dog/handler team regardless of prior training, skill, or previous experience.

The JSMT Wilderness Challenge will be held in San Miguel County, Colorado. Meals and lodging will be provided in the beautiful Eagle's Nest Lodge. Participants may elect to take one or both courses and course pricing, meals, and lodging will be a package deal.

Please contact us via e-mail at [info@jackshuler.com](mailto:info@jackshuler.com) for additional details concerning this great training opportunity.

Jack Shuler Mantrailing Training Academy is offering our Mantrailing II course that is open to all breeds, except Bloodhounds. This course is being offered in Salem, Illinois as follows:

Mantrailing II    May 24 - 26, 2001

### Statewide Training

SARDOC Weekends (dates may be subject to change)

The editor did not have any dates to publish, but hosts for the weekends are as follows:

**Water Weekend**, Bill Young, Larimer County; **Confidence Weekend**, El Paso County; and **Wilderness Weekend**, Sue Purvis, Gunnison County.

If you are hosting a SARDOC Weekend or a special training, you can contact Julie Weibler to send you mailing labels or the email list for sending information to the SARDOC membership.

### Local Training

El Paso County Practices: Training is generally on Sunday afternoons. Contact Barbi Atkins [[Barbi.Atkins@oracle.com](mailto:Barbi.Atkins@oracle.com)], (719)630-1573] for specific locations and times.

Larimer County Practices: Practices are held weekly on alternating Saturdays and Sundays. Sunday practices are usually near Estes Park and Saturday practices are usually in the northern part of the county. Contact John Shivik [[John.Shivik@usda.gov](mailto:John.Shivik@usda.gov), (970)266-6088] for specific locations and dates.

Western Slope Practices: Contact Jim Vail [[jimvail@springsips.com](mailto:jimvail@springsips.com), (970)879-8474] for times and locations of practices. They are trying to practice on the 2nd weekend of months without SARDOC weekends.

## SARDOC library/T-shirts

Jen Mackler is housing the books and video tapes purchased by SARDOC. If you are interested in checking out these educational resources, please call (970)613-9097. Jen also has T-shirts and window decals which are available for voting members.

The following books are currently in the SARDOC Library:

*Fire Weather*, by the Forest Service Department of Agriculture

*The Avalanche Book*, by Betsy Armstrong and Knox Williams

*Go Find*, by L. Wilson Davis

*Map & Compass*, by Bjorn Kjellstrom

*Search Dog Training*, by Sandy Bryson

*Scent and the Scenting Dog*, by William Syrotuck

*Wilderness Search and Rescue*, by Tim Setnicka

*Scent*, by Milo Pearsall

*Ready*, by Susan Bulanda

*Ready to Serve, Ready to Save*, by Susan Bulanda

Three spiral notebooks Fran Lieser put together of the old *Search and Rescue Dog Training*, by Sandy Bryson

The videotapes we have are:

*Cadaver Recovery Procedures*, hosted and narrated by Bill Tolhurst

PBS, *Spirit of Colorado* filmed at the Water Weekend 1998

## Dispatch and Vacations

When search teams and agencies need search dogs they can request SARDOC dogs by having SARDOC dispatchers paged through the Larimer County Sheriff's Department at (970)416-1985. The dispatchers are on-call for a week at a time. The current dispatchers are Bill Young, Dan Fanning, Darren Weibler, Jen Mackler, Mike Fink, Josh Brauer and Jaynie Zmijewski. Julie Weibler and Cheryl Kennedy serve as back up dispatchers.

If your dispatch protocol has changed, please get your new protocols to Bill Young so he can distribute them to the dispatchers.

Operational support and handlers, please let Bill Young know if you are unavailable to respond to missions outside of your county for a period of time due to vacation, illness, or injuries. He will then inform the dispatchers. Having this information saves invaluable time when dog teams need to be dispatched.

## Mission Reports

Handlers, please remember to send in mission reports for each mission whether you were fielded or not (you may not have even made it out the door before you got stood down). If you need a blank form from which to make copies, contact Bill Young. If you are sending reports via email, please send them to both Bill at [wyoung@frii.com](mailto:wyoung@frii.com) and Julie Weibler at [jcotton@psnw.com](mailto:jcotton@psnw.com).

### January 21, 2001

Location: Edison, El Paso County

Subject: 14-year-old female, deaf, bipolar

Mission: Dennis McLaughlin and Kiowa/Duke and Gayle Humm and Aspen (El Paso County SAR) were stood down en route to search for the subject whom had cut her wrists then rode off on her bicycle after having an argument with her parents. It was very cold weather. Subject was located on a nearby road prior to arrival of the dog teams.

### January 25, 2001

Location: El Paso County

Subjects: 54-year-old male and 26-year-old male

Dog team used on mission: Dennis McLaughlin and Kiowa/Duke (EPCSAR)

Mission: A plane crashed with 2 male occupants on board. The dog team first searched an area where CAP members had a strong ELT signal. Nothing was found in this area. The ELT signals were erratic. Then the dog team accompanied an El Paso County team with an ELPER and the crash site was located using the ELPER. The two occupants were deceased. Kiowa had had an alert towards the crash location an hour prior to locating the site, but was unable to follow through with the alert.

### February 3, 2001

Location: Deckers, Teller County

Subject: 13-year-old male

Mission: Dennis McLaughlin and Kiowa/Duke and Barbi Atkins and Deegee and Helen Freeman (EPCSAR) were stood down as they were starting to field. The boy had an argument with his mother the previous day and ran away. The child had hitchhiked, with his dog, to Cañon City where his family had a cabin.

## **February 4 and 5, 2001**

Location: Black Forest, El Paso County

Subject: 45-year-old female, alcoholic

Dog teams used on mission: Dennis McLaughlin and Kiowa, Gayle Humm and Aspen, Barbi Atkins and Deegee (all EPCSAR) fielded. Jaynie Zmijewski and Miriah (Larimer County SAR) were stood down en route).

Mission: The subject had walked away from her mother's home in socks, jeans, and a jacket late in the evening. The area was wooded and had up to 14 inches of snow in some areas. There were safety concerns for the searchers because they were searching at night on private property, much of it fenced. As Dennis' team was approaching a house to get permission to search the property, they visually spotted the subject who was facedown in the snow near the driveway. She was critically hypothermic and her feet were frozen. By late afternoon, her body core temperature was 93 degrees F, up from 74 degrees F when she was found.

## **February 7, 2001**

Location: Cheyenne Indian Reservation, South Dakota

Subject: 66-year-old male with history of epilepsy

Mission: No dog teams were sent as this was during a major snowstorm with many roads being closed. Subject had gone outside to get some fresh air. He was feeling the onset of a seizure and sometimes the fresh air would halt the onset. He had not been seen since. Subject was found deceased a couple of hours after SARDOC was called.

## **February 12, 2001**

Location: Loveland Pass

Subjects: two sisters, 16 and 20 years old, snowboarding

Mission: No SARDOC dogs were available. Front Range Rescue Dogs did have a dog on site if an avalanche was spotted and the avalanche needed to be searched. The subjects did not return from snowboarding at Loveland Pass the previous day. A helicopter crew spotted the girls in the morning. They had built a snow cave to protect them from the weather and made large marks in the snow to point out their location.

## **March 4, 2001**

Location: Monument, El Paso County

Subjects: two sisters, 4 and 5 years old

Mission: Dennis McLaughlin and Duke/Kiowa (EPCSAR) were stood down upon arrival. The two girls wandered off while playing behind their grandmother's house and got lost in the heavily wooded area. While trying to find their grandmother's house, the girls ended up at another house ¾ mile away and the woman called the sheriff's office to report the whereabouts of the two girls.

## **March 15, 2001**

Location: Fort Collins, Larimer County

Mission: The police department wanted a cadaver dog to check out a yard for a supposed burial site. We suggested other resources for them to contact and gave them ideas on what to look for when they inspected the yard.

## **March 18, 2001**

Location: Farwell Mountain, Routt County

Subject: 34-year-old male, skier

Dog team used on mission: Jim Vail and Pepper (Routt County SAR)

Mission: A group of five people were snowmobile skiing. One person was watching the subject ski and saw the slide happen. The reporting party saw the subject go down to the bottom of the slide and watched him struggle to the top at one point then lost sight of him again. They started probing and digging at that spot, where there was a ski pole. Though some in the group did have an avalanche beacon, the subject did not. The slide was approximately 60 feet wide by 150 feet long and the deposit area was compressed by a gully at the bottom of the slope, so actual slide size to search was about 20 feet wide by 60 feet long. It was a loose snow slide that broke at about 16 inches. Pepper went to the hole where the group had been digging. She began digging and uncovered the subject who was at that time now under only 8 more inches of snow. Subject had been under about 3 feet of snow for about 3 hours. Search time for the dog was under four minutes. This search site was not far from Jim's home and he was on-site well before the rest of his search team. He had to evaluate the stability and safety of the slide on his own.

### **April 1, 2001**

Location: El Paso County, residential care facility

Subject: 80-year-old male with Alzheimer's

Mission: Dennis McLaughlin and Kiowa/Duke and Tony Boldt, Barbi Atkins and Deegee and Michelle Bennett, and Ina Bernard and Lenzbe (EPCSAR) were stood down upon arrival. The subject had wandered away from the facility around 0645 and was found 0830 hours.

### **April 3, 2001**

Location: Crystal Peak drainage, Summit County

Subject: 22-year-old male, snowmobile guide

Mission: Patti Burnett and Sandy (Summit County Rescue Group/Copper Mountain Ski Patrol) were being flown to the site when the subject's co-workers located him. The subject had gone alone up a gully apparently trying to establish a trail to a bowl on the west side of Crystal Peak. When he did not return several hours later, his co-workers went to find him. They followed his trail to the avalanche site, where his jacket was on the snow and part of his machine was sticking out of the slide. They probed uphill of the machine and found the subject under 4-5 feet of snow. They believe he may have been trying to dig out his machine when the avalanche released.

### **April 8, 2001**

Location: Horsetooth Reservoir residential area, Larimer County

Subject: 11-year-old girl missing from home

Dog teams used on mission: Dan Fanning and Bear and Jaynie Zmijewski and Miriah fielded. Allen Weaver and Rosie and Estelle Purvis and Echo did not field. (All LCSAR)

Mission: The subject was found to be missing from her bedroom in the early morning. Miriah searched the residence and Bear began trailing from the house. He trailed down to a road. Shortly after the dog teams started, the girl was located at a convenience store over 9 miles from her home. She was requesting a taxicab.

### **April 17, 2001**

Location: Ellicott, El Paso County

Subjects: two boys, 5 and 6 years old

Mission: Dennis McLaughlin and Duke/Kiowa were stood down en route. The boys had not told their mother where they were going and took off on their bikes at separate times. An older brother located the boys.

### **April 21, 2001**

Location: YMCA Peak, Fremont County

Subject: 66-year-old male, hiking

Mission: Ina Bernard and Lenzbe and Dennis McLaughlin and Kiowa (EPCSAR) and Angela Eaton Snovak and Isis (Alpine Rescue Team) were stood down en route. Subject had not returned from his hike the previous day and snow was predicted for the next evening. Subject had daypack with map, compass, food, and water. He'd had back surgery a few months earlier and had some heart problems. Subject walked out to a road.

### **April 24, 2001**

Location: east of Colorado Springs, El Paso County

Subject: 5-year-old girl wandered away from home as darkness fell

Dog teams used on mission: Dennis McLaughlin and Duke/Kiowa, Gayle Humm and Aspen and Kate Canestorp, Ina Bernard and Lenzbe and Michelle Bennett (EPCSAR)

Mission: Only one dog team was fielded prior to child being found by a foot team. The child was found facedown in a fenced enclosure containing two wild horses and two burros. She was unconscious with serious head injuries. As of April 28, she was still in a coma. Apparently the animals had kicked her or knocked her down and trampled her head.

### **April 28, 2001**

Location: North Cheyenne Canyon area, El Paso County

Subject: 30-year-old female mountain biker

Mission: Dennis McLaughlin and Kiowa and Gayle Humm and Aspen were stood down as the subject self-recovered.

## **2001 Area Directors**

Northern Colorado: John Shivik (970)224-4714

Southern Colorado: Barbi Atkins (719)630-1573

Western Slope: Jim Vail (970) 879-8474

Please contact the Area Director in your region if you are interested in learning more about using dogs as a SAR resource or are interested in getting information about training a dog through SARDOC.

## **2001 Executive Board**

President: Wendy Wampler  
Secretary:  
Treasurer: Jim Vail  
Director at Large: Dennis McLaughlin  
SAR Dog Coordinator: Bill Young

Please contact the Board if you have ideas or suggestions regarding fundraising, presentations, or other things relating to the organization. Please contact the Standards Committee if you have ideas or suggestions regarding training.

## **2001 Standards Committee**

Ina Bernard  
Kitty Gardiner  
Gayle Humm  
Sandy Phillips  
Sue Purvis  
Bill Young



***Search & Rescue Dogs of Colorado***

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