Right Under Our Noses: Dogs Moving Conservation Forward

Working Dogs *for* Conservation

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Photo by Anna Yu


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Super Sniffers

- 220 million olfaction receptor cells
- 60% of brain devoted to olfaction
- detect compounds down to 3 ppb

Photos courtesy of Mark Johnstad

Photo courtesy of Northwest Detection Dogs

History of dogs

- extensive
- dates back to 1890's in New Zealand
- locating kiwi and kakapo so they could be moved to predator-free islands

1930's to 1990's

censuses & brood counts

banding & tagging

nests

laboratory & museum specimens

re-locating marked animals

cougars, brown tree snakes, & box turtles

Modification in use

- type of dog & training

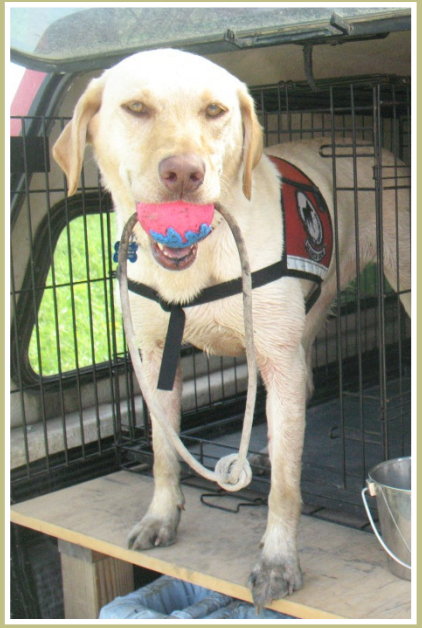
- toy-obsessed dogs trained to detect a target that is inherently meaningless to them

Why scat?

- Presence/absence
- Habitat use
- Diet
- Relative abundance
- Hormone profiles
- DNA
- Demography
  - Sex ratio
  - Kinship
- Parasites & disease
- Home range

Working Dogs for Conservation

To apply the extraordinary detection capabilities of canines to further conservation worldwide



Ideal candidates

"Let's try it again. This time with a tad less mania."


We select for:
• high play drive and focus
• nerve strength
• search drive
• desire to work with handler
Photo by Julie Larsen Maher © WCS

Powerful Survey Tool

- effectively locate target species and/or their sign
- allow sufficient data
- successful on even difficult to monitor species

Photo by Julie Larsen Maher © WCS

The Journal of Wildlife Management 75(5):1209–1217; 2011; DOI: 10.1002/jwmg.150

Research Article

Comparing Detection Dog and Livetrapping Surveys for a Cryptic Rodent

JENNIFER M. DUGGAN,[1]
EDWARD J. HESKE, *Illinoi*
ROBERT L. SCHOOLEY, *I*
IL 61801, USA
AIMEE HURT, *Working Dog*
ALICE WHITELAW, *Worki*

ABSTRACT We com
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in 2007–2009 and surv
dog-handler teams to
(detection rate = 83–
trained to scent of a s
teams cost >2 daily liv
by dog-handler teams
factor, number of false
which livetrapping is c
stage strategy could be
The Wildlife Society.

KEY WORDS cost co
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Detection dogs have long bee
search and rescue missions (Sl
Rebmann et al. 2000, Denve
conservation biologists develo
species that are cryptic or occur
detection dogs (Hurt and Smit
used to help biologists locate p
reptiles (Cablk and Heaton 2
Fraser 2009), and mammals
2006, Gsell et al. 2010), as w
scat (Homan et al. 2001, Arne
MacKay et
tion dogs p
could field biologists using trad
as livetrapping. For example, d
of the endangered black-footed

Peer Reviewed: From the Field

Efficacy of Scent Dogs in Detecting Black-Footed Ferrets at a Reintroduction Site in South Dakota

SARA A. REINDL-THOMPSON,[1] *United States Fish and Wildlife Service, Pierre, SD 57501, USA*
JOHN A. SHIVIK,[2] *United States Department of Agriculture, Wildlife Services National Wildlife Research Center, and Department of Wildland Resources, Utah S*
ALICE WHITELAW, *W*
AIMEE HURT, *Workin*
KENNETH F. HIGGIN
University, Brookin

Abstract

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for detecting ferret p*

Key words

black-footed ferre

The black-footed ferret (
possible (Forest et al. 198
ferret reintroduction sites

Animal Conservation (2003) **6**, 339–346 © 2003 The Zoological Society of London
DOI:10.1017/S136794300300341X Printed in the United Kingdom

Detection and accuracy rates of dogs trained to find sc San Joaquin kit foxes (*Vulpes macrotis mutica*)

Deborah A. Smith[1], Katherine Ralls[2], Aimee Hurt[3], Brice Adams[4], Megan Parker[5], Barbara Da and Jesus E. Maldonado[8]

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[2]Conservation and Research Center, Smithsonian National Zoological Park, Washington DC 20008, USA
[3]Division of Biological Sciences, University of Montana, Missoula, Montana 59812, USA
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[7]Washington Department of Fish and Wildlife, LaConner, Washington DC 98257, USA
[8]Genetics Program, National Museum of Natural History, Washington DC 20008, USA

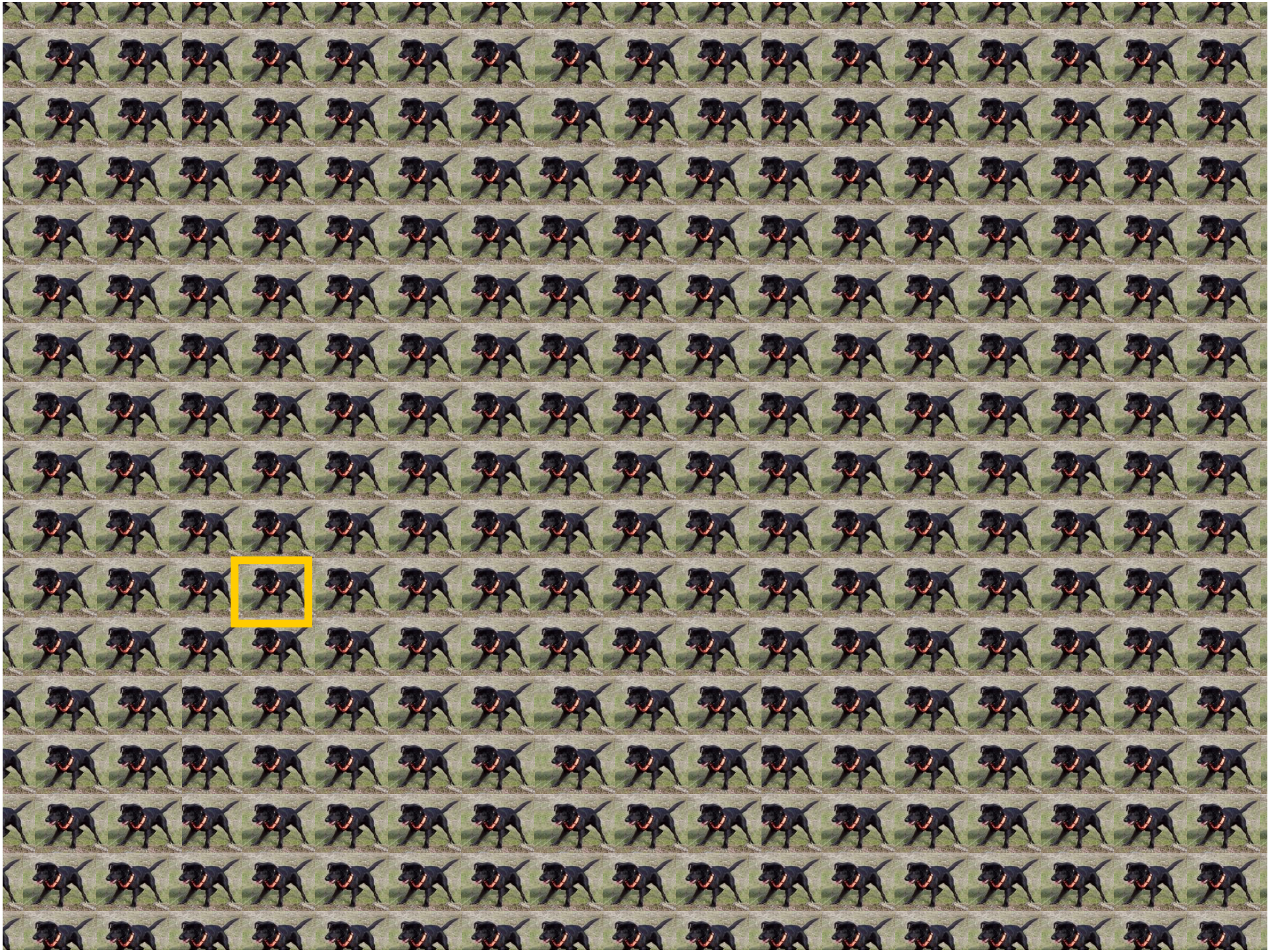
Increase sample number for any analysis

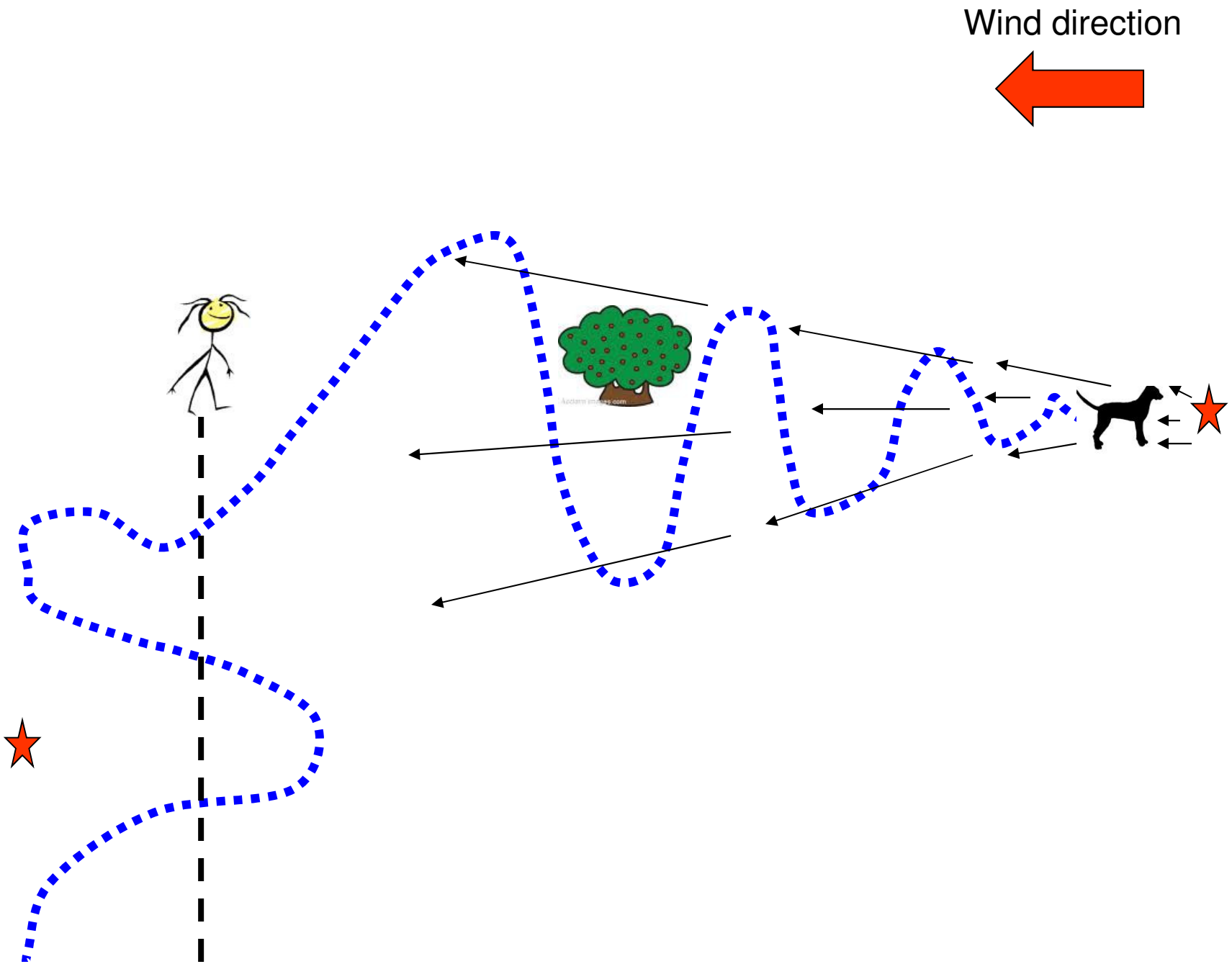
Abstract

Specially trained detection dogs have been used to locate faeces (scats) for faecal analyses but t

Benefits

- Work in complex, varied habitats - covering large area
- Detect and discriminate single or multiple species at once
- Find needed data in one visit
- Find real landscape use patterns - no baiting/luring off-track
- Huge public appeal!




Wind direction


Greenland
Iceland
Sweden
Finland
Norway
Russia
United Kingdom
Ireland
Denmark
Germany
Poland
Belarus
Ukraine
France
Spain
Portugal
Italy
Romania
Greece
Turkey
Kazakhstan
Mongolia
Uzbekistan
Turkmenistan
China
South Korea
Japan
Afghanistan
Iran
Iraq
Pakistan
India
Myanmar (Burma)
Thailand
Vietnam
Philippines
Malaysia
Indonesia
Australia
Papua New Guinea
Canada
United States
Mexico
Cuba
Puerto Rico
Guatemala
Nicaragua
Venezuela
Colombia
Ecuador
Peru
Brazil
Bolivia
Paraguay
Chile
Argentina
Uruguay
Guyana
Suriname
North Atlantic Ocean
South Atlantic Ocean
Indian Ocean
North Pacific Ocean
Morocco
Algeria
Libya
Egypt
Mauritania
Mali
Niger
Chad
Sudan
Nigeria
Ethiopia
Somalia
Kenya
DR Congo
Tanzania
Angola
Zambia
Mozambique
Zimbabwe
Namibia
Botswana
South Africa
Madagascar
Saudi Arabia
Yemen
Oman

Photo by C. Tschanen

Photos courtesy of NCZ & WCS

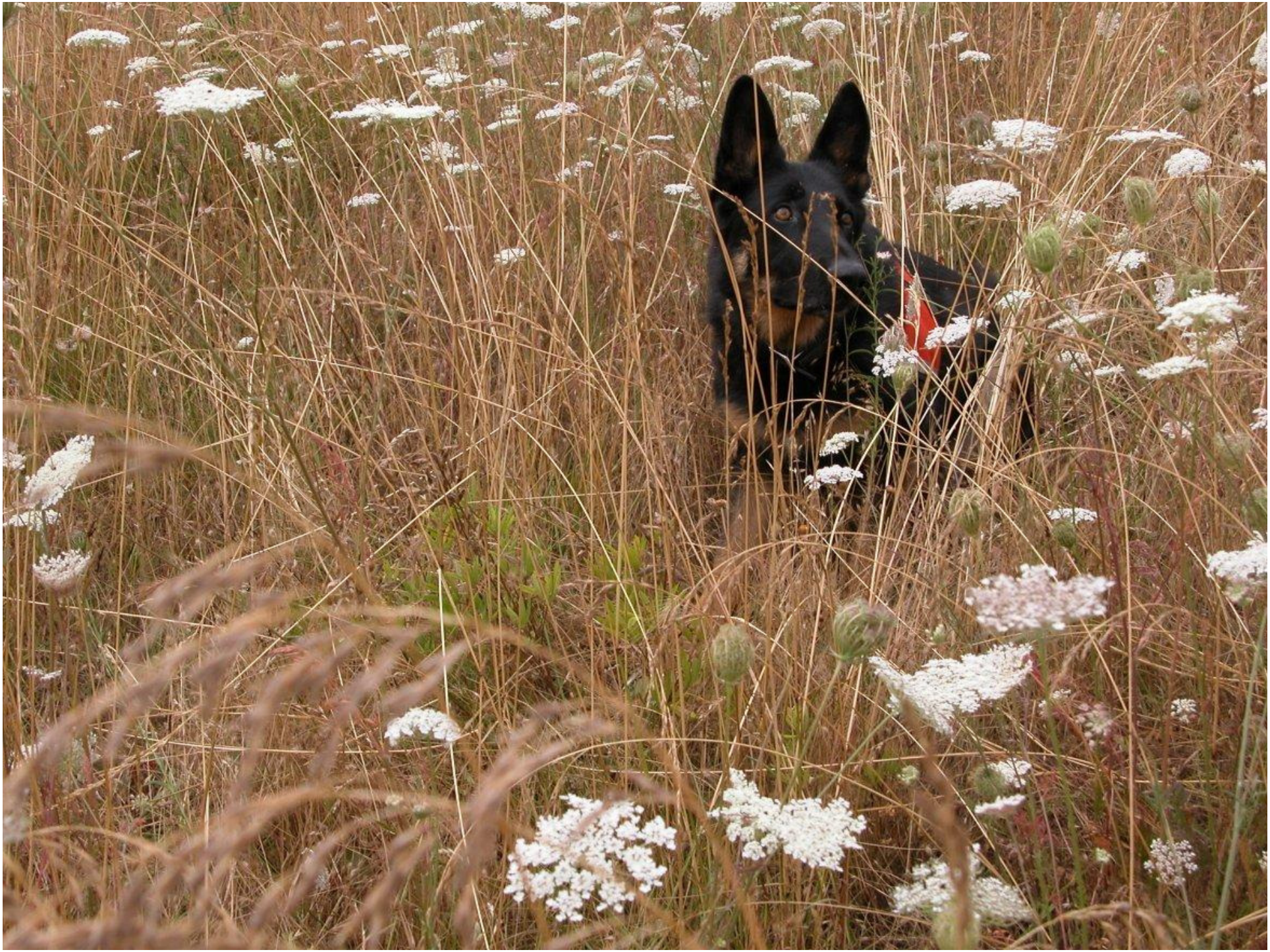
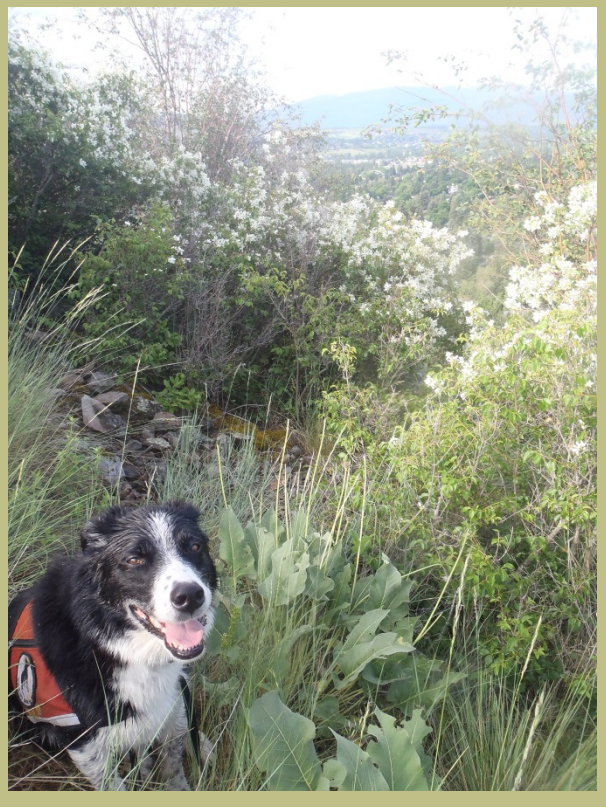
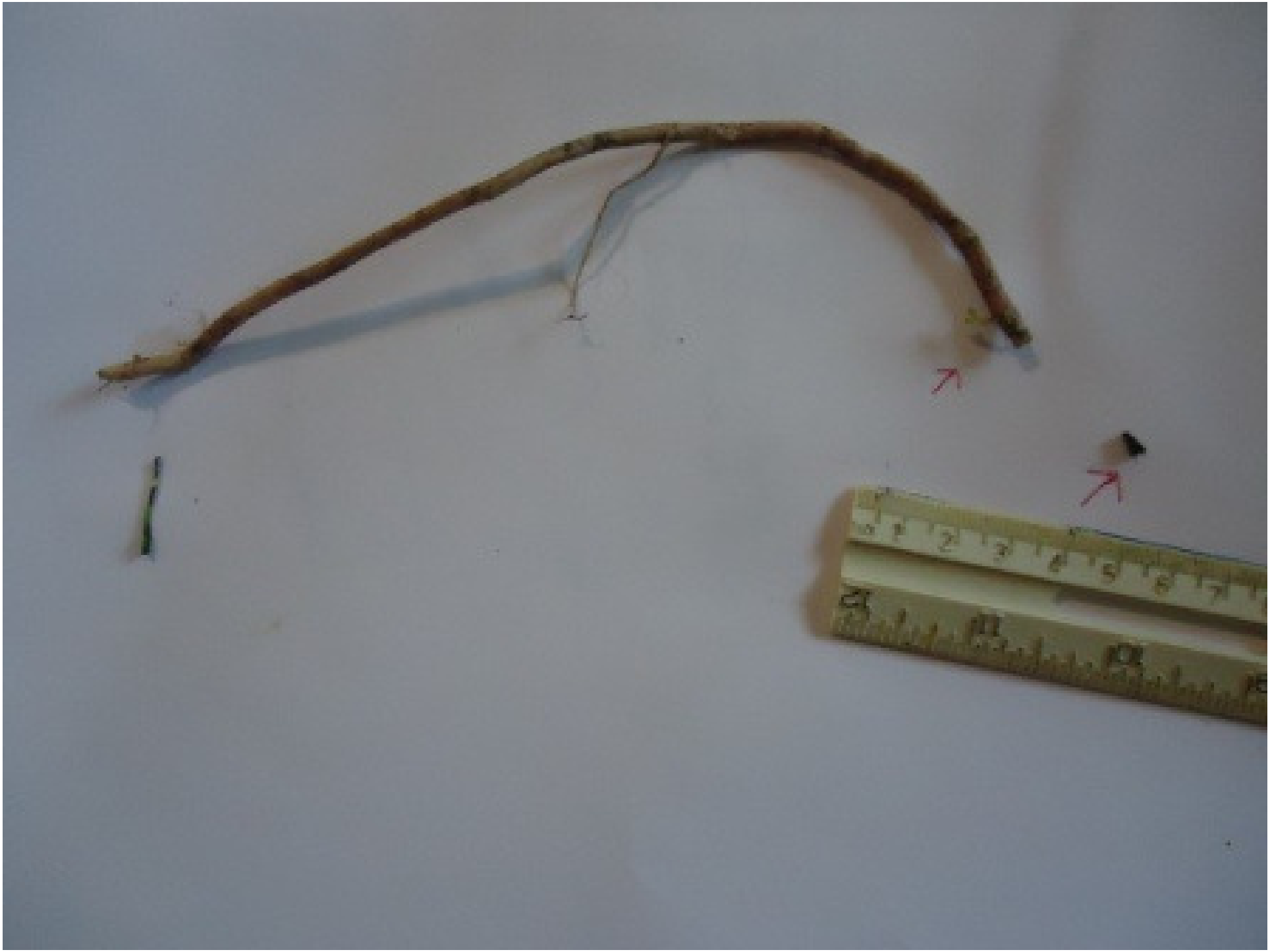
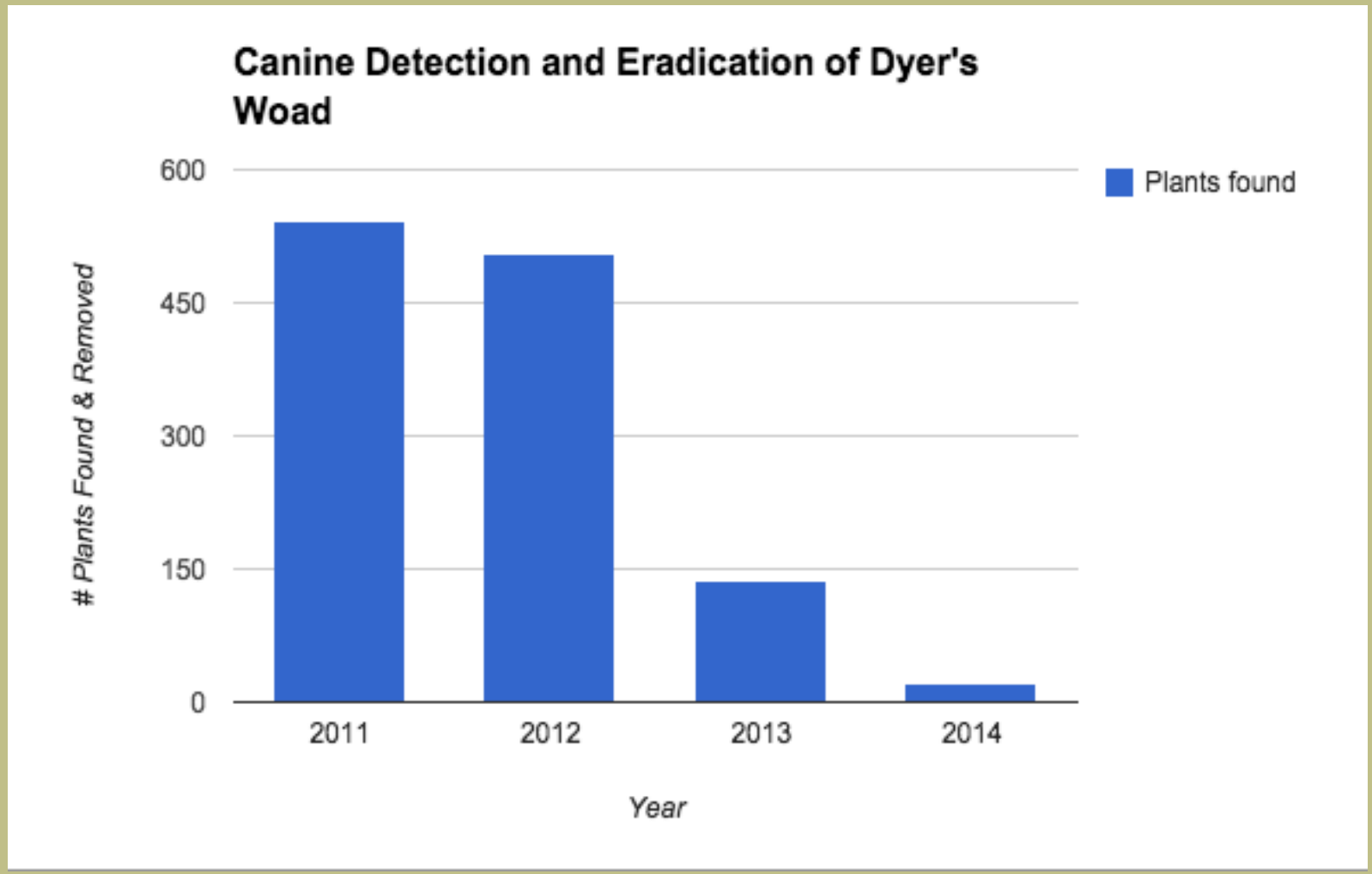


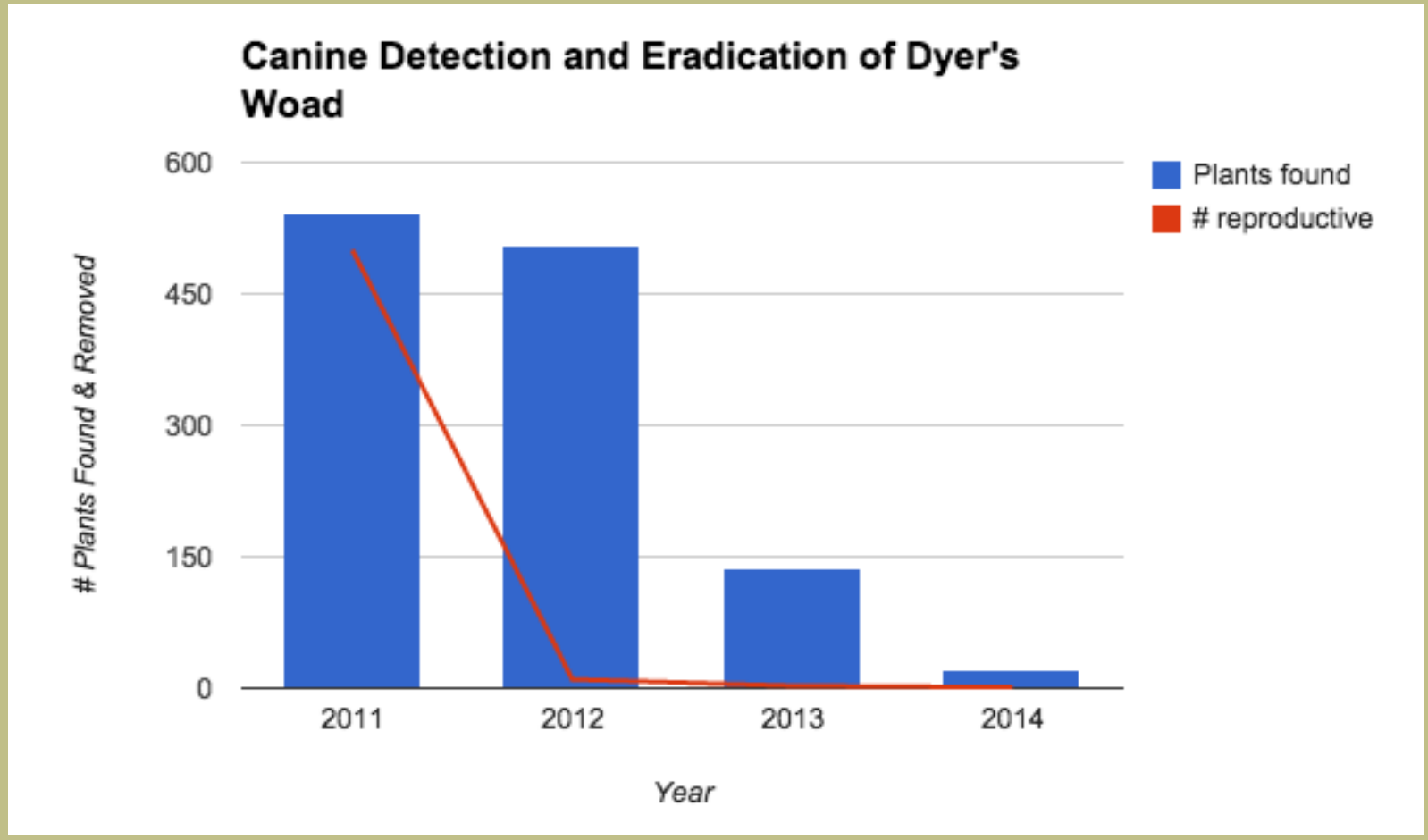
Photo by Paul Severns


Sharpie
FINE
POINT






Canine Detection and Eradication of Dyer's Woad
600
450
300
150
0
Plants Found & Removed
2011
2012
2013
2014
Year
Plants found


Canine Detection and Eradication of Dyer's Woad
600
450
300
150
0
Plants Found & Removed
2011
2012
2013
2014
Year
Plants found
reproductive

In the San Joaquin Valley...

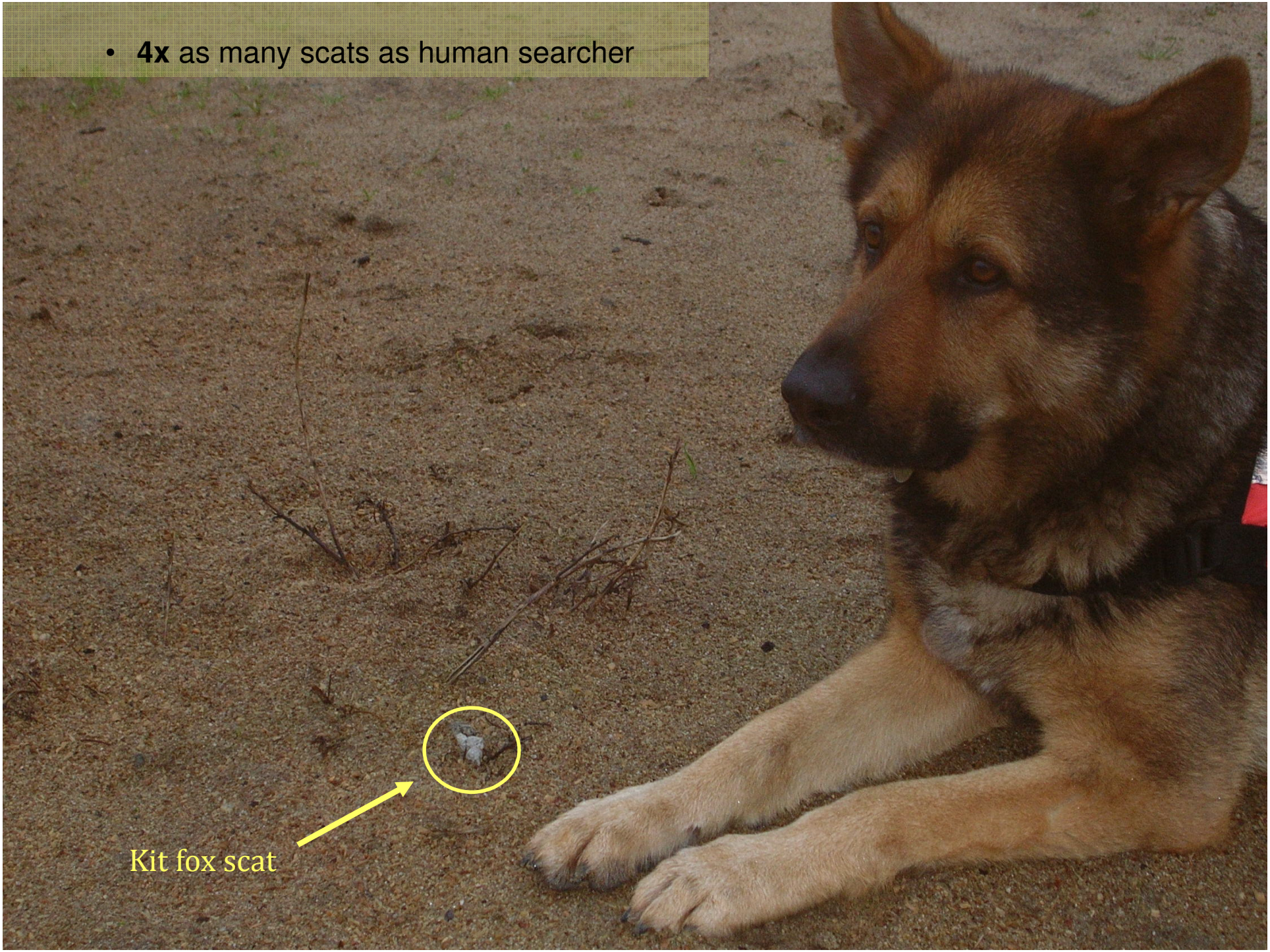
Dogs & Kit Foxes:

- occurrence and distribution
- relative abundance
- habitat use
- animal movement
- sex ratio
- latrine use
- abundance
- monitoring

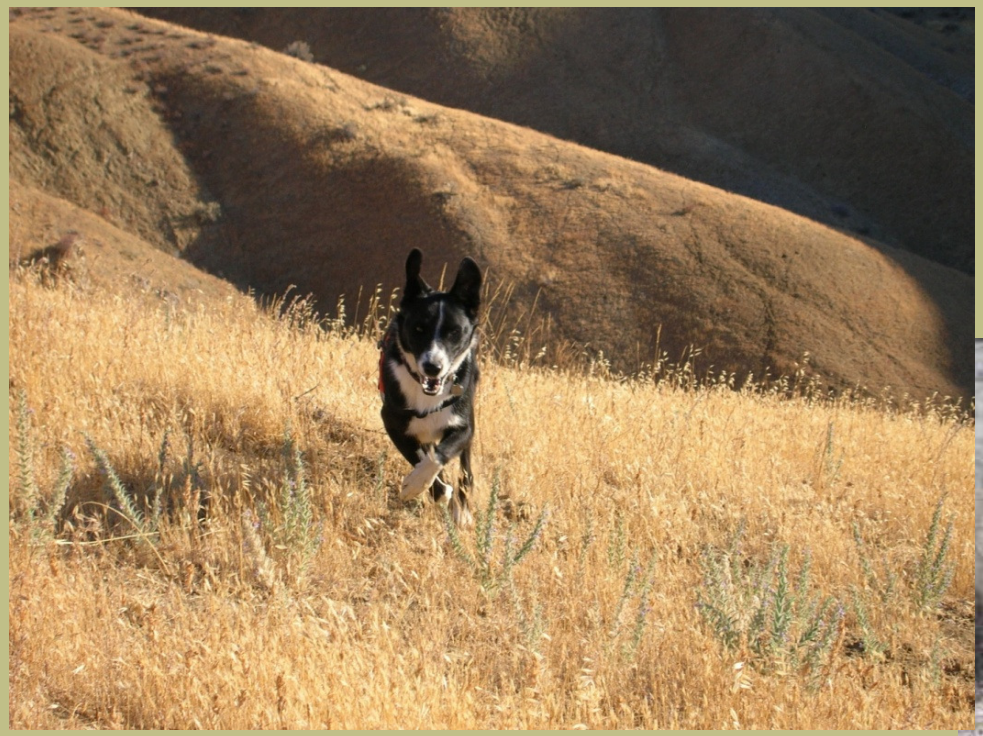
Photo by M. Westphal

- over **1,500** fresh scats found for DNA analysis

- **4x** as many scats as human searcher



Partnerships



Ciervo-Panoche Natural Area

- BLM, Hollister Field Office & Smithsonian Conservation Biology Institute
- 2009 - present
- distribution and population connectivity

Photo by M. Westphal

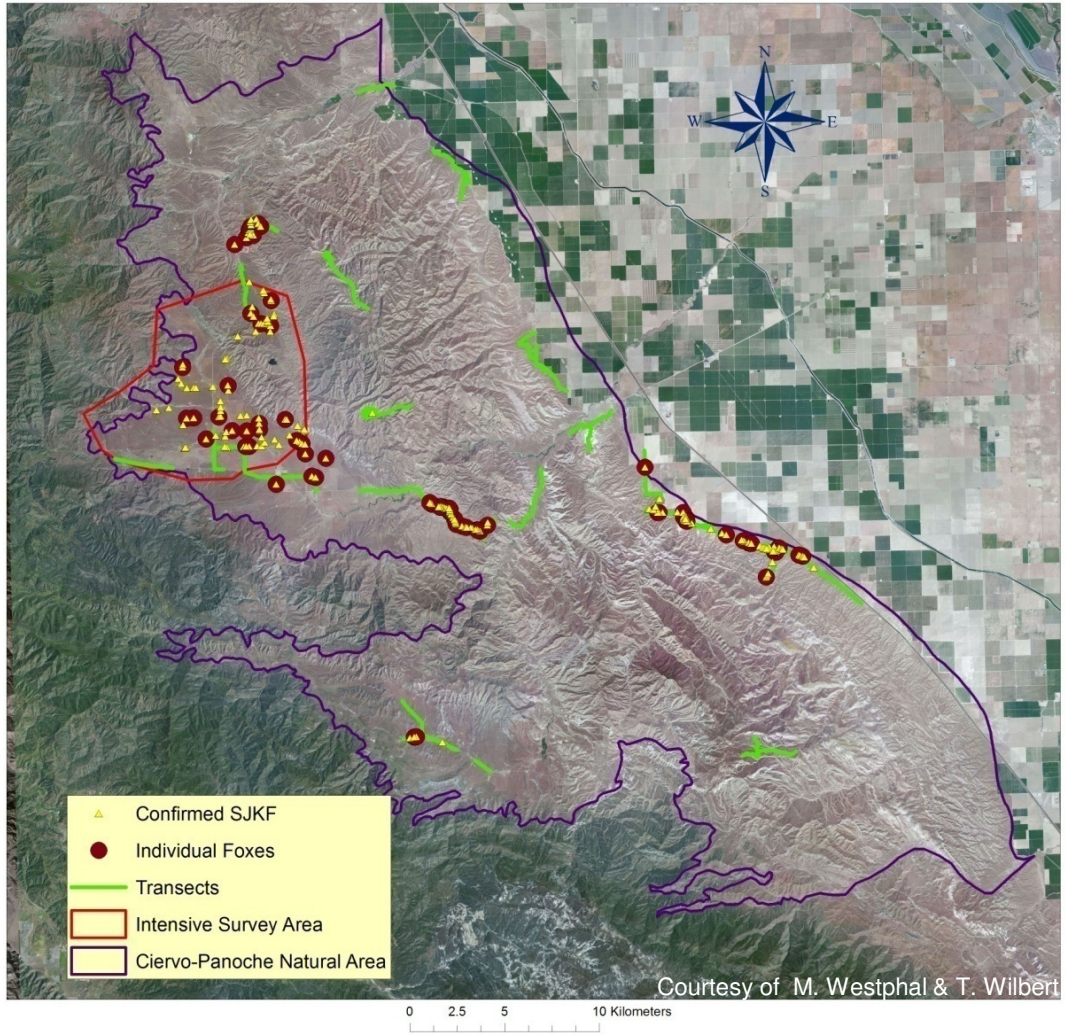
Ciervo-Panoche Natural Area

- 600 scats collected
- 93 individuals identified

Ciervo-Panoche Natural Area

- examining genetic diversity and signatures of structuring

- inform management of current distribution and important pieces of land to connect

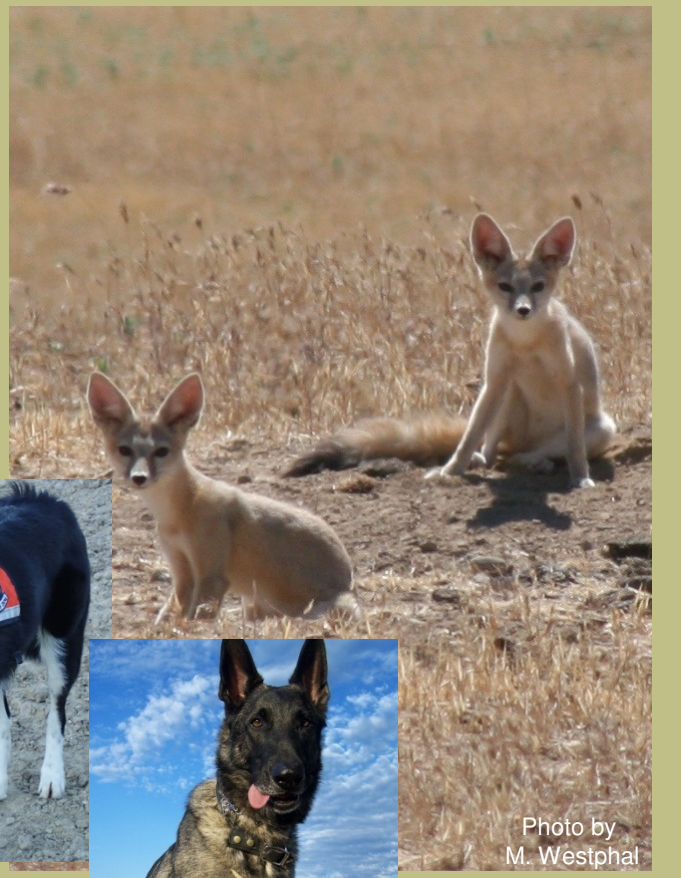


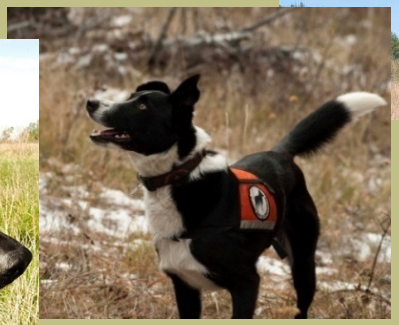
Ciervo-Panoche Natural Area

- dog data = proof that species is present
- continue surveys and identify new, additional habitat that should be preserved

Ciervo-Panoche Natural Area

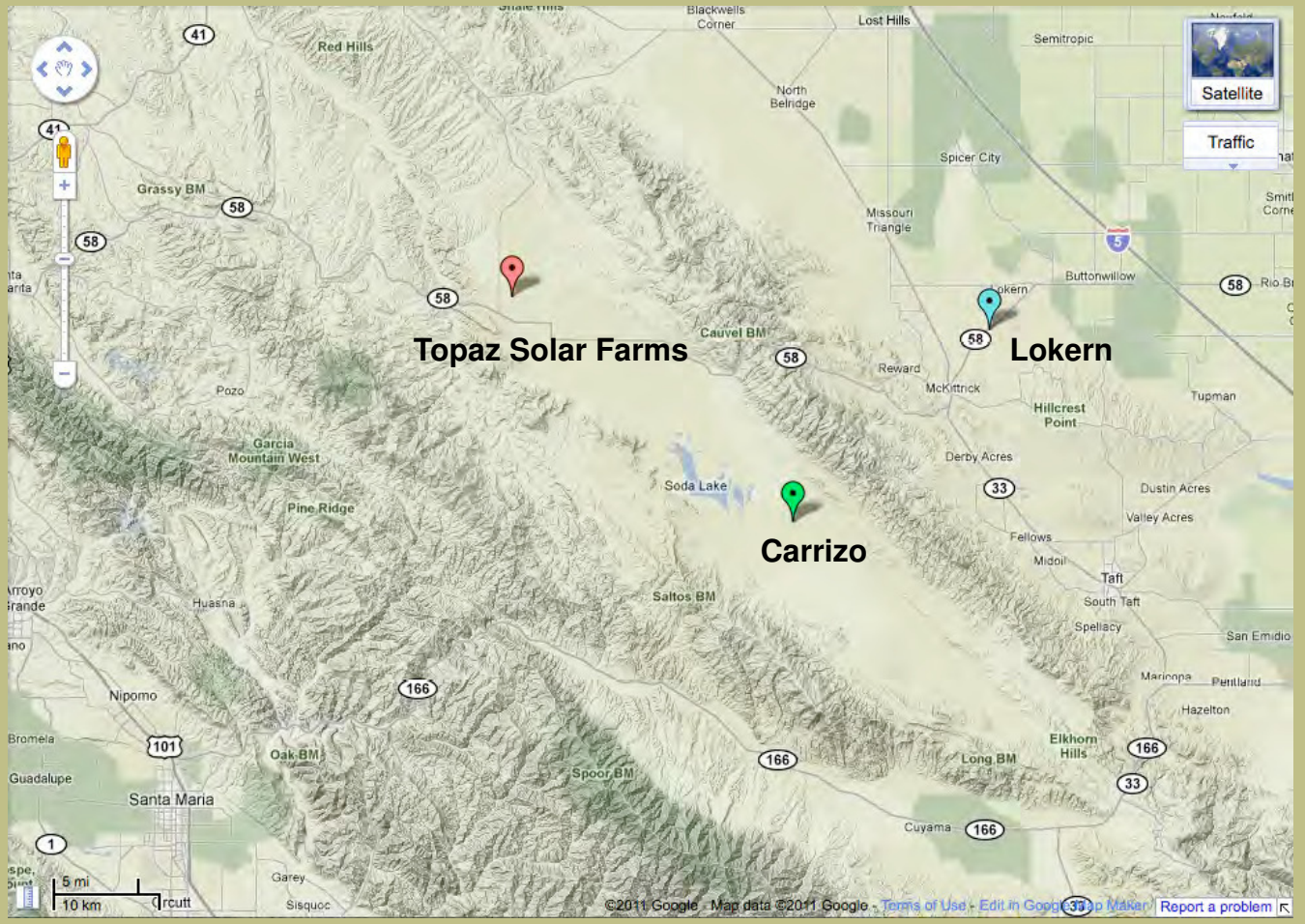
• With dog data. BLM has been able to leverage over **2.5 million dollars** to purchase land for permanent protection in this area





Topaz Solar Farms

- Althouse & Meade, Inc. & Smithsonian Conservation Biology Institute
- 2009 – present
- one of the world's largest solar farms



Detection dog monitoring

- document numbers, distribution, and genetic characteristics

- collect baseline data for comparison to data during and after construction

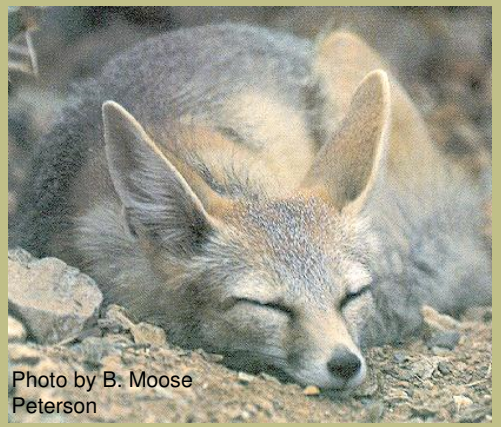
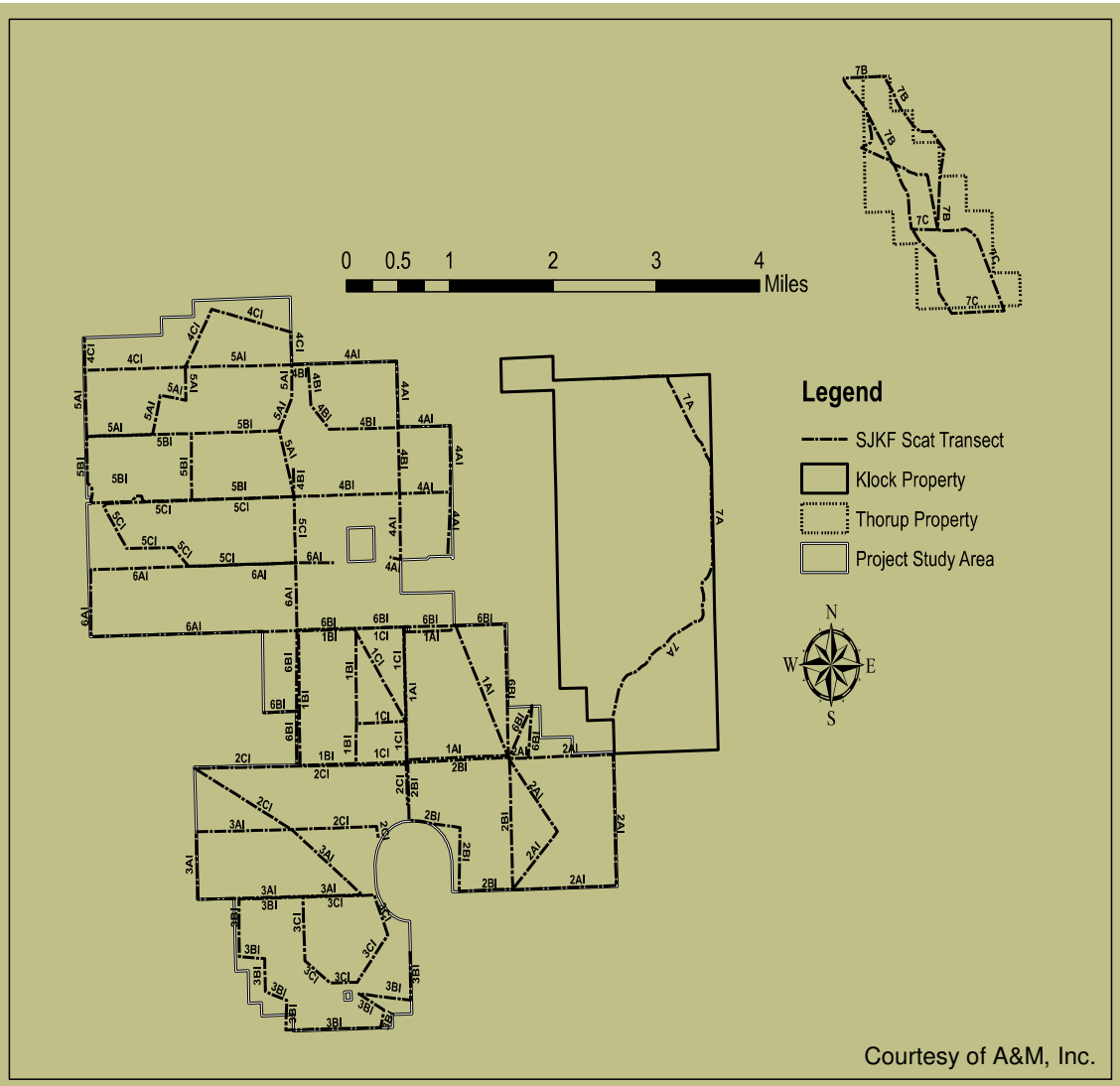


Photo by B. Moose Peterson

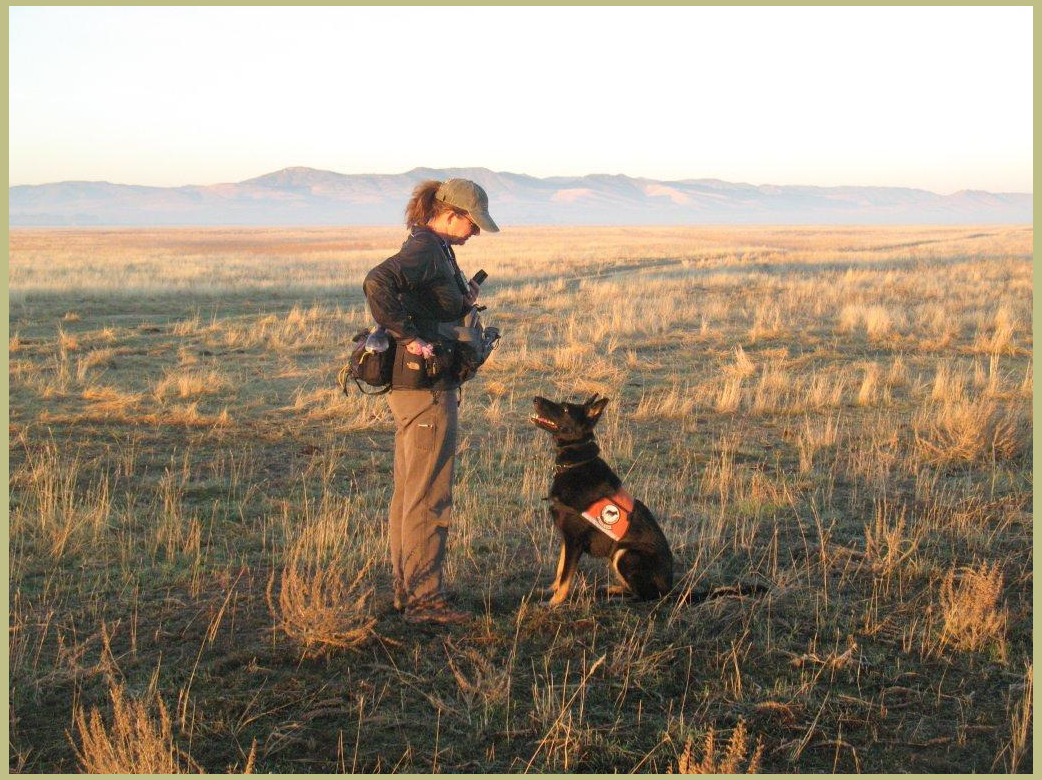
Transects surveyed

- ~108 km of transect
- additional surveys on nearby private lands



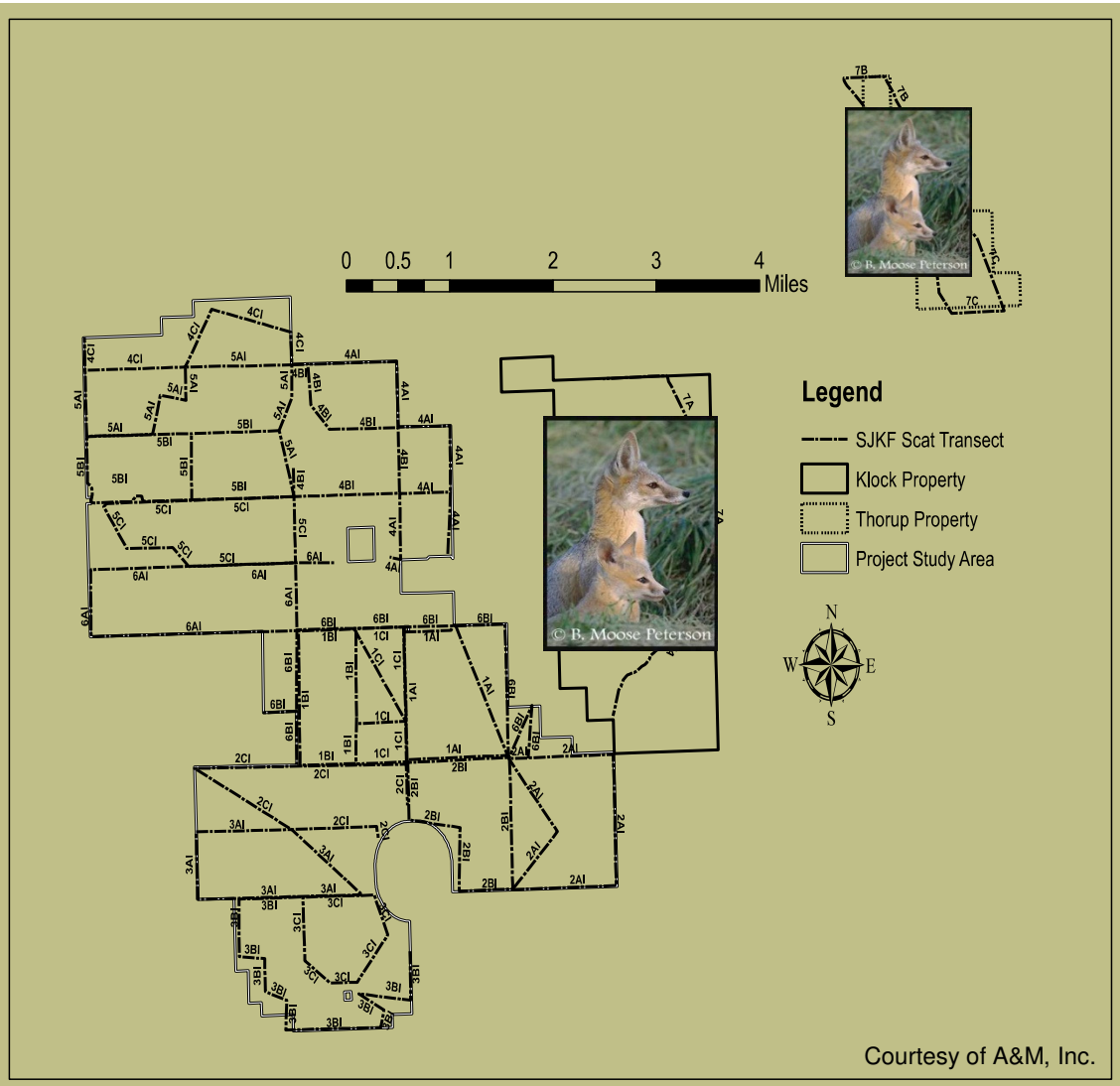
Scats located by dogs

- over 800 fresh scats collected for DNA analysis
- geo-referenced location of 1,100 older scats
- characterized recent use of the study area



Pre-construction results...

- used **similar** areas from year to year
- did not use all areas of the site, allowing panel placement that **minimizes** impacts
- presence **confirmed** on additional parcels, both are **suitable** for mitigation efforts



In progress...

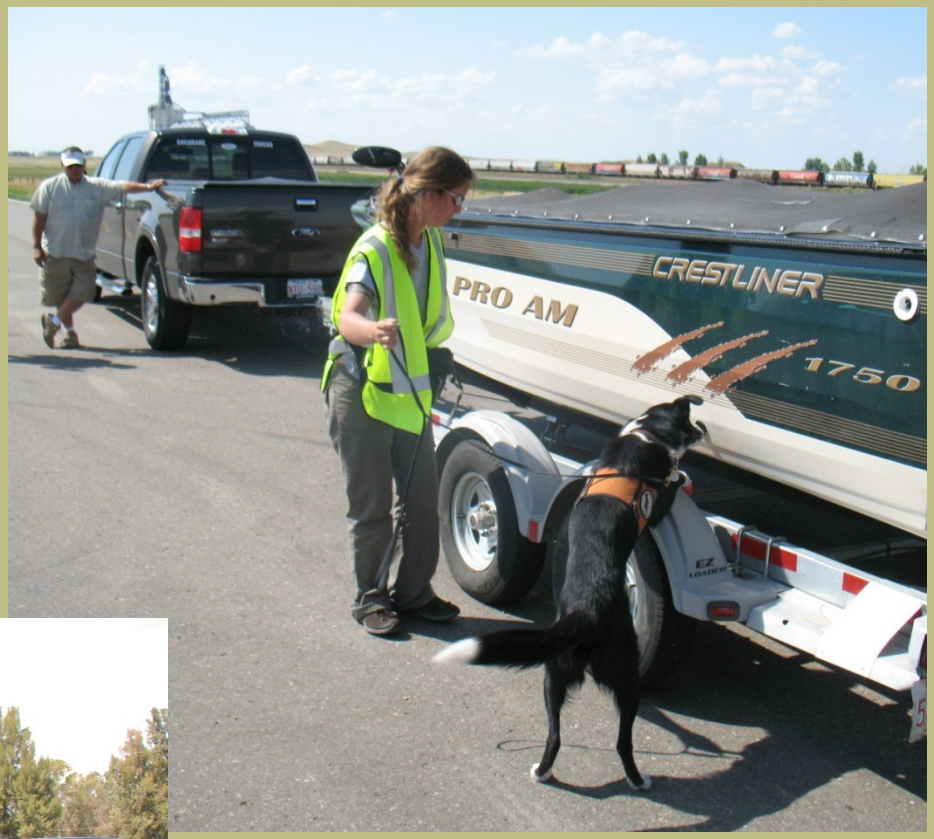
- dog surveys / scat collection scheduled 2014 - 2019

- continue to track kit fox numbers after construction

Balance species & land uses


Photo by J.Murdoch

Photo by M. Westphal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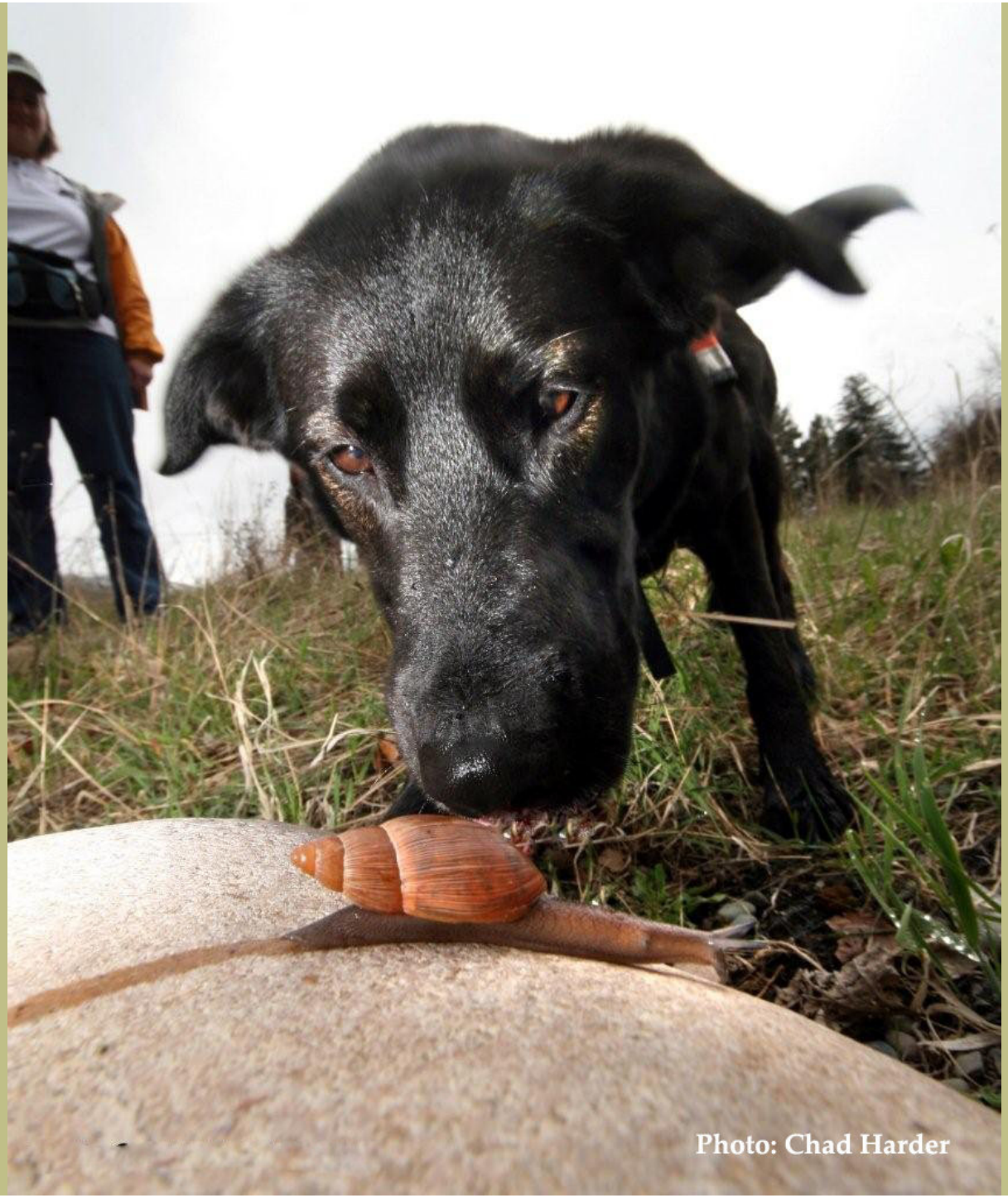
Photo: Chad Harder


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Richard Dumoulin
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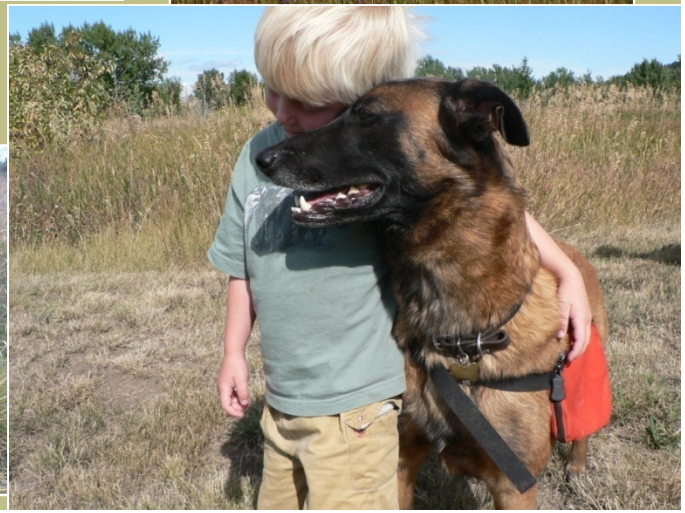


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