

# Rethinking “Pit Bulls”

---

Karen Delise, Founder and Director of Research  
[kdelise@ncrcouncil.com](mailto:kdelise@ncrcouncil.com)

Donald Cleary, Director of Communications and Publications  
[dcleary@ncrcouncil.com](mailto:dcleary@ncrcouncil.com)

**No-Kill Conference**  
**Washington, D.C.**  
**August 11-12, 2012**



# BEYOND BREED

New Research on the Visual Identification of Breeds  
Calls into Question Breed-Discriminatory Legislation

By Ted Brewer

Reprinted from *Best Friends Magazine*, March/April 2011



Something used to weigh on Dr. Victoria Voith's mind nearly every time she visited a shelter. She noticed a preponderance of dogs identified as German shepherds or as shepherd mixes. As someone with a great fondness for the breed and someone who once had a German shepherd, Voith was fairly certain that the shelters were, in many cases, misidentifying the dogs.

Voith is a professor of veterinary medicine at Western University in Pomona, California, and a specialist in the animal/human relationship, so she became curious: Just how often do people visually misidentify the breeds of dogs? She decided to conduct a study that might give her an answer.

“There’s so much behavioral variability within each breed, even more between breed mixes, that we cannot reliably predict a dog’s behavior or his suitability for a particular adopter based on breed.”

In 2008 she randomly chose 20 different dogs who had been adopted from 17 different shelters, rescue groups and other adoption agencies that had attempted to identify the dogs' breeds. All of the 20 dogs had been labeled as mixed breeds - either a mix of specific breeds (e.g., German shepherd and Labrador) or breed types (e.g., shepherd mix), or a combination of both (e.g., chow/terrier mix). Voith had the dogs' DNA analyzed to see how the agencies' breed identifications matched up to the genetic tests.

The DNA tests, which report breed compositions in percentages, revealed multiple breeds in all but one of the dogs, whose only DNA-identified breed was 12.5 percent Alaskan malamute. The highest percentage of one breed found in any of the dogs was 50 percent, and that too occurred in only one dog. Otherwise, predominant breeds represented only 25 percent or 12.5 percent of the dogs' genetic makeup. (The DNA reports are in units of 12.5 percent to represent the approximate percentage that each great-grandparent contributed to the individual dog's DNA.)

So, how did the adoption agencies' identifications match up with the DNA results? According to the DNA, the agencies correctly identified a specific breed in only 31 percent of the 20 dogs. Usually, the breeds correctly identified by the



agencies represented only 25 percent or 12.5 percent of the dogs' makeup. "Even when there was an agreement between a specific adoption identification and DNA identification, the same dogs usually had additional breeds identified by DNA that were not suggested by the adoption agencies," Voith says.

Voith has expanded her breed identification research to include more than 900 trainers, veterinarians, kennel workers, animal control staff and other dog experts, all tasked with visually identifying a sample of mixed-breed dogs. Voith has compared their answers with the DNA of these dogs. Though she can't yet reveal what the results are, she does say, "My ongoing studies indicate there is often little correlation between how people visually identify dogs and DNA-reported results."

---

**"So we have to go from identifying dogs by breed to identifying dogs as individuals."**

---

"You can even have agreement among professionals on what they think this dog is, maybe as much as 70 percent of the people trying to identify the dog, and the DNA doesn't come out to match that," she says. "It's not that people in these professions aren't good at identifying purebred dogs; it's just that mixed-breed dogs do not always look like their parents."

Speaking or writing about her research, Voith often refers to the research that John Paul Scott and John L. Fuller conducted in the 1950s and 1960s on the behavior and development of dogs, including the mixed-breed offspring of various purebred crosses.

Scott and Fuller photographed the offspring and many of the dogs looked nothing like their parents or grandparents. Some, in fact, looked more like other breeds. "It amazes me how dogs can look like a breed that doesn't appear in their immediate ancestry," Voith says.

---

**"Voith suspects that as many as 75 percent of all mixed-breed dogs may be mislabeled."**

---

Voith's research triggers a slew of questions, among them: If professionals can't even correctly identify breeds of dogs by sight, how can law enforcement in cities where certain breeds are banned? Given how hard it is to correctly identify breeds of dogs by sight, do breed-discriminatory policies make sense - in whatever arena they exist? By claiming their dogs are the offspring of certain breeds, with the characteristics commonly associated with those breeds, are adoption agencies inadvertently creating false expectations among adopters of how those dogs might behave?

And is it time, finally, to stop viewing dogs through the prism of their supposed breeds?

#### **A CASE OF MISTAKEN IDENTITY**

The propensity we have for wanting to know our dogs' breeds and talk about it is perhaps as natural to us as wanting to know our own ancestry and tell others about it. It's often a matter of pride that our dog has, say, Newfoundland in him, just as it's a matter of pride that our grandparents or great-grandparents emigrated from Italy, Russia, India or some other exotic location.



But once person's pride can be another person's, or city's, bias, as we well know from places that have banned pit bull-type dogs.

Ledy VanKavage, senior legislative attorney for Best Friends, has taken note of Voith's breed identification research and cited it in support of an argument presented last year in an article for the American Bar Association's *The Public Lawyer*. VanKavage says that breed-discriminatory legislation is bad fiscal policy based largely on erroneous data that pegs pit bull terriers as the common culprit in dog bites. The data is gleaned largely from the media.

---

**“Not even all dogs in the same litter of purebreds are identical. There's tremendous variation in the behavior and the morphology within a breed, even among litter mates.”**

---

“It's sort of like an urban legend or hoax promulgated by the media,” VanKavage says. “You can't just go by the headlines, because a lot of times they're wrong. A lot of times it's law enforcement who's giving the media incorrect information. They're wrongly identifying the breed, because they think that any shorthaired muscular dog is a pit bull.”

Voith suspects that as many as 75 percent of all mixed-breed dogs may be mislabeled. “So the whole data base on which these [breed] restrictions exist is in question,” Voith says.

A number of cases in cities and counties with breed bans have underscored the fallibility of animal control when it comes to identifying pit bull terriers. Last year in Toledo, Ohio, for instance, the Lucas County Dog

Warden's Office seized from a Toledo man's house what animal control officials insisted were three pit bull terriers, two more than the city allows for one owner. Police also charged him with violating an ordinance that mandates pit bull owners to keep a muzzle and leash on their dogs when in public. The owner fought the charges in court, proving that the dogs were, in fact, cane corsos, not pit bulls. The judge ruled that the dogs be released. (The judge also struck down the provisions in the dog ordinance that limited the number of pit bulls an owner may have and mandated that pit bulls wear muzzles in public.)

Of course, even if the dogs had been pit bull terriers, that doesn't mean they were dangerous dogs simply by virtue of their breed. “Not all dogs of the same breed act the same,” Voith says. “Not even all dogs in the same litter of purebreds are identical. There's tremendous variation in the behavior and the morphology within a breed, even among litter mates.”

### **UNFAIR ASSUMPTIONS**

Voith's research throws a monkey wrench into more than just breed-discriminatory legislation. It also challenges the feasibility and fairness of breed-discriminatory policy wherever it might be found, be it policy set by landlords, dog parks, dog rescues and shelters, even insurance companies. American Family Insurance, for instance, denies homeowner's insurance to people with pit-bull-terrier-type dogs.

It's conceivable then, given Voith's research, that a family may think they have adopted a pit bull terrier (because that's what they were told when the family adopted the dog) and come to find that their insurance company won't cover them anymore or that their landlord won't allow them to remain on his property



with the dog - when in truth, the family doesn't have a pit bull terrier, but simply a dog who resembles one.

"It's not fair to dogs to be misidentified and denied living spaces with their owners or forced out of their homes," Voith says. "It's also not fair to assume that all dogs of a specific breed are going to behave the same."

Dr. Amy Marder, director of the Center for Shelter Dogs at the Animal Rescue League of Boston and one of the most renowned applied behaviorists in the country, believes that adoption agencies may be doing a disservice to certain dogs and people who might adopt them by insisting on breed identification. She fears that the practice of identifying dogs by breed might be creating false expectations. As an example, she notes that shelters are often full of dogs identified, correctly or incorrectly, as Labrador mixes, which could lead adopters of those dogs to expect a pet who likes to retrieve. She says that even if a dog was correctly identified as a Labrador retriever, that doesn't always mean retrieval is something they do.

"It's impossible to breed-label dogs of unknown history and genetics solely on the basis of their appearance. We know that," she says. "And we also know that there's so much behavioral variability within each breed, even more between breed mixes, that we cannot reliably predict a dog's behavior or his suitability for a particular adopter based on breed. So we have to go from identifying dogs by breed to identifying dogs as individuals."

## WHAT'S IN A NAME?

As any experienced dog person knows, what matters most when it comes to adopting a dogs is not how the dog looks, but what his or her personality is like and how he or she behaves. Only by knowing a dog's personality and behavior traits can we determine if the dog we're thinking of adopting will be the ebst fit for our household and lifestyle and for an other dog we might have.

Still, if only for the sake of curiosity, we often want to know the size, shape and color of a dog, and referring to a breed is perhaps the easiest way to convey that information. Voith therefore suggest using similes, as in "This dog looks like a black Lab."

---

**"It's impossible to breed-label dogs of unknown history and genetics solely on the basis of their appearance."**

---

Marder has proposed an alternative to categorizing an adoptable dog by his or her breed - that is, calling that dog an "American shelter dog." She believes that by doing so, we can boost the significance and pride that goes along with adopting dogs from shelters.

Whatever we end up calling our dogs, all agree that what matters most is acknowledging that, no matter the breed, every dog is an individual. "It's like what Martin Luther King Jr. said," VanKavage says. "Do not judge a man by the color of his skin, but by the content of his character.' I think the same should be true with dogs. You judge them by their temperament, by their actions, because they're individuals."

# BREEDS AND BEHAVIOR

“THEY’RE NOT LIKE OTHER DOGS” – OR ARE THEY?

By Janis Bradley

Reprinted from *The Bark*, No. 64 (April/May 2011)

I’m interviewing a new client whose dog tends to bark and charge and nip the heels and dangling hands of retreating strangers. Her dog is smallish and stocky, with a course medium-length coat of mottled blue-gray, black, white and brown. His nose and ears are pointy. While I reassure her that his behavior actually makes sense from his doggy point of view, a little voice in my head whispers, “What did she expect? She got a Cattle Dog.” I have little difficulty discounting the client’s own plaintive claim that she’s had Cattle Dogs all her life and this is the first one who’s acted this way. “You were lucky until now,” my little voice says, assuming those dogs were somehow the exceptions. But when another client complains that his large, square-headed, short-coated, yellow dog is growly around his food bowl, I take his statement that “none of my other Labs have done this,” at face value. The current dog is clearly the exception. After all, my little voice says, “everyone knows Labs love people.”

“[E]ven reliable identification of the ancestry of a mixed-breed dog by itself wouldn’t help us predict an increased likelihood of known, genetically driven traits.”

## My little voice is probably wrong.

Often, we assume that each breed carries its own set of hard-wired impulses, which are particularly difficult to alter, even with sound behavior-modification techniques. We even expect these presumed genetic predispositions to carry over to mixed-breed dogs who physically resemble a particular breed. Dog professionals are as prone to these biases as everyone else. We’ve learned them as part of the conventional professional wisdom, and our experiences seem to confirm them - not surprising, since current behavioral and neuroscience studies show that human brains consistently prefer data that support what we already believe and disparage anything that contradicts it. To top it off, a nodding acquaintance with the burgeoning field of canine genetics research indisputably demonstrates connections between genetics and behavior. One new study even appears to have found the locations on the map of the canine genome that account for pointers pointing and herders herding.

So why not use breed as a way to choose the particular puppy or dog who’s likely to help us fulfill the dream of taking a perfectly behaved, friendly dog to cheer the lives of people in nursing homes, be endlessly tolerant with our kids or have the kind of indefatigable enthusiasm for retrieving that makes a good contraband-sniffing dog? How about using breed stereotypes to guide public policy decisions on whether some dogs are more likely than others to present a danger to people, or simply to assess whether that dog coming toward us means us good or ill?

---

The source material for this article is a paper by Janis Bradley, published by the National Canine Research Council, entitled “The Relevance of Breed in Selecting a Companion Dog.”

## Turns out it's not that simple.

First, there is the "what kind of dog is that?" question. Probably at least half of the estimated 77.5 million dogs in the U.S. are mixed breeds. It's common practice among people working in rescues and shelters to identify the dogs in their care as "predominantly breed X" or as an "X/Y" mix. Recently, when scientists used DNA analysis to test the accuracy of such labeling, they found that among dogs labeled by adoption workers, only one dog in four actually had the named breed confirmed as significantly - much less, predominantly - represented.

This would not be a surprise to any geneticist or indeed, anyone who has ever glanced at Scott and Fuller's venerable 1960's study of canine development and breed characteristics, which found that breeding, for example, a Basenji to a Cocker Spaniel often resulted in puppies with little or no resemblance to either parent.

And even reliable identification of the ancestry of a mixed-breed dog by itself wouldn't help us predict an increased likelihood of known, genetically driven traits - say, the blood-clotting disorder that plagues Dobermans or the heart defects of Cavaliers. The parents of any mixed-breed dog have, by definition, waded out the closed gene pool that makes purebred dogs such fertile ground for genetic research. The inevitable inbreeding of purebred populations, combined with the phenomenon called genetic drift, gradually decreases overall genetic diversity; more and more animals have fewer and fewer variable traits, including characteristics that aren't deliberately selected for or against. But as researchers found with a colony of keen enough to race. Now, a 75 percent incidence of a trait sounds pretty high. You'd certainly take those odds in Vegas at the roulette wheel. But his is a trait that's already extremely common across the species; it is, in all likelihood the most widespread of the predation behaviors of hunting, stalking, chasing, killing, dissecting and eating first

wolves in Sweden, even inbreeding so severe that it causes infertility can be reversed by the introduction of just one outsider. So, if we could demonstrate such a thing as "acting like a Beagle" or "acting like a Basenji," there would be little reason to expect either one from the offspring of a Beagle/Basenji pairing.

But what about those purebred Basenjis and Beagles and Cattle Dogs and Afghans and Golden Retrievers? Can't we expect them to behave consistently in ways that resemble work at which they were once selected to excel?

## Yes and No.

The cause of my Annie, the lovely, fawn-colored Greyhound camouflaged in a pile of pillows on my couch as I write this, may be instructive. She came into rescue directly from the breeding farm. It's obvious why she never made it to the racetrack. When my other Greyhound, Henry, a racer successful enough to stay alive until retirement at four, barks and quivers at the living room window at the sight of a squirrel or takes off in an ecstatic (albeit futile) pursuit of a jackrabbit at the local off-leash park, Annie looks up blandly and then, with a clear "*Whatever,*" goes back to her interrupted sniffing or chewing or resting.

And yet, every single one of her ancestors, going back scores, perhaps even hundreds, of generations, was hyper-motivated to chase. They would not have had the opportunity to reproduce otherwise.

---

**"Reliably increasing the likelihood of complex behaviors through selective breeding isn't easy."**

---

Racing Greyhounds are bred for two things only: a keen inclination to pursue small, fast-moving furry things and the physical ability to do it at a great speed. Racing industry insiders estimate that only about 70 to 80 percent of the dogs who result from this ruthless selection process are

observed and described by the famous wolf ethologist, David Mech. Most dogs already do this.

---

So these days, when people look fondly at the breed they fancy or angrily at the one they fear and say to me, “They’re not *like* other dogs,” I remind my little voice to recite, “Well, actually, they kind of *are*.”

---

If you take more complex behaviors that are actually selected against in the wild, like compulsively fighting other dogs and failing to respond to the doggy body language equivalent of “crying uncle,” for example, your odds of reliably producing the behavior through artificial selection go down dramatically. This explains how so many of the so-called “game-bred” dogs from fight busts (like the ones rescued from Michael Vick’s fighting operation) have gone on to live companionably with other dogs as relative couch potatoes in normal homes.

Reliably increasing the likelihood of complex behaviors through selective breeding isn’t easy. And racing Greyhounds are one of only a handful of dog breeds where this is still even attempted. Since the advent of modern purebreds in the late 19<sup>th</sup> century and the subsequent closing of breed registries, selection criteria have focused almost exclusively on appearance. Qualities of temperament are sometimes mentioned, although not in ways that can be practically applied in the show ring, where - as biologist Ray Coppinger has pointed out - the behavior required is standing, and to a lesser degree, trotting alongside a handler. Most purebred dogs come out of this selection system.

So these days, when people look fondly at the breed they fancy or angrily at the one they fear and say to me, “They’re not *like* other dogs,” I remind my little voice to recite, “Well, actually, they kind of *are*.”

---

*Janis Bradley, author of Dogs Bite, but Balloons and Slippers are More Dangerous and Dog Bites: Problems and Solutions was a founding faculty member and taught for ten years at the San Francisco SPCA Academy for Dog Trainers, which gained a reputation as the “Harvard for Dog Trainers,” where more than 400 students were prepared for careers as dog professionals.*

# RESIDENT DOG VS. FAMILY DOG WHAT IS THE DIFFERENCE?

**All dog owners are responsible for the dogs in their care. Consider the difference between Resident Dogs and Family Dogs:**



**Windsor as a resident dog**



**Windsor as a family dog**

## **A RESIDENT DOG**

Resident dogs are dogs whose owners maintain them exclusively on chains, in kennels, or in yards; and/or obtain them for negative functions (such as guarding, fighting, protection, and irresponsible breeding). Because resident dogs are maintained in ways that isolate them from regular, positive human interactions, they cannot be expected to exhibit the same behavior as family dogs.

## **A FAMILY DOG**

Family dogs are dogs whose owners afford them opportunities to learn appropriate behavior and to interact with humans on a regular basis in positive and humane ways, and who give them the tools necessary to live harmoniously in our world.

**We will achieve safer, more humane communities when we hold owners of all dogs accountable to high standards of humane care, custody and control.**

## The quality of a dog's relationship to humans crucial determinant of social behavior

---

For more than a decade, Jozsef Topál has been at the forefront of research indicating that dogs have a special ability, that few other animals possess, to notice and respond to social signals from humans. Topál and his colleagues at Loránd Eötvös University in Hungary have begun to demonstrate that this canine ability to connect with humans is enhanced, if not determined, by the amount and kind of interaction a dog has had with people. The primary distinction is not whether the dog has been trained or even when he was first exposed to contact with people as a puppy. The watershed seems to be between dogs that live with people as day-to-day companions, and those who live in relative isolation from humans.

Topál compared how two groups of dogs responded to a problem: figuring out how to access food in a pan that was placed under a barrier in such a way as to require the dogs to reach under the barrier and pull the pan out by the handle. One group of dogs, labeled *companions*, lived "in the house as an integral member of the family." The dogs in the other group lived apart from people, and were "kept outside the house as a guard or for some other purpose." Both groups included individuals who had had obedience training. What the researchers found was that the dogs in the first group were less eager to try to solve the puzzle on their own than were the outside dogs. These *companion* dogs instead tended to look to their owners repeatedly, stayed closer to their owners during the experiment and generally waited for encouragement from their owners before attempting to get at the food, regardless of whether they had ever had any obedience training. Topál and his colleagues concluded that life as a companion enhanced not only the bond between dog and human, but also the dog's tendency to look to the human for clues as to how to behave.

NCRC Founder and Director of Research Karen Delise has for years emphasized a similar distinction, based upon her research. Delise draws a distinction between what she terms *family dogs*, those who have the chance to "learn appropriate behavior and to interact with humans on a regular basis in positive and humane ways", and what she deems *resident dogs*, those who have been deprived of such close interactions. It is unrealistic, she says, to expect these two groups of dogs to behave similarly. We see further evidence in the controlled experiments of Topál that canine behavior is profoundly influenced by the function of the dog and that the "quantity and quality of social experiences influence later social behavior and social preferences."

"The whole model is about responsible pet ownership," writes Bill Bruce, Director of Calgary Animal and Bylaw Services, and an advisor to NCRC. "In North America, we don't really have an animal problem; we've got a people problem. I think that's the first realization you've got to come to - it's not about the animal, it's about the people." The findings of Topál and his colleagues, and those of Delise, confirm Bruce's cogent analysis.

Delise, K, "Resident Dog vs. Family Dog: What is the Difference?" available at [http://www.nationalcanineresearchcouncil.com/uploaded\\_files/tinymce/Family\\_v\\_Resident\[1\].pdf](http://www.nationalcanineresearchcouncil.com/uploaded_files/tinymce/Family_v_Resident[1].pdf)

Topál J., Miklósi Á, Csányi V, "Dog-Human Relationship Affects Problem Solving Behavior in the Dog," *Anthrozoos*, 1997; 10: 214-224.

Dog bite-related fatalities are so extremely rare that not even a state could ban enough dogs to insure that they had prevented even one. (Consider: in Denver, Colorado, after they banned pit bull dogs in 1989, they had another dog bite-related fatality in the Denver area, involving another type of dog.)

Spain, Italy, Great Britain and the Netherlands have all reported that their breed specific regulations have not produced a reduction in dog bite incidents. The Toronto Humane Society surveyed health departments throughout the province of Ontario, and reported that the breed ban enacted in 2005 had not produced a reduction in dog bites. In Winnipeg, Manitoba, after the city banned one type of dog, dog bites actually rose, just involving other types of dogs. Reports from Denver, Colorado, Miami-Dade, Florida, Prince George's County, Maryland, and Omaha, Nebraska all tell the same story.

While there is no scientific evidence that one kind of dog is more likely to injure a person than another kind of dog and BSL's documented record is one of ineffectiveness, BSL remains a policy that some find attractive. Patronek, Marder and Slater explain why.

"It is our belief," they write in their conclusion, "that BSL is based largely on fear, and it has been emphasized that appeals to fear have their greatest influence when coupled with messages about the high efficacy of the proposed fear-based solution."

The documented failures of BSL, now combined with the NNB analysis, can be marshaled to undermine such fear-based appeals. BSL proponents will be unable to show "high efficacy of the fear-based solution" or that BSL is rationally related to the public safety issues communities are typically attempting to address when implementing BSL.

The complete article can be purchased from the *Journal of American Veterinary Medical Association* at <http://avmajournals.avma.org/doi/full/10.2460/javma.237.7.788>

---

<sup>i</sup> Patronek, G., Slater, M., Marder, A., "Use of a number-need-to-ban calculation to illustrate limitations of breed-specific legislation in decreasing the risk of dog bite-related injury," *JAVMA*, vol 237, Number 7, October 1, 2010

# DOG BREED SPECIFIC LEGISLATION

## The cost to people, pets and veterinarians, and the damage to the human-animal bond.

Veterinarians, their clients, and their clients' pets in 300 cities and towns in the United States live with special burdens and added costs because of ordinances banning or restricting dogs of one or more breeds and breed mixes. Thirty-six breeds of dogs and mixes of those breeds have been restricted, in various combinations and groupings. These restrictions and bans compromise the human-animal bond and complicate the professional landscape for veterinarians.

**“There has never been any evidence that breed bans or restrictions contribute to improved public safety.”**

AVMA, the CDC, the National Animal Control Association, the Association of Pet Dog Trainers, and virtually all animal welfare charities oppose breed-specific regulation.<sup>1</sup> AVMA PLIT recently released a statement opposing breed discrimination by insurers.

There has never been any evidence that breed bans or restrictions contribute to improved public safety. The Netherlands repealed its breed ban last year because, based upon a report from a committee of experts, the ban had not led to any decrease in dog bites.<sup>2</sup> Italy repealed its breed-specific regulations in April of this year.<sup>3</sup>

### DEMONIZED DOGS THEN

As America's conflict over slavery intensified, public attitudes towards the bloodhound paralleled the increasingly negative attitudes towards the dogs' most publicized function: slave catching. The depiction of the slave catcher's dog in stage re-enactments of UNCLE TOM'S CABIN made him an object of dread to ordinary citizens, and an object of attraction to dog owners who wanted dogs for anti-social purposes. As these owners acquired more and more dogs, serious incidents – and fatalities – associated with dogs identified as bloodhounds became prominent in the public press.<sup>4</sup>

In the 20<sup>th</sup> century, other groups of dogs replaced the bloodhound as objects of dread, most notably the German Shepherd (In 1925, a New York City magistrate said they should be banned.<sup>5</sup> Australia banned the importation of German Shepherds from 1928 until 1973<sup>6</sup>), the Doberman Pinscher (frequently associated with soldiers of the Third Reich), and the Rottweiler (portrayed as the guardian of Satan's child in the popular 1976 film THE OMEN).

### DEMONIZED DOGS NOW

Early in the 20<sup>th</sup> century, pit bull type dogs enjoyed an excellent popular reputation. An American Bull Terrier had symbolized the United States on a

World War One propaganda poster. “Tighe”, a pit bull type dog, had helped sell Buster Brown shoes. Pete the Pup, the “little rascals” pit bull pal of the Our Gang comedies, was the first AKC-registered Staffordshire Terrier (Registration number A-103929).

In 1976, the Federal government amended the Animal Welfare Act to make trafficking in dogs for the purposes of dog fighting a crime. The media focused on the dogs, rather than on the people who fought the dogs; and the dogs made headlines. Monster myths of super-canine powers began to dominate the stories.<sup>7</sup> As had happened to the bloodhound, the myths attracted the kind of owners who use dogs for negative functions. Sensationalized, saturation news reporting of

---

**“Dog bite statistics are not statistics, and do not give an accurate representation of dogs that bite.”<sup>10</sup>**

---

incidents involving dogs called pit bulls, linked them in the public mind almost exclusively with criminal activity. This small subset of dogs being used for these negative purposes came to define the millions of pit bull type dogs living companionably at home.

### **WRONG NUMBERS, NOT STATISTICS**

The Centers for Disease Control (CDC) attempted to identify the breeds of dogs involved in fatal human attacks.<sup>8</sup> The study period, 1979–1998, happened to coincide with the sensationalized media portrayal and resulting notoriety of pit bulls and Rottweilers.<sup>4,7</sup>

In reporting their findings, the researchers made clear that the breeds of dogs said to be involved in human fatalities had varied over time, pointing out that the period 1975–1980 showed a different distribution of breeds than the later years.<sup>8</sup> Subsequently, Karen Delise of the National Canine Research Council reported that, in the decade

1966–1975, fewer than 2% of all dogs involved in fatal attacks in the United States were identified as of the breeds that figured prominently in the CDC study.<sup>4</sup>

The CDC has since concluded that their single-vector epidemiological approach did not “identify specific breeds that are most likely to bite or kill, and thus is not appropriate for policymaking decisions related to the topic.”<sup>1</sup> AVMA has published a statement to the same effect.<sup>9</sup>

“Dog bite statistics are not statistics, and do not give an accurate representation of dogs that bite.”<sup>10</sup> Nevertheless, the questionable data-set covering only one particular 20-year period, and not the

researchers’ conclusions and recommendations, is repeatedly cited in legislative forums, in the press, and in the courts to justify breed discrimination. Dr. Gail Golab of the AVMA, one of the researchers involved in the CDC project, said, “The whole point of our summary was

to explain why you can’t do that. But the media and the people who want to support their case just don’t look at that.”<sup>11</sup>

The researchers had suspected that media coverage of “newsworthy” breeds could have resulted in “differential ascertainment” of fatalities by breed attribution. Relying on media archives, of the 327 fatalities identified within the 20-year period, the researchers located breed or breed-mix identifications for 238, approximately 72% of the total. More than 25 breeds of dogs were identified.<sup>8</sup>

Of those incidents for which the researchers could find no breed attributions (n = 89), Karen Delise of the National Canine Research Council later located breed attributions in 40; and 37 of these cases involved dogs identified as other than Rottweiler and pit bull, a result that confirmed the researchers concerns regarding “differential ascertainment” of incidents because of breed bias.<sup>12</sup>

In addition to the problem of the small, unrepresentative, and incomplete data sets, the researchers expressed concern about the reliability of the breed identifications they had obtained, and were uncertain how to count attacks involving “cross bred” dogs.<sup>8</sup>

It is estimated that at least one-half of the dogs in the United States are mixed breed dogs.<sup>13</sup> What is the reliability or significance of a visual breed identification of a dog of unknown history and genetics?

Pit bull is not a breed, but describes a group of dogs that includes American Staffordshire Terriers, Staffordshire Bull Terriers, American Pit Bull Terriers, an increasing number of other pure breeds, and an ever-increasing group of dogs that are presumed, on the basis of appearance, to be mixes of one or more of those breeds. Ordinances restricting or banning dogs generally rely on someone’s visual assessment of their physical characteristics.

The modern science of genetics renders a breed label based on visual identification problematic. According to Sue DeNise, vice-president of MMI Genomics, creators the Canine Heritage Breed Test for mixed breed dogs, each test result is furnished to the dog owner with the following proviso: “Your dog’s visual appearance may vary from the listed breed(s) due to the inherent randomness of phenotypic expression in every individual.”<sup>14</sup>

Scott and Fuller, in their landmark genetic studies, produced offspring of considerable phenotypic variety from purebred and F1 crosses.

Breed identification of a mixed breed dog based on its phenotype is unscientific, and is likely to be contradicted by a DNA test. A study to be published in the Journal of Applied Animal Welfare Science points to a substantial discrepancy between visual

identifications of dogs by adoption agency personnel and the breeds identified in the same dogs through DNA analysis. Of 16 mixed breed dogs labeled as being partly a specified breed, in only 25% of these dogs was that breed also detected by DNA analysis.<sup>15</sup>

## THE LANDSCAPE OF BREED SPECIFIC LEGISLATION

Legislative restrictions range from an outright ban in Denver, Colorado, where, since 1989, thousands of dogs have been seized and killed<sup>16</sup>; to a regulatory catalog of muzzling, neutering, and confinement mandates that only apply to the regulated group, however defined; and to requirements that owners pay special license fees and maintain higher levels of liability insurance. Apart from statutory requirements, some homeowners’ insurers are imposing special requirements before they will include liability coverage for dogs of certain breeds, or are declining to cover dogs of an increasing number

---

**“Breed identification of a mixed breed dog based on its phenotype is unscientific, and is likely to be contradicted by a DNA test.”**

---

of breeds altogether. Rental apartments, planned communities, campgrounds, and neighborhood associations impose a wide range of special rules or restrictions regarding many breeds of dogs.

In a jurisdiction with breed-specific regulations, veterinarians can easily be drawn into an official controversy. When a police officer in Maquoketa, Iowa identified a dog as a pit bull and served notice on the owner that she had to remove it from the town, the owner appealed to the state Office of Citizen’s Aide/Ombudsman. The 21-page report that resulted, chronicles the failure to arrive at an agreed-upon breed identification for the dog. Among other documents, the owner produced

vaccination certificates from her veterinarian that described the dog as a “Rott-mix.” The town countered with another veterinarian’s intake form that described the dog as a “pit mix”.<sup>17</sup>

In January, 2009, the U.S. Department of the Army banned Chows, Rottweilers, pit bulls, wolf hybrids and Doberman Pinschers from all privatized military housing. The previous July, Fort Hood, Texas banned pit bulls and pit bull mixes from government housing. The Fort Hood mission support order specifies that, in the event of a dispute, “the Fort Hood Veterinary Clinic [emphasis mine] will be the deciding authority to determine if a dog is a Pit Bull [sic] cross.”<sup>18</sup>

## HUMANE COMMUNITIES ARE SAFER COMMUNITIES

In “A Community Approach to Dog bite Prevention,” the AVMA Task Force reported, “An often asked question is what breed or breeds of dogs are ‘most dangerous’? This inquiry can be prompted by a serious attack by a specific dog, or it may be the result of media-driven portrayals of a specific breed as ‘dangerous.’ . . . singling out 1 or 2 breeds for control . . . ignores the true scope of the problem and will not result in a responsible approach to protecting a community’s citizens.”<sup>10</sup> Delise, based upon her study of fatal attacks over the past five decades, has identified poor ownership/management practices involved in the overwhelming majority of these incidents: owners obtaining dogs, and maintaining them as resident dogs outside of the household for purposes other than as family pets (i.e. guarding/ protection, fighting, intimidation/status); owners failing to humanely contain, control and maintain their dogs (chained dogs, loose roaming dogs, cases of abuse/neglect); owners failing to knowledgeably supervise interaction between children and dogs; and owners failing to spay or neuter resident dogs not used for competition, show, or in a responsible breeding program.<sup>4</sup>

Focusing on breed or phenotype diverts attention from strategies veterinarians and other animal experts have consistently identified as contributing to humane and safer communities.

## BREED LABELING AND VETERINARY PRACTICE

In an environment of breed discrimination, the breed identification of a dog can have serious consequences with municipal authorities, animal shelters, landlords, and insurers, all of which will compromise the bond between a family and their dogs. Ordinances may obligate owners with expensive special housing and containment requirements. Owners may even be forced to choose between sending a beloved family pet away, or surrendering it to be killed.

Veterinarians who attempt to visually identify the breeds that might make up a dog do not derive any benefit from this activity, while the client may hold the veterinarians to the same professional standard as they would with respect to the delivery of medical services.

It is impossible to breed label dogs of unknown origin and genetics solely on the basis of their appearance. There is so much behavioral variability within each breed, and even more within breed mixes, that we cannot reliably predict a dog’s behavior or suitability based on breed alone. Each dog is an individual.<sup>19</sup> Owners may be influenced as to what behavior to expect from their dog, based upon breed stereotypes.<sup>20</sup> Veterinarians must take the lead, and free themselves from stereotypes, in order to better serve their clients, their clients’ animals, and society.

---

Jane Berkey, President  
**Animal Farm Foundation, Inc.**



## REFERENCES

- 1 <http://www.cdc.gov/HomeandRecreationalSafety/Dog-Bites/dogbite-factsheet.html>;  
[http://www.avma.org/issues/policy/dangerous\\_animal\\_legislation.asp](http://www.avma.org/issues/policy/dangerous_animal_legislation.asp);  
<http://www.nacanet.org/poldanger.html>;  
[http://www.apdt.com/about/ps/breed\\_specific\\_legis.aspx](http://www.apdt.com/about/ps/breed_specific_legis.aspx).
- 2 Associated Press, "Dutch government to lift 25-year ban on pit bulls," June 10, 2008
- 3 ANSA, "Italy Scraps Dangerous dog Blacklist," March 3, 2009
- 4 K. Delise, The Pit Bull Placebo: The Media, Myths, and Politics of Canine Aggression, Anubis Publishing, Ramsey, New Jersey, 2007
- 5 New York Times, January 1, 1925
- 6 German Shepherd Dog Club of South Australia, "History of the Breed," <http://gsdcsa.org.au/breedhistory.htm>.
- 7 New York Times, 'Sport' Pitting Dog Against Dog Is Reported Spreading Secretly,' December 10, 1978; E.M. Swift, "The Pit Bull: Friend and Killer," Sports Illustrated, July 27, 1987; D. Brand, "Time Bomb on legs," Time Magazine July 27, 1987
- 8 J. Sacks, L. Sinclair, G. Golab, et al, "Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998," JAVMA, Vol 217, No. 6, Sept 15, 2000.
- 9 AVMA, "To Whom It May Concern," open letter, copy furnished upon request
- 10 B. Beaver, et al, "A community approach to dog bite prevention: American Veterinary Medical Association Task Force on Canine Aggression and Human-Canine Interactions," JAVMA, Vol 218, No. 11, June 11, 2001
- 11 Golab quoted in "Dangerous Breeds?," Best Friends Magazine, Sept/Oct 2004, p 14
- 12 <http://nationalcanineresearchcouncil.com/dog-bites/dog-bite-studies/wrong-numbers-notstats/>; G. Patronek, S. Slavinski, "Zoonosis Update: Animal Bites," JAVMA, VOL 234, No. 3, February 1, 2009.
- 13 B. Beaver, "In Opposition to the Ontario Law," affidavit submitted in Cochrane v In Right of Ontario, Ontario Superior Court of Justice, Court File No. 05-CV-295948PDI
- 14 Quoted in J. Brackman, "Can DNA Decipher the Mix?" The Bark, Issue #50, Sep/Oct 2008
- 15 V. Voith, E. Ingram, K Mitsouras, et al, "Comparison of Adoption Agency Identification and DNA Breed Identification of Dogs," Journal of Applied Animal Welfare Science, In Press July 2009
- 16 K. Delise, "Denver: Selective Counting and the Cost to Dogs and People, Animal Law Coalition, <http://www.animallawcoalition.com/breed-bans/article/648>
- 17 Investigative Report State of Iowa Citizens' Aide/Ombudsman, "Investigation of Maquoketa's Pit Bull Ban Ordinance and Enforcement," Case File 0603634, December 21, 2006.
- 18 HQ, III Corps & Fort Hood Fort Hood, TX 76544 041229LAug 08, MISSION SUPPORT ORDER PC 08-07-269
- 19 A. Marder and B. Clifford, "Breed Labeling dogs of Unknown Origin," <http://nationalcanineresearchcouncil.com/wp-content/uploads/2008/10/breedlabelingnrc.pdf>
- 20 Duffy, D.L. et al, "Breed differences in canine aggression," Appl. Anim. Behav. Sci, (2008) doi: 10.1016/j.applamin.2008.04.006; S. Gosling, et al, "A Dog's Got Personality: A Cross Species Comparative Approach to Personality Judgments in Dogs and Humans," Journal of Personality and Social Psychology, 2003, Vol. 85, No.6, 1161-1169

# A COMPARISON OF VISUAL AND DNA IDENTIFICATION OF BREEDS OF DOGS

We are all aware of the newspaper articles, magazine stories, and TV segments that show pictures of dogs and then reveal DNA breed analyses of the dogs. Surprise – the DNA results are not what were expected based on the appearance of the dogs or the owners’ beliefs. Those of us who walk through shelters and animal control facilities compare the posted breed descriptions of the dogs to what they look like to us – with frequent differences of opinions. Those who have worked at shelters and similar facilities are aware that as dogs move through the steps in admission or during their stay that their breed descriptions may change. It is my impression, when visiting animal control or adoption agencies, that most medium to large size dogs with straight, short/ medium length brown hair coats are cast as German shepherds or shepherd

mixes, dogs with a black spot on their tongues are designated Chow mixes, and most medium sized, stocky, broad headed, small eared dogs with a short hair coats are pitbulls or pit-bull mixes.

“the DNA results  
are not what  
were expected  
based on the  
appearance of  
the dogs or the  
owners’ beliefs.”

It is not easy to visually identify the breeds of dogs of unknown parentage accurately. Sometimes dogs just don’t look like either parent. Scott and Fuller’s work on the genetics and social behavior of dogs involved studying purebred dogs, F1 crosses of purebreds, backcrosses and F2 crosses.<sup>1</sup> Photographs of some of these F1 and F2 puppies depict that they do not resemble either purebred parent, nor do the photographs of the F2 generations dogs look like their mixed breed parents. We don’t know how many of the offspring did look like their purebred ancestors, but clearly not all resembled parents or grandparents.

Shelter dog breed assignments may be based on what the dogs look like to someone at the shelter or because owners relinquishing their dogs have identified the dogs as a specific breed. Newborn and young puppies may be identified as a certain breed because the mother dog resembled a purebred dog. In the latter case, the sire of the litter could have been any breed or several dogs could have fathered puppies in the same litter. When the puppies grow up they don’t look anything like their mother or litter mates. These breed or mixed breed identifications may eventually find their way into data bases – be it through population data, dog bites, serious dog attacks, behavior problems, or disease statistics.

Rarely are owners permitted to simply fill out forms that ask about the breed by only stating that the dog is a mixed breed or of unknown parentage. If they do so, the follow-up question often is “What is it mostly?”, or “What is its most predominant breed?”, or “What does it look like mostly?” This information may be solicited by insurance companies, landlords, housing associations, licensing agencies, mandatory dog bite reports, veterinary

medical records, the media, and researchers trying to determine the likelihood of involvement of specific breeds in study populations. For example, in the methodology of one elegantly designed study, owners were asked “what breed they considered their dog: if more than one breed was specified, they were asked which breed they considered to be predominant.”<sup>2</sup> This article became part of the impetus for many recommendations and restrictions intended to reduce dog bites.

High profile articles in JAMA and JAVMA have reported dog bite fatalities and listed breeds involved in such attacks.<sup>3,4</sup> The data used was obtained by “combining data from the National Center for Health Statistics

and computerized searching of news stories. Karen Delise has presented compelling arguments in her recent book, *The Pit Bull Placebo*, that undermines conclusions and implications of these reports.<sup>5,6</sup>

A short report in press in the Journal of Applied Animal Welfare Science indicates low agreement between the identification of breeds of dogs by adoption agencies and DNA identification.<sup>7</sup> The dogs in this study were of unknown parentage and had been acquired from adoption agencies. In only a quarter of these dogs was at least one of the breeds proposed by the adoption agencies also detected as a predominant breed by DNA analysis. (Predominant breeds were defined as those comprised of the highest percentage of a DNA breed make-up.) In 87.5% of the adopted dogs, breeds were identified by DNA analyses that were not proposed by the adoption agencies. A breed must have been detected at a minimum of 12.5% of a dog’s make-up to be reported in the DNA analysis.

**“The discrepancy between breed identifications based on opinion and DNA analysis, as well as concerns about reliability of data collected based on media reports, draws into question the validity and enforcement of public and private policies pertaining to dog breeds.”**

Reports of DNA analyses of percentages of pure-bred dog breed ancestry, while accurate most of the time, are not infallible. The laboratories providing such analyses may have qualifiers in their reports stating that there is an 85% or 90% validity of the results and indicate which results have lower confidence levels. Different testing laboratories

may report different results depending on which dogs were used to develop their standards and how the laboratories analyze the samples.<sup>8</sup> As the tests are refined, the same laboratory may report slightly different results at different points in time.

The discrepancy between breed identifications based on opinion and DNA

analysis, as well as concerns about reliability of data collected based on media reports, draws into question the validity and enforcement of public and private policies pertaining to dog breeds.

Dr. Amy Marder, Animal Rescue League of Boston and Director for the Center for Shelter Dogs, has proposed that dogs adopted from shelters in the U.S. simply be identified as “American Shelter Dogs”. This might solve a lot of problems, as well as promote pride and ownership of an “American Shelter Dog.”

---

Victoria Lea Voith  
PhD, DVM, DACVB  
**Professor, Animal Behavior,  
Western University**



## REFERENCES

1. J P Scott, J L Fuller, (1965). *Genetics and the Social Behavior of the Dog*. The University of Chicago Press.
2. K A Gershman , J J Sacks, J C Wright J.C.( 1994). Which Dogs Bite? A Case-Control Study of Risk Factors. *Pediatrics*, 93, 913-916
3. J J Sacks, R W Sattin,, S E , Bonzo, 1989). Dog-Bite related Fatalities from 1979 through 1988. *JAMA*. 262, 1489-1492.
4. J J Sacks, L Sinclair,, J Gilchrist, et al (2000). Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998. *JAVMA*, 217, 836-840.
5. K. Delise, *The Pit Bull Placebo: The Media, Myths, and Politics of Canine Aggression*, Anubis Publishing, Ramsey, New Jersey, 2007
6. J R Berkey, DOG BREED SPECIFIC LEGISLATION: THE COST TO PEOPLE, PETS AND VETERINARIANS, AND THE DAMAGE TO THE HUMAN ANIMAL BOND, Proceedings of Annual AVMA Meeting, July 11-13, 2009, Seattle.
7. V. Voith, E. Ingram, K Mitsouras, et al, "Comparison of Adoption Agency Identification and DNA Breed Identification of Dogs, *Journal of Applied Animal Welfare Science*, July 2009.
8. M Kochan,( 2008, October). Can I see some I.D.? *Dogfancy*, 38-41

## COMPARISON OF ADOPTION AGENCY BREED IDENTIFICATION AND DNA BREED IDENTIFICATION OF DOGS

This study was undertaken to compare breed identification by canine adoption agencies with identification by DNA analysis of 20 dogs of unknown parentage

### BACKGROUND

#### Breed Specific Regulations:

- Government legislation, housing associations, landlords, and insurance companies may either prohibit ownership or impose constraints on ownership of specific breeds or mixed breeds
- Restrictions may ban ownership, require owners to move or relinquish their dogs, require dogs to be muzzled or confined in a specific manner, and may even result in confiscation and/or euthanasia
- Restrictions are typically worded as “any purebred X (name of breed) or dog that has any characteristics of breed X”
- Identity of the dog might be assigned by a variety of people
- If people are unsure what breed a dog is, they are often forced to guess and asked to name “the breed the dog looks most like”

#### Shelter Dogs:

- The majority are mixed breeds of unknown parentage
- It is common practice for staff to assign breed based on appearance
- Breed identity elicits behavioral expectations and affects ease of adoption

### MATERIALS AND METHODS

#### Subjects:

- 40 dogs met the entrance criteria of having been adopted, being available on specific dates for photographs and blood samples, and having fully erupted canine teeth
- These dogs were placed in 4 weight categories and 5 were randomly selected from each category:
  - < 20 pounds, 21-40 pounds, 41-60 pounds, and > 60 pounds
- 20 dogs entered the study:
  - 12 Spayed Females; 1 Intact Female; 7 Castrated Males
  - 5.5 months to 12 years old
- The dogs had been acquired between 2.5 months and 11.5 years prior to the study
- The dogs had been adopted from 17 different locations (shelters, rescue groups, foster housing, animal control and similar agencies)

#### DNA Analysis:

- MARS VETERINARY™, Lincoln, Nebraska, performed the DNA analyses and reported to have “an average accuracy of 84% in first-generation crossbred dogs of known parentage”
- All of the breeds identified by the adoption agencies were in the MARS database
- Breeds must comprise at least 12.5% of the dog’s make-up to be reported

Poster Presentation: ACVB/AVSAB Veterinary Symposium; July 30, 2010 Atlanta, Georgia  
Poster Presentation: Evidence-Based Veterinary Medicine Symposium; June 14-15, Western U, Pomona, CA

# DOG BREED IDENTIFICATION

V Voith, C Chadik, E Ingram, K Irizarry, K Mitsouras, J Marilo  
Western University of Health Sciences Pomona, California

## RESULTS

See Poster Photographs and Legends. The grid behind the dogs depicts 1 foot squares.

#### Adopting agencies identifications

- All dogs had been identified as mixed breeds at time of adoption
- 16 dogs had been described as a specific breed mix
- 4 dogs were only identified by a “type” (2 “shepherd” mixes and 2 “terrier” mixes)
- 1 dog had been identified by both a specific breed (Chow Chow) and a “type” (terrier)

#### DNA and Adoption Agency Comparison

- Only 25% (4/16) of the dogs identified by agencies as specified breed mixes were also identified as the same predominant breeds by DNA (3 were only 12.5% of the dogs’ composition)
- No German Shepherd Dog ancestry was reported by DNA in the 2 dogs identified only as “shepherd mixes” by adoption agencies
- In the 3 dogs described as terrier mixes, a terrier breed was only identified by DNA in one dog
- In 15 of the 16 dogs, DNA analyses identified breeds as predominant that were not proposed by the adoption agencies

## DISCUSSION

- Looking at the photographs, it is apparent that many mixed breed dogs do not closely, if at all, resemble the predominant breeds identified by DNA
- Mixed breed dogs may not look like their parents or grandparents
- These results do not allow a conclusion that shelter personnel cannot identify purebred dogs
- Breed identities at adoption agencies can be assigned by owners relinquishing their dogs, by anyone working or volunteering at a facility, or be based on what a puppy’s mother looks like

## CONCLUSIONS

- There is little correlation between dog adoption agencies’ identification of probable breed composition with the identification of breeds by DNA analysis
- Further evaluation of the reliability and validity of visual dog breed identification is warranted
- Justification of current public and private policies pertaining to breed specific regulations should be reviewed

## REFERENCES

- Voith VL, Ingram E, Mitsouras K, Irizarry K. (2009). Comparison of Adoption Agency Breed Identification and DNA Breed Identification of Dogs. Journal of Applied Animal Welfare Science, 12, 253-262.

© 2010 Victoria L Voith. Printed in USA.



Adopted as: “Terrier”; Chow Chow mix at 7.5 months old  
DNA: 25% each: American Staffordshire Terrier, Saint Bernard  
12.5% Shar-Pei



Adopted as: Cocker Spaniel mix at 5 years old  
DNA: 25% each: Rottweiler, American Eskimo Dog, Golden Retriever, Nova Scotia Duck-Tolling Retriever



Adopted as: Border Collie mix at 7 weeks old  
DNA: 25% each: English Springer Spaniel, German Wirehaired Pointer



Adopted as: “Shepherd” mix at 11 weeks old  
DNA: 25% Lhasa Apso  
12.5% each: Bischon Frise, Australian Cattle Dog, Italian Greyhound, Pekingese, Shih Tzu



Adopted as: German Shepherd/Labrador mix at 1 year old  
DNA: 12.5% each: German Shepherd, Australian Shepherd, Siberian Husky, Chow Chow, Dalmatian



Adopted as: Labrador mix at 2 years old  
DNA: 25% each: Chow Chow, Dachshund, Nova Scotia Duck-Tolling Retriever



Adopted as: Corgi mix at 3 months old  
DNA: 12.5% each: Pomeranian, Tibetan Terrier, Shih Tzu, Black Russian Terrier, American Water Spaniel



Adopted as: German Short-haired Pointer mix at 5 months old  
DNA: 25% each: French Bull Dog, Chow Chow; 12.5% each: Great Dane, Gordon Setter, Dalmatian, Clumber Spaniel



Adopted as: “Terrier” mix at 3 months old  
DNA: 25% Dalmatian;  
12.5% each: Boxer, Chow Chow, Newfoundland



Adopted as: Silky Terrier mix at 3.5 years old  
DNA: 25% each: Pekingese, Australian Shepherd



Adopted as: Chow Chow mix at 6 weeks old  
DNA: 25% each: German Shepherd Dog, American Staffordshire Terrier  
12.5% each: Chow Chow, Bull Terrier



Adopted as: “Shepherd” mix at 1 year old  
DNA: 12.5% each: Boxer, Dalmatian, Dachshund, Glen of Inual Terrier, Australian Shepherd Dog



Adopted as: Australian Shepherd Dog mix at 4 months old  
DNA: 12.5% Alaskan Malamute



Adopted as: Australian Shepherd Dog mix at 3 months old  
DNA: 25% each: Standard Schnauzer, German Shepherd Dog;  
12.5% English Setter



Adopted as: Labrador mix at 5 years old  
DNA: 12.5% each: St. Bernard, Gordon Setter, Chow Chow, Golden Retriever



Adopted as: Australian Shepherd Dog/Labrador mix at 3 months old  
DNA: 12.5% each: Australian Shepherd Dog, Boxer, Golden Retriever



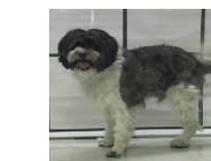
Adopted as: King Charles Spaniel mix at 1 year old  
DNA: 12.5% each: Cavalier King Charles Spaniel, Chihuahua, Shih Tzu



Adopted as: Miniature Pinscher/Poodle mix at 3 months old  
DNA: 50% Miniature Pinscher;  
12.5% Dachshund



Adopted as: “Terrier” mix at 6 months old  
DNA: 25% Border Collie;  
12.5% each: Cocker Spaniel, Bassett Hound



Adopted as: Tibetan Terrier mix at 5 years old  
DNA: 25% Shih Tzu;  
12.5% each: Pekingese, Cocker Spaniel, Miniature Schnauzer

## **Dog breed identification is no basis for shelter policy.**

A new study further confirms the unreliability of visual breed identification used in dog adoption, lost and found, and regulation.

The study, underwritten by Maddie's Fund® and reported on the Maddie's Fund® website,<sup>1</sup> dealt with the limited problem of identifying "pit bull" dogs in four Florida animal shelters. Shelter staff and veterinarians regularly assign breed descriptors to the dogs in their care; but, the authors asked, what are the reliability and repeatability of these breed assignments? They developed their project based upon this question, to test the hypothesis that agreement among staff members regarding identification of "pit bull" dogs would be poor, and that there would be poor agreement between staff breed identifications and DNA breed signatures.

The results from the four shelters participating confirmed the hypothesis. The authors report that shelter staff named twice as many dogs as "pit bulls" based on visual inspection as were identified as "pit bulls" based on DNA analysis. Further, shelter staff frequently disagreed with each other regarding the breed composition of the more than 100 dogs examined.

(Note: "Pit bull" is a term applied to an ever-increasing group of dogs of a number of breeds, along with dogs suspected, based on visual inspection, to be mixes of those breeds. "Pit bull" is not recognized as a breed by kennel clubs, dog registries, or companies offering DNA dog breed analysis.)<sup>2</sup>

The authors' findings regarding "pit bull" dogs are consistent with the findings of Dr. Victoria Voith and her colleagues regarding other mixed breed dogs.<sup>3</sup> Breed identifications based upon visual examination correlate poorly with DNA breed analysis, and are subject to disagreement among observers.

These results echo the findings of modern canine genetics. A remarkably small amount of genetic material exerts a remarkably large effect on the size, shape, etc. of a dog.<sup>4</sup> For example, Mars Wisdom Panel™ uses 321 genetic markers to differentiate breeds of dogs. However, Mars cautions that many, perhaps most, of these markers determine traits that are not observable.<sup>5</sup> According to geneticists, as few as six markers may determine the shape of the dog's head, with the rest influencing other internal and external traits.<sup>6</sup> This being the case, how could one examine a dog's head and then name the breed of the dog, or predict its behavior, or its suitability for a particular adopter? In fact, a paper published last year in the *Journal of Veterinary Behavior* reported that predicting behavior differences (with respect to aggression) in dogs based on appearance, including the shape of the head, is incorrect.<sup>7</sup>

The percentage of America's dog population documented as pure bred has been declining in the 21<sup>st</sup> century. Estimates of the percentage of the 78 million American dogs who are undocumented or mixed breed range from a low of 44% to a high of 67%.<sup>8</sup> It is not unreasonable to assume that the percentage of dogs in U.S. shelters who are undocumented or mixed breed is at the highest end of these estimates.

Deciding whether or not a dog is a "pit bull" dog -- or a lab mix, or a shepherd mix – does not advance the welfare of dogs. There is so much behavioral variability within each breed, and even more among breed mixes, that we cannot reliably predict behavior differences on the basis of breed identifications, however derived.<sup>9</sup> Reports based on professional behavior evaluations and pet owner surveys in Europe and North America have borne this out.<sup>10</sup> A recent survey of the available literature by a founding faculty member of the San Francisco SPCA Academy for Dog Trainers has put the relevance of breed in the selection of a companion dog into a new perspective, suggesting that reliance on breed identification as a primary guide in either pet-dog selection or dangerous-dog designation should be abandoned.<sup>11</sup>

We honor our obligations to the dogs in the nation's shelter system when we treat each dog as an individual, focusing on personality and behavior, and stop making guesses regarding breed and then being influenced by preconceptions arising from those guesses.

Visual breed identification has also exerted a harmful influence on public policy. We have placed an entirely unwarranted confidence in dog bite studies, bite reports and news accounts that attempt to relate incidents to breed. Visual breed identification did not only become inaccurate after Dr. Voith and the Maddie's Fund® researchers pointed it out. These researchers are calling our attention to what has always been the case. As Dr. Voith pointed out to the American Veterinary Medical Association in 2009, "The discrepancy between breed identifications based on opinion and DNA analysis, as well as concerns about reliability of data collected based on media reports, draws into question the validity and enforcement of public and private policies pertaining to dog breeds."<sup>12</sup>

<sup>1</sup> K. Olson, J. Levy et al. "Pit Bull Identification in Animal Shelters": A poster that illustrates the project and its result can be found at [http://www.maddiesfund.org/Resource\\_Library/Incorrect\\_Breed\\_Identification.html](http://www.maddiesfund.org/Resource_Library/Incorrect_Breed_Identification.html) (Accessed 7 February 2012)

<sup>2</sup> J. Berkey, "Dog breed specific legislation: The cost to people, pets, veterinarians, and the damage to the human-canine bond," *Proceedings*, Annual AVMA Convention 2009; 1-5.

<sup>3</sup> V. Voith, et al, "Comparison of adoption agency breed identification and DNA breed identification of dogs," *Journal of Applied Animal Welfare Science*, 2009; 12 253-262

<sup>4</sup> AR Boyko, et al (2010) "A Simple Genetic Architecture Underlies Morphological Variation in Dogs," *PLoS Biol* 8(8): e1000451. doi:10.1371/journal.pbio.1000451

<sup>5</sup> Mars Wisdom Panel™ FAQs, <http://www.wisdompanelpro.com/faq.html> (Accessed 7 February 2012)

<sup>6</sup> Personal correspondence with Kristopher Irizarry, Assistant Professor of Bioinformatics, Genetics and Genomics, Western University.

<sup>7</sup> Martinez, A.G., Pernas, G.S., Casalta, J.D., Rey, M.L.S., Palomino, L.F, dIC., "Risk factors associated with behavioral problems in dogs," *Journal of Veterinary Behavior* (2011) 6, 225-231

<sup>8</sup> J. Bradley, *The Relevance of Breed in Selecting a Companion Dog*, National Canine Research Council Vision Series, 2010.

<sup>9</sup> A. Marder and B. Clifford, "Breed labeling dogs of unknown origin," National Canine Research Council, at [http://www.nationalcanineresearchcouncil.com/uploaded\\_files/tinymce/Marder%20viewpoint.pdf](http://www.nationalcanineresearchcouncil.com/uploaded_files/tinymce/Marder%20viewpoint.pdf) (Accessed 7 February 2012)

<sup>10</sup> S. Ott et al, "Is there a difference? Comparison of golden retrievers and dog affected by breed-specific legislation regarding aggressive behavior," *Journal of Veterinary Behavior*, (2008) 3, 134-140; A MacNeil-Allcock, NM Clarke, RA Ledger, D Fraser, "Aggression, behaviour, and animal care among pit bulls and other dogs adopted from an animal shelter," *Animal Welfare*, 2011: 20:463-468; D.L. Duffy et al, "Breed differences in canine aggression," *Appl. Anim. Behav. Sci.* (2008), doi:10.1016/j.applanim.2008.04.006

<sup>11</sup> J. Bradley, op. cit.

<sup>12</sup> V.Voith, "A comparison of visual and DNA identification of breeds of dogs." *Proceedings*, Annual AVMA Convention 2009; 1-3.

# BREED LABELING DOGS OF UNKNOWN ORIGIN

It is impossible to breed label or predict the behavior of dogs of unknown history and genetics solely on the basis of their appearance.



Amy Marder, V.M.D., CAAB,  
Director of the Center for Shelter  
Dogs, Animal Rescue League  
of Boston, Advisor to NCRC



Bernice Clifford  
Director of Behavior and Training,  
Animal Farm Foundation

There is so much behavioral variability within each breed, and even more within breed mixes, that we cannot reliably predict a dog's behavior based on breed alone. Each dog is an individual.

We must take the lead and free ourselves from stereotypes that imply simple solutions to complex issues, in order to better serve our animals and society.

V  
I  
E  
W  
P  
O  
I  
N  
T

# BREED SPECIFIC OR LOOKS SPECIFIC

The term “pit bull characteristics” and “all three bully breeds” are used as descriptions of the dogs that the breed-specific laws would apply to. However, I’m not sure what a “pit bull characteristic” is because the term pit bull does not refer to any specific breed of dog. It is ironic that legislation containing the words

**“I am beginning to believe that breed specific legislation targets nothing more than a small subset of morphological characteristics of dogs and does not address behavior at all.”**



**Kristopher Irizarry, PhD  
Assistant Professor,  
Bioinformatics, Genetics,  
Genomics, Western University**

“breed” and “specific” define “the specific breed” as a nebulous group of three or more distinct breeds along with any other dog that might be mixed with those breeds. It is my professional opinion that this group of dogs must be the most genetically diverse dog breed on the planet. I find it paradoxical that the consensus medical and genetic view is that even one single letter difference between two people’s DNA can result in dramatic differences in behavior, susceptibility to disease and risk of adverse drug reactions, but, when it comes to man’s best friend, the exact opposite argument is made. I think these attempts to “protect society” from dangerous dogs are flawed because the inherent assumption in these laws is that anatomical and morphological characteristics in dogs correlate with certain behaviors. The genetic program that results in a large thick skull, like that of a Labrador Retriever, is not the same genetic program that builds the brain. The former regulates genes that control the cellular differentiation and anatomical patterning of cartilage, muscle and bone. The latter regulates completely different processes including the highly ordered growth of millions of different neurons that migrate and interconnect to form neuronal circuits that communicate the biochemical language of the brain.

The “science” of inferring cognitive and behavioral traits from physical properties of the head and skull (called phrenology) has been discredited in the last century (the 20th century). Why we would allow laws based on phrenology to be enacted in the 21st century is a question worth investigating.

# “OUR RESEARCH DOES NOT SUPPORT BREED-SPECIFIC LEGISLATION”

– Centers for Disease Control (CDC) & American Veterinary Medical Association (AVMA)

Almost every proponent of breed-specific legislation relies on one ten year old study to make their case<sup>1</sup>. Both the CDC and the AVMA have warned that the findings of that study are not an argument for breed legislation of any kind.

## CENTERS FOR DISEASE CONTROL STATEMENT

“[The study] does not identify specific breeds that are most likely to bite or kill, and thus is not appropriate for policy-making decisions related to the topic...There is currently no accurate way to identify the number of dogs of a particular breed, and consequently no measure to determine which breeds are more likely to bite or kill.”

## AVMA STATEMENT

“In contrast to what has been reported in the news media, the data...CANNOT be used to infer any breed-specific risk for dog bite fatalities...”



**WHY DEBATE WHAT THE EXPERTS HAVE ALREADY CONCLUDED?  
THERE IS NO SCIENTIFICALLY VALID EVIDENCE AND NO REASONABLE  
ARGUMENT TO SUPPORT BREED-SPECIFIC LEGISLATION.**

Instead of discriminating against breeds, take responsibility for dog ownership and management practices. The CDC recommends “a community approach to dog bite prevention” that focuses on improving the quality of human-canine interactions and the care of all canine species.

<sup>1</sup>(AVMA) Task Force on Canine Aggression and Human-Canine Interactions  
([http://www.avma.org/public\\_health/dogbite/dogbite.pdf](http://www.avma.org/public_health/dogbite/dogbite.pdf))

# Study Explains Why Breed Specific Legislation Does Not Reduce Dog Bites<sup>i</sup>

---

## **Important article available from *JAVMA* website.**

For years, evidence has mounted that breed specific legislation (BSL) fails to reduce dog bite incidents. The data supporting this conclusion has come from cities and counties all over North America, and from four European countries.

An insightful new analysis, published October 1, 2010 in the *Journal of the American Veterinary Medical Association*, explains why BSL has consistently failed to reduce dog bites. The authors, Gary J. Patronek, VMD, PhD, and Amy Marder, VMD, CAAB, of the Center for Shelter Dogs, Animal Rescue League of Boston; and Margaret Slater, DVM, PhD, of the ASPCA, have applied one of the most valuable and well-recognized tools of evidence-based medicine to this question.

Number needed to treat (called NNT) measures the effectiveness of new medicines or treatments. It asks the question: How many patients have to take the medicine or get the treatment in order for one patient to avoid a bad outcome? The fewer patients that have to be treated in order to avoid a bad outcome, the more effective scientists consider a medicine or treatment to be.

But what if we had to treat thousands of patients to avoid even one bad outcome? Would we bother with a new medicine if the number of people we needed to treat to prevent one bad outcome, was 10,000? If we could only identify 9,900 people suffering from the disease, we could not treat enough people with the new medicine to be sure that even one of them would avoid the dreaded symptom.

This is precisely the result that Patronek and his colleagues obtained when they applied this evidence-based method to estimating how many dogs a community would have to ban to prevent a single, serious dog bite. They called their mystery number the number needed to ban (NNB). Using dog bite injury data from the Centers for Disease Control, the State of Colorado, and other, smaller jurisdictions, along with guesstimates of the population of various breeds or kinds of dogs, the authors calculated the absurdly large numbers of dogs of targeted breeds who would have to be completely removed from a community, in order to prevent even one serious dog bite. For example, in order to prevent a single hospitalization resulting from a dog bite, the authors calculate that a city or town would have to ban more than 100,000 dogs of a targeted breed.

To prevent a second hospitalization, double that number.

# MARYLAND'S EXPERIENCE: THE PUBLIC RECORD & THE TRACEY V SOLESKY RULING

Only a limited number of comprehensive studies have been conducted to address dog bite-related incidents in American communities.

## BALTIMORE CITY

In the 1970s, in reaction to concerns over a growing number of dog bite incidents in Baltimore City, Dr. David R. Berzon, a veterinarian specializing in public health issues, conducted and published three studies on the issue, two of which were co-authored with Dr. John B. DeHoff, who later served as Health Commissioner of Baltimore City.

The findings indicated that dog bites were dramatically increasing:

- In 1953, there were 2,884 recorded dog bites in Baltimore City.
- In 1964, there were 4,442 recorded dog bites in Baltimore City.
- In 1970, there were 6,023 recorded dog bites in Baltimore City.
- **In 1972, dog bites in Baltimore City reached an all-time high of 6,922.**

In 1974, in response to the initial reports of Drs. Berzon and DeHoff, authorities in Baltimore took action, setting higher standards for all owners of all dogs, regardless of breed or type. It was made clear that Baltimore owners must recognize their individual obligation to keeping their community and their dogs safe. Among other changes, the city:

- Enacted a comprehensive Animal Control Ordinance (1974).
- Increased surveillance of animal bites.
- Promoted inter-agency cooperation regarding bite incidents.
- Appointed an advisory council to investigate and make recommendations.
- Undertook a campaign to educate citizens.
- Conducted low-cost vaccination clinics each spring.
- Intensified enforcement of licensing and vaccination requirements.
- Took violators to court.
- Amended ordinances pertaining to humane handling, "public nuisance," etc.

The improvement in community safety was immediate. By 1976, reports of dog bites had fallen to 4,760: a decrease of more than 30% from 1972.<sup>1</sup>

The numbers of reported dog bites have continued to decrease into the 21<sup>st</sup> century, with dog bites numbering less than 1,000 per year in Baltimore City over the past decade.

In 2011, there were 716 reported dog bites in Baltimore City.

### ***Severe dog bites and dog bite-related fatalities in Maryland***

Severe dog bite injuries are extremely uncommon throughout the nation and represent only a small percentage of the total number of reported dog bites. Dog bite-related fatalities are even more uncommon: they are exceedingly rare, both throughout the nation, and in Maryland.

- In the last 6 years, there have been *no* dog bite-related fatalities in Maryland.
- Over the past 47 years, (from 1965 to the present), there have been 12 dog bite-related fatalities in Maryland: an average of 1 every 4 years.
- Nine (9) different breed descriptors have been assigned to the dogs involved in these fatalities.<sup>3</sup>

Between 1965 and 2012, more than 16 different breed descriptors have been assigned to the dogs involved in Maryland cases of severe, non-fatal incidents. No single breed predominates.<sup>4</sup>

### ***Shifting Popularity of Breeds/types of dogs in Maryland & the U.S.***

Dramatic reduction in the reported number of dog bites, rare cases of severe injuries, and even rarer cases of dog bite-fatalities have been the experience in Maryland over the past 4 decades. This harmonious co-existence between Marylanders and dogs has occurred during a period in which the “pit bull” population has increased.

According to Vetstreet.com, a website published by the journals *Compendium* and *Veterinary Technician*, the American Pit Bull Terrier is the second most popular dog in Maryland.<sup>5</sup>

Banfield Pet Hospitals, the largest general veterinary practice in the world, reports that the percentage of “pit bulls” visiting their U.S. network of clinics has increased by 47 percent over the past 10 years.<sup>6</sup>

### **TRACEY v SOLESKY: FAR-REACHING CONSEQUENCES**

Marylanders immediately understood that the Court of Appeals ruling in *Tracey v Solesky*, based on its belief that “pit bull” “pit bull mix” or “cross-bred pit bull mix” dogs are “inherently dangerous,” would impact not only thousands of “pit bull” dog owners and their landlords, but also would spill over onto owners of other dogs and their landlords, onto animal shelters, pet-friendly retail stores, groomers, kennels, veterinarians, and all other animal service providers.

The *Tracey v Solesky* decision is not supported by the data, conclusions or recommendations from controlled dog bites studies.

### ***Unsupported by controlled studies of dogs, dog bites***

In April 2012, experts from the American Veterinary Medical Association (AVMA) published a report summarizing studies of serious dog-bite injuries covering 40 years, conducted in the U.S., Canada, and Europe. Their report contradicts the Court’s declaration regarding “pit bull” dogs. According to the AVMA report, “controlled studies have not identified this breed

group [i.e. pit bull] as disproportionately dangerous.”<sup>7</sup>

The AVMA has *consistently* expressed strong opposition to regulating by breed. However, the report points out that, if a community insisted on targeting breeds of dogs, then a cluster of large breeds would have to be included, among which would be German shepherds and shepherd crosses, along with other breeds that would vary by location.

### ***Visual Identification of breed(s): Unreliability and Genetics***

Even before *Tracey v Solesky*, animal experts questioned how any dogs of unknown pedigree - whether described as “pit bulls,” “German Shepherd mixes,” “Labrador mixes,” or otherwise - could be *reliably* breed-labeled. The court decision does not recognize the results reported in two recent university studies, which indicate that observers frequently disagree with each other when guessing at the breed or breeds that make up a dog, and also, that their guesses do not agree with DNA analysis of the same dog.<sup>8</sup>

The court decision further failed to note the literature of canine genetics, which explains why this will always be the case. A surprisingly small amount of genetic material exerts a very large effect on a dog’s appearance. For example, a dog’s genome consists of 19,000 genes. According to Dr. Kristopher Irizarry, Assistant Professor of Genetics at Western University of Health Sciences, as few as six genes may determine the shape of a dog’s head, but *none of those same six genes will influence behavior*. A dog’s physical appearance does not predict how it will behave.

### ***Frederick County Commissioners Speak Out Against the Decision***

The Frederick County Board of Commissioners released a statement in response to the *Tracey v Solesky* decision. In it, they collectively “expressed great displeasure over a recent court case of *Tracey v Solesky* held by the Maryland Court of Appeals that targets pit bull and pit bull mixture dogs. We wholeheartedly support and are confident that our Animal Control Division has the proper policies in place to address aggressiveness in animals... Frederick County has not had the degree of incidents to merit this kind of extreme response.”<sup>9</sup>

In 2009, Frederick County, which had a population of over 233,000 people at that time, had only 210 reported dog bites. Following a serious dog bite incident in 2003, Frederick County enacted an ordinance in 2004 regulating all dangerous dogs regardless of breed. The ordinance allows the director of Frederick County Animal Control to determine whether a dog involved in a reported incident is dangerous or potentially dangerous. Dangerous or potentially dangerous dogs are then registered. As of May 2012, there are five dogs registered in Frederick County - each with a different breed attribution.

Frederick County recognized that dog bites are not a result of any one factor, but are the product of a complex set of circumstances that do not lend themselves to a simplistic one-note description or policy.

## *Unequal Recourse for Victims*

The decision does not provide equal legal recourse for anyone injured by a dog. A recent dog bite-related injury in Maryland involved a 3-year-old Rawlings boy, who was so severely injured that doctors placed him on a ventilator and in a medically-induced coma in order to treat his life-threatening injuries. Authorities did not report the dog to be a “pit bull,” “pit bull mix” or “cross-bred pit bull mix.”<sup>10</sup>

In consequence of the new Court of Appeals ruling, this child's family would labor under a different burden of proof than does someone injured by a dog labeled as a “pit bull:” not because of the circumstances of the incident, but because of the breed label ascribed to the dog.

Further, *Tracey v Solesky* offers plaintiffs and their attorneys an incentive to game the system, and to try and convince a court that the dog was a “pit bull,” “pit bull mix,” or “cross-bred pit bull mix” in order to tilt the scale in their favor and create a prima facie case.

## CONCLUSION

Nothing in the available public record in Maryland - or anywhere else in Europe or North America - supports the designation of “pit bull” dogs as “inherently dangerous.” The *Tracey v Solesky* decision has failed to account for the data conclusions of controlled studies, the consistent recommendations of animal experts, or the Maryland record that bears them out.

Moreover, it is unfair to victims of bites from dogs not implicated by the ruling.

*Tracey v Solesky* has not addressed the concerns of Marylanders or their dogs, and will not meet their needs.

Intense focus on select and isolated incidents of serious dog bite injuries clouds the issues, rather than clarifies them. It foments fear and hysteria, and is not a sound basis for making public policy. It prevents a useful understanding of the complexity of dog bite-related incidents, and ignores the incredible good that results in our communities from positive canine-human bonds and responsible pet ownership.

We all want to be safe in our communities. We want laws that are fair, and based on the best evidence available. For as long as animal experts have considered the problem of dog bites in light of science, safety, and fairness, they have advocated for responsible, accountable dog ownership. All dog owners should be held to the same standards of humane care, custody, and control of their dogs, regardless of breed.

## SOURCES

---

1. Berzon, David R., DVM, MPH, LLB. "The Animal Bite Epidemic in Baltimore, Maryland." *American Journal of Pediatric Health (AJPH)*. June 1978, Public Health Briefs, Vol 68, No 6.
  2. For reported dog bites in 2006, 2007: Baltimore City Public Health Department records.
  3. Available at: <http://nationalcanineresearchcouncil.com/resources/MD/> (Accessed 18 June 2012)
  4. Comprehensive state-wide dog bite data is unavailable for Maryland. The neighboring District of Columbia made such data available for the year 2007. Of the 183 reported dog bites reported in DC, 10 were classified as severe (severe defined as "4 or more puncture wounds which may include crushing or tears from shaking"). Of the 10 severe bites, there were 9 different breed attributions.
  5. Seymour, Kristen. "Top Dogs Across America: 10 Most Popular Breeds by State." *Vet-Street.com*. <http://www.vetstreet.com/our-pet-experts/top-dogs-across-america-10-most-popular-breeds-by-state>
  6. Banfield Pet Hospital State of Pet Health 2011 Report. Available at: <http://www.banfield.com/Banfield/files/bd/bd826667-067d-41e4-994d-5ea0bd7db86d.pdf>
  7. American Veterinary Medical Association, "Welfare Implications of The Role of Breed in Dog Bite Risk and Prevention," (April 17, 2012). Available at [http://www.avma.org/reference/backgrounders/dog\\_bite\\_risk\\_and\\_prevention\\_bgnd.asp](http://www.avma.org/reference/backgrounders/dog_bite_risk_and_prevention_bgnd.asp) (Accessed 18 June 2012)
  8. John Paul Scott & John Fuller. *Genetics and the Social Behavior of Dogs*. Chicago, University of Chicago Press, 1965.
- V. Voith, E. Ingram, K Mitsouras, et al, "Comparison of Adoption Agency Identification and DNA Breed Identification of Dogs" *Journal of Applied Animal Welfare Science*, July 2009.
- K. Olson, J. Levy et al. "Pit Bull Identification in Animal Shelters": A poster that illustrates the project and its result can be found at [http://www.maddiesfund.org/Resource\\_Library/Incorrect\\_Breed\\_Identification.html](http://www.maddiesfund.org/Resource_Library/Incorrect_Breed_Identification.html) (Accessed 18 June 2012)
9. Frederick Board of County Commissioners, Press Release, May 3, 2012.
  10. Delmarva Media Group, "Maryland: 3-year-old badly mauled by dog", April 27, 2010.

"In this study, we have tried to elicit the various human, dog, and environmental factors associated with dog bites, and to determine if these factors indicate ways to prevent and control dog bites."

Henry M. Parrish, 1959

The purpose of studying dog bites, which commenced in the late 1950's, has not changed from Henry Parrish's time to our own: how can we reduce the number of dog bite injuries?

Good intentions notwithstanding, a problem was evident from the first that has not been solved in the years since. The researchers defined dog bites as a public health problem on the order of a disease, and then employed a traditional public health analysis in pursuit of the cause of the "disease." This approach assumes that it is possible to isolate the factor, or factors, that compel a dog to respond with a bite.

Dog bites are not a disease. They are the result of complex interactions between sentient creatures of different species. They occur in the most uncontrolled and unscientific settings imaginable. However one breaks down the "factors" – whether related to the dog, the owner, the environment, or the victim – they cannot be measured against each other.

When the list of factors became too daunting, researchers attempted to limit them to a few, or even to one: correlating bite incident with the attributed breed of the dog, and presenting this correlation as a cause/effect relationship. Single-cause explanations are easily comprehended, and make a condition seem more manageable.

The problem is that focus on breeds puts the focus on the dog, at the expense of consideration of his relationship with the human beings who controlled him. This breed focus has hindered scientific inquiry and prevented the development of better informed public policy. And it has damaged the human-canine bond.

### **Neglect of the human and environmental components**

Some dog bite studies have attempted to factor for the behavior of the owner and/or the victim. Others have not bothered. A few classify dog bites as either "provoked" or "unprovoked." In fact, dog bites are classified as provoked when someone noticed the human (or animal) behavior to which the dog responded and judged such a response to be justified. Unprovoked bites fall into one of two sub-categories. Either no one noticed or understood what had transpired; or they did notice, and deemed the severity of the dog's response unacceptable from the human perspective.

Furthermore, researchers have frequently failed to acknowledge the relevance of stressful or inhumane situations that humans often force dogs to endure. At NCRC, we urge people to consider what the world looks like from their dog's point of view. NCRC, as a result of its investigations of the circumstances surrounding incidents of severe and fatal incidents, draws a distinction between a "family" dog and "resident" dog. The distinction is similar to one drawn by European scholars ("dependent" vs. "independent" dogs), in that both are an attempt to assess the nature and quality of the dog's relationship with human being.

*There are at least two parties involved in a dog bite; a dog and one or more humans. Dog behavior cannot be understood or analyzed apart from humans, or the situations in which humans have placed dogs.*

### **Isolating one or two dog-specific factors and ignoring others:**

Most dog bite studies attempt to analyze the incidents on the basis of “dog-specific factors.” These factors may include the sex of the dogs, the reproductive status (altered vs. unaltered) and/or the breed of the dogs. This data may then be presented as a valid representation of which dogs bite more frequently, despite the fact that the analysis does not predict an individual dog’s future behavior.

Not surprisingly, different studies have reported conflicting results. One study found that intact male dogs were responsible for the majority of bites, while another study indicated that spayed females bit more frequently. Conflicting results are to be expected when attempting to pluck out a single factor from the complex, multi-variable, interaction between a dog and a human that resulted in a bite.

Attempting to isolate “dog-specific factors” may even result in salient circumstances being ignored, in favor of the factor previously deemed the factor of interest. Consider the case of an intact, male dog chained to a barn, without food or water for 2 days, and suffering from cancerous tumors. The dog bit a 4-year-old boy. A study attempting to isolate “dog specific factors,” attributed this incident to an “unaltered, male” dog, ignoring the dog’s illness and mistreatment. The study later concluded that unaltered male dogs bite more frequently.

*There is no individual factor, or combination of factors, that reliably explain which dogs bite. A dog bite is the culmination of dozens of circumstances and variables, both past and present.*

### **Inaccurate breed identifications result in bad data:**

Most dog bite studies are developed from one or more of the following sources:

- Animal care and control, or health department incident reports
- Hospital outpatient or inpatient data
- News accounts
- Telephone surveys

Breed descriptors obtained from these sources may come from the dog’s owner. They may also come from persons who have no direct knowledge (i.e., animal control officer, victim, neighbor, police officer, witness, unnamed source) of the dog’s lineage.

There is robust evidence that these breed descriptors are often inaccurate. Roughly half the dogs in the U.S. are mixed breed dogs. Surveys conducted by researchers from Western University in California have shown that, when asked to name the breed or breed mix in mixed-breed dogs whose origin they did not know, adoption agency personnel responses correlated extremely poorly with DNA analysis of the same dogs. It’s not that professionals can’t identify commonly available, physically distinct pure-bred dogs, but that mixed-breed dogs do not always look like their parents. If professionals cannot accurately identify the dogs, what about the breed labels assigned by non-professionals, who might nevertheless be the source of a breed attribution in a news story or bite report?

*If we have not been breed labeling the dogs accurately, dog bite studies proposing to correlate incidents by breed have never contained, and will never contain, reliable data.*

### **We have always known the cause of dog bite injuries:**

From the first dog bite study published more than 50 years ago until today, the conclusions and recommendations of the researchers have shared a lot in common.

"This study of the epidemiology of dog bites would seem to indicate that human factors are more important than environmental factors in the genesis of dog bites."

-- Henry M. Parrish, 1959

"Education programs aimed at influencing the behavior of pet owners, particularly with respect to the responsibilities of ownership, would do much to reduce the magnitude of the problems."

-- H. Michael Maetz, 1975

"Poor owner control blamed for increase in dog bites."

-- Washington Post, 1975

"The growing problem of dog control can only be solved if dog owners realize their responsibilities as pet owners."

-- Lancaster Farming, 1978

"Efforts to prevent severe dog bites should be focused primarily at the level of the owner."

-- John C. Wright, 1985

"Generic non-breed-specific dangerous dog laws can be enacted that place primary responsibility for a dog's behavior on the owner . . . In particular, targeting chronically irresponsible dog owners may be effective."

-- Jeffrey J. Sacks, et al, 2000

"The dog bite problem is not a disease problem with a single vector; it is a complex societal issue that must address a wide range of human behaviors in ways that deal with irresponsible behavior that puts people and animals at risk."

-- Randall Lockwood, 2007

### **The vector of injury is us!**

If we want better outcomes in our communities, we need to promote responsible pet ownership: the humane care, custody and control of all dogs.

## REFERENCES

- 1 <http://www.cdc.gov/HomeandRecreationalSafety/Dog-Bites/dogbite-factsheet.html>;  
[http://www.avma.org/issues/policy/dangerous\\_animal\\_legislation.asp](http://www.avma.org/issues/policy/dangerous_animal_legislation.asp);  
<http://www.nacanet.org/poldanger.html>;  
[http://www.apdt.com/about/ps/breed\\_specific\\_legis.aspx](http://www.apdt.com/about/ps/breed_specific_legis.aspx).
- 2 Associated Press, "Dutch government to lift 25-year ban on pit bulls," June 10, 2008
- 3 ANSA, "Italy Scraps Dangerous dog Blacklist," March 3, 2009
- 4 K. Delise, The Pit Bull Placebo: The Media, Myths, and Politics of Canine Aggression, Anubis Publishing, Ramsey, New Jersey, 2007
- 5 New York Times, January 1, 1925
- 6 German Shepherd Dog Club of South Australia, "History of the Breed," <http://gsdcsa.org.au/breedhistory.htm>.
- 7 New York Times, 'Sport' Pitting Dog Against Dog Is Reported Spreading Secretly,' December 10, 1978; E.M. Swift, "The Pit Bull: Friend and Killer," Sports Illustrated, July 27, 1987; D. Brand, "Time Bomb on legs," Time Magazine July 27, 1987
- 8 J. Sacks, L. Sinclair, G. Golab, et al, "Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998," JAVMA, Vol 217, No. 6, Sept 15, 2000.
- 9 AVMA, "To Whom It May Concern," open letter, copy furnished upon request
- 10 B. Beaver, et al, "A community approach to dog bite prevention: American Veterinary Medical Association Task Force on Canine Aggression and Human-Canine Interactions," JAVMA, Vol 218, No. 11, June 11, 2001
- 11 Golab quoted in "Dangerous Breeds?," Best Friends Magazine, Sept/Oct 2004, p 14
- 12 <http://nationalcanineresearchcouncil.com/dog-bites/dog-bite-studies/wrong-numbers-notstats/>; G. Patronek, S. Slavinski, "Zoonosis Update: Animal Bites," JAVMA, VOL 234, No. 3, February 1, 2009.
- 13 B. Beaver, "In Opposition to the Ontario Law," affidavit submitted in *Cochrane v In Right of Ontario*, Ontario Superior Court of Justice, Court File No. 05-CV-295948PDI
- 14 Quoted in J. Brackman, "Can DNA Decipher the Mix?" The Bark, Issue #50, Sep/Oct 2008
- 15 V. Voith, E. Ingram, K Mitsouras, et al, "Comparison of Adoption Agency Identification and DNA Breed Identification of Dogs," Journal of Applied Animal Welfare Science, In Press July 2009
- 16 K. Delise, "Denver: Selective Counting and the Cost to Dogs and People, Animal Law Coalition, <http://www.animallawcoalition.com/breed-bans/article/648>
- 17 Investigative Report State of Iowa Citizens' Aide/Ombudsman, "Investigation of Maquoketa's Pit Bull Ban Ordinance and Enforcement," Case File 0603634, December 21, 2006.
- 18 HQ, III Corps & Fort Hood Fort Hood, TX 76544 041229LAug 08, MISSION SUPPORT ORDER PC 08-07-269
- 19 A. Marder and B. Clifford, "Breed Labeling dogs of Unknown Origin," <http://nationalcanineresearchcouncil.com/wp-content/uploads/2008/10/breedlabelingnrc.pdf>
- 20 Duffy, D.L. et al, "Breed differences in canine aggression," Appl. Anim. Behav. Sci, (2008) doi: 10.1016/j.applamin.2008.04.006; S. Gosling, et al, "A Dog's Got Personality: A Cross Species Comparative Approach to Personality Judgments in Dogs and Humans," Journal of Personality and Social Psychology, 2003, Vol. 85, No.6, 1161-1169

## Banned breeds are no more aggressive than others, new study finds

---

Every study completed to date has found breed specific legislation to be completely ineffective in reducing the incidence of dog bites. Now a study of pet dogs in Spain published in *The Journal of Veterinary Behavior*, offers new insight into why.\* The study found that the so called dangerous breeds simply behave no differently from dogs in general when it comes to behaviors likely to lead to biting.

The authors looked for risk factors for various behavior problems as reported by dog owners. They found that dogs identified as belonging to breeds designated as dangerous according to Spanish law were no more likely to behave aggressively toward people or toward other dogs than were dogs of the random group of breeds in the sample.

What the study did find was that the larger the dog (dividing the 232 dogs studied into 3 size categories), the **less** likely it was to exhibit aggressive behaviors toward people such as barking, growling, snarling lunging, snapping or biting. Large dogs were also less likely to behave fearfully. This is particularly striking with regard to the breeds identified as dangerous according to Spanish law, since most fall into the large dog category and the rest into the medium. Thus they are disproportionately represented within the least aggressive groups the study identified. Another notable aspect of this finding is that it is consistent with a larger study conducted in Canada a decade earlier, (Guy, 2001) suggesting that this inverse relationship between aggression and size may carry over across continents and long periods of time.

In looking at aggression toward their fellow dogs, the study found that gender and age played a role. Males were more likely to show aggression toward other dogs, as were to a small degree, the older dogs in the sample, but dangerous breed identification made no difference.

The researchers conclude simply, that “dogs classified as dangerous do not seem to be more aggressive than the rest.”

The full text article can be purchased at [http://www.journalvetbehavior.com/article/S1558-7878\(11\)00008-6/abstract](http://www.journalvetbehavior.com/article/S1558-7878(11)00008-6/abstract)

---

\*Martinez,A.G., Pernas, G.S., Casalta,J.D., Rey,M.L.S., Palomino, L.F,dIC., Risk factors associated with behavioral problems in dogs. *Journal of Veterinary Veterinary Behavior* (2011) 6, 225-231.

# AGGRESSION AND DOGS

“NO SIGNIFICANT DIFFERENCE FOUND BETWEEN BREEDS.”

## INTRODUCTION

On July 5, 2000 the government of Lower Saxony, Germany ruled that 14 breeds of dogs were especially dangerous and placed restrictions on the ownership, management and breeding of dogs of these breeds. The breeds cited included Bull Terriers, American Staffordshire Terriers, Pit bull Terriers, Staffordshire Bull Terriers, Rottweilers and Dobermans. Exemption from the restrictions required that the owner and dog pass a standardized temperament test administered by veterinary behaviorists at the University of Veterinary Medicine in Hannover, Germany. A passing score demonstrated that the dog displayed no exceptional aggressive behavior or aggressive behavior in inappropriate situations.

Dogs of  
the targeted  
breeds signal  
their intent  
just like  
other dogs

## MATERIALS AND METHODS

415 dogs of the targeted breeds were tested in 21 situations of dog-human contact and 14 situations of dog-environment contact. The dog's behavior in each situation was scaled from 1 to 7.

1	No aggressive behavior
2	Visual or acoustic threat behavior while backing away or remaining stationary
3	Bite movements while backing away or remaining stationary
4	Bite movements while moving forward but stopping at some distance
5	Bite with preceding threat signals
6	Bite with no preceding threat signals
7	Bite with no preceding threat signals and unable to calm within 10 minutes

70 Golden Retrievers, having been volunteered by their owners, were also tested using this same standardized temperament test.

## RESULTS

- There was no significant difference between the volunteered Golden Retrievers and the dogs from the targeted breeds that were required to submit to the test in the occurrence of aggressive behavior in inappropriate situations.
- Dogs of the targeted breeds signal their intent just like other dogs.
- Dogs of the targeted breeds are statistically no more likely to show inappropriate aggressive behavior than are Golden Retrievers.

No indicators of greater dangerousness of any of the then-restricted dog breeds were found. Rather than regiment dogs by breed, more emphasis should be put on the dog owners' education.

## **This study contributed to the repeal of breed specific legislation in Lower Saxony.**

---

### **For additional information:**

Schalke et al., "Is breed specific legislation justified? Study of the results of the temperament test of Lower Saxony", *Journal of Veterinary Behavior*, (2008) 3: 97-103.

Ott et al., "Is there a difference? Comparison of golden retrievers and dogs affected by breed specific legislation regarding aggressive behavior", *Journal of Veterinary Behavior*, (2008) 3: 134-140.

---

*Dr. Esther Schalke holds a degree in Veterinary Medicine from the University of Hannover in 1997 and a Doctorate in Veterinary Medicine from the Department of Animal Welfare and Behavior of the University of Veterinary Medicine of Hannover.*

*She has been a practicing animal behavior therapist since 1998 and runs the Animal Behavior Clinic at the University of Veterinary Medicine in Hannover, where she teaches courses in animal behavior, learning theory and behavior problems in dogs as well as in cats. She runs puppy socialization and pet dog training classes, training classes for SAR dogs and police dogs. She lectures nationally and internationally on various aspects of animal behavior.*

*Her recent areas of research include the various aspects regarding aggressive behavior in dogs. For example, temperament testing, assessing and comparing aggressive behavior in various dog breeds, including Pit Bull Terriers, Golden Retrievers, and others according to the guidelines of the Dangerous Animals Act of Lower Saxony, Germany (GefTVO) of 05.07.2000.*



Esther Schalke, PhD., DVM

## Canadian owners report that “pit bulls” make good pets, just like other dogs.

---

The role of most dogs in Europe and North America is as companions to human beings. Recognizing that a wide variety of dogs make satisfactory household pets, author Janis Bradley recently reviewed the available literature in order to explore the relevance (or lack thereof) of a dog’s breed to its suitability as a companion pet. She concluded on the basis of her review that, “even among purebreds, breed is an unreliable predictor of behavior,” and that “most of the behaviors associated with specific breeds are only tangentially related to desirable and undesirable qualities in pet dogs.” Bradley also pointed to the considerable number of mixed-breed dogs in the North American canine population, whose origins are not documented. “Pet dog selection,” Bradley advised, “should focus on the dog as a multi-faceted individual.”<sup>1</sup>

A study published in 2011 by the Universities Federation for Animal Welfare<sup>2</sup> poses a related question: Are the assumptions underpinning discriminatory regulation of “pit bulls” borne out based upon their performance as companion pets? The study, which was supported by the Natural Sciences and Engineering Research Council of Canada and by the Animal Welfare Program of the University of British Columbia, interviewed persons who had adopted “pit bulls” or other similar-sized dogs from the British Columbia Society for the Prevention of Cruelty to Animals (BC SPCA), asking whether their pet ever acted aggressively or exhibited “other undesirable behavior.” If the assumptions underlying breed specific regulation are correct, one would expect the owners of “pit bulls” to answer “yes” more frequently than the adopters of “other breeds.”

The authors described a “pit bull” as a dog believed to be an “American Staffordshire Terrier, American pit bull terrier, pit bull terrier or crosses of those breeds.” While not all jurisdictions in Europe and North America define “pit bull” in precisely the same terms, the one employed by these authors is similar to the one included in the breed specific regulations of those BC communities that have elected to regulate “pit bull” dogs differently from others. Researchers included a dog in the “pit bull” group on the basis of a visual inspection of facial structure, body shape and coat length. There is no indication that any of the dogs, all of whom had either been picked up as strays or been surrendered, had arrived at the shelter accompanied by pedigree documentation. We presume therefore that the shelter staff and researchers assigned breed descriptors to all of the dogs, “pit bull” or otherwise, on the basis of visual inspection, and that the descriptors assigned to all of the dogs are thus subject to the uncertainty and lack of correlation with DNA breed analysis that Dr. Victoria Voith et al have documented.<sup>3</sup>

Were “pit bulls” more likely to show aggression and other problematic behaviors than similar-sized dogs of other breeds? Not according to the BC adopters, all of whom had owned their dogs for more than

two months at the time they were interviewed. Adopters of “pit bulls” did not report a higher proportion of dogs as exhibiting problem behaviors than did the owners of other dogs. Nor did “pit bull” adopters describe problem behaviors, in the few dogs in which they did occur, that differed in frequency or degree from those reported by the adopters of the other dogs.

The results of this study echo those reported by researchers in Germany, Spain and the United States. Behavior evaluations of regulated dogs in Lower Saxony, Germany showed that dogs of the regulated breeds did not show more inappropriate aggressive behavior than did a control group of Golden Retrievers.<sup>4</sup> A paper published in 2011 based on owner reports in Spain concluded, “dogs classified as dangerous do not seem to be more aggressive than the rest.”<sup>5</sup> An analysis of hundreds of owner surveys, which was much publicized in the United States, reported that the rate of aggression towards human beings was extremely low across all breeds, with a smaller percentage of the “pit bulls” being described by their owners as showing owner-directed or stranger-directed aggression than was the average for all of the dogs included in that study.<sup>6</sup>

The authors of the BC study concluded, “The results of this study support the inclusion of pit bulls in well-managed shelter adoption programs and the use of screening for aggression of all shelter dogs.” The assumptions underpinning breed specific regulation are no more relevant to a dog’s suitability as a human companion than they are to the reduction of dog bite incidents.”<sup>7</sup>

The complete report is available for purchase at:

<http://www.ingentaconnect.com/content/ufaw/aw/2011/00000020/00000004/art00001>

<sup>1</sup> J Bradley, “The Relevance of Breed in Selecting a Companion Dog,” An NCRC Vision Series Publication, 2011.

<sup>2</sup> A MacNeil-Allcock, NM Clarke, RA Ledger, D Fraser, “Aggression, behaviour, and animal care among pit bulls and other dogs adopted from an animal shelter,” *Animal Welfare*, 2011: 20:463-468.

<sup>3</sup> V Voith, E Ingram, K Mitsouras, K Irizarry, “Comparison of Adoption Agency Identification and DNA Breed Identification of Dogs,” *Journal of Applied Animal Welfare Science*, 12:253-262, 2009; AR Boyko et al, “A Simple Genetic Architecture Underlies Morphological Variation in Dogs,” *PLoS Biology*, August 2010, Volume 8, Issue 8, e1000451.

<sup>4</sup> SA Ott, E Schalke, et al, “Is There A Difference? Comparison of Golden Retrievers and Dogs Affected by Breed Specific Legislation Regarding Aggressive Behaviour,” *Journal of Veterinary Behavior*, (2008) 3: 134-140.

<sup>5</sup> AG Martinez, GS Pernas, et al, “Risk factors associated with behavioral problems in dogs,” *Journal of Veterinary Behavior* (2011) 6, 225-231

<sup>6</sup> DL Duffy, Y Hsu, JA Serpell, “Breed differences in canine aggression,” *Applied Animal Behaviour Science*, (2008), doi: 10.1016/j.applanim.2008.04.006

<sup>7</sup> National Canine Research Council, “World-wide Failure of Breed Specific Legislation,” available at

[http://www.nationalcanineresearchcouncil.com/uploaded\\_files/tinymce/World-wide%20Failure%20of%20BSL.pdf](http://www.nationalcanineresearchcouncil.com/uploaded_files/tinymce/World-wide%20Failure%20of%20BSL.pdf); see also G Patronek, M Slater, M Marder, “Use of a number-needed-to-ban calculation to illustrate limitations of breed specific legislation in decreasing the risk of dog bite-related injury,” *Journal of American Veterinary Medical Association*, vol 237, Number 7, October 1, 2010.



---

*Welfare Implications of*  
***The Role of Breed in Dog Bite  
Risk and Prevention***

(April 17, 2012)

---

### **BREEDS IMPLICATED IN SERIOUS BITE INJURIES**

In a range of studies, the breeds found to be highly represented in biting incidents were German Shepherd Dog,<sup>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16</sup> pit bull type,<sup>5,9,13,16,17,18,19,20,21</sup> mixed breed,<sup>1,4,6,8,10,11,12,22</sup> Rottweiler,<sup>15,19,21,23</sup> Chow Chow,<sup>7,20</sup> Jack Russell Terrier,<sup>18,23</sup> and others (Collie,<sup>3</sup> Springer Spaniel<sup>14</sup> Saint Bernard,<sup>17</sup> and Labrador Retriever<sup>2</sup>). If you consider only the much smaller number of cases that resulted in very severe injuries or fatalities,<sup>17,19</sup> pit bull-type dogs are more frequently identified. However this may relate to the popularity of the breed in the victim's community, reporting biases and the dog's treatment by its owner (e.g., use as fighting dogs<sup>17</sup>). It is worth noting that fatal dog attacks in some areas of Canada are attributed mainly to sled dogs and Siberian Huskies,<sup>43</sup> presumably due to the regional prevalence of these breeds. See Table 1 for a summary of breed data related to bite injuries.

### **CONTROLLED STUDIES**

The prevalence of particular dog breeds can also change rapidly over time, often influenced by distinct peaks of popularity for specific breeds. It seems that increased popularity is sometimes followed by increases in bite reports in some large breeds. For example there was a distinct peak in American Kennel Club registration of Rottweilers<sup>24</sup> between 1990 and 1995, and they come at the top of the list of 'biting breeds' for the first time in studies of bites causing hospitalization in the late 90s and early 2000s.<sup>21,23,15,46</sup> While it must be noted that other fad breeds such as Dalmatians and Irish setters do not seem to make similar appearances, any estimate of breed-based risk must take into account the prevalence of the breed in the population at the time and place of serious biting events.<sup>25</sup>

For example, researchers may compare well-documented bite cases with matched control households. Using this method, one study found that the breeds disproportionately involved in bite injuries requiring medical attention in the Denver area (where pit bull types are not permitted) were the German Shepherd Dog and Chow Chow.<sup>52</sup>

Other studies use estimates of breed prevalence that do not relate specifically to the households where the bites occurred, such as general community surveys, breed registries, licensed dogs or animal shelter populations (See Table 2.). These studies implicate the German Shepherd Dog and

crosses<sup>48,49,50,51,52</sup> and various other breeds (mixed breed,<sup>50,51</sup> Cocker spaniel,<sup>49,53</sup> Chow Chow,<sup>52,53</sup> Collie,<sup>49</sup> Doberman,<sup>48</sup> Lhasa Apso,<sup>35,53</sup> Rottweiler,<sup>38</sup> Springer Spaniel,<sup>34</sup> Shih Tsu,<sup>34</sup> and Poodle<sup>50</sup>).

### **AGGRESSIVE BREEDS**

Based on behavioral assessments and owner surveys the breeds that were more aggressive towards people were small to medium-sized dogs such as the collies, toy breeds and spaniels.<sup>26,27,28,29</sup> For example, a survey of general veterinary clientele in Canada (specifically practices in New Brunswick, Nova Scotia, and Prince Edward Island) identified Lhasa Apso, Springer spaniel and Shih Tsu as more likely to bite.<sup>34</sup>

While small dogs may be more aggressive their size means they are less likely to inflict serious bite injury except on vulnerable individuals or as part of a pack attack.<sup>30</sup> Referrals for aggression problem more closely approximate the breeds implicated in serious bite attacks, probably because owners are more likely to seek treatment for aggression in dogs that are large enough to be dangerous. Larger dogs (regardless of breed) are implicated in more attacks on humans<sup>31</sup> and other dogs.<sup>32</sup>

Certain large breeds are notably under-represented in bite statistics such as large hounds and retrievers (e.g., Labrador Retrievers and Golden Retrievers)<sup>28,34</sup>—although even these breeds may have known aggressive subtypes.<sup>33</sup> Results relating to German Shepherd Dogs are mixed,<sup>29,34</sup> suggesting there may be particularly high variability in this breed, perhaps depending on regional subtypes or ownership factors.

### **PIT BULL TYPES**

Owners of pit bull-type dogs deal with a strong breed stigma,<sup>35</sup> however controlled studies have not identified this breed group as disproportionately dangerous. The pit bull type is particularly ambiguous as a “breed” encompassing a range of pedigree breeds, informal types and appearances that cannot be reliably identified. Visual determination of dog breed is known to not always be reliable.<sup>36</sup> And witnesses may be predisposed to assume that a vicious dog is of this type.

It should also be considered that the incidence of pit bull-type dogs’ involvement in severe and fatal attacks may represent high prevalence in neighborhoods that present high risk to the young children who are the most common victim of severe or fatal attacks. And as owners of stigmatized breeds are more likely to have involvement in criminal and/or violent acts<sup>37</sup>—breed correlations may have the owner’s behavior as the underlying causal factor.

## BREED BANS

While some study authors suggest limiting ownership of specific breeds might reduce injuries (e.g., pit bull type,<sup>38</sup> German Shepherd Dog<sup>39</sup>) it has not been demonstrated that breed-specific bans affect the rate or severity of bite injuries occurring in the community.<sup>8</sup> Factors that are reliably associated with serious dog bite injury (requiring hospital treatment) in the United States are the victim being a young child and the dog being familiar (belonging to the family, a family friend or neighbor).<sup>40,41</sup> Strategies known to result in decreased bite incidents include active enforcement of dog control ordinances (ticketing)<sup>42</sup>.

## CONCLUSION

Maulings by dogs can cause terrible injuries<sup>40</sup> and death—and it is natural for those dealing with the victims to seek to address the immediate causes. Serious bites occur due to a range of factors in which a dog’s size and temperament are known to be the risk factors. Also important are dog management factors such as neutering and tethering, and child care factors such as supervision around animals.

Given that pit bull-type dogs are not implicated in controlled studies, and the potential role of prevalence and management factors, it is difficult to support the targeting of this breed as a basis for dog bite prevention. If breeds are to be targeted a cluster of large breeds would be implicated including the German shepherd and shepherd crosses and other breeds that vary by location.

## SEE ALSO:

National Animal Control Association Guideline Statement: *“Dangerous and/or vicious animals should be labeled as such as a result of their actions or behavior and not because of their breed.”*

## SUMMARY TABLES

Table One

### Studies of Serious Dog Bite Injury by Breed

Period	Data Source	N	Country	Top Two Breeds Identified	Ref
1971	US Dept. Health	843	United States (VA)	mixed breed German Shepherd Dog	1
1971-1974	Hospital records	50	South Africa	German Shepherd Dog Labrador Retriever	2

1973-1976	US Dept. Health	2618	United States (AL)	German Shepherd Dog Collie	3
1979-1982	Health Dept. Severe attacks	16	United States (SC)	pit bull type Saint Bernard	17
1981-1983	US Reservations	772	United States	mixed breed unspecified pedigree	22
1982-1989	Hospital records	146	United Kingdom	pit bull type Jack Russell Terrier	18
1987-1988	HASS	487	United Kingdom	mixed breed German Shepherd Dog	4
1979-1998	Fatalities	27	United States	pitt bull type Rottweiler	19
1989	Hospital records	168	United States	German Shepherd Dog pit bull type	5
1989	Hospital records	75	United Kingdom	German Shepherd Dog mixed breed	6
1991	Animal control records	357	United States	German Shepherd Dog Chow Chow	7
1991+1994	Hospital records	198	United Kingdom	German Shepherd Dog mixed breed	8
1989-1996	Hospital records	1109	United States (CA)	pit bull type German shepherd	9
1990-2007	Fatalities	28	Canada	mixed breed husky “sled dog”	43
1995	Patients receiving rabies post-exposure prophylaxis	~8000	United States (PA)	German Shepherd Dog mixed breed	10
1991-2000	Hospital records	654	Spain	German Shepherd Dog mixed breed	11
1996	Hospital records	1916	Australia	German Shepherd Dog Bull Terrier	44
1995-1997	Animal control	?	United States	pit bull type Chow Chow	20
1997	Hospital records	385	Canada	German Shepherd Dog Cocker Spaniel	11 <sup>45</sup>
1998-2002	Hospital records	72	Canada	Rottweiler German Shepherd Dog	46

This information has been prepared as a service by the American Veterinary Medical Association's Animal Welfare Division. Mention of trade names, products, commercial practices or organizations does not imply endorsement by the American Veterinary Medical Association.

© 2012 American Veterinary Medical Association

1991-2004	Hospital records	25	South Africa	pit bull type German Shepherd Dog	47
1994-2005	Hospital records	341	Austria	mixed breed German Shepherd Dog	12
1997-2003	Hospital records	11	United States	Rottweiler German Shepherd Dog	15
2001-2002	ACC claims	3020	New Zealand	German Shepherd Dog pit bull type	13
2000-2004	Hospital records	593	United Kingdom	Rottweiler Jack Russell Terrier	23
2001-2005	Hospital records	551	United States	pit bull type Rottweiler	21
2002-2005	Veterinary referral	111	United States (PA)	Springer Spaniel German Shepherd Dog	14

**Table Two**

**Studies of Serious Dog Bite Injury by Breed taking into Account Breed Prevalence**

Period	Data Source	Prevalence estimate	N	Country	Breeds Identified as Higher Risk	Ref
1974-1975	Animal control	Licensed dogs	?	United States (MD)	German Shepherd Dog and shepherd crosses Doberman Pinscher	48
1976-1977	US Bases	Relative risk versus mixed breed	529	United States (IL, MO)	Collie German Shepherd Dog Cocker Spaniel	49
1982	Pediatric practice	Non-biting pets of other patients	194	United States (MO)	German Shepherd Dog and shepherd crosses mixed breed over 30lb Poodle	50
1986-1987	Health Unit	Licensed dogs	318	Canada	German Shepherd Dog mixed breed	51
1991	Plastic surgery cases	Prevalence in community	146	Australia	German Shepherd Dog	39
1991	Animal control	Case controls	178	United States (CO)	German Shepherd Dog Chow Chow	52
1990-1993	Hospital records	Survey	356	Australia	Doberman Pinscher German Shepherd Dog Rottweiler	38
1993	Shelter animals quarantined for biting	General shelter admissions	170	United States (WI)	Chow Chow Cocker Spaniel Lhasa Apso	53
1996	Owner self-report (biters)	Owner self-report (non-biters)	3226	Canada	Lhasa Apso Springer Spaniel Shih Tsu	34

**REFERENCES**

This information has been prepared as a service by the American Veterinary Medical Association's Animal Welfare Division. Mention of trade names, products, commercial practices or organizations does not imply endorsement by the American Veterinary Medical Association.  
© 2012 American Veterinary Medical Association

- <sup>1</sup> Morton C. Dog bites in Norfolk, VA. *Health Serv Rep*, 1973;88:59-65.
- <sup>2</sup> Chait LA, Spitz L. Dogbite injuries in children. *S Afr Med J* 1975;49:718-720.
- <sup>3</sup> Maetz, M. Animal bites, a public health problem in Jefferson County, Alabama. *Public Health Rep* 1979;94: 528-534.
- <sup>4</sup> Levene S. Dog bites to children. *BMJ* 1991;303:466.
- <sup>5</sup> Avner JR, Baker MD. Dog bites in urban children. *Pediatrics*. 1991;88:55-57.
- <sup>6</sup> Jarrett P. Which dogs bite? *Arch Emerg Med* 1991;8:33-35.
- <sup>7</sup> Patrick GR, O'Rourke KM. Dog and cat bites: epidemiologic analyses suggest different prevention strategies. *Public Health Rep* 1998;113:252257.
- <sup>8</sup> Klaassen B, Buckley JR, Esmail A. Does the Dangerous Dogs Act protect against animal attacks: a prospective study of mammalian bites in the accident and emergency department. *Injury* 1996; 27: 89-91.
- <sup>9</sup> Meade, P. Police and domestic dog bite injuries: What are the differences? What are the implications about police dog use? *Injury Extra* 2006;37:395-401.
- <sup>10</sup> Moore DA, Sisco WM, Hunter A, et al. Animal bite epidemiology and surveillance for rabies postexposure prophylaxis. *J Am Vet Med Assoc* 2000;217:190-194.
- <sup>11</sup> Mendez Gallart R, Gomez Tellado M, Somoza Argibay I, Liras Munoz J, Pais Pineiro E, Vela Nieto D. Dog bite related injuries treated in a pediatric surgery department: analysis of 654 cases in 10 years. *An Esp Pediatr*. 2002;56:425-429.
- <sup>12</sup> Schalamon J. Analysis of dog bites in children who are younger than 17 years. *Pediatrics* 2006;117:374-379.
- <sup>13</sup> Wake AF. *The Aetiology of Dog Bites in New Zealand*, [MSc thesis], Palmerston North: Massey University, 2005.
- <sup>14</sup> Reisner, IR. Assessment, management, and prognosis of canine dominated-related aggression. *The Veterinary Clinics of North America Small Animal Practice* 1997;27:479-495.
- <sup>15</sup> Benson LS, Edwards SL, Schiff AP, et al. Dog and cat bites to the hand: treatment and cost assessment. *J Hand Surg [Am]* 2006; 31: 468-473.
- <sup>16</sup> Ashby K. Dog bites. Victorian Injury Surveillance System. *Hazard* 1996; 26: 7-13.
- <sup>17</sup> Wright JC. Severe attacks by dogs: characteristics of the dogs, the victims, and the attack settings. *Public Health Rep* 1985;100:55-61.
- <sup>18</sup> Shewell PC, Nancarrow JD. Dogs that bite. *BMJ* 1997;303:1512-13.
- <sup>19</sup> Sacks JJ, Sinclair L, Gilchrist J, Golab GC, Lockwood R. Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998. *J Am Vet Med Assoc* 2000; 217: 836-840.
- <sup>20</sup> Blocker DE. Dog bite rates and biting dog breeds in Texas, 1995-1997. Masters Thesis 2000.
- <sup>21</sup> Kaye AE, Belz JM, Kirschner RE. Pediatric Dog Bite Injuries: A 5 Year Review of the Experience at the Children's Hospital of Philadelphia. *Plastic and Reconstructive Surgery* 2009;124:551-558.
- <sup>22</sup> Daniels TJ. A study of dog bites on the Navajo reservation. *Public Health Rep* 1986;101:50-59.
- <sup>23</sup> Thompson P. Aggression Effects - From a Human Perspective and Solutions. *Urban Animal anagement Conference Proceedings* 2004.
- <sup>24</sup> Herzog H. Forty-two Thousand and One Dalmatians: Fads, Social Contagion, and Dog Breed Popularity. *Society and Animals* 2006;4:383-398.
- <sup>25</sup> Cunningham, L. The Case Against Dog Breed Discrimination By Homeowners' Insurance Companies. *Connecticut Insurance Law Journal* 2004;11:61.
- <sup>26</sup> Fatjó J, Amat M, Mariotti VM, Torre JLR, Manteca X. Analysis of 1040 cases of canine aggression in a referral practice in Spain. *J Vet Behav* 2007; 2:158-65.
- <sup>27</sup> Duffy, DL., Hsu, Y. Serpell, JA. Breed differences in canine aggression. *Appl Anim Behav Sci* 2008;114:441-460.
- <sup>28</sup> Draper, T.W., Canine analogs of human personality factors. *J Gen Psych* 1995;122: 241-252.
- <sup>29</sup> Lund JD, Agger JF, Vestergaard KS. Reported behaviour problems in pet dogs in Denmark: age distribution and influence of breed and gender. *Preventative Vet med* 1996;28:33-48
- <sup>30</sup> Kneafsey B, Condon KC. Severe dog-bite injuries, introducing the concept of pack attack: A literature review and seven case reports. *Injury*. 1995;26:37-41.
- <sup>31</sup> Harris D, Imperato PJ, Oken B. Dog bites—an unrecognized epidemic. *Bull NY Acad Med* 1974;50:981-1000.
- <sup>32</sup> Roll, A., Unshelm, J. Aggressive conflicts amongst dogs and factors affecting them. *Appl Anim Behav Sci*. 1997;52:229-242.
- <sup>33</sup> van den Berg, L., Schilder, M.B.H., Knol, B.W. Behaviour genetics of canine aggression: behavioural phenotyping of Golden Retrievers by means of an aggression test. *Behav Gen* 2003;33:469-483.
- <sup>34</sup> Guy, N, Canine household aggression in the caseload of general veterinary practitioners in Maritime Canada, Master of Science thesis, Atlantic Veterinary College, University of Prince Edward Island, 1999
- <sup>35</sup> Twining, H., Arluke, A. Patronek, G. Managing stigma of outlaw breeds: A case study of pit bull owners. *Society and Animals* 2001;8:1-28.

- <sup>36</sup> Voith VL, Ingram E, Mitsouras K. Comparison of adoption agency breed identification and DNA breed identification of dogs. *J Appl Anim Welf Sci* 2009;12:253–262.
- <sup>37</sup> Ragatz L, Fremouw W, Thomas T, McCoy K. Vicious dogs: the antisocial behaviors and psychological characteristics of owners. *Journal of Forensic Sciences* 2009;54:699-703
- <sup>38</sup> Thompson PG. The public health impact of dog attacks in a major Australian city. *Med J Aust* 1997;167:129-32.
- <sup>39</sup> Greenhalgh C, Cockington R, Raftos I. An epidemiological survey of dog bites presenting to the emergency department of a children's hospital. *J Paediatr Child Health* 1991; 27: 171-174.
- <sup>40</sup> Loewe CL, Francisco JD, Bechinski J. Pitbull mauling deaths in Detroit. *The American Journal of Forensic Medicine and Pathology* 2007;28:356-360.
- <sup>41</sup> Monroy A, Behar P, Nagy M, Poje C, Pizzuto M, Brodsky L. Head and neck dog bites in children. *Otolaryngol. Head Neck Surg* 2009;140:354–357
- <sup>42</sup> Clarke NM. A survey of urban Canadian animal control practices : the effect of enforcement and resourcing on the reported dog bite rate, Master of Science – MSc 2009
- <sup>43</sup> Raghavan M. Fatal dog attacks in Canada, 1990–2007. *Can Vet J.* 2008;49:577–581.
- <sup>44</sup> Ashby K. Dog bites. Victorian Injury Surveillance System. *Hazard* 1996; 26: 7-13.
- <sup>45</sup> Flores J, Brown J, Mackenzie SG. Innovative CHIRPP project focuses on dog bites. *CHIRPP News* 1997;11:3–7.
- <sup>46</sup> Lang ME, Klassen T. Dog bites in Canadian children: a five-year review of severity and emergency department management. *Can J Emerg Med.* 2005;7:309–314.
- <sup>47</sup> Dwyer JP, Douglas TS, van As AB. Dog bites injuries in children—a review of data from a South Africa paediatric trauma unit. 2007;97:597–600.
- <sup>48</sup> Berzon DR. The animal bite epidemic in Baltimore, Maryland: review and update. *Am J Public Health.* 1978;68:593-595.
- <sup>49</sup> Hanna, TL, Selby LA. Characteristics of the human and pet populations in animal bite incidents recorded at two Air Force bases. *Public Health Rep.* 1981;96:580-584.
- <sup>50</sup> Lauer EA, White WC, Lauer BA. Dog bites: a neglected problem in accident prevention. *AJDC.* 1982;136:202-204.
- <sup>51</sup> Szpakowski NM, Bonnett BN, Martin SW. An epidemiological investigation into the reported incidents of dog biting in the City of Guelph. *Can Vet J* 1989;30:937–942.
- <sup>52</sup> Gershman KA, Sacks JJ, Wright JC. Which dogs bite: a case-control study of risk factors. *Pediatrics* 1994;93:913-917.
- <sup>53</sup> Castelein C, Klouda J, Hirsch H. The bite case scenario—it is not what you think. In: *WFHS newsletter.* Madison, Wis: Wisconsin Humane Society, 1996; Sep:12–14. Cited in: Overall KL, Love M. Dog bites to humans: demography, epidemiology, injury, and risk. *J Am Vet Med Assoc* 2001;218:1923-1934.

# ANIMAL SERVICES AND THE RESPONSIBLE PET OWNERSHIP MODEL

In North America, the vast majority of animals that fill our shelters or end up on our streets have arrived at that situation because a human relationship has failed them. The solution lies in responsible pet ownership and responsive animal services – not animal control and not building more shelters to fill.

Responsible Pet Ownership is a model that focuses on changing the behaviour of pet owners from problematic to acceptable. A positive change in human behaviour will always yield a positive change in animal behaviour. The foundation of any successful program starts with collaboration between all agencies involved with animals and a common understanding of the community's acceptable standards. With this knowledge, we can create programs and self-sustaining services that foster responsible pet ownership through education and recognizing the benefits of compliance, rather than relying solely on compulsion. Certain traditional approaches only create barriers to responsible pet ownership. We must identify what the components of responsible pet ownership should be. For my community, responsible pet ownership can be summarized in four points:



*Bill Bruce  
Director of Calgary Animal Services and By-Law Services  
Advisor to NCRC*

- Provide a license and permanent identification
- Spay and neuter your pet
- Provide the proper medical care, socialization, training, diet and exercise
- Don't allow your pet to become a threat or nuisance in the community.

Think about it - if all pet owners in your community did these simple things, which are within everyone's capability, you could solve most of the community's animal issues. Licensing and identification quickly reunite lost pets with their families; spay and neuter initiatives reduce unwanted litters humanely; proper training and care produces safe, healthy animals; and proper management prevents pets from becoming a threat or nuisance, and reduces community complaints about animals.

A fifth component completes the responsible pet ownership community: responsible procurement of pets. When a family is adding a new pet, we always want them to ask where the animal came from and under what conditions it was produced. They should select their pets from ethical breeders, shelters or rescues when making this choice. In the animal services world, no officer ever gets called out to a property because the neighbour's pets are too good, never bark or howl, never threaten or bite and are well cared for. Our goal is to build communities where this is the standard – for our communities and for our pets.

# A COMMUNITY MODEL FOR RESPONSIBLE PET OWNERSHIP



## Calgary, Alberta (Population 1,065,000) Responsible Pet Ownership Bylaw

Funded entirely by license fees, not tax dollars, the bylaw is based on four principles:

1. License and provide permanent identification for your pets
2. Spay or neuter your pets
3. Provide training, socialization, proper diet and medical care for your pets
4. Do not allow your pets to become a threat or nuisance in the community

The results were outstanding.

2009

- Dog license compliance ~ 95%
- Out of 4,291 dogs impounded:
  - 86% returned to owners, 27% of those driven directly home
  - 9% adopted
  - 5% euthanized
- Only 159 reported dog bites, most of them minor

---

"The whole model is about responsible pet ownership... In North America, we don't really have an animal problem; we've got a people problem. I think that's the first realization you've got to come to - it's not about the animal, it's about the people."



Bill Bruce, director of Animal and Bylaw Services and NCRC advisor

# SUGGESTED READING

Bathurst, Cynthia, Donald Cleary, Karen Delise, Ledy VanKavage, and Patricia Rushing. The Problem of Dog-Related Incidents and Encounters. Community Oriented Policing Services, U.S. Department of Justice, 2011.

Beaver, Bonnie, et al. "A Community Approach to Dog Bite Prevention." Journal of the American Veterinary Medical Association 218.11 (2001): 1732 -1749. 21 June 2012 <[http://www.avma.org/public\\_health/dogbite/dogbite.pdf](http://www.avma.org/public_health/dogbite/dogbite.pdf)>

Berger, Peter L., and Luckmann, Thomas. The Social Construction of Reality: A Treatise on the Sociology of Knowledge. New York: Anchor Books, 1966.

Bradley, Janis. Dog Bites: Problems & Solutions. Ann Arbor, MI: Animals & Society Institute, 2011.

---, Dogs Bite, But Balloons and Slippers are More Dangerous. Berkeley: James & Kenneth Publishers, 2005.

---, The Relevance of Breed in Selecting a Companion Dog. National Canine Research Council, 2011.

Calgary, City of. Bylaw Number 23M2006. "Being a Bylaw of the City of Calgary Respecting the Regulation, Licensing and Control of Animals in the City of Calgary." Available at <http://www.calgary.ca/layouts/cocis/DirectDownload.aspx?target=http%3a%2f%2fwww.calgary.ca%2fCA%2fcity-clerks%2fDocuments%2fLegislative-services%2fBylaws%2f23M2006-ResponsiblePetOwnership.pdf&noredirect=1&sf=1> (Accessed 24 June 2012)

Cohen, Stanley. Folk Devils and Moral Panics. 3<sup>rd</sup> edition. London: Routledge, 2002.

Delise, Karen. The Pit Bull Placebo: The Media, Myths, and Politics of Canine Aggression. Anubis Publishing: 2007.

Gladwell, Malcom. "Troublemakers: What Pit Bulls can teach us about Profiling." New Yorker. 6 February 2006. 21 June 2012 <[www.gladwell.com/2006/2006\\_02\\_06\\_a\\_pitbull.html](http://www.gladwell.com/2006/2006_02_06_a_pitbull.html)>

- Gorant, Jim. The Lost Dogs: Michael Vick's Dogs and Their Tale of Rescue and Redemption. New York: Gotham Books, 2010.
- Harris, Davis. Good Cops: The Case for Preventive Policing. New York: The New Press, 2005.
- Horowitz, Alexandra. Inside of a Dog: What Dogs See, Smell, and Know. New York, NY: Scribner, 2009.
- Miklosi, Adam. Dog Behavior, Evolution and Cognition. Oxford: Oxford University Press, 2007.
- Reindl, J.C. "Canadian city changes tack to cut dog deaths." Toledo *Blade*, February 28, 2010.
- Schaffner, Joan E., Ed. A Lawyer's Guide to Dangerous Dog Issues. Chicago: American Bar Association Publishing, 2009.
- Scott, John Paul and Fuller, John L. Genetics and the Social Behavior of the Dog. Chicago: U. of Chicago Press, 1965.
- Stallings, Robert A. "Media Discourse and the Social Construction of Risk." *Social Problems*, Vol 37, No 1, February 1990.
- Stocking, S. Holly and Gross, Paget H. How do Journalists Think? Bloomington, IN: ERIC Clearinghouse on Reading and Communication Skills, 1989,
- Sunstein, Cass. R. Worst-Case Scenarios. Cambridge, MA: Harvard University Press, 2007.
- Voith, Victoria, Elizabeth Ingram, Katherine Mitsouras, and Kristopher Irizarry. "Comparison of Adoption Agency Identification and DNA Breed Identification of Dogs." Journal of Applied Animal Welfare Science 12.3 (2009): 253-262.