
COMMENTARY

ARE "PIT BULLS" DIFFERENT? AN ANALYSIS OF THE PIT BULL TERRIER CONTROVERSY

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One of the most controversial aspects of animal control legislation is characterizing a dog as vicious, or in some way restricting ownership of a breed, on the basis of breed description alone. Thus far, breed-specific regulations have affected only "pit bulls," but breed clubs and other organizations of dog owners fear that such restrictions might extend to other breeds in the future (Lockwood 1986). This article reviews some of the historical, ethological, and epidemiological evidence relevant to the question of whether pit bull terriers present special animal control problems justifying unusual legislative action.

From an epidemiological perspective, it is difficult to draw scientifically sound conclusions about the dangers posed by a specific breed. Many lists of the breeds most likely to bite have appeared in the popular press, but accurate breed-specific bite rates are very difficult to compute. Such statistics require good data for both the numerator (number of bites attributed to a particular breed) and the denominator (number of animals in that breed). To get good data, one must have detailed and accurate reports of all bites, including reliable information about the breed(s) and registration of all animals in question, and detailed demographics of the whole dog population of the community.

Several studies suggest that the bite rate for pit

bulls is significantly higher than for other breeds (Pickney and Kennedy 1982; Multani and Clifford 1985; Wright 1985). However, many factors, including the following, can bias breed-specific bite rates:

1. Overreporting of bites attributed to a particular breed
2. Difficulty in identifying a particular breed
3. Underreporting of the population of a particular breed, including aberrant registration or licensing rates
4. A tendency to find specific breeds within populations of dog owners more likely to maintain their animals irresponsibly

All of these factors may apply to analyses of pit bull bite rates.

First, dog fighting and bites attributed to fighting breeds attract considerable attention in the print and electronic media. If a community is having a problem with dangerous dogs, any bite or attempted bite involving pit bulls is likely to find its way into newspapers and local records.

Second, people commonly use the term *pit bull* to describe a variety of registered and unregistered dogs, including the American pit bull terrier (registered by United Kennel Club and American Dog Breeders Association), the American Staffordshire terrier, the Staffordshire bull terrier, the bull terrier, and the bulldog (all registered by the American Kennel Club), and many mixtures of these breeds with one another and with other breeds.

There is considerable controversy over the ability of animal control officers, law enforcement officials, and veterinarians to positively identify individual dogs as pit bulls. One survey of over 2,000 bite reports (Beck, Loring, and Lockwood 1975) found that any medium-sized black and tan animal was likely to be recorded as a German shepherd. Similarly, any stocky short-haired animal involved in an attack is likely to be recorded as a pit bull. It is not unusual to find newspaper accounts of "pit bull attacks" accompanied by a picture of a boxer, pug, or some

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other breed.

Third, low estimates of the total population of specific breeds will inflate bite rates. Several of the preceding studies used AKC registrations to estimate the frequency of bites for various breeds in the *total* population of dogs. This approach is likely to produce erroneous results for pit bulls, since many pit bull owners register their dogs with organizations other than the AKC (including UKC and ADBA), and very few dogs have dual registration. Also, pit bull owners are probably less likely to register or license their animals than owners of other breeds, given past attempts to impose restrictions on the breed.

Finally, although there are many well-bred pit bull terriers with responsible owners, the traditional association of pit bulls with illegal dog fighting means that a disproportionate number of these dogs belong to that class of dog owners likely to exercise less responsibility for the care and supervision of any type of dog. Bite rates, therefore, may say more about the irresponsibility of owners who tend to prefer pit bulls than about the viciousness of pit bulls themselves.

The few communities that claim to have documented higher bite rates for pit bulls have not taken into consideration the confounding factors just mentioned. Unfortunately, there are no statewide or nationwide reporting systems that would support epidemiological generalizations. When addressing problems in the real world, however, it is important to separate issues of epidemiology and ethology from issues of public safety and legislation. The public may demand protective legislation if it perceives any increased bite risk, no matter how small, to be associated with a breed. Recent court actions suggest that law enforcement and animal control agencies have a broad mandate to give the protection of the public priority over the right to own property that may cause harm. In the absence of conclusive data, legislators tend to err in the direction of safety.

With these problems in mind, we can address several questions. First, are there biological or ethological reasons why pit bull terriers might present special dangers? Second, do *all* pit bulls present these dangers? If not, are there other predictable factors associated with dogs or owners that are likely to cause harm?

A review of the origins of pit bulls provides some insight. We do not intend to provide a detailed history of the various pit-bull-type breeds in this paper. For in-depth information see *Pit Bull Report* (Lockwood and Miller 1986) or other standard references (for example, Matz 1984; Semenic 1984). We can, however, briefly point to some illuminating facts. All dogs of the pit bull type trace their ancestry to the bulldogs of the nineteenth century. These animals were originally used for bullbaiting in England. When England passed laws against bullbaiting in 1835, organized dog fighting became popular, resulting in a proliferation of smaller dogs bred for combat. These smaller dogs became popular in America at about the time of the Civil War.

The United Kennel Club was founded in 1898 to register pit bull terriers and to standardize the rules of dog fighting. In 1935 the American Kennel Club, which had registered pit bull terriers since its founding, began registering them as Staffordshire terriers; it renamed them American Staffordshire terriers in 1972. Today, even though both AKC and UKC have taken a stand against dog fighting, owners of registered dogs still pride themselves on their animals' "gameness."

A long history of breeding for bullbaiting and fighting has had a profound effect on the genetic predisposition of many of the fighting breeds. In many cases, a shorter history of selection for qualities that might make these animals suitable as household companions has counteracted this effect. The extent to which breeding has altered the original temperaments of fighting breeds is often difficult to predict in a given animal. The following characteristics of fighting dogs contribute to the problems these animals may present:

1. *Aggression against dogs and other animals.* The primary quality for which pit bulls have been selected is "gameness." A game animal is ready and willing for combat and unyielding in battle with another creature. Certain genetically based characteristics reflect gameness. One important characteristic is a low level of fighting inhibition.

Most wild and domestic dogs fight one another only to drive a rival away from some disputed object—food, mate, or territory. The attack ends when the rival withdraws or displays signals

of surrender. Bluff, such as growling or staring, is usually the preferred tactic. Actual attacks are usually last-resort confrontations. In fighting breeds this inhibition against attacking has been selected against. These animals will fight with no provocation, and a game animal will fight until complete exhaustion or death. In this sense, these animals are not "doing what comes naturally." Their behavior is totally abnormal in an evolutionary or ecological sense and is strictly the result of human intervention. This lowered inhibition against aggression may also apply to other species, particularly smaller animals such as cats.

The flight of a potential prey animal usually triggers predatory attacks in wild and domestic dogs. This is why many breeds may pursue or attack moving people or objects like joggers, bicyclists, and cars. But animals selected for bullbaiting and fighting had to show gameness against animals that were either restrained or confined, so these animals and their descendants are more likely to attack targets that do not flee or show other "provocative" behaviors.

Gameness also seems to include a genetically based lowering of sensitivity to pain. Many fighting breeds show no outward sign of disturbance by severe injuries.

2. *Decreased communication.* Dogs, like wolves, are highly social and possess a rich repertoire of signals to communicate their moods and intentions to others. Animals selected for fighting do not reveal their intentions or weaknesses and are not inhibited by opponents' displays of submission or surrender. Fighting dogs offer little or no indication that they are about to charge or attack. They often fail to give warning with a growl, an aggressive facial expression, or other sign. They are often insensitive to behaviors that usually stop aggression. For example, dogs not bred for fighting usually display defeat in combat by rolling over and exposing a light underside. On several occasions, pit bulls have been reported to disembowel other dogs offering this signal of submission.

3. *Attack behaviors.* Dogs use many different styles of attack against members of their own and other species. Many breeds have styles of biting that reflect the purposes for which they were bred. Guard dogs such as German shepherds, for example, tend to restrain their enemies by grab-

bing and holding. The fighting breeds, on the other hand, have been selected to inflict maximum damage on their opponents by sustained grabbing, holding, shaking, and tearing. To our knowledge, there is no direct evidence of unusually great biting force in fighting dogs. These animals do not possess any unusual adaptations for "locking" their jaws. The increased destructiveness of pit bull bites is attributable to the behavioral factors of persistence and stamina rather than to any biomechanical factors.

4. *Aggression toward people.* The fighting dogs of the nineteenth century generally posed little or no threat to people. These animals were disqualified in the pit if they exhibited aggression to their handlers or other people. Early in this century several former fighting breeds such as the bull terrier and the English bulldog were specifically selected for their good dispositions around people.

As mentioned earlier, AKC, UKC, and ADBA animals are all descended from fighting stocks. Breed standards for the American Staffordshire terrier and the American pit bull terrier make little or no reference to temperament, although an animal that attacks a person or a dog in the show ring may be disqualified. Many individual breeders have attempted to produce animals with stable dispositions toward people. There are many examples of well-behaved dogs of these breeds, but there have been no uniform standards in this direction. Nonregistered and pit-bull-mix dogs, which are becoming increasingly popular, have been subjected to even less selection for stable temperament than their registered counterparts.

The widespread practice of hybridizing American Staffordshire terriers and American pit bull terriers with other breeds can produce particularly dangerous animals. American Staffordshire and pit bull terriers were bred to show little aggression to people. Other breeds with which they are commonly hybridized, such as the German shepherd, Bullmastiff, Rottweiler, and Rhodesian ridgeback, have been selected for use as guard dogs against human intruders. The result can easily be an animal with the fighting potential of the classic pit dogs and the potential aggressiveness to people of guard dogs.

Table 1. Fatal Dog Attacks (1986)

Date	Place	Victim's age/sex	Dog(s) involved
12/29	Apison, Tenn.	F, 3 yrs	1 malamute
11/21	Decatur, Ga.	M, 4 yrs	3 pit bulls
10/26	Denver, Colo.	M, 3 yrs	1 pit bull
9/-	Elizabethtown, Pa.	M, 7 yrs	1 coonhound
9/18	Forest City, N.C.	M, 4 yrs	1 wolf-shepherd
9/2	Dallas, Tex.	F, 14 mos	1 pit-bull-mix 1 mixed-breed
7/1	Kobuk, Alaska	F, 2 yrs	1 "husky-type"
6/10	Ramsey, Mich.	M, 20 mos	1 pit bull
5/5	Anchorage, Alaska	F, 2 yrs	1 wolf-husky
4/24	Osteen, Fla.	M, 79 yrs	1 pit-bull-boxer 1 mixed-breed
4/10	Gresham, Ore.	M, 5 yrs	1 pit bull
1/26	Longview, Tex.	M, 6 yrs	At least 4 pit bulls

The lack of uniform standards of temperament, the lack of inhibition of aggression, the strength and tenacity of attacks, and the failure to show appropriate warning signs of aggression all represent potential risks associated with fighting breeds and their hybrids. As previously mentioned, there is little reliable evidence about breed-specific bite rates. We have conducted research to gain some additional insight from two other sources—reports of fatal attacks and a survey of press reports of dog bites.

Although many dog bites go unreported to either the press or to a board of health, we are certain that virtually all dog-related fatalities are reported. When we learn of a dog-related fatality through local humane groups, veterinarians, health departments, or the press, we contact the appropriate authorities to get a complete record of the incident and subsequent investigations. In several cases, we have been able to conduct on-site investigations.

In 1986 we received reports of 12 fatalities from dog attack (see Table 1). Seven of these attacks involved at least one pit bull. Eleven of the 12 fatalities involved children aged 7 or under. A less comprehensive survey of fatal attacks between October 1983 and December 1984 yielded reports of 9 additional fatalities, 7 of

which involved at least one pit bull. Thus, two thirds of the fatalities we have learned of during the last three years have involved pit bulls. Past and current AKC and UKC registrations and AKC estimates of the ratio of unregistered to registered dogs show that there are roughly 500,000 to 1 million pit-bull-type dogs in the United States, or an estimated 1–2% of the entire dog population. It seems clear, then, that pit bulls are over-represented in the small population of dogs involved in human fatalities.

The injuries inflicted by pit bulls in the cases we have studied are noticeably different from the injuries inflicted in fatal attacks by other breeds. Pit bull victims typically had large portions of tissue torn away, whereas victims of other breeds typically died from a smaller number of exsanguinating injuries or from a single crushing injury to the brain or spinal cord. We are preparing a more detailed review of these incidents.

In order to gain insight into serious but nonfatal dog attack injuries, we reviewed press clippings of 278 dog attacks compiled by two clipping services from approximately 1,100 newspapers for the period from January 1, 1986, to October 1, 1986. We abstracted as much information as possible from each report, following the format used by Beck, Loring, and Lockwood

Table 2. Age of Victim in Nonfatal Dog Attacks

Age of victim	No. of victims (dog=pit bull)	No. of victims (dog=other breed)
<5 yrs	22 (18.0%)	25 (21.2%)
5-9 yrs	24 (19.7%)	31 (26.3%)
10-14 yrs	10 (8.2%)	17 (14.4%)
15-19 yrs	5 (4.1%)	3 (2.5%)
20-29 yrs	8 (6.6%)	3 (2.5%)
30-39 yrs	7 (5.7%)	5 (4.2%)
40-49 yrs	4 (3.3%)	4 (3.4%)
Adult, age unspec.	42 (34.4%)	30 (25.4%)
Total	122 (100%)	118 (100%)

(1975) in their survey of police reports.

We realize that we cannot use this analysis to draw breed-specific conclusions about bite rates, since there may be a tendency to report pit bull attacks more often than others. In fact, 143 of the reports, or 51.4%, dealt with pit bull incidents. Of the remainder, 11.5% dealt with German shepherds or German shepherd mixed breeds, 7.2% with Dobermans, 4.7% with Labradors, 2.9% with Chows, and 22.3% with other unidentified breeds. Thus, we are *not* asking the question "Are pit bulls different?" but instead are asking "Are pit bull attacks different?" Our analysis of press clippings indicates several relevant differences.

Beck, Loring, and Lockwood (1975) reported that most serious dog bite cases involve children, and our analysis agrees (see Table 2). There is, however, a higher proportion of adolescents and adults among pit bull victims (54.1%) than among victims of other breeds (38.1%). This suggests that greater size and maturity are less of a defense against pit bulls than they are against other attacking breeds. Familiarity with the animal also appears to provide less protection in the case of pit bulls. Out of 143 pit bull attacks, 19 (13.3%) involved attacks on the owner; out of 135 attacks by other breeds, only 3 (2.2%) involved the owner.

We characterized an injury as serious if the report indicated a need for suturing, hospitalization, or other medical intervention. Of the 143 reports of pit bull attacks, 55 (38.5%) were serious. Of the 135 reports of attacks by other

breeds, only 36 (26.7%) were serious. These figures suggest that the press is *not* more likely to report nonserious pit bull bites just because they involve pit bulls; if they did, we would expect a higher proportion of reports of nonserious pit bull bites. Out of the 91 serious bites reported, however, over half (60.4%) involved pit bulls. Thus, these reports indicate that pit bulls are more likely to be involved in serious bites, and serious bites tend to involve pit bulls more often than other breeds.

Two other measures of the severity of bites are the incidence of bites to the face and the number of bites involving multiple injuries to several body areas. Victims under 9 years of age tended to receive a high proportion (around 60%) of facial bites from *all* breeds. Pit bulls do not inflict more facial injuries than other breeds to any group. However, pit bulls are more likely to inflict multiple injuries on older victims: 35% of older pit bull victims received multiple injuries, compared with 18.5% of older victims of other breeds.

Previous studies of dog bite epidemiology (for example, Beck, Loring, and Lockwood 1975) suggest that the majority of incidents involve free-roaming, owned animals. Virtually all the dogs in the cases we studied were owned. A surprising number, however, were restrained at the time of the attack. In the case of pit bull bites, 61 of 143 (42.7%) involved animals that were fenced, chained, or inside prior to the incident. Twenty cases (14%) involved pit bulls that escaped by jumping fences or breaking chains immediately before the attack. Of the 135 cases involving other breeds, 36 (26.7%) involved restrained animals, but only 1 (0.7%) broke restraint to initiate the attack.

The press accounts support the fact that most dog bites are unprovoked. Table 3 describes the victims' interactions with dogs in the 163 reports in which details were provided. The most noteworthy distinction between pit bull attacks and attacks involving other breeds is that 24.8% of the former involved the victim coming to the aid of an animal or person *already injured* by the attacking animal. This occurred in only 11.3% of the attacks by other breeds.

Our overview suggests that some pit bulls present special problems. They account for a dis-

Table 3. Victim Interaction with Dog (Where Known)

interaction	No. of cases (dog=pit bull)	No. of cases (dog=other breed)
No direct interaction	59/101 (58.4%)	30/62 (48.4%)
Inactive, walking	38 (37.6%)	15 (24.2%)
Run, bike, play	9 (8.9%)	7 (11.3%)
Other	12 (11.9%)	8 (12.9%)
Interacting with dog	42/101 (41.6%)	32/62 (51.6%)
Feed, pet, play, misc. friendly	8 (7.9%)	17 (27.4%)
Helping injured animal	5 (5.0%)	3 (4.8%)
Helping injured person	20 (19.8%)	4 (6.5%)
Deliberate provocation	5 (5.0%)	1 (1.6%)
Other	4 (4.0%)	7 (11.3%)

proportionate number of fatal attacks, although these are few; and they are more likely than other breeds to inflict serious injuries, to attack while restrained or after breaking out of restraint, and to attack adults, including their owners.

These generalizations seem to be supportable, but we feel that we cannot use them to make predictions about the behavior of an individual animal. A dog's tendency to bite is a product of at least five factors:

- The dog's genetic predisposition to be aggressive
- The early socialization of the animal to people
- Its training for obedience or mistraining for fighting
- The quality of care and supervision provided by the owner
- The behavior of the victim

All of these factors interact. Genetic predisposition is the only factor directly relevant to the issue of breed-specific restrictions. Are pit bulls as a group genetically uniform and predictably aggressive enough to warrant special restrictions? Responsible breeders argue that they are not. None of the 1986 fatalities involved AKC- or

UKC-registered animals, nor did press accounts of nonfatal bites ever mention registration. Although the nature and severity of pit bull attacks reflect the effects of the dogs' selection for fighting, we must recognize the variability in the animals that we call pit bulls and in their owners.

The genetics of canine aggression are still poorly understood, although the existence of many breeds intentionally selected for aggression under different circumstances clearly demonstrates a strong genetic component to some aspects of aggressive behavior. It is quite possible that the term *pit bull* encompasses a variety of genetically diverse animals. The long history of selection for gameness has produced a characteristic fighting dog. The shorter history of breeding for pet qualities has clearly overcome many negative characteristics in responsibly bred animals.

The remaining factors affecting dog attack are all *human* variables related to the level of owner responsibility and supervision. Many owners are responsible people, well aware of the history of pit bulls, and they attempt to correct problems of aggression inherited from the past. Other owners are ignorant of the breed. Most troublesome are owners specifically seeking a "mean" dog. In their hands, *any* dog is likely to become a menace, a pit bull particularly so. The interest among less responsible owners and breeders in overall "meanness" has affected at least the last 10 to 20 generations of dogs; this fact may partly account for the recent increase in the number of problem animals. Finally, there continues to be an interest in dog fighting. The dogs that prove to be too aggressive to people to be acceptable for dog fighting often wind up in the hands of owners seeking a "mean" dog.

The common theme in virtually all of the fatal and nonfatal attacks we reviewed was that the owner had not taken appropriate steps to prevent his or her animal from becoming a problem. Simply placing an animal behind a fence or on a chain is not sufficiently responsible behavior, particularly in the case of a breed or individual animal inclined to attack others.

Problems of irresponsible ownership are not unique to pit bulls, nor will they be in the future. For this reason, we feel that effective animal control legislation must emphasize responsible and

humane ownership of sound animals as well as responsible supervision of children and animals when they interact. We believe that this can be accomplished in a number of ways:

- Strengthen and enforce laws against dog fighting to eliminate the "macho" image of this activity.
- Introduce and enforce strong animal control laws to identify problem animals and owners before tragedy strikes. (Guidelines for such ordinances are available from the Humane Society of the United States, 2100 L St. NW, Washington, DC 20037.)
- Introduce programs to educate the public about responsible ownership and the problems of dog bite.

We feel that it is possible to protect the health and safety of the public and at the same time preserve the rights of pet owners. By placing greater emphasis on responsible and humane animal care, communities can go a long way toward solving their current animal problems and preventing new ones.

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