White-tailed deer attacking humans during the fawning season: a unique human–wildlife conflict on a university campus

RYAN D. HUBBARD, Southern Illinois University–Carbondale, Cooperative Wildlife Research Laboratory, Carbondale, IL 62901, USA  ryan_hub@yahoo.com
CLAYTON K. NIELSEN, Southern Illinois University–Carbondale, Cooperative Wildlife Research Laboratory, Carbondale, IL 62901, USA  kezo92@siu.edu

Abstract: Human–wildlife conflicts associated with suburban white-tailed deer (Odocoileus virginianus) populations have increased in the last 20 years. Primary threats to human health and safety associated with overabundant deer populations include deer–vehicle collisions, attacks on humans, disease, and damage to native and ornamental vegetation. During the fawning seasons (May–June) of 2005 and 2006, 13 confirmed incidences of white-tailed deer attacking humans occurred on the campus of Southern Illinois University–Carbondale. To our knowledge, no report exists that documents free-ranging does attacking humans during the fawning season. The attacks occurred at multiple locations on campus, with injuries to humans, including minor scrapes, bruises, broken bones, and skin lacerations requiring stitches. Wildlife managers may face the increased likelihood of aggressive behavior from deer directed towards humans as deer and human populations increase and come into closer contact with each other.

Key words: animal attacks, deer attacks, fawning season, human–wildlife conflicts, Odocoileus virginianus, Illinois, white-tailed deer

White-tailed deer (Odocoileus virginianus) populations have proliferated in suburban areas during the last 20 years due to high-quality habitat, lack of predators, and protection from harvest (Conover 1995, Deblinger and Rimmer 1995, Swihart et al. 1995, Hansen et al. 1997, Hussain et al. 2007). The increase has led to increased human–wildlife conflicts, such as deer–vehicle collisions (Finder et al. 1999, Nielsen et al. 2003, Bissonette et al. 2008, Grovenburg et al. 2008, Ng et al. 2008), ornamental plant damage (Conover and Kania 1988), damage to crops (DeVault et al. 2007, Retamaosa et al. 2008), and concerns about zoonotic disease transmission (Decker and Gavin 1987, Kilpatrick and Walter 1997).

Cervid attacks also pose a potentially serious threat to human and pet health and safety occurring sometimes in suburban environments that contain high cervid populations. Infrequently, male cervids attack, and even kill, humans in territorial defense during rut (Colorado Division of Wildlife 2001, Conover 2002). Female cervids have attacked humans and dogs when cornered or while protecting offspring (Colorado Division of Wildlife 2001, Conover 2002, Pittsburgh Post-Gazette 2007). When female cervids have attacked humans, there has usually been habituation to humans or taming of the animal by humans (Geist 2007). Such habituation is likely due to the restriction of hunting or to the animal living in proximity to humans (Colorado Division of Wildlife 2001, Conover 2002). Moose (Alces alces) have attacked humans in populations where moose cows are not hunted. For example, a moose cow trampled an elderly man to death on the University of Alaska–Anchorage campus in 1995 when the moose apparently perceived that

A walking path on Southern Illinois University campus was closed due to deer attacks on humans.

1Present address: 3304 E. Highway U, El Dorado Springs, MO 64744, USA
her calf was being threatened (Conover 2002). Several days later, the same cow tried to attack another human. In 2007, on the same campus, a moose trampled a university student to death. In another incident in the Municipality of Anchorage, a moose with twin calves attacked an 8-year-old boy (ABC News 2007). Attacks on humans by elk (Cervus elaphus) and other cervids also have been reported. In 2002, an elderly woman was injured by an elk in her yard in Estes Park, Colorado, when she unknowingly moved too close to a newborn calf (Pinecam 2002). In 2006, a cross-country runner was repeatedly harassed by a mule deer (Odocoileus hemionus) doe (ABC News 2006).

We documented repeated incidences of free-ranging female white-tailed deer attacking humans on the campus of Southern Illinois University–Carbondale (SIUC) during the fawning seasons of 2005 and 2006. Extensive literature searches yielded no instances of white-tailed deer attacking humans during the fawning season elsewhere in the wild. Herein, we describe such cervid attacks and discuss potential management implications.

**Study area**

Southern Illinois University–Carbondale is located in southwest suburban Carbondale, Illinois (population 20,681 without students present; U.S. Census Bureau 2000; Figure 1). Southern Illinois University Carbondale employs >4,000 workers with a student enrollment of >20,000 (K. Blackwell, SIUC Department of Human Resources, personal communication). Southern Illinois University Carbondale is 1,394 ha in area, including the main campus (493 ha), of which 101 ha is forested, agricultural research fields (551 ha), and surrounding forested property (350 ha).

Thompson Woods (Figure 1) is a 7-ha woodlot dominated by hardwood trees and shrubs (Acer saccharum, Asimina triloba, Carya spp., Liquidambar styraciflua, Quercus spp.) interspersed with walking paths, located in the center of SIUC campus. Thousands of students, faculty, and Carbondale residents travel on these paths daily. Thompson Woods adjoins 13-ha Campus Lake (Figure 1), which is bordered by forested areas. Dense stands of timber and

![Figure 1](https://example.com/figure1.png)

*Figure 1. Locations of deer attacks on humans on Southern Illinois University–Carbondale campus during the fawning seasons (May–June) of 2005 and 2006. Stars represent attacks in 2005; triangles represent attacks in 2006. Multiple attacks occurred at some locations.*
shrubby undergrowth exist along trails where deer are frequently observed (Figures 2 and 3). As part of the SIUC agricultural research program, fields of corn, soybeans, and wheat are located <1 km west of the main campus. The combination of cover, manicured lawns, and agricultural land results in high-quality, suburban deer habitat throughout SIUC property and Carbondale. Deer freely travel from the agricultural areas to the interior of campus using forested corridors (Cornicelli et al. 1996). Deer hunting is prohibited on SIUC property, a fact that has contributed to a relatively high deer density compared to the surrounding rural landscape. Distance sampling estimates of deer density (LaRue et al. 2007) were 18 ± 2 deer/km² (R. Hubbard, unpublished data).

**Results**

During June 7–15, 2005, and May 23–June 5, 2006, >1 doe attacked 13 different adult humans (T. Sigler; SIUC Department of Public Safety, unpublished data; Table 1). Two additional attempted deer attacks were reportedly prevented by officers who were on extra patrol in high-risk areas of campus. Also, numerous anecdotal reports concerning deer behaving aggressively towards humans and pets were given to the author and SIUC police (T. Sigler; SIUC Department of Public Safety, personal communication).

All attacks were by does, and all occurred during the fawning season in southern Illinois (May 21–June 30; Rohm et al. 2007). Deer attacks were generally clustered temporally at specific times.

![Figure 2](image1.png) Many walking paths dissect woodlots on the Southern Illinois University–Carbondale campus. These paths are within or adjacent to dense stands of vegetation that provide hiding cover for fawns near human activity.

![Figure 3](image2.png) Deer, such as this adult doe with twin fawns, are frequently observed throughout the Southern Illinois University–Carbondale campus.

<table>
<thead>
<tr>
<th>Attack</th>
<th>Date</th>
<th>Time of day (hr)</th>
<th>Sex of human</th>
<th>Type of injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6/7/2005</td>
<td>1505</td>
<td>Female</td>
<td>Scrapes</td>
</tr>
<tr>
<td>2</td>
<td>6/7/2005</td>
<td>1520</td>
<td>Female</td>
<td>Broken clavicle</td>
</tr>
<tr>
<td>3</td>
<td>6/7/2005</td>
<td>1536</td>
<td>Female</td>
<td>Lacerations, concussion</td>
</tr>
<tr>
<td>4</td>
<td>6/13/2005</td>
<td>1520</td>
<td>Male</td>
<td>Minor scrapes</td>
</tr>
<tr>
<td>5</td>
<td>6/14/2005</td>
<td>800</td>
<td>Female</td>
<td>Cut to head</td>
</tr>
<tr>
<td>6</td>
<td>6/14/2005</td>
<td>805</td>
<td>Female</td>
<td>Unknown injury</td>
</tr>
<tr>
<td>7</td>
<td>6/15/2005</td>
<td>2014</td>
<td>Female</td>
<td>Back injury</td>
</tr>
<tr>
<td>8</td>
<td>6/15/2005</td>
<td>2014</td>
<td>Male</td>
<td>Dislocated shoulder</td>
</tr>
<tr>
<td>9</td>
<td>6/15/2005</td>
<td>2029</td>
<td>Male</td>
<td>Scrapes</td>
</tr>
<tr>
<td>10</td>
<td>5/23/2006</td>
<td>1230</td>
<td>Male</td>
<td>Pain to left extremities, neck, head</td>
</tr>
<tr>
<td>11</td>
<td>5/23/2006</td>
<td>1250</td>
<td>Female</td>
<td>Bleeding from head and hands</td>
</tr>
<tr>
<td>12</td>
<td>5/23/2006</td>
<td>1314</td>
<td>Male</td>
<td>Scrapes, bruises</td>
</tr>
<tr>
<td>13</td>
<td>6/5/2006</td>
<td>1859</td>
<td>Male</td>
<td>Pain in arm and neck</td>
</tr>
</tbody>
</table>
locations (Figure 1). Multiple attacks within 40-min spans were reported on 4 days (Table 1). Only 2 attacks occurred without any further incidents during the same day.

An attack generally consisted of a single doe (usually observed with ≥1 fawn) standing upright on her rear legs while flailing her front legs towards a human. Usually the victim either would be knocked down by the doe or would fall down when scrambling to escape. Most injuries sustained during a deer attack were minor to moderate scrapes and lacerations, but more severe injuries, such as broken bones, were reported in a few instances. One woman suffered a broken clavicle from the force of the attacking doe’s legs (Table 1). Other attacks caused a concussion and a dislocated shoulder to its victim. Eleven of the 13 attacks (92%) occurred after 1200 hours; 8 of the 13 attacks (66%) were after 1500 hours.

One attack, which occurred on June 5, 2006, involved a SIUC police officer, who in self-defense shot the attacking doe with his sidearm. The doe was a healthy 4-year-old (Severingham 1949) animal weighing 60-kg that was lactating and was seen with a fawn. (The doe’s carcass was sent to the Illinois Veterinary Diagnostic Laboratory in Centralia, Illinois, for testing, and no diseases were found.)

Discussion

We do not know the exact causes of the deer attacks that occurred on the SIUC campus during 2005 to 2006 or how many does were responsible for them. However, we speculate that several factors stimulated these attacks. The clustering of attacks may be explained by an individual doe being overly stressed or antagonized at a given time. Apparently, the doe initiating the attack became extremely aggressive for a short period of time until the perceived threat to her and the fawn(s) ceased. We are uncertain whether deer were provoked by humans attempting to pick up or otherwise touch fawns, because only 1 police report mentioned this activity.

Other factors influencing deer attacks at SIUC may have included high-quality fawning habitat within areas of high human use, antipredator defense strategies of does, a history of deer and humans in close proximity on campus, and unusual stress in a high-density population of deer. Thompson Woods, the area surrounding Campus Lake, and wooded corridors on campus offer deer cover. These areas, which are interspersed with agricultural fields and manicured lawns, also provide dense cover suitable for fawning (Huegel et al. 1986). Most newborn fawns remain concealed in thick vegetation while the mother is away (Schwede et al. 1994). The cryptic coloration and behavior of fawns (e.g., not fleeing from predators until they are about 10 days old; Hirth 1985) caused many recreationists on campus to approach unknowingly close to a fawn. A large amount of fawn-hiding cover exists along campus walkways where most of the attacks occurred (Figure 2). Some of the humans attacked reported seeing fawns, whereas others stated that the doe just “came out of nowhere” and began to attack. A wandering fawn, however, may have been at fault for ≥1 deer attacks in which the victim reported that a fawn was following him along a walking path before a doe charged from the woods.

On the SIUC campus, deer have become accustomed to humans, and vice versa, over the past 20 years since deer populations were first noted to be increasing (Cornicelli et al. 1993, Cornicelli et al. 1996). Year-round activity on campus allows deer to become habituated to human activity, and, during most seasons, habituation to humans will not result in attacks. Humans also are accustomed to seeing deer on campus without incident, and previously they had no reason to fear the presence of deer. However, during the fawning season, does will aggressively defend their fawning territory from other deer (Ozoga et al. 1982) and predators (Ozoga and Verme 1986, Mech and McRoberts 1990), although much of this behavior is thought to be in defense of the fawn, rather than true territoriality (McCullough 1979). At relatively high deer population densities, such as that existing at SIUC, Ozoga et al. (1982) reported that fawn rearing space is severely limited and maternal behavior is disrupted. This territoriality or fawn-protecting behavior was apparently extended toward humans at SIUC during 2005 and 2006 by ≥1 doe.

Management implications

Factors contributing to these attacks at SIUC can be found in many similar settings.
The university campus environment at SIUC (i.e., high deer populations and thousands of students, staff, and recreationists traveling through deer habitat daily) likely increases deer-human interactions, compared to the situation in most urban parks. However, many suburban and campus settings similar to SIUC's exist in North America. Thus, the possibility of white-tailed does attacking humans during the fawning season in suburban areas other than SIUC should not be discounted. All reported attacks on humans from free-ranging female cervids have occurred only since 1995 (Colorado Division of Wildlife 2001, Conover 2002, Pinecam 2002, ABC News 2006, ABC News 2007), a time period when many ungulate population levels were reaching 100-year high (Fagerstone and Clay 1997). As human populations increase in areas of high-quality deer habitat and as deer populations grow where hunting is restricted or prohibited (Storm et al. 2007a, b), deer attacks could increase.

We assert that deer attacks provide additional impetus for deer management, given that such attacks can be injurious and even deadly to humans. This is especially true on SIUC campus where thousands of children attend >90 campus-sponsored events, such as volleyball camp and cheerleading clinics, during the fawning season (P. Davenport, SIUC Department of Media and Communication Resources, personal communication). Managed hunts (Hansen and Beringer 1997, Mastro et al. 2008, McShea et al. 2008), deer contraception (Curtis et al. 2008, Rutberg and Naugle 2008, Miller et al. 2008), and sharpshooting (Nielsen et al. 1997, Doerr et al. 2001, DeNicola et al. 2008) allow wildlife managers to control deer numbers in suburban landscapes to abate deer-human conflicts such as Lyme disease (Decker and Gavin 1987), vegetation depredation (Kilpatrick and Walter 1999), and deer-vehicle collisions (Sullivan and Messmer 2003, DeNicola and Williams 2008). The university is in the process of considering these management options according to regulations set by the Illinois Department of Natural Resources.

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**Ryan D. Hubbard** is a wildlife biologist and ranch manager for Housh Farms LLC in Eldorado Springs, Missouri. He is a former graduate student at the Cooperative Wildlife Research Laboratory at Southern Illinois University–Carbondale (SIUC), where his master’s degree project focused on whitetailed deer management on the campus. He has been a member of The Wildlife Society since 2003 and was the student chapter vice president at Kansas State University where he received his B.S. degree in wildlife biology in 2005. His interests include pursuing whitetailed deer with his bow and roaming through prairies.

**Clayton K. Nielsen** is a wildlife ecologist at the Cooperative Wildlife Research Laboratory at Southern Illinois University–Carbondale, where he received his Ph.D. degree in 2001. He has been a member of The Wildlife Society (TWS) since 1994 and is a certified wildlife biologist, an Illinois chapter past president of TWS, and the president elect of the north central section of TWS. He is also the director of scientific research for the nonprofit Cougar Network.