

Western Park Personnel Meet on Mountain Lion-Human Encounters

By Bruce Moorhead and Terry Hofstra

Close-encounters and attacks on humans by mountain lions (*felis concolor*) have increased in the past 20 years in western North America and in a number of parks. In April, a lone female runner was killed by a lion in the Sierra Nevada foothills east of Sacramento; this was the second runner fatality in three years (a Colorado runner was killed in 1991) and the fifth lion attack in California since 1985. In Olympic NP, 33 lion-human encounters (i.e., sudden unexpected meetings at close range) and five near-attacks have been reported since 1991 with at least 12 occurring in 1994. Several other western national parks (Sequoia, Redwood, Big Bend, and Yosemite NPs) report similar patterns with two attacks occurring in Glacier NP in the past five years. This trend presents a visitor safety problem, has legal ramifications, and requires timely preparation by park resource managers.

On July 12-13, we participated in a workshop at the University of California, Davis (UCD) on managing lion-human conflicts in western parks. The workshop was sponsored jointly by Redwood NP and the CPSU/UCD. About 30 persons participated, including lion and legal experts, houndsmen, rangers, biologists, administrators, and interpretive specialists from various national parks (Glacier, Olympic, Sequoia and Kings Canyon, Yosemite, Lassen Volcanic NPs, Redwood National and State Parks), Whiskeytown and Golden Gate NRAs, the Western Regional Office, and the California Park Service.

Dr. Howard Quigley of the Hornocker Wildlife Research Institute summarized lion ecology and behavior based on long term research in Idaho, Yellowstone and Glacier NPs, and New Mexico. In un hunted populations, adult lions (>two years old) occur in rather stable social territories that tend to limit population density, with one male territory typically overlapping several (three to five) female territories. Relations between lions in territories (outside of breeding) vary from tolerance to serious fighting and frequent deaths. Female territories are more responsive to prey changes locally. Young animals dispersing from natal territories can move 300 miles in search of home ranges; lingering in an adult territory can amount to a death sentence. These transient animals

often interact with humans. Research is still needed, however, on the habituation of lions to people and encounter/attack rates as the human population increases and people move closer to lions.

Dr. Paul Beier, University of Northern Arizona, summarized and expanded on his published research on lion attacks (Beier, 1991. Cougar attacks on humans in the U.S. and Canada. *Wildl. Soc. Bull.* 19:403-412). Overall, the risk of a lion attack is very small although it is increasing and is causing concern in some areas. In the 100 years from 1890-1989, about 50 humans were injured, while 10 people were killed due to lion attacks. The majority of victims (66%) were unsupervised children or lone adults; 60% of the attacks occurred in British Columbia. In the 20 years from 1970-90 (since the end of bounty hunting), the risk of an attack increased five times (from 0.4 human deaths/100 yrs to 2.5/100 yrs).

Avoiding Attack

While children are most vulnerable to attack, risk is much lower when accompanied by an adult. Similarly, people traveling in groups are more difficult targets for lions. At close range, lions may interpret deference in people as increased (prey) vulnerability. Therefore, when encountering a lion, people should stand their ground, not run, be assertive, keep their eyes on the animal, not play dead, and fight back, if necessary.

Bill Clark of California Wildlife Investigations Lab discussed the protocol for investigating incidents, such as the April 1994 fatality where a lone female runner was killed and partially consumed in a state park east of Sacramento. Assume that you'll be sued, and act immediately to protect the scene of an injury or fatality and to permit identification of the lion involved (by tracks, etc.). For forensic work, time is also critical since tissue and other evidence either decomposes rapidly at a scene or is digested by the animal. In the April fatality, human autopsy data, lion tracks, and reference skulls were used to develop a profile of the lion being sought based on its cranial characteristics

inferred from bite wounds and other clues. Chase dogs captured the right lion soon thereafter, underscoring the value of tracker availability. The cat's identity was confirmed by DNA analysis of human tissue residues found at the base of its claws. The animal was a lactating female with cubs.

The field solicitor of the Department of the Interior and the deputy attorney general for California addressed park liability issues. While liability is evaluated case by case, it depends largely on whether or not a park is aware of a safety threat (not reasonably to be expected by the average visitor) and whether or not due warning is given. Everyone entering a park where lions are being observed or frequently encountered should be informed of the natural presence of and potential hazards posed by lions (e.g., by entry brochures and posted signs). Reports of lion sightings and interactions with people should be taken seriously, documented, and investigated. More specific warnings should be posted (and areas closed temporarily if warranted) where multiple lion observations and encounters occur. Warnings should be neither too soft nor unduly alarming, but must communicate the presence of lions in an area, the potential hazards, how to reduce the likelihood of encounter, and what to do if you meet an animal.

On the second day of the workshop, the group developed uniform mountain lion management guidelines for federal and state parks. Terry Hofstra of Redwood NP is editing the guidelines to include sections on policy and purpose, management alternatives and tactics, documentation and data management, and education and communication.

Some of the management recommendations include encouraging parks with increasing lion-human interactions to (1) complete local response plans; (2) standardize lion sighting/incident report forms and management response procedures—lion behaviors (movements, postures, characteristics of eyes, ears, mouth, tail, etc.) observed during encounters (as summarized by Dr. Lee Fitzhugh/UCD) can aid personnel in placing a particular behavior on an ascending scale of attack risks; (3) control/minimize lion attractants, such as pets, raccoons, carrion, and improperly



Olympic NP visitor and photographer Jan Brill and a partner encountered a mountain lion suddenly when hiking the popular boardwalk trail between Ozette and Sand Point. What began as excitement for the wildlife viewing opportunity turned to concern as the lion neared the hikers.



Photos by Jan Brill

Noting the lion's ear position, Brill decided to wave his arms (see sidebar). The lion sauntered off into the brush ending a typical and potentially hazardous lion-human encounter.

stored human food and garbage in inholdings and recreation facilities; (4) recognize that a close encounter is potentially very dangerous and complex--a lion's behavior can rapidly escalate or shift back and forth between secretive, curious, defensive, or offensive depending in good part upon what people do; (5) advise the public to become assertive and counter-aggressive when a lion behaves aggressively or is reluctant to leave an area; (6) promptly haze lions away from dense public use areas; (7) realize that translocation of problem mountain lions is complicated by considerations of park size and neighboring land use, and may cause fatal territorial competition between lions; (8) develop interagency arrangements to ensure that qualified personnel are available to capture and remove prob-

lem animals as needed; and (9) train rangers and interpreters to educate visitors about the hazards of mountain lions and appropriate human responses during an encounter. The group also identified as priority needs establishment of a lion technical coordinating group, to improve communication among parks and lion experts, and creation of a central database.

In conclusion, mountain lion-human interactions are increasing in a number of western national and state parks. Reports of lions should be documented, acted on, and taken as seriously as grizzly or black bear reports. Managing these incidents is more complicated than for black bears, however, due to the predatory behavior potential in lions. Serious incidents often develop through a rather unpredictable

pattern of "cold" to "warm" reports from visitors which can either foretell something "hot" soon to follow, or nothing at all. Adequate public warning in parks is the first priority, followed by prompt efforts to remove or control pets or other food attractants. This trend indicates a timely need for improving management planning, bettering lion behavior and habituation information, and upgrading education in parks.

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