

[A]mong all these evolutionary achievements, perhaps none are more important, more widely used, and more highly developed, than those characteristics which serve to elude, to attract, or to deceive the eye, and so facilitate escape from enemies or the pursuit of prey. (Cott, 1966)

CCD [camouflage, concealment, and deception] employment increases survivability. (Joint CCD Program FY95 annual report)

What do defense planners have to learn from animal and plant biology, particularly in the area of deception? The answer is not immediately obvious, relative to what might be learned, for example, from a historical review of earlier military engagements. As defense analysts and decisionmakers grapple with the difficult challenges of operating in urban environments, animal and plant biology might seem at a far remove from obvious utility. Yet previous research (Gerwehr and Glenn, 2000) has observed a powerful resonance between military deception in urban environments and biological deception techniques—techniques that are highly effective and commonplace in support of species survival. This resonance is particularly apparent for objectives that are *proximate* rather than *ultimate*. In other words, the nexus between biological and military deception is most visible when the deception benefits the deceiver immediately and directly (*proximately*). For example, studies in animal behavior have found that camouflage is often more effective in cluttered, densely populated areas, possibly due to the greater amount of information present and the concomitant difficulty an individual organism has in tracking and sorting it. A reasonable

analogy might be drawn between this finding and military operations in urban terrain, where identifying concealed combatants within a huge population of active noncombatants and complex, man-made terrain is a longstanding and formidable problem. Studies on “cognitive load” in the literature of social psychology seem to echo this point (Milgram, 1970; Cohen, 1978).

Our current effort seeks to build on that earlier work by delving more deeply into the variety of biological deceptions to distill further lessons with application in the military domain, specifically in urban operations. As such, this report represents the convergence of two lines of inquiry:

- The staggering variety of deceptions in the animal and plant kingdoms demonstrates the vital importance and ubiquity of deception in nature. Deception is simply one of the most valuable instruments of biological survival. Human deception differs from that found in other species only by degree; virtually every type of deception conducted by human beings (particularly in military affairs) is mirrored in nature (e.g., decoys, camouflage, diversions, disinformation, dazzles, disruptive coloration, disguise). All are found in the animal and plant kingdoms, and they are found not once but repeatedly throughout every environment and in species from microbes to mammals.
- Furthermore, animal and plant deception—like military deception—varies widely in its sophistication, complexity, cost, risk, and effectiveness. In the course of previous research, a thorough mining of animal and plant literature proved extremely valuable in developing a comprehensive theory of deception, one broad enough to encompass human, animal, and plant alike.

U.S. intelligence-collection assets have greater difficulty in accurately picturing the urban environment than any other; the urban setting is the most conducive to deception of any operating environment. Compared to others, the urban environment has the richest lodes of materials, the greatest background noise, the highest operational tempo (OPTEMPO), and the most complex terrain, and it also exacts the greatest toll on sensor and communication effectiveness. Moreover, urban environments have the greatest numbers of noncombatants and nongovernmental organizations (NGOs) present. This

alone presents an array of challenges to situational awareness: “normal” activity is so voluminous and varied that it is difficult to notice “abnormal” activity. In time of war, of course, gauging what is “normal” baseline activity is exceedingly problematic, greatly facilitating the possibilities for deception of all sorts.

Deception thrives in this setting. A wealth of available materials increases the sophistication of deceptions; voluminous activity improves masking efforts and overloads the adversary’s intelligence efforts; complex terrain creates uncertainty and diffuses vigilance; degraded sensing and communications blur the intelligence picture; and a high OPTEMPO precludes deliberate, unhurried perception and erodes decisionmaking. The possibility of conducting deception, the variety of possible deception efforts, the likelihood of deception success, and the ultimate effect of successful deception are all amplified in urban terrain relative to other terrain types.