

Chapter 2

History of Urban Wildlife Conservation

Lowell W. Adams

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2.1 In the Beginning

Urban wildlife management is rooted in game management. According to Leopold (1933), game management was first practiced in Asia by Kublai Khan during the latter half of the thirteenth century (Fig. 2.1). At that time, game animals could not be taken between March and October. Such practice found its way to Europe where a long history developed of setting hunting seasons and bag limits to manage game species. *The Master of Game* is considered the oldest English book on hunting, written by Edward of Norwich, Second Duke of York, between 1406 and 1413 (Baillie-Grohman and Baillie-Grohman 2005) (Fig. 2.2). The practice of setting hunting seasons and bag limits to manage game species was transferred to North America with European settlement of the continent. For example, Rhode Island closed the hunting season for white-tailed deer (*Odocoileus virginianus*) from May to November in 1639 and Iowa established a bag limit of 25 greater prairie chickens (*Tympanuchus cupido*) per day in 1878 (Leopold 1933 as cited in Bolen and Robinson 2003).

Game management as a science in the United States began in the 1930s, led by the publication of Aldo Leopold's book *Game Management* in 1933 (Leopold 1933). The Cooperative Wildlife Research Unit program began in 1935. In 1936, The Wildlife Society was formed and the first North America Wildlife Conference (now North American Wildlife and Natural Resources Conference) was held. In 1937, the Federal Aid in Wildlife Restoration Act was enacted. That legislation is widely known as the Pittman–Robertson Act (or P–R Act), and is one of the most important wildlife acts in the USA.

L. W. Adams (✉)
Department of Environmental Science and Technology,
University of Maryland, College Park, MD 20742, USA
e-mail: Ladams4@umd.edu

Fig. 2.1 Game management was first practiced in Asia by Kublai Khan during the latter half of the thirteenth century. Kublai Khan prohibited the taking of game animals between March and October. Later the practice of game management was adopted in Europe and from there it spread to North America

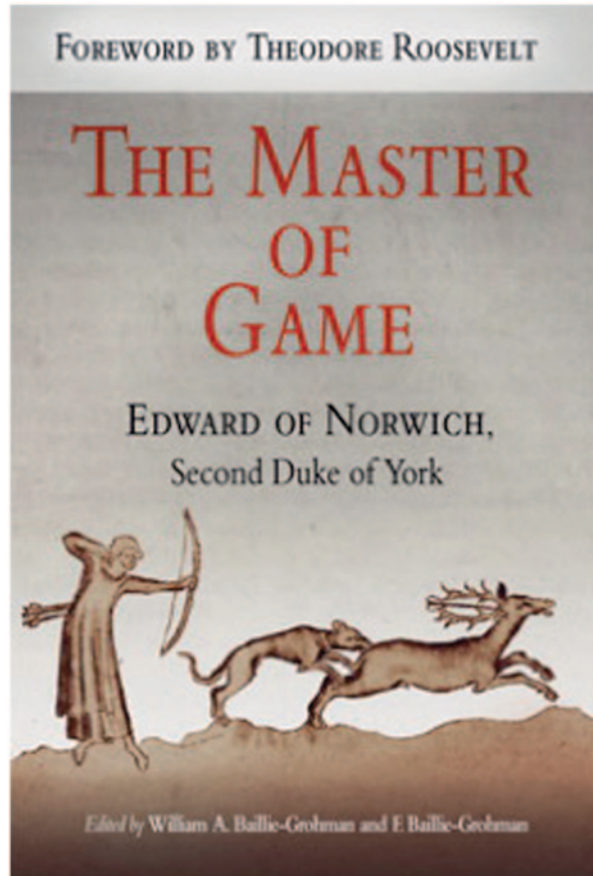


During the early years of wildlife management in North America, far-sighted wildlife biologists recognized the importance of urban wildlife. For example, in his classic text, Aldo Leopold stated “A pair of wood thrushes (*Hylocichla mustelina*) is more valuable to a village than a Saturday evening band concert, and costs less” (Leopold 1933, p. 404). Rudolf Bennitt, first president of The Wildlife Society, summarized the 1946 North American Wildlife Conference and stated: “I still look forward to the day when we shall hear men discuss the management of songbirds, wildflowers, and the biota of a city” (Bennitt 1946, p. 517).

The 1960s saw greater focus on urban areas with regard to wildlife conservation and management. In 1966, Raymond Dasmann, another prominent wildlife biologist soon to be president of The Wildlife Society, spoke of “old conservation,” concerned mainly with quantity of natural resources, and “new conservation,” dealing principally with clean air and water, open space, outdoor recreation, and quality of the human environment, particularly the urban environment, where most people live (Dasmann 1966). He pointed out that generations of humans were growing up in cities with no roots in the land and little experience in the natural world. Dasmann believed the wildlife profession was too closely identified with game animals and hunters, and was too narrow-minded. He believed that more wildlife biologists should focus their efforts on the metropolitan environment.

In 1968, the US Bureau of Sport Fisheries and Wildlife (now US Fish and Wildlife Service) sponsored a national conference on “Man and Nature in the City.” Then, the Bureau Director Dr. John Gottschalk stated: “If our Bureau were to focus, as we have in the past, on the wide open spaces and neglect the people in the city,

Fig. 2.2 *The Master of Game* is considered the oldest English book on hunting, written by Edward of Norwich, 2nd Duke of York, between 1406 and 1413. In addition to discussing hunting practices, the book includes chapters on the nature of various animals as known at the time



I believe it would soon find itself in a very questionable orientation with society” (Bureau of Sport Fisheries and Wildlife 1968, p. viii).

2.2 Growth of Urban Wildlife Conservation

This brings us to the late 1960s and 1970s when the discipline of urban wildlife ecology, conservation, and management grew more rapidly. I begin this section focusing first on the people and institutions of the USA and ending with international programs and activities.

2.2.1 Urban Wildlife Working Group of The Wildlife Society

In the late 1960s, Al Geis, Bob Dorney, and other members of The Wildlife Society proposed that a committee of that society be formed to focus on wildlife and urban areas. The committee was established as the Urban Affairs and Regional Planning Committee. That committee reached out to landscape architects and planners with the realization that those professionals played important roles in urban areas. In 1975, wildlife biologists were invited to convene a session at the American Institute of Planners Meeting. The following year, planners and landscape architects were invited to convene a session on planning and design at the North America Wildlife and Natural Resources Conference. The committee was renamed the Urban Wildlife Committee in 1982.

The Urban Wildlife Committee was quite active. In 1983, it prepared a policy statement on urban wildlife that was adopted by Council of The Wildlife Society on 11 October of that year. The statement highlighted wildlife as an important component of the urban environment (The Wildlife Society 2012).

The committee conducted two surveys of urban programs. The first was a 1983 survey of state conservation agencies in the USA. In that survey, six agencies reported the existence of designated urban wildlife programs (Lyons and Leedy 1984). The principal functions of those programs were extension, public education, and management. Only three states reported that research was a part of their program activities. The second survey was conducted in 1985 and focused on North American colleges and universities (Adams et al. 1987). About 2% of wildlife research budgets were devoted to urban wildlife studies in 1983–1984. Few schools (9%) offered specific courses in urban wildlife, but most (78%) included the topic in other wildlife courses.

The committee prepared and published a report entitled “Guidelines for Implementing Urban Wildlife Programs Under State Conservation Agency Administration” (Tylka et al. 1987). The report recommended four main elements for a well-rounded urban wildlife program: (a) inventory and research, (b) planning and management, (c) public information, education, and extension services, and (d) urban habitat acquisition, development, preservation, restoration, and conservation. The committee also assisted the American Society of Landscape Architects in developing a policy statement on wildlife and wildlife habitat in 1988. The policy statement reads in part “Landscape architecture, allied design professions, and wildlife management apply similar principles to planning for the beneficial use of the land and support an awareness of and appreciation for wildlife, wildlife habitat, and their value to the planet. The Society therefore urges the identification and application of planning and design principles that promote the enhancement, protection and management of landscapes that support wildlife” (American Society of Landscape Architects 2013, p. 1). In 1999, the Urban Wildlife Committee evolved into the Urban Wildlife Working Group of The Wildlife Society. The working group has been active in sponsoring workshops and sessions at annual meetings of The Wildlife Society (Fig. 2.3). And, following the



Fig. 2.3 In recent years, the Urban Wildlife Working Group of The Wildlife Society has sponsored workshops and field trips at the Society's annual conference. Shown here are participants who took part in an all-day workshop in Tucson, Arizona, 22 September 2007. The workshop included a desert walk at the Arthur Pack Regional Park and Tucson Audubon's Mason Center. Both areas protect saguaro-ironwood desert habitat of northwest Tucson

fourth urban wildlife symposium in Tucson, Arizona, in 1999, it assumed a leadership role in continuing the symposium series initiated by the National Institute for Urban Wildlife in 1986 (Sect. 2.2.3).

2.2.2 *Urban Wildlife Research Program of the US Fish and Wildlife Service*

The US Fish and Wildlife Service officially established an urban wildlife research program in June 1972 (Geis 1981). The program focused on birds and was headed by Dr. Aelred D. Geis of the Service's Patuxent Wildlife Research Center central campus in Laurel, Maryland (Fig. 2.4). Early in his program, Dr. Geis studied bird-habitat associations in relation to development of the new town of Columbia, Maryland, and documented bird community changes as development advanced (Geis 1974a, b, 1976). Geis noted that farmland and field species, such as northern bobwhite (*Colinus virginianus*) and eastern meadowlark (*Sturnella magna*), declined, and other species, such as northern mockingbird (*Mimus polyglottos*) and song sparrow (*Melospiza melodia*), increased. He also found that building design and

Fig. 2.4 Dr. Aelred Geis of Patuxent Wildlife Research Center was head of the US Fish and Wildlife Service's urban wildlife research program that was established in 1972. Dr. Geis's early work focused on bird-habitat associations. Later he conducted research on bird feeding and published a report on the subject that received high public demand and was distributed widely



quality of construction affected density of house sparrows (*Passer domesticus*) and European starlings (*Sturnus vulgaris*) and unboxed eaves provided small openings beneath house roofs that these birds used for nesting sites.

Dr. Geis also studied birds in a wooded natural area of Baltimore, Maryland, and a nearby residential area of detached and two-family attached housing (Geis 1980a). He reported the highest density of birds and lowest number of species in the mature residential area and the lowest density of birds but highest number of species in the wooded natural area. This work helped to establish a pattern of bird density and diversity in relation to urban development that is now well accepted in the scientific community (See Chaps. 7 and 8).

Based on his bird-habitat research, Dr. Geis developed planning and management recommendations for urban and urbanizing areas. He argued that trees and shrubs preserved or planted in urban open spaces were valuable for wildlife and that urban open space should be better managed. He believed that too much public open space was simply mowed and could be managed in a more sound ecological way that would provide better wildlife habitat and offer wildlife viewing opportunities to people.

Dr. Geis conducted research on supplemental bird feeding by people, work that focused on seeds birds liked to eat. He found that the small, oil-type sunflower seed and white proso millet were best for use under Maryland conditions. At the time, oil sunflower seeds were not marketed as birdseed. Geis's work created demand by the public and he played a role in convincing the seed industry to make oil sunflower available as birdseed. Geis published his research as a US Fish and Wildlife Service Special Scientific Report, which was distributed widely (Geis 1980b). See Adams (2012) for more detail regarding Dr. Geis's urban research.

Dr. Geis was active in The Wildlife Society and was influential in its establishment of an Urban Affairs and Regional Planning Committee (above). He also was



Fig. 2.5 The core of the Urban Wildlife Research Center for many years. From *left to right*, Louise Dove, Lowell Adams, Dan Leedy, Tom Franklin, and Barbara McFalls

a major force behind creation of the Urban Wildlife Research Center (above). During the 1970s and 1980s, particularly, Dr. Geis was a strong advocate in expressing need for the wildlife profession to get more involved in urban areas.

2.2.3 Urban Wildlife Research Center

The Urban Wildlife Research Center was founded in 1973 as a private, nonprofit scientific and educational organization dedicated to wildlife conservation in urban, suburban, and urbanizing areas (Adams 1989) (Fig. 2.5). It was renamed National Institute for Urban Wildlife in 1983 and closed in 1995. Most of the work of the organization resulted in scientific, technical, or popular publications. Examples include an early literature review (Leedy 1979), planning considerations for fish and wildlife (Leedy et al. 1978, 1981; Adams and Dove 1989), proceedings of two national symposia on urban wildlife (Adams and Leedy 1987, 1991), and two educational primers (Adams and Dove 1984; Leedy and Adams 1984). Beginning in 1975, in cooperation with the Urban Affairs and Regional Planning Committee of The Wildlife Society, the Center organized and held annual open exchange meetings in conjunction with the North American Wildlife and Natural Resources Conference. The meetings were designed to provide an opportunity for those interested in urban wildlife to get together and discuss programs, policies, and research and management activities. In 1986, the Institute initiated an urban wildlife symposium series to bring together biologists, landscape architects, planners, and other

Fig. 2.6 The National Wildlife Federation encourages homeowners to think about wildlife needs. In 1973, it developed a Backyard Wildlife Habitat Program (now the Certified Wildlife Habitat Program). Shown here is a front yard in Columbus, Ohio, that has been certified by the Federation. (Photo by Toni Stahl)



professionals working in urban, suburban, and urbanizing areas. Proceedings of the first two and fourth conference were published (Adams and Leedy 1987, 1991; Shaw et al. 2004). The fifth symposium was held in Massachusetts in 2009 and the sixth in Texas in 2011. Those meetings provided an excellent forum for wildlife biologists and others to get together and discuss the art and science of wildlife conservation and management in metropolitan environments.

2.2.4 *National Wildlife Federation*

The National Wildlife Federation was involved early on with urban wildlife conservation, primarily with initiation of its Backyard Wildlife Habitat Program in 1973 (Tufts 1987) and publication of *Gardening With Wildlife* the following year (National Wildlife Federation 1974). Tufts and Loewer (1995) authored a follow-up to the latter publication. The Backyard Wildlife Habitat Program (now the Certified Wildlife Habitat Program) remains popular. It is designed to educate and motivate citizens to enhance urban wildlife habitat in their own backyards, schoolyards, and other properties, and it certifies habitats that meet established criteria (Fig. 2.6). Some 4700 habitats were certified by 1986 (Tufts 1987). More than 150,000 habitats were certified by May 2012 (National Wildlife Federation 2012). The concept has expanded to other private organizations (The Humane Society of the United States 2012), as well as state wildlife agencies (Penland 1987; Bender 2004).

2.2.5 *The State University of New York, Syracuse*

In the mid 1970s, Dr. Larry W. VanDruff of the State University of New York, Syracuse, developed the first, or one of the first, graduate courses and programs in the US in urban wildlife ecology (Fig. 2.7). The program focused mostly on birds

Fig. 2.7 Dr. Larry VanDruff of the State University of New York was an early leader in urban wildlife conservation and management in the USA. He helped to train some of the first wildlife biologists who specialized in urban wildlife

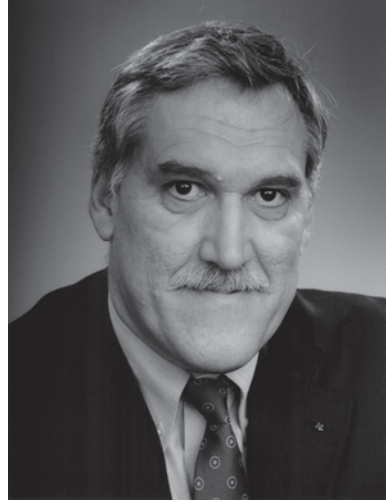


and mammals. Dr. VanDruff and his students were active in regional and national wildlife conferences, urban wildlife symposia, and the urban wildlife committee of The Wildlife Society. Dr. VanDruff chaired the urban wildlife committee during a portion of the 1980s. He was awarded the Daniel L. Leedy Urban Wildlife Conservation Award of 1987 by the National Institute for Urban Wildlife for outstanding professional commitment and contributions to the conservation of wildlife and habitat in urban, suburban, and developing areas. Dr. VanDruff's graduate students included Bob Bruleigh, Art Johnsen, Charlie Nilon, and Mike O'Donnell, among others.

2.2.6 The USDA Forest Service's Northeastern Forest Experiment Station

In the mid 1970s, the US Forest Service developed an active urban forestry program in the northeastern US. Components of the program included hydrology, meteorology, economics, geography, recreation psychology, landscape architecture, and wildlife conservation. At the time, the Northeast was rapidly urbanizing and it was felt that people were losing contact with nature, natural processes, and wildlife in particular. Jack Ward Thomas, a research wildlife biologist, was then stationed at the Northeastern Forest Experiment Station at the University of Massachusetts and he focused much of his work on urban wildlife. He completed his PhD at the University of Massachusetts in 1973 with a dissertation titled "Habitat requirements for suburban songbirds—a pilot study" (Thomas 1973). Thomas was soon transferred to Oregon and Richard DeGraaf, also a research wildlife biologist, carried on and expanded the urban wildlife-habitat work (Fig. 2.8). Thomas and DeGraaf studied the relationship of foliage height diversity to bird species diversity in urban areas, a concept first described by MacArthur and MacArthur (1961). DeGraaf's research

Fig. 2.8 As a US Forest Service research biologist, Dr. Richard DeGraaf focused his attention on urban bird-habitat associations from the mid 1970s through the early 1980s. His work helped to set the foundation for how landscape architects could incorporate good bird habitat in urbanizing areas



program continued to focus primarily on bird-habitat associations and considerable research was published through the early 1980s. A good overview of bird-habitat associations relative to landscape design was published in the proceedings of a national symposium on urban wildlife (DeGraaf 1987). That paper provided considerable information on how landscape architects could incorporate good bird habitat in urbanizing areas. In recognition of his work, Dr. DeGraaf was awarded the Daniel L. Leedy Urban Wildlife Conservation Award of 1991 by the National Institute for Urban Wildlife.

2.2.7 New York Department of Environmental Conservation

New York State's Department of Environmental Conservation started an urban wildlife program in 1976 (Matthews 1985). The first product of that effort was a survey of residents regarding urban wildlife (Brown and Dawson 1978). The study showed a high level of interest in, and a positive attitude toward, wildlife by New York's urban and suburban populations. Following the resident survey, a statewide inventory of seven urbanized areas was conducted to determine the availability of potential urban wildlife habitat. Data were used by municipal planners, developers, environmental organizations, and state agencies involved in the planning and development of metropolitan New York State. The Department also initiated an urban wildlife park program to provide opportunities for residents to enjoy an environmental educational experience in natural surroundings. Other efforts included production of educational materials on backyard wildlife, distribution of "shrub packets" to homeowners, and assistance in urban forestry through the State's Division of Lands and Forests.

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