

# Regulatory oversight and activities of wildlife control operators in Illinois

*Robert D. Bluett, George F. Hubert, Jr., and Craig A. Miller*

**Abstract** Members of the wildlife profession, animal welfare groups, and the wildlife control industry believe that state agencies should provide greater regulatory oversight of private wildlife control operators (WCOs). We describe specific regulatory provisions of a program administered by the Illinois Department of Natural Resources (DNR) to establish qualifications for issuance of permits to WCOs, standards for animal welfare, and restrictions on business practices such as translocation. WCOs licensed by the DNR reportedly serviced >495,000 wildlife conflicts and handled >483,000 animals from 1992 through 2000. Although the number of permits issued to WCOs increased from 275 in 1992 to 510 in 2000, administrative demands of the program were offset by our ability to refer homeowners to WCOs for assistance, thereby reducing the amount of time needed for detailed consultations with agency staff. We anticipate that WCOs will play an increasingly important role in wildlife damage management and recommend adoption of appropriate restrictions on their activities where none exist.

**Key words** administration, Illinois, law, policy, wildlife damage control

State agencies play a key role in administering laws and policies that shape urban wildlife damage management programs. Early programs often relied on informal cooperative agreements to specify operational guidelines for private wildlife control operators (WCOs) (McKegg 1984, Williams and McKegg 1987). This approach became obsolete as numbers of wildlife conflicts and WCOs expanded rapidly during the 1980s. By the 1990s, members of the wildlife profession (Barnes 1997), animal advocacy groups (Hadidian et al. 2001), and the wildlife control industry (Critter Control 1991) were calling for reforms of state programs because they perceived a need for greater regulatory oversight of WCOs. Some states adopted more restrictive laws and policies (Hewitt and Messmer 1997, Barnes 1998), but few implemented programs that met critics' expectations by requiring WCOs to demonstrate their proficiency, obtain a license, and comply with standards for animal welfare (Hadidian et al. 2001). This topic remains controversial (Simon and Hadidian 2000) and increasingly prone to reach the disruptive stage of issue management, characterized by Minnis (2001) as a phase in which agencies tend to lose control and credibility because they fail to address constituents' concerns proactively.

We describe provisions for the taking, possession, transport, and disposition of nuisance wildlife that the State of Illinois first adopted in 1991 (17 Illinois Administrative Code, Chapter I, Section 525; http://dnr.state.il.us/legal/525.htm). We recognize that statutory authorities, organizational structures, and traditions vary widely among state agencies (Barnes 1998), but we believe that elements of Illinois' program can be adapted to meet their needs. The same is probably true of programs administered

Address for Robert D. Bluett: Illinois Department of Natural Resources, Division of Wildlife Resources, One Natural Resources Way, Springfield, IL 62702, USA; e-mail: bbluett@dnrmail.state.il.us. Address for George F. Hubert, Jr.: Illinois Department of Natural Resources, Division of Wildlife Resources, P.O. Box 728, Hinckley, IL 60520, USA. Address for Craig A. Miller: Illinois Natural History Survey, 607 East Peabody Drive, Champaign, IL 61820, USA.

by other states. However, few if any agencies have shared information about their programs in sources disseminated widely outside their respective jurisdictions. Surveys of state agencies (Brammer et al. 1994, La Vine et al. 1996, Barnes 1998, Hadidian et al. 2001) allow some general comparisons of urban wildlife damage programs but offer no specific examples of licensing, examination, training, and reporting requirements for WCOs or regulatory provisions for the capture, handling, translocation, and euthanasia of wildlife.

Implementing a wildlife damage program is a complex task because it requires coordination among governmental agencies (Berryman 1992), consensus among a wide array of stakeholders (Decker et al. 1996), and support from policymakers who must weigh biological, economic, and social considerations (Sparrowe 1995, Amend and Gasson 1996). Recent studies on human tolerance of wildlife damage (e.g., Siemer and Decker 1991, Zinn and Andelt 1999), attitudes about methods for controlling it (e.g., Wittman et al. 1998, Loker et al. 1999, Mertig and Koval 1999), and perceptions of the government's role in managing it (Reiter et al. 1999) provide a vital backdrop for policy formation (e.g., Hewitt and Messmer 1997), application (e.g., Slate et al. 1992), and evaluation (e.g., Decker and Enck 1996). Comparatively few articles offer perspectives on administrative or biological aspects of urban wildlife damage programs. Those that do are often unsupported by quantitative estimates. For example, generalities about "growing" numbers of wildlife conflicts and WCOs (e.g., Hadidian et al. 1997, Craven et al. 1998, Schmidt 2000) underscore the need for programs, but they do not aid policymakers in assessing potential administrative burdens associated with licensing requirements, the need for limitations on activities such as translocation, or the roles of local governments and other partners. Therefore, we describe trends in WCO licensing and wildlife control activities in Illinois from 1992 through 2000.

## Regulatory provisions

### *Regulatory authority*

Agencies need clear operating authority to administer an urban wildlife damage program (Williams and McKegg 1987, Slate et al. 1992). A law enacted in 1988 (Public Act 85-1181) allowed the Illinois Department of Natural Resources (DNR) to "grant to an individual, corporation, association or governmental body the authority to control wildlife" (Illinois Compiled Statutes 1996 6:311). This law (520 Illinois Compiled Statutes 5/2.37) also directed the DNR to set forth applicable regulations in an administrative rule, later adopted as 17 Illinois Administrative Code, Chapter I, Section 525 (Part 525). During 1992 the state limited certain regulatory powers of home-rule units (i.e., a county with an elected chief executive officer or a city, village, or incorporated town with a population of >25,000 people), thereby averting a complex patchwork of local ordinances: "The regulation and licensing of the taking of wildlife in Illinois are exclusive powers and functions of the State. A home rule unit may not regulate or license the taking of wildlife. This section is a denial and limitation of home rule powers and functions under subsection (h) of Section 6 of Article VII of the Illinois Constitution" (Illinois Compiled Statutes 1996 6:300).

### *Permit application requirements and procedures for issuance and revocation*

The DNR issues 3 types of Nuisance Wildlife Control Permits. Each individual who offers nuisance wildlife services for a fee must obtain a Class A (commercial) permit. This includes each person who works for a company with multiple employees. Applicants for a Class A permit must be ≥18 years of age, submit an official application form, and pass a written examination with a minimum score of 80%. They must also pass a hunter safety course administered by the DNR or provide proof of equivalent training (e.g., military or civil service) if they use a gun while performing nuisance wildlife control services authorized by their Class A permits. The DNR may refuse an application for a Class A permit if the applicant has violated fish or wildlife laws within the past 3 years.

Topics addressed by the examination include pertinent laws and regulations, methods for preventing or controlling damage, and wildlife diseases, behavior, and biology. The test consists of 100 questions in multiple choice and true or false formats. No training is provided by the DNR. However, applicants may request an information packet that includes all pertinent laws and regulations as well as a list of references from which test questions were developed. Qualifying examinations for Class A permits are administered at DNR field offices. Demand for Class A permits is relatively low outside the Chicago metropolitan area, so staff

schedule tests only as needed to meet demand. Staff located nearest Chicago offer the examination monthly.

Applicants who pass the examination are issued permits within 10 working days. WCOs are not required to take another examination except when seeking reinstatement after expiration or revocation of their permits. Applicants who fail the examination on their first attempt are allowed to retake the test after a 45-day waiting period. Those who fail a second time must wait 6 months before taking the test again. This sequence may be repeated no more than twice during any 2-year period.

Class B (volunteer) permits are issued to qualified individuals who do not charge a fee for their services. Applicants must be ≥18 years of age and submit an official application form. Violations of fish or wildlife laws within 3 years prior to application for a Class B permit constitute a basis for refusal. No examination is required. However, DNR staff interview applicants to ascertain their knowledge of wildlife and wildlife capture techniques. A Class B permit is issued upon receipt of the staff member's recommendation.

Class B permits are also issued to not-for-profit (501 [c] [3]) zoos and botanical gardens. To be eligible, organizations must be accredited by the American Zoological Association or a member of the American Arboreta and Botanic Garden Association. No tests or interviews are required. All employees who operate under the supervision of a designated staff member are authorized to control wildlife. This authority is granted under a single permit issued in the organization's name and is limited to properties it owns.

Class C (governmental) permits are issued to governmental bodies upon receipt of an application. Typical applicants include municipal, county, township, and federal governmental agencies. A single permit is issued to the governmental body. Its authority applies to all employees designated by that agency and is limited to properties under its jurisdiction.

All classes of Nuisance Wildlife Control permits are issued annually and expire on 31 January of each year. These permits may not be used in lieu of scientific collectors' permits or sport or commercial licenses (e.g., a hunting license). Permits must be carried at all times when taking or transporting animals under their authority and must be presented upon the request of peace officers and authorized DNR staff. WCOs must maintain records and submit an annual report of their activities by 20 January of each year. Records required by the DNR are subject to inspection by authorized employees of the DNR and any sheriff, deputy sheriff, or peace officer. Annual reports must specify the total number of complaints serviced from 1 January through 31 December of the previous year; numbers and types of animals released, translocated, killed, or transferred to wildlife rehabilitators; and numbers and types of animals released at each site and the owner's, tenant's, or superintendent's name and address. WCOs who fail to submit an annual report are barred from obtaining a permit the following year.

Violations of Part 525 are Class B misdemeanors; penalties are assigned accordingly by circuit courts of the State of Illinois. Each conviction for a violation of the Wildlife Code (520 ILCS 5), the Endangered Species Protection Act (520 ILCS 10), or federal statutes or rules also accumulates points toward revocation of the WCO's permit; point systems, revocation periods, and adjudicatory processes are governed by 17 Illinois Administrative Code, Chapter I, Section 2530 (Part 2530). Upon receiving ≥3 complaints about services rendered by a WCO, the DNR may suspend the person's permit for ≤90 days pending an investigation and possible action under Part 2530. WCOs who rent, lend, or otherwise transfer traps to parties who are not under their direct supervision or authorized to trap animals under other provisions of the Wildlife Code (520 ILCS 5) are responsible for any damages or violations perpetrated by those parties.

### *Restrictions on taking wildlife*

WCOs who possess valid permits may take (i.e., hunt, shoot, pursue, lure, kill, destroy, capture, trap, snare, or harass) most species protected by the Wildlife Code (520 Illinois Complied Statutes 5/2.2). State endangered and threatened species (17 Illinois Administrative Code, Chapter I, Section 1010; includes all extant native species listed federally) are an exception, as are migratory birds unless authorized by a United States Fish and Wildlife Service (USFWS) depredation permit (Title 50, Code of Federal Regulations, Section 21.41) or standing depredation order (Title 50, Code of Federal Regulations, Section 21.43). Activities of WCOs who apply for and receive a USFWS depredation permit must also be authorized by the DNR. WCOs may not take live white-tailed deer (*Odocoileus virginianus*) but may remove and dispose of dead ones.

We limit our discussion of Illinois' urban wildlife damage management programs for white-tailed deer, described elsewhere (Jones and Witham 1995), and for resident Canada geese (*Branta canadensis*), which is likely to change if amendments to federal permit requirements (USWFS 2002) are adopted in the near future.

Methods approved by Part 525 attempt to balance efficiency and effectiveness with considerations for animal welfare, selectivity, safety, and compliance with civil law. Devices approved for land sets (i.e., traps set where they do not contact flowing or impounded water) include box traps, cage traps or traps of similar design; EGG™ traps (EGG Trap Company, Ackley, Ia.), D-P™ (Dog-Proof) traps (DP Trap Company, Talmage, Calif.), or traps of similar design with a single access opening ≤19.36 $cm^2$; cushion-hold (padded) traps with no modifications from the manufacturer's specifications except auxiliary springs or swivels; and body-gripping (Conibear™) traps (Oneida Victor Incorporated, Limited, Euclid, Oh.) that are powered by 2 springs and have an inside jaw spread ≤161.3 $cm^2$. When set inside a residence, body-gripping traps must be located ≥10.16 cm from any outside surface of the structure. When set outdoors, body-gripping traps must be located ≥2.44 m above the ground and enclosed in a tube, cylinder, or open-ended box constructed of solid wood, metal, or plastic with the trigger located ≥30.48 cm from any entrance to the enclosure. When used for land sets, cushion-hold traps must have an inside jaw spread ≤16.6 cm and must be placed ≥9.14 m from unconcealed bait, defined as the flesh, fur, hide, entrails, or feathers of any mammal, bird, or fish.

Devices approved for water sets (i.e., traps set where they contact flowing or impounded water) include body-gripping traps, cushion-hold traps, leghold (foothold) traps, cage or box traps and those of similar design, EGG or D-P traps and those of similar design, Bailey beaver traps and those of similar design, and Snead colony traps and those of similar design. Snares may be used for water sets if they are not powered by springs or other mechanical devices, at least half of the snare noose loop is located underwater, and the noose loop diameter is ≤38.1 cm. In addition, snares must be equipped with a mechanical lock, anchor swivel, and stop device to prevent the noose from closing to a diameter ≤6.4 cm and constructed of cable ≤3.2 mm and ≥2.0 mm; cable manufactured from stainless steel is not allowed. When used for water sets, foothold and cushion-hold traps must have an inside jaw spread ≤19.1 cm; body-gripping traps must have an inside jaw spread ≤929.09 $cm^2$. Foothold and cushion-hold traps must be placed ≥9.14 m from unconcealed bait unless the traps are completely under water.

All devices must be tagged or inscribed with the WCO's name and address when in use. They must be checked and any animals removed from them at least once each calendar day. No traps may have saw-toothed, serrated, spiked, or toothed jaws. It is unlawful for anyone to move or disturb traps owned by another person or to remove animals from them without written permission from the owner. Prohibited methods include the use of any deadfall, pit trap, spear, gig, hook, crossbow, poison, chemical, explosive, or similar devices except that commercially available gas cartridges that emit carbon monoxide (CO) or carbon dioxide ($CO_2$) as primary lethal agents may be used according to the manufacturer's specifications.

The use of guns is subject to all state restrictions (i.e., civil laws). Guns must be unloaded and cased when carried in a vehicle or other motorized conveyance. The discharge of guns along, upon, across, or from any public right-of-way or highway is prohibited, as is the use of a silencer or other device intended to muffle the report of a gun. Firing a rifle, pistol, revolver, or airgun on, over, or into any water, including frozen water, is prohibited. In counties open to gun deer hunting, WCOs must wear a blaze-orange cap and outer garment with a combined area of ≥2,580.8 $cm^2$ while afield during the open season. The state's limitation on home-rule powers does not apply to local laws enacted for public safety (i.e., prohibitions on discharging a firearm in the city limits). Therefore, WCOs must obtain written permission from a local official if they wish to discharge a firearm within a jurisdiction that normally prohibits this activity.

Commercial and volunteer WCOs must obtain written permission from a landowner or tenant before taking or attempting to take wildlife. Written permission must be obtained from a representative of the DNR before taking wildlife on state properties. WCOs must provide cost estimates and describe control methods likely to be used to resolve a client's problem before they provide any services. Wanton or careless injury or destruction of real or personal property while taking wildlife is prohibited.

### *Restrictions on handling, translocating, and killing captured animals*

Striped skunks (*Mephitis mephitis*) must be killed. Raccoons (*Procyon lotor*) may be killed, released on the same person's property (within 91.4 m of the capture site), or surrendered to a licensed veterinarian who is also a licensed wildlife rehabilitator. Such a person may kill raccoons or transfer them to any licensed wildlife rehabilitator for treatment. Raccoons held for rehabilitation must be observed for symptoms of disease for ≥45 days before they are released or translocated. Eleven species defined as "fur-bearing mammals" (520 Illinois Compiled Statutes 5/1.2g) and 5 defined as "game mammals" (520 Illinois Compiled Statutes 5/1.2h) may be released, translocated, or killed at the WCO's discretion. All other species (i.e., those not mentioned specifically) must be released alive or surrendered to a licensed wildlife rehabilitator.

With 2 exceptions, WCOs must release animals ≥16.09 km but ≤64.36 km from the capture site. One exception is for governmental agencies, which may release animals <16.09 km from the capture site at a location within their respective jurisdictions. Animals may be released >64.36 km from the capture site only if they are certified disease-free according to DNR procedures (17 Illinois Administrative Code, Part 630) and the WCO receives prior approval from the DNR. All animals must be released in suitable habitat within 24 hr of their capture. Temporary holding facilities, handling procedures, and care must comply with federal standards for animal welfare (Title 9, Code of Federal Regulations, Chapter I, Part 3, Subpart F). WCOs must obtain written permission from a landowner, tenant, or site superintendent before releasing animals on properties owned or managed by other people.

Methods of killing captured animals must be approved by the DNR. These include physical methods such as captive bolt, gunshot, drowning, and stunning, plus inhalant agents such as halothane, isoflurane, CO, and $CO_2$. Non-inhalant pharmacologic agents such as secobarbital-dibucaine may be used in accordance with state and federal regulations. Use of commercially available agents (e.g., Nighty Nite™, On Target A.D.C., Cortland, Ill.) is approved for killing striped skunks according to the manufacturer's directions. All dead animals must be transferred to a licensed rendering facility or disposed of in accordance with the Illinois Dead Animal Disposal Act (225 Illinois Compiled Statutes 610). Methods allowed by this act include burial under at least 15.24 cm of compacted dirt in a location that will not contaminate water supplies and incineration in a device that complies with the Illinois Environmental Protection Act (415 Illinois Compiled Statutes). Animals, including their parts and by-products, may not be sold, offered for sale, bartered, or shipped for the purpose of sale or barter.

## Trends in licensing and WCO activities

Illinois' current program was preceded by issuance of cooperative field agreements similar to those described by McKegg (1984). Thirty-three field agreements were issued during 1982, the first year of the program. During 1990, 151 private WCOs and 60 governmental agencies possessed field agreements. Part 525 was adopted in June 1991. People with field agreements were granted a 6-month grace period to comply with new requirements. During this transition period, 215 private WCOs operated under authority of field agreements or nuisance wildlife control permits. By January 1992 most private WCOs (67.4%) had obtained commercial or volunteer permits and submitted annual reports required for renewal. Numbers of permits issued annually by the DNR increased from 275 in December 1992 to 510 in 2000 (Figure 1). Volunteer permits proved an unpopular choice, with 2 to 26 issued annually by the DNR. This does not include >35 volunteer permits issued annually to individual employees of 2

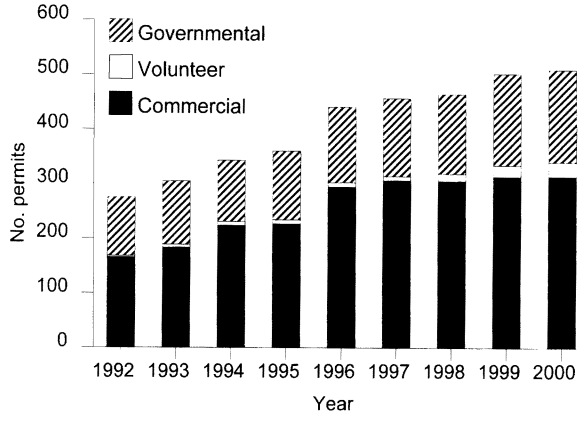


Figure 1. Numbers of permits issued annually to wildlife control operators by the Illinois Department of Natural Resources, 1992–2000.

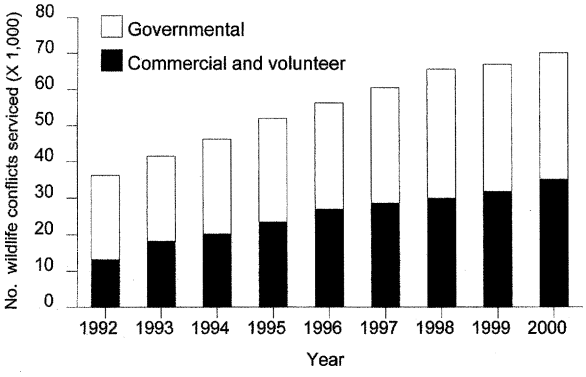


Figure 2. Numbers of wildlife conflicts reportedly serviced by wildlife control operators in Illinois, 1992–2000.

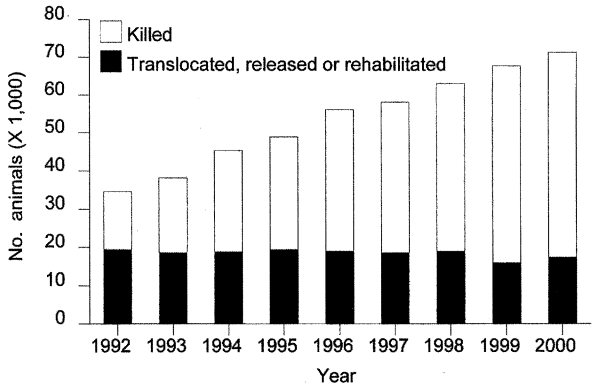


Figure 3. Numbers and disposition of animals reportedly handled by wildlife control operators in Illinois, 1992–2000.

not-for-profit organizations from 1995 through 1999, before current requirements (i.e., 1 permit required per organization) were adopted through an amendment to Part 525.

The number of complaints serviced annually by WCOs increased from 36,227 in 1992 to 70,262 in 2000 (Figure 2), with a total of 495,676 complaints reportedly serviced during this entire period of time. Most complaints (83.3–86.6% annually) were serviced by WCOs who operated in 9 northeastern counties encompassing the greater Chicago metropolitan area. The proportion of complaints serviced by governmental WCOs decreased steadily from 63.6% in 1992 to 49.8% in 2000.

WCOs reportedly handled 34,608 animals in 1992 and 71,396 in 2000 (Figure 3). Of the 483,608 animals handled during this entire period, most (88.5%) were raccoons ($n$=180,824), tree squirrels (*Sciurus niger* and *S. carolinensis*; $n$=99,404), Virginia opossums (*Didelphis virginiana*; $n$=67,743), striped skunks ($n$=45,016), and woodchucks (*Marmota monax*; $n$=35,016). Most (56.8%) of the 166,546 animals reportedly released, translocated, or surrendered to wildlife rehabilitators from 1992 through 2000 were raccoons ($n$=53,044) and squirrels ($n$=41,584). WCOs transferred 1,310 animals to wildlife rehabilitators during 2000; most of these (83.5%) were raccoons ($n$=585), birds ($n$=283), and opossums ($n$=226).

During 2000 commercial WCOs handled more animals per complaint (1.53) than those with volunteer (0.68) or governmental permits (0.51). Most (74.4%) of the 164 commercial WCOs who provided services outside the Chicago metropolitan area during 2000 serviced <25 complaints. Volunteer WCOs serviced few complaints ($n$=474) and handled few animals ($n$=321) compared to other types of WCOs who provided services during 2000.

Administration of Illinois' urban wildlife damage program required approximately 178 hours of staff time during fiscal year (FY) 2000. Most homeowners who contacted the DNR about wildlife problems were referred to WCOs, although we still provided technical consultations on an individual basis (requiring approximately 1,880 hours of additional staff time in FY 2000). Our total time commitment in FY 2000 was approximately 24.5% less than that for FY 1992, the year before WCO permits were first issued.

## Discussion

A mail survey distributed to households in the 100 largest metropolitan areas of the United States suggested that recent (<1 yr) wildlife conflicts affected a majority (61%) of respondents and caused approximately $3.8 billion in damage (Conover 1997). Such estimates must be interpreted and used cautiously (Craven et al. 1992, Conover et al. 1995). However, they underscore the need for urban wildlife damage programs that provide for efficient, economical means of resolving conflicts; promote methods that are effective, biologically sound, and socially acceptable; and seek to reduce problems on a broad scale (Williams and McKegg 1987). Most state wildlife agencies believe they are best positioned to provide this leadership within the constraints of their state's laws, needs, and traditions (La Vine et al. 1996, Barnes 1998). The public perceives this as an appropriate role for state agencies (Reiter et al. 1999), as do animal welfare advocates (Hadidian et al. 2001) and representatives of the wildlife control industry (T. J. Julien,

National Wildlife Control Operators Association, personal communication).

Broad comparisons of Illinois' program with those of other states are difficult because of conflicting reports on regulatory provisions. Barnes (1998) reported that 56% of states required a license or permit to conduct nuisance wildlife control activities, 15% administered qualifying examinations, 4% required continuing education, and 78% allowed translocation of captured wildlife. Hadidian et al. (2001) reported that 36% of states required a license, 6% administered qualifying examinations, 6% required continuing education for recertification, and 46% allowed translocation of certain species. Assuming that some or all of these requirements are desirable, we perceive room for improvement while noting progress toward regulatory oversight of WCOs' activities (Hewitt and Messmer 1997, Barnes 1998).

Comparison of Illinois' program to a model proposed by Barnes (1997) revealed many similarities (e.g., license, examination, and reporting requirements; restrictions on translocation and euthanasia; considerations for public health and safety) and some differences (e.g., training or education prerequisites; mandatory liability insurance and continuing education requirements; annual license fee). We proposed an annual fee when developing Illinois' program, but the idea was rejected by policymakers with greater authority. We also considered the possibility of training and education programs but concluded that the DNR possessed neither the resources nor expertise to deliver them adequately. Fortunately, these types of opportunities are now offered by national, state, and local WCO organizations as well as private businesses. Another important development is a certification program administered by the National Wildlife Control Operators Association (NWCOA; T. J. Julien, National Wildlife Control Operators Association, personal communication). Given their strict standards for education, experience, and ethics, we believe that certification will come to mean as much in the wildlife control industry as it does in our own profession. It will also help WCOs to overcome what some perceive as a poor image (Schmidt et al. 1992). The DNR's authority to require liability insurance or a surety bond is unclear except as a condition of contracts for services on properties owned or managed by the agency. We also hesitate to mandate insurance requirements because few WCOs who operate outside the Chicago metropolitan area could afford to comply and still remain in business to serve the needs of rural communities.

Linking issuance of commercial permits to a qualifying examination is impartial and consistent with precedents set by other state agencies in Illinois (e.g., pesticide applicator's license). The examination appears adequate for screening applicants' knowledge and presumably their abilities to offer services. For example, 71% of applicants passed the test during the first year of the program. Those who failed were not likely to retake it or to succeed if they did. During 2000, 59 individuals failed the test once. As of October 2001, 10 of these people had repeated the examination; 5 passed the test and 5 failed it a second time.

As in Colorado (Wittmann et al. 1998) and New York (Loker et al. 1999), Illinoisans' attitudes about killing individual animals vary according to species and circumstances (Miller et al. 2001). For example, homeowners in the Chicago metropolitan area supported the concept of a law requiring WCOs to humanely destroy wild animals if it helped reduce risks of captured animals spreading diseases to people (86%), endangered species (79%), pets (79%), or other wildlife (74%); creating safety hazards for people (70%) or pets (61%); or causing problems for homeowners who lived near areas where animals might otherwise be released alive (56%) (Miller et al. 2001). Similarly, Michigan residents approved of killing individual nuisance animals if it was properly controlled and helped to reduce wildlife damage (67%), ensure public safety (81%), or control wildlife diseases (92%) (Mertig and Koval 1999).

Illinois residents value the concept of killing animals quickly and without undue pain (Duda and Young 1994), but they seem cautious about the government's role in mandating specific standards. When asked about preferred roles of the DNR in solving wildlife problems, a minority of homeowners in the Chicago metropolitan area responded that the agency should establish standards of animal welfare for removing (37%) and destroying (32%) animals (Miller et al. 2001). This does not absolve agencies of ethical and professional commitments to animal welfare (Proulx and Barrett 1989, Schmidt 1989, Schmidt et al. 1992). However, it suggests that attempting to balance compassion with pragmatism is an appropriate philosophy when considering restrictions on wildlife control activities.

Methods of killing animals approved by the DNR in 1991 were deemed acceptable or conditionally

acceptable by the American Veterinary Medical Association's (AVMA) Panel on Euthanasia (Smith et al. 1986). The panel's report (Smith et al. 1986) was silent on drowning, a method we also allowed. The next panel (Andrews et al. 1993) deemed drowning and stunning unacceptable for killing animals while acknowledging, "For wild and feral animals, many of the recommended means of euthanasia for captive animals are not feasible" (Andrews et al. 1993:243). In 1999 the DNR amended Part 525 to eliminate several methods of killing captured animals (e.g., ether, methoxyflurane, nitrous oxide, $N_2$, T-61) no longer recommended by the AVMA (Andrews et al. 1993). We continued to allow drowning and stunning, but discussed the appropriate use of these methods in a letter sent to WCOs. Specifically, we recommended use of bottled CO or $CO_2$ as primary means of killing animals, use of drowning only for animals taken in water sets, and use of an alternate means of killing animals when stunning fails to cause rapid unconsciousness and death. This policy deviates from recommendations of the current AVMA panel (Beaver et al. 2001), which recognizes difficulties in applying its standards to free-ranging wildlife but recommends only gunshot and kill trapping when preferred methods are deemed impractical. Neither alternative is well-suited for use in urban areas because the discharge of firearms is often prohibited or unsafe and the presence of large numbers of pets creates concerns about capturing and killing them accidentally in body-gripping traps. Therefore, we believe that practical limitations presented by the AVMA's policies warrant their use as guidelines rather than mandates (Bluett 2001). Members of the veterinary community (Ludders et al. 1999, Ludders et al. 2001) and animal advocacy groups (J. Hadidian, The Humane Society of The United States, personal communication) disagree. Wildlife professionals believe agencies should adopt AVMA standards when killing captured animals is mandated or preferred over translocation, but they recognize difficulties in doing so and offer no practicable solutions: "Unfortunately, few 'acceptable' euthanasia techniques are practical and available for field technicians, and fewer still are available to the public" (Craven et al. 1998:175).

Adaptive management, described by Decker and Enck (1996) as an ongoing cycle of application, evaluation, refinement, and reapplication, characterizes our experience with policies on translocation of raccoons. Unaware of the magnitude of this activity and unable to demonstrate more than intuitive concerns about it (e.g., Riley 1989, Rosatte and MacInnes 1989), we allowed translocation of raccoons when Part 525 was adopted in 1991. Annual reports submitted by WCOs for 1992 showed that they translocated 5,740 of 8,575 (66.9%) raccoons taken in the Chicago metropolitan area, where this species attains high densities (38.6–93.0 raccoons/$km^2$; Hatten 2000) and availability of remote release sites is limited. In 1993 we sent a letter to WCOs to express our concerns about translocation and request their cooperation in destroying common species (e.g., raccoons, tree squirrels, opossums, and woodchucks) as an alternative. The proportion of raccoons translocated by WCOs fell to 32.6% by 1998. However, this amounted to 3,886–5,787 raccoons annually from 1993 through 1998 because the total number handled by WCOs in the Chicago area increased 77% during the same period.

In 1998 we proposed a prohibition on translocation of raccoons because studies in Illinois (e.g., Heske et al. 1999, Mitchell et al. 1999, Mosillo et al. 1999) confirmed broader concerns about transmission of diseases, parasites, and maladaptive behavioral and genetic traits into recipient populations, increased problems for humans residing near release sites, and increased risks of disease and predation for other wildlife species (Davidson and Nettles 1992, Craven et al. 1998). Our proposal to mandate destruction or on-site release of raccoons was criticized sharply by local, state, and national animal advocacy groups during a public hearing process. Legislators approved the change with a compromise that allowed the receipt and eventual release of raccoons by licensed veterinarians who also possessed permits for wildlife rehabilitation. Detractors of the original proposal favored this amendment because it provided a second alternative to killing raccoons, especially dependent young; the DNR accepted it because oversight by a licensed veterinarian eased concerns about possible translocation of diseased animals. Our long-standing ban on translocation of striped skunks, a rabies vector species in the Midwest, caused comparatively little controversy and proved consistent with recommendations from a recent Compendium of Animal Rabies Prevention and Control in which groups such as the AVMA, National Association of State Public Health Veterinarians, and Council of State and Territorial Epidemiologists supported enactment of state laws to prohibit importation, distribution, and

relocation of raccoons, skunks (e.g., *Mephitis mephitis*), coyotes (*Canis latrans*), foxes (e.g., *Vulpes vulpes*), and bats (e.g., *Eptesicus fuscus*, *Myotis lucifugus*) (C. Austin, Ill. Department of Public Health, personal communication).

Wildlife control operators service a large number of wildlife conflicts but a small proportion of those that occur in Illinois. Miller et al. (2001) found that 58% of homeowners in the Chicago metropolitan area had experienced wildlife problems during the past year. Of those who took corrective action (71%), many used harassment (e.g., household chemicals such as ammonia or mothballs [29%]), commercial repellents (18%), or exclusion (e.g., closed up cracks and crevices [28%] or installed devices such as chimney caps [27%]); comparatively few called city or county animal control agencies (14%) or private WCOs (12%) for assistance in removing animals (Miller et al. 2001). Of those who hired private WCOs (8%), most rated their services as good (36%) or excellent (26%); the remainder rated services as fair (23%) or poor (15%) (Miller et al. 2001). Services of commercial WCOs are an important alternative for homeowners who lack the knowledge, ability, or interest to attempt their own solutions to wildlife problems, especially if they reside in communities without permits or experience problems that cannot be resolved by governmental WCOs. For example, few governmental WCOs install exclusion devices or attempt to capture animals on roofs or in attics because of concerns about liability and employee safety. Private WCOs also handle a greater variety of wildlife problems than governmental WCOs. During 2000 nearly all (>92%) beavers (*Castor canadensis*), muskrats (*Ondatra zibethicus*), and coyotes were taken by commercial WCOs. We speculate that fees charged by commercial WCOs tend to deter people who experience minor annoyances and yet are incurred willingly by those with problems considered serious or urgent. If so, services provided by commercial WCOs are consistent with our agency's philosophies about wildlife damage management as well as satisfactory to a majority of their clients.

Mankin et al. (1997) reported that 9% of urban Illinois homeowners who experienced wildlife problems in the past year had hired private WCOs to remove offending animals; 79% tolerated the problem, 69% attempted to solve it themselves, and 13% called a friend for assistance. Affirmative responses to >1 category suggests that many respondents experienced >1 problem and used different approaches or they used >1 approach for the same problem. We suspect the latter because most (>50%) homeowners who attempt to solve problems themselves consider those efforts unsuccessful (Brown et al. 1979, Conover 1997). These experiences influence homeowners' expectations of state agencies. When asked about preferred roles of the DNR, homeowners in the Chicago metropolitan area favored providing information (73%) or direct assistance (52%) more than regulatory functions such as requiring WCOs to obtain licenses (33%) or insurance (27%) and limiting equipment and methods employed by WCOs (29%) (Miller et al. 2001). Most residents in Pennsylvania (77%) and Delaware (66%) also expressed interest in receiving information about wildlife problems from their state agencies (Duda et al. 1998).

## Management implications

Wildlife conflicts are likely to increase as humans encroach on wildlife habitats, adaptable wildlife species thrive in human environments, and each successive generation of homeowners understands less about wildlife (Acord et al. 1994, Organ and Ellingwood 2000). We anticipate that WCOs will play an increasingly important role in solving wildlife problems and encourage state agencies to implement standards and license requirements for WCO activities where none exist. Our approach is not unique or intended as a rigid model. For example, we borrowed aspects of programs that existed in Pennsylvania and Connecticut when developing our own. In our opinion, The Wildlife Society's (1990:7) policy of supporting programs "that are biologically, environmentally, and economically valid, effective, and practical" provides important overall guidance for developing specific requirements tailored to an agency's statutory authority, fiscal constraints, and needs of the citizenry it serves. We encourage innovation and yet recognize that merits of existing programs warrant consideration by agencies in the process of developing or modifying their own. We suggest this effort could be expedited by The Wildlife Society's Wildlife Damage Management Working Group if it develops a task force to collect, post, and periodically update pertinent laws, policies, and contacts.

Homeowners who experience wildlife problems are a large and growing "constituency" of resource agencies. Determining their needs and expectations through human-dimensions studies can help

guide program development and balance biological, ethical, economic, and other considerations during decision-making processes (Decker and Enck 1996, Clay and Schmidt 1998, Gigliotti 1998). Our evaluation of homeowners' attitudes revealed a strong desire to obtain information about solving wildlife problems (Miller et al. 2001). Unfortunately, our efforts to distribute brochures (e.g., Bluett 1992, 1996) and news releases were ineffective; only 13% of respondents received information from the DNR, while 45% received it from city or county animal control agencies (Miller et al. 2001). We suggest that partnering with external groups already recognized by the public (e.g., city and county animal control agencies) might improve agencies' efforts to develop and disseminate informational products. Toll-free hotlines have been used successfully by agencies in Maryland and Vermont (Decker et al. 2001).

Groups unsatisfied with agencies' policies often seek resolution of their concerns through legislative, executive, or judicial influence (Minnis 2001). Recent activities of animal advocacy groups suggest that this outcome is likely, if not imminent, in states where regulatory oversight of WCOs is perceived as inadequate. For example, draft regulations prepared by The Humane Society of The United States (HSUS) as a template for state legislation requires WCOs to complete training courses, pass a written examination to obtain a license, submit reports of their activities, and comply with standards for animal welfare (J. Hadidian, The Humane Society of The United States, personal communication). Similarities with Barnes' (1997) recommendations, provisions administered in Illinois since 1991, and those supported by NWCOA suggest that diverse stakeholders are probably receptive to the same general approaches for regulating activities of WCOs.

Consensus for specific regulatory provisions might prove elusive, even when groups agree on the need for regulatory oversight of WCOs and a broad framework for doing so. For example, HSUS' draft legislation requires WCOs to "employ or recommend exclusionary means in preference to lethal means for control of problem animals" and mandates that "Lethal control shall be utilized only when public safety is immediately threatened or when nonlethal control methods have been employed to address the specific problem at the site and have proven unsuccessful" (J. Hadidian, The Humane Society of The United States, personal communication). Experts in wildlife damage management recommend a different approach (Slate et al. 1992:61): "Preference should be given to practical, nonlethal methods when formulating each strategy. However, this must not be misinterpreted as a recommendation that nonlethal methods always be applied as a first response to each damage problem. Commonly, the most appropriate response is the integration of nonlethal and lethal methods, and there will be many instances where the application of lethal methods alone is the responsible approach." Our agency's position (Illinois Department of Natural Resources 2000) coincides with the latter philosophy. Therefore, we believe WCOs should be allowed to use their discretion in recommending legal solutions, including lethal methods when warranted by specific circumstances. Clients are engaged in decision-making processes by laws that require WCOs to describe methods they plan to use and obtain written consent before taking any animals.

We conclude that our agency's role in providing regulatory oversight of WCOs lacks a clear social mandate but is warranted by ecological, ethical, and practical consequences of capturing and killing or translocating large numbers of wild animals. Obtaining and weighing stakeholder inputs are important parts of the rule-making process because issues associated with this task tend to be value-oriented, complex, and at times controversial. Traditional approaches such as meetings and requests for written comments provide a forum for the technical expertise and varied perspectives of active stakeholders, including wildlife professionals, animal advocates, industry representatives, lawyers, agency administrators, and politicians. However, these venues tend to exclude passive stakeholders (Hewitt and Messmer 1997), so we suggest evaluating homeowners' perceptions of experts' recommendations, especially those provisions that affect social policy. When agencies pursue policies that diverge from public opinion, they should do so knowingly and provide clear reasons for their actions (Decker and Chase 1997). Agencies are also advised to consider real and perceived impacts on homeowners' abilities to solve wildlife problems effectively; frustration can undermine generally positive attitudes that exist toward wildlife and its conservation (Muth and Jamison 2000, Organ and Ellingwood 2000). Our recommendations for participatory processes that exceed agencies' legal requirements are intended to enhance decision-making, not obstruct it. At times,

progress is more important than process, especially if it allows agencies to make improvements, avoid the disruptive phase of issue management, and move on to address aspects of urban wildlife damage management that homeowners perceive as more important.

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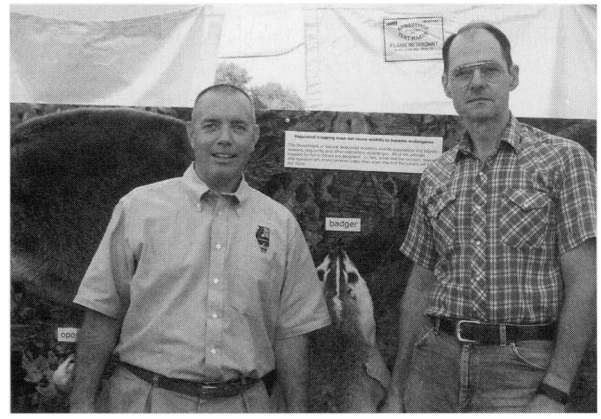
***Robert D. (Bob) Bluett*** (left) has been a wildlife biologist with the Illinois Department of Natural Resources' (IDNR) furbearer program since 1989. His program responsibilities include oversight of nuisance wildlife control activities, coordinating furbearer research and restoration, monitoring furbearer populations and harvest levels, and recommending appropriate regulations for fur hunting and trapping. Bob received his B.A. from Ripon College and M.S. in wildlife management from the University of Wisconsin-Stevens Point. He is a certified wildlife biologist and a former president of the Illinois Chapter of The Wildlife Society. ***George F. Hubert, Jr.*** (right) has been a wildlife biologist with the IDNR furbearer program for 27 years and an affiliate research scientist in the Center for Wildlife

Ecology, Illinois Natural History Survey (INHS), for 13 years. He has an M.S. in wildlife biology from Colorado State University and is a certified wildlife biologist. George's current professional interests include the ecology and management of furbearers, trap technology, and public outreach associated with fur hunting and trapping. ***Craig A. Miller*** received a Ph.D. in recreation and park management from the Pennsylvania State University. He obtained an M.S. in environmental education and B.S. in biology from Slippery Rock University of Pennsylvania. A former adjunct faculty member of the University of Idaho, Craig is currently leader of the human-dimensions research program of the INHS and IDNR's Division of Wildlife Resources. His research interests include error and bias in harvest reporting by hunters, hunter recruitment and commitment, and human attitudes toward urban wildlife.

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