

Wildlife Researchers Running the Permit Maze

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Abstract

The study of wildlife, whether in the field or in the lab, may start with a hypothesis, a literature search, or a grant proposal, but in many cases, the work will never happen unless the researcher successfully navigates a maze of permit requirements. A single project can involve multiple permits at the national and state levels, and it can take months to obtain any one permit.

Therefore, permits may not have been issued at the time of protocol review, but Public Health Service Policy makes accommodations for this situation. Once in hand, however, the permits convey critical information to the Institutional Animal Care and Use Committee (IACUC): one or more government agencies have determined that the activity will not be detrimental to the population or that any detriment is justified by the scientific knowledge that will be generated. This paper assumes that IACUCs are reviewing all wildlife protocols involving live vertebrates, regardless of the current, albeit temporary, distinction made by Animal and Plant Health Inspection Service Animal Care with regard to birds.

Key Words: permits; population impacts; research; wildlife

Introduction

Even the most experienced wildlife biologists have trouble ascertaining which permits are required for any given research study. Management of research permits is time consuming and can be vexing. Some even find it distressful. Each permit stems from a regulation, but these are difficult to find and harder to comprehend, and there are gaps and overlaps among them. [Table 1](#) outlines the panoply of federal permits. Agencies sometimes issue written guidance, but more often agency interpretations are unwritten

and inconsistent among the agency's own regions and staff. Some research institutions assign permit management to an individual who acquires expertise, but in the university context faculty members and graduate students frequently struggle through the system alone or with guidance from a colleague with slightly more comprehension and, not uncommonly, with a greater abundance of misinformation. Assistance is available from professional societies such as the Ornithological Council, which maintains up-to-date comprehensive guides to permits for all research activities involving birds (information on mammals will soon be incorporated). This article is intended to provide only an overview of the permits needed to conduct wildlife research. It should not be construed as a substitute for more detailed guides or for the individual assistance often needed to obtain a permit that is both appropriate for the research and that is the most efficient for the researcher and the institution. Further, the permit is just the starting point for some research activities. For instance, a virtual minefield of complex procedures stands between the permit and successful import of biological specimens.

For the Institutional Animal Care and Use Committee (IACUC), permits serve two purposes. First, they assure the IACUC that the researcher has complied with the relevant laws at least insofar as obtaining the permit is concerned. Compliance with permit conditions, including annual reporting, is subject to monitoring by the permitting agency. Second, and more important, permits tell the IACUC that the population-level impacts, if any, are both acceptable and justified. The agencies that issue wildlife permits have far better information about the population status of the species to be studied than does the IACUC and, in issuing the permits, have determined that any potential population level impact is warranted.

Permits Overview

Federal and state permits serve three purposes. The permits issued under the array of federal and state wildlife protection laws are designed to conserve certain terrestrial and aquatic wildlife species. These wildlife conservation permits are issued by the US Fish and Wildlife Service (USFWS) of the Department of the Interior and by the state fish and wildlife agencies. Site-specific permits issued by the federal and state land management agencies protect those same species at a more local level and also protect all the other natural

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Table 1 Summary of permit requirements for wildlife research in the United States

Permit type	Statute	Regulation	Implementing agency	Covered species
Migratory Bird Treaty Act	16 U.S.C. 703 <i>et seq.</i>	50 CFR Part 21	USFWS Division of Migratory Bird Management USGS Bird Banding Lab	www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html Same species; all external markers including leg bands, wing tags, neck collars, external transmitters
Endangered Species Act	16 U.S.C. 1531 <i>et seq.</i>	50 CFR Part 17	USFWS Division of Endangered Species NOAA Office of Protected Resources	www.fws.gov/endangered/ (check both US and foreign listings) 361 mammal species; 317 bird species; 165 fish species; 124 reptile species; 35 amphibians (as of March 2012) 29 mammal species; 44 marine fish species; 16 marine turtle species (as of March 2013)
Convention on International Trade in Endangered Species (CITES)	16 U.S.C. 1537(a)	50 CFR Part 23	USFWS Division of CITES Management Authority	Protected species: www.cites.org/eng/resources/species.html Suspended parties (can't issue permits) www.cites.org/eng/resources/ref/suspend.php
Wild Bird Conservation Act (WBCA)	16 U.S.C. 4901 <i>et seq.</i>	50 CFR Part 15	USFWS Division of Management Authority	All CITES-listed bird species plus all birds in the WBCA prohibited list, plus all birds from certain countries: www.fws.gov/international/DMA_DSA/Permits/web_list_wbca.html
Bald and Golden Eagle Protection Act	16 U.S.C. 668 – 668(d)	50 CFR Part 22	USFWS Division of Migratory Bird Management	Bald eagles Golden eagles
Lacey Act	18 U.S.C. 42 16 U.S.C. 3371–3378	50 CFR Part 16 50 CFR Parts 11,12,14	USFWS	Injurious wildlife: www.fws.gov/injuriouswildlife/ Lawfully taken provision: all species Humane transport provisions
Marine Mammal Protection Act	16 U.S.C. 1361 <i>et seq.</i>	50 CFR Part 216 50 CFR Part 18	NOAA Office of Protected Resources USFWS Division of Management Authority	Cetacea (whales, dolphins, and porpoises) and Pinnipedia (not walrus; seals and sea lions) Marine mammals: polar bear, sea otters, walrus, dugong, manatees, marine otter
National Wildlife Refuge System (NWRS) Special Use Permits	15 U.S.C. 668dd <i>et seq.</i> and refuge-specific legislation	50 CFR Part 26	USFWS (permits are issued by the refuge where the research will take place)	NWRS Research and Monitoring Special Use permits are intended to protect all natural resources on the refuge where the research will take place
National Park Service (NPS) Scientific Research and Collecting	16 U.S.C. 1 and park-specific legislation	36 CFR 1.6 and numerous NPS policies	NPS	NPS Scientific Research and Collecting permits are intended to protect all natural resources in the National Park, National Seashore, or National Monument where the research will take place (www.nps.gov/romo/parkmgmt/research_permit.htm)
Bureau of Land Management (BLM)	43 U.S.C. 1701 <i>et seq.</i>	None pertaining to permits at this time	BLM	Permission from BLM to conduct research is intended to protect all natural resources on the BLM-managed public land where the research will take place (BLM has no relevant permits website)

Continued

Table 1 Continued

Permit type	Statute	Regulation	Implementing agency	Covered species
Forest Service Special Use	Various statutes	36 CFR 251.50	Forest Service	Forest Service Special Use permits are intended to protect all natural resources in the National Forest or National Grassland where the research will take place (www.fs.fed.us/specialuses/)
Import, APHIS	7 U.S.C. 8301 <i>et seq.</i>	9 CFR Parts 93 (live) and 94 (specimens and parts)	APHIS	APHIS permits are intended to exclude pathogens that do not occur in the United States and that could be harmful to US livestock. As of 2012, the species that carry the pathogens subject to APHIS import permit requirements are birds, ruminants, swine, and equids. Note that quarantine may also be imposed within the United States.
Import, CDC	42 U.S.C. 264 <i>et seq.</i>	42 CFR Parts 70 (interstate) and 71 (import)	CDC	Dogs, cats, bats, turtles (if carapace under four inches), nonhuman primates, civets, African rodents. Note that quarantines may also be imposed within the United States.

CDC, Centers for Disease Control and Prevention; CFR, Code of Federal Regulations; NOAA, National Oceanographic and Atmospheric Association; U.S.C., US Code; USFWS, US Fish and Wildlife Service; USGS, US Geological Survey.

resources found on the protected land unit where the research will take place. Wildlife conservation permits also serve management needs by preventing conflicting uses by different individuals or groups who want to conduct activities at the same site. These site-specific permits are issued by various state agencies and by the National Wildlife Refuge System, the National Park Service (for research to be conducted in national parks, national seashores, and national monuments), and the Bureau of Land Management (BLM) for research to be conducted on public lands that have been entrusted to its management. The US Department of Agriculture’s (USDA) Forest Service issues permits for research that will be conducted in national forests. Finally, permits issued by the USDA Animal and Plant Health Inspection Service (APHIS) and the US Department of Health’s Centers for Disease Control and Prevention (CDC) serve to protect this country’s crops, domestic food animals, and human health.

Federal Species Conservation Permits

Species-conservation permits are based on federal statutes (acts of Congress) as augmented by federal regulations, internal agency policy, guidance documents, and permit conditions. Some statutes implement international treaties.

Lacey Act

The oldest of these is the Lacey Act (16 U.S.C. §§ 3371-3378 [2011] and 50 C.F.R. §§ 16.1-16.33 [2012]), originally enacted in 1900 and intended to serve as the legal basis for enforcing the wildlife (hunting and fishing) laws of two US states when animals are taken in one state and sold in another. Import of material in violation of this law (i.e., without the permits that might be required in the country or state where the research takes place) is a criminal act. For IACUC purposes, it is difficult to ascertain what foreign permits might be needed and if they have been issued or will be issued once the researcher is in-country. In some cases, required permits may not be issued until after the researcher returns to the United States. If the research entailed scientific collection of certain biological materials such as specimens, tissues, feathers or skins, DNA, or other parts of animals, the materials must be left behind and shipped at a later time. As a practical matter, enforcement of the Lacey Act as it relates to materials entering from foreign countries occurs at the time of import, when the USFWS Law Enforcement inspectors or Customs officials inspect the shipment and accompanying paperwork.

Another provision of the Lacey Act also serves to prevent the import of potentially harmful organisms to the United States, although it is very rarely used for this purpose and the current list of “injurious wildlife” is very short (50 Code of Federal Regulations [CFR] 16 Subpart B). It includes only (1) fruit bats (fruit bat of the genus *Pteropus*); (2) any species of mongoose or meerkat of the genera *Atilax*, *Cynictis*,

Helogale, *Herpestes*, *Ichneumia*, *Mungos*, and *Suricata*; (3) any species of European rabbit of the genus *Oryctolagus*; (4) any species of Indian wild dog, red dog, or dhole of the genus *Cuon*; (5) any species of multimammate rat or mouse of the genus *Mastomys*; (6) raccoon dogs, *Nyctereutes procyonoides*; and (7) brushtail possums, *Trichosurus vulpecula*. Live birds and eggs of (1) species of “pink starling” or “rosy pastor” *Sturnus roseus*; (2) the species of dioch (including the subspecies black-fronted, red-billed, or Sudan dioch) *Quelea quelea*; (3) Java sparrows, *Padda oryzivora*; and (4) the red-whiskered bul-bul, *Pycnonotus jocosus* are also prohibited except with a permit. A number of fish species and mollusc species (including eggs) are also prohibited except with a permit.

Although it is not a permit issue, the Lacey Act has one other component of interest for IACUCs: the 1981 amendments to the statute serves as the legal authority for the USFWS to regulate the manner of transport of live animals into the United States. The standards are found in Title 50 of the CFR, Part 14, and are fairly general, especially as compared with standards promulgated by the International Air Transport Association (IATA) for air transport of live animals. The IATA guidelines have been adopted by the World Health Organization and are therefore nearly uniform around the world; some countries do impose mostly minor variations. Another set of guidelines for humane transport was adopted by the Convention on International Trade in Endangered Species (CITES; 16 U.S.C. 1537[a] and 50 CFR Part 23) in 1979 but has since been supplanted by a resolution stating that as to transport by air, the IATA Live Animal Regulations are to be followed (CITES Resolution Conf. 10.21 [Rev. CoP14]). However, to the extent that animals are moved by train or motor vehicle, the CITES guidelines would still apply.

Migratory Bird Treaty Act (MBTA)

The MBTA (7 U.S.C. §§ 703-712 [2011] and 50 C.F.R. §§21.1-21.61 [2012]), which was enacted in 1918, first implemented a treaty with Great Britain (acting on behalf of Canada) to protect bird species found in the United States and Canada. Later treaties with Mexico, Japan, and the then-Soviet Union were also implemented under this law. Contrary to the name, however, the law is not limited to species that migrate between the parties to the treaty or even to birds that migrate across international borders. In fact, the lists of protected species and even the policies that determine which species are to be protected vary among the four countries. In the United States, virtually every species of bird is protected except certain game species. These latter include birds in the families Phasianidae (grouse, ptarmigans, and prairie-chickens) and Odontophoridae (New World quail), and non-native species. In effect, then, all species except these excluded families—European starlings (*Sturnus vulgaris*), house sparrows (*Passer domesticus*), mute swans (*Cygnus olor*), and accidental or vagrant species—are protected by

law in the United States. In Canada, however, nonnative species are protected, whereas certain species considered agricultural pests, such as cormorants, pelicans, and blackbirds, are not. As with all species conservation permits, the only way to be sure if a species is protected is to check the USFWS list. The regulatory list is at 50 CFR 10.13, and is also available on the USFWS website (www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtandx.html). The list changes occasionally (it was last updated in 2010), so it is essential to recheck each species listed for each permit application. The MBTA makes it illegal to “pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.” The term “take” is undefined in the statute, but the regulations provide that “take” means “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.”

For research, then, a permit is required for virtually any activity that involves capture and handling of a protected bird species but is not required for purely observational studies. A permit is also needed for import and export of any listed species or any part of any listed species, including blood, feathers, tissue, and preserved carcasses (i.e., museum specimens). The regulations exempt the following sorts of institutions from the permit requirements: “public zoological parks, accredited institutional members of the American Association of Zoological Parks and Aquariums and public scientific or educational institutions.” The term “public scientific or educational institutions” is not defined in the regulation. Operationally, the USFWS has used the term to mean “open to the public” as opposed to the source of funding (i.e., state-funded universities vs. privately funded universities). The exemption covers acquisition “by gift or purchase, possess, transport, and by gift or sale dispose of lawfully acquired migratory birds or their progeny, parts, nests, or eggs,” and “such birds may be acquired only from persons authorized by this paragraph or by a permit issued pursuant to this part to possess and dispose of such birds, or from Federal or State game authorities by the gift of seized, condemned, or sick or injured birds. Any such birds, acquired without a permit, and any progeny therefrom may be disposed of only to persons authorized by this paragraph to acquire such birds without a permit” (50 CFR 21.12[b][1]).

Permits for capture and marking bird species protected under the MBTA are issued by the US Geological Survey’s Bird Banding Lab (BBL). These “banding” permits cover the numbered metal bands issued by the BBL and any auxiliary markers, such as colored plastic bands, neck collars, patagial (wing) tags, and externally affixed radio and satellite transmitters. The BBL will not issue a permit for transmitters

requiring body penetration. For those purposes, a scientific collecting permit from the USFWS is needed. Note that current regulations do not specifically address these practices. The existing regulations have been augmented, as is often the case, by informal interpretation by the agencies. It had been anticipated that the regulations pertaining to bird marking would be updated in 2012. The issuance of the new regulations has been delayed and it is not known when they will be forthcoming. If and when issued, these gaps will likely be addressed. Similarly, by informal agency agreement between the USFWS and the BBL, a banding permit can allow the take of blood and feathers but only if the bird is also to be marked. If it will not be marked, a scientific collecting permit from the USFWS is needed. The USFWS Division of Migratory Bird Management issues these scientific collecting permits. Scientists usually use the term “scientific collecting” to mean the permanent removal of an individual from the wild for scientific study, but in the regulatory framework federal and state agencies use the term in a more inclusive context such that it includes any research activity for which a permit is required, which is typically any activity that involves capture and handling. Researchers apply for scientific collecting permits in the USFWS region where they reside, but the region where the activity is to take place is consulted. Under current regulations, permitted activities can continue after the permit expires so long as the permit holder applies to renew the permit no less than 30 days before its expiration date.

Bald and Golden Eagle Protection Act

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are covered by a separate statute known as the Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668[d] [2011]). When first enacted in 1940, the statute protected only bald eagles; a 1962 amendment extended coverage to golden eagles. The statute prohibits the take, possession, sale, purchase, barter, or offer to sell, purchase, barter, transport, export, and import of bald eagles and golden eagles, and violations carry civil and criminal penalties. Permits for scientific research are issued by the USFWS Division of Migratory Bird Management.

Wild Bird Conservation Act

The Wild Bird Conservation Act (formally, the Wild Exotic Bird Conservation Act: 16 U.S.C. §§ 4901-4916 [2011] and 50 C.F.R. §§ 15.1-15.53 [2012]), intended to control the flow of wild birds from other countries for the pet trade, is the most recent of the wildlife conservation statutes. Many of the species covered by this act are also covered by the Endangered Species Act (ESA; 16 U.S.C. §§ 1531-1544 [2011] and 50 C.F.R. §§ 17.1-17.108 [2012]) or by CITES, but many more are not. This particular statute, enacted in 1992, covers imports of any bird that is not indigenous to the United

States, except those species listed as exempt. Also exempt are dead museum specimens, dead scientific specimens, and products manufactured from such birds. Researchers import relatively few live birds, but what they do import represents a wide range and number of species from around the world. The list of species is extensive and has not changed since it was first promulgated in 1996. The list of species for which a permit is required includes virtually all wild birds except those native to the United States, budgerigars (*Melopsittacus undulatus*), cockatiels (*Nymphicus hollandicus*), rosy-faced lovebirds (*Agapornis roseicollis*), and all birds in the Anatidae (ducks, geese, swans), Cracidae (guans and curassows), Dromaliinae (emus), Gruidae (cranes), Megapodidae (megapodes), Numididae (guinea fowl), Phasianidae (pheasants and quails), Rheidae (rheas), and Struthionidae (ostriches) families. A number of captive-bred species may be imported without a permit; however, this subset is subject to change, so the list should be consulted before import.

Permits for Research Involving Mammals, Herpetofauna, and Fish

No federal wildlife conservation statute protects all mammals, fish species, or herpetofauna. These taxa are subject to permit requirements only if they are listed as endangered or threatened under the ESA or are listed on the appendices to CITES or are marine mammals protected by the Marine Mammal Protection Act (MMPA; 16 U.S.C. §§ 1361-1423[h] [2011] and USFWS, 50 C.F.R. §§ 18.1-18.129 [2012]; NOAA, 50 C.F.R. §§ 216.1-216.279 [2012]).

Endangered Species Act

The ESA, enacted in its present form in 1973, prohibits the taking of any species that is formally listed as threatened or endangered; “take” is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The BBL requires that an ESA permit be issued before the BBL will issue a banding permit that includes endangered species.

The list of endangered and threatened species changes continuously, and for some species, only certain populations are protected by the ESA. The best way to determine whether a particular species or a given population is protected under the ESA is to check the ESA species list at 50 CFR 17.11 via the electronic CFR (www.ecfr.gov), which is updated daily.

For permitting purposes, there are two key differences between the MBTA and the ESA. The ESA expressly prohibits “take” of ESA-listed species. There are allowances for take through permitting or for take that is incidental to otherwise lawful activities through the issuance of an “incidental take” permit. “Incidental take” is defined in 50 CFR 17.3 as any taking if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. ESA permits are issued for direct take where the purpose of the action is to

impact the listed species (e.g., studies targeting endangered or threatened species). Unlike the MBTA, the ESA also prohibits harassment, which could result from purely observational studies such as presence/absence surveys and censuses if they significantly disrupt normal behavioral patterns such as breeding, feeding, or sheltering of an ESA-listed species.

Incidental take of an ESA-listed species could potentially occur in the course of research on non-ESA-listed species. For instance, a researcher may have an MBTA permit to capture a migratory bird species that is not ESA listed. But, when setting traps or using mist nets to capture their target species in an area also used by an ESA-listed species, the researcher could unintentionally capture the ESA-listed species; this would constitute “take” of that ESA-listed species. Those who intend to conduct activities in a location where ESA-listed species may occur should contact the appropriate USFWS Regional Endangered Species permit issuing office (www.fws.gov/endangered/) before applying for an MBTA permit to determine whether an ESA permit is needed. If an ESA permit is needed, the MBTA permit application should state that the Endangered Species permit issuing office has advised that an ESA permit is also needed and the species for which this permit is needed should be stated in the MBTA permit application. The Division of Migratory Bird Management and the Division of Endangered Species will coordinate that permit review and issuance.

Convention on International Trade in Endangered Species

The ESA is the implementing legislation for CITES. That Convention, which entered into force in 1975 and to which 177 countries are now parties (at the time of this writing), protects endangered species only in the context of international movement. Every 2 or 3 years, the parties to the convention meet and decide on a number of issues, including the listing or delisting of species and a wide variety of implementation and enforcement matters. To determine if a species is protected under CITES, check the CITES website listing (www.cites.org/eng/resources/species.html). Protected species are assigned to one of three Appendices. For international movement of species on Appendix I, international movement is permitted only for noncommercial purposes such as scientific research, and both an export permit from the country of origin (or re-export certificate from the country of re-export) and an import permit from the receiving country are required. Appendix II species may be moved in international commerce to a limited extent, and only an export permit (or re-export certificate) is needed. For species listed on Appendix III, export permits are needed only when the animal or animals are exported from the country that listed the species, whereas certificates of origin are required for shipments from other countries that did not list the species in Appendix III (or re-export certificates from countries of re-export). The very same species might or might not enjoy legal protection within their country of origin.

Each party to CITES has a Management Authority that issues permits. Imports to and exports from countries that are not parties to CITES may be allowed if that country has established a Management Authority or other competent authority and registered the name and address of that authority with the CITES Secretariat to authorize the international movement of CITES specimens. The permits or documents must conform to the CITES documents requirements. The United States imposes the additional condition that the issuer must be satisfied that the specimen was acquired legally and that its export will not be detrimental to the survival of the species. There is no legal means to import from a CITES country whose permit-issuing authority has been suspended by the CITES Secretariat. Suspensions are listed on the CITES website (www.cites.org/eng/resources/ref/suspend.php).

Scientific institutions may register with the CITES Management Authorities in their countries, and shipments of scientific specimens between registered institutions may move without permits. Some countries, including the United States, issue Certificates of Scientific Exchange to registered scientific institutions, but with or without a permit, the only documents needed for import and export are Customs declarations on which the institutions list their registration number and state that they are CITES registered and that the shipment comprises CITES-protected material.

Marine Mammal Protection Act

The MMPA enacted in 1972 prohibits, with certain exceptions, the take of marine mammals in US waters and by US citizens on the high seas and the importation of marine mammals and marine mammal products into the United States. It protects any mammal that is morphologically adapted to the marine environment (including sea otters and members of the orders Sirenia, Pinnipedia, and Cetacea) or primarily inhabits the marine environment (such as the polar bear). As with ESA implementation, responsibility is divided between the USFWS, which is responsible for sea otters, marine otters, dugongs, manatees, polar bears, walrus, and National Oceanographic and Atmospheric Administration (NOAA) Fisheries, which is responsible for cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, but not walrus). Permits for scientific research are issued by the USFWS Division of Management Authority and the NOAA Office of Protected Resources. For the species protected by NOAA, if a species is protected under both the ESA and the MMPA or if the research entails “Level A harassment,” then a formal permit is needed. Level A harassment is activity that has the “potential to injure a marine mammal or marine mammal stock in the wild.” If research involves a species that is protected under the MMPA but not the ESA and involves “Level B harassment,” then NOAA’s Office of Protected Resources will issue a General Authorization of Scientific Research. Level B harassment comprises activities that have the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but

not limited to, migration, breathing, nursing, breeding, feeding, or sheltering, but that does not have the potential to injure a marine mammal or marine mammal stock in the wild. Essentially, applying for a General Authorization is a simplified process whereby researchers submit a letter of intent with sufficiently detailed information about the planned research that NOAA Fisheries can accurately determine whether the research is bona fide and the impacts of the activities are limited to Level B harassment. Should NOAA Fisheries determine that the project is eligible, based on the information provided by the applicant, no public comment period is required. The researcher will receive a letter of confirmation that they are covered under the General Authorization. The USFWS requires permits for all marine mammal species for which it is responsible and does not distinguish between Level A and Level B harassment. A permit is required for all “take,” defined as “harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal, including, without limitation, any of the following: The collection of dead animals or parts thereof; the restraint or detention of a marine mammal, no matter how temporary; tagging a marine mammal; or the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which results in the disturbing or molesting of a marine mammal” (50 CFR 18.3).

Multiple Federal Permits for a Single Activity

It is often the case that a single activity entails several federal permits. A species may be protected under the MBTA, ESA, and/or CITES. Some marine mammals are also protected under the ESA. The USFWS issues ESA permits for 19 species, subspecies, or stocks of sea otters, manatees, dugongs, and polar bears. Permits for research for 29 ESA-listed aquatic marine mammal species—the Cetacea (whales and porpoises), Pinnipedia (seals and sea lions, other than walrus)—are issued by the National Marine Fisheries Service of the NOAA of the US Department of Commerce. If the species is ESA listed, NOAA automatically treats the activity as a Level A harassment permit under the MMPA, regardless of the nature or impact of the activity. In any case, each agency has procedures for processing permit applications for activities involving species that are protected by two or more species conservation laws. In most cases, this entails submission of a single permit application. Internal agency coordination and consultation among branches serve to assure that the permit includes all necessary authorities for that particular species and activity.

Site-Specific Permits for Federally Managed Public Land

Wildlife research often takes place on federally managed public land because these land units, particularly in the Western states, are expansive and can include large tracts that are in a somewhat natural condition. For these reasons, it is often possible to find concentrations of the animals to be studied

and areas relatively free of human traffic. Moreover, federal agencies sometimes sponsor wildlife research on the populations for which they are responsible. In every case, a permit is needed to conduct this research.

Special use permits are issued by the USFWS for work on national wildlife refuges. The permitting process may be simple or elaborate, depending on the nature of the research, the impact on the refuge’s natural resources, and the extent to which the research is perceived by the refuge manager to be of value in helping to manage the refuge. These permits also help the refuge manager to prevent conflicts among refuge visitors and uses.

The national parks have a stated policy that the parks are natural laboratories and welcome “science for parks.” Although it is not a requirement that a particular research project benefit a park, it is certainly the case that each park has specific research needs, and studies that will address one or more of those needs are especially encouraged. The National Park Service issues these permits only after formal review by their own IACUC. It should be noted that there is only a single IACUC for the entire National Park Service.

The USFS has created an elaborate process for its special use permits. The system is so elaborate, in fact, that the agency has also created a bypass process for projects that will have little or no impact on the forest unit where they will take place. The special use system requires potential applicants to consult with authorities in the particular forest or grassland where the work will take place. If the manager determines that the work will have little or no impact, the work may take place without a permit. Typically, this decision will be formalized in a letter that may also include restrictions on the times and places of research activities. If a permit is deemed necessary, there are several levels of analysis (and attendant fees) for permit applications, depending on the extent to which the proposed use will impact natural resources and tax the forest management staff.

The BLM is housed within the US Department of the Interior. It has no formal permit system at this time. The BLM, on a case-by-case basis, may require a permit or other authorization for biological research conducted on BLM-managed public lands, particularly where a research proposal involves surface disturbance, is in a wilderness area, or may have impacts on other natural or cultural resources. Researchers are well advised to contact the local BLM field office, district office, or state office before conducting research so the BLM can determine what authorization may be required. Researchers should provide a written description of the research proposal, including a site location, estimated time and duration of the project, and any ground-disturbing activities, including the establishment of monitoring or observation equipment.

Federal Permits to Protect Agriculture and Human Health

The mission of the APHIS is, in part, to protect US crops and livestock from foreign pathogens. The agency accomplishes this by regulating the imports of certain live animals and

animal products such as blood, feathers, tissues, animal parts, or preserved specimens through a system of permits and required quarantine (or, in the case of animal products through a requirement that imports from certain countries be treated with one of several approved methods to inactivate or kill potential pathogens). The list of animal species that are banned or regulated changes, and sometimes a species or taxon can be listed with no advance notice. APHIS posts these notices and lists on its website (http://www.aphis.usda.gov/import_export/animals/animal_disease_status.shtml) as soon as they are issued, so it is possible to know, sometimes even on the day of export, if a ban has been imposed.

As of the date of this publication, the species for which permits or a health certificates are required are all birds, ruminants, swine, equids, elephants, hippopotami, rhinoceroses, and tapirs. APHIS is also developing restrictions for fish. Protocols vary among species and are perhaps most restrictive for birds. Imports of some live animals from some countries are prohibited. Although restrictions vary by country, the import process for live birds generally requires postimport quarantine. Reservations must be made for space in a USDA quarantine station. Agricultural quarantine inspectors (who are now employed by Customs and Border Protection) meet the shipment on the aviation ramp and remove it immediately to the quarantine station. After quarantine and mandatory testing, the shipment is released to the importer. The USDA maintains an “all-in, all-out” policy. If any individual animal fails the required testing, all individuals in the shipment are killed. The system is elaborate and costly, and, of course, there is a risk of loss of the animals because of failure to pass the required testing. Although it might seem more practical to study the animals in their native country, long-term studies or studies that require close and continued observation of individuals might not be feasible even if suitable research facilities are available in that particular country and the researcher can be absent from the university for a prolonged period of time.

The CDC regulates import of animals known to carry pathogens that are primarily of concern for human health risks. There is occasionally temporary dual regulation by APHIS and the CDC until the two agencies determine who should have responsibility. For instance, until it was determined that the H5N1 highly pathogenic avian influenza was primarily a threat to poultry flocks as opposed to human health, both agencies imposed restrictions. After the determination was made, APHIS took responsibility for regulating avian imports. It is always possible that this situation could change, so it is essential to consult both the CDC (<http://www.cdc.gov/animalimportation/>) and APHIS websites to determine if import of a given species is regulated. At this time, the CDC regulates the import of nonhuman primates, bats, bees, African rodents, dogs, cats, turtles, and civets.

State Permits

Every state has a system of permits based on the need to protect wildlife and other natural resources. Generally, permits

are required for all research activities. States typically call these permits scientific collecting permits. That term is generally interpreted by scientists to mean the permanent removal of an individual from the wild for scientific research purposes. Thus, it is not uncommon to find that a researcher who believes a state permit is not required because the research plan does not involve permanent removal of individuals from the wild. In most cases, that conclusion is erroneous. It is critical to check the state’s regulation or to inquire of the agency’s permits staff. It can be quite difficult to find the one or two individuals who issue research permits, and with the severe fiscal conditions under which many state agencies are laboring, it can be difficult to find even a single individual as many have been reassigned or are handling two or more jobs. Most states have at least some information on their websites and some scientific organizations, such as the Ornithological Council (<http://www.nmnh.si.edu/BIRDNET/>), have fairly comprehensive state permit information on their websites.

State permits also serve to prevent conflict with the agency’s own management and research activities and with other user groups. Permits for additional lands under state control, such as state parks, wildlife management areas, natural resource areas, and state forests, usually require permit holders to notify the permitting agency or land unit of the times and dates when research activities will occur. Notification ensures that the researcher is mindful of hunting seasons and dates and that public activities are not scheduled for the same time and place where the researcher will be working. If the permit does not require advance notice to the agency or land unit manager, the researcher should take affirmative measures to learn of hunting dates and seasons and the location of any public activities that will be taking place during the research season. A few state agencies consider a federal bird-banding permit sufficient for banding activities, but most will require an additional permit if the researcher intends to use any markers other than the federally issued metal band. Most states require separate permits for state-listed endangered and threatened species. In some cases, such as California, the permits for state-listed endangered and threatened species is complex, requiring consultation before the issuance of the permit, and a long list of conditions that must be met.

One particular aspect of state permits is of importance to IACUCs and researchers. Very often, the states will not allow release of any animal that has been held in captivity. If captive animals cannot be used in subsequent research, the investigator should make plans for disposition of the animals. On very rare occasions, the animals might be accepted by a zoo or wildlife park, but more commonly, the animals will be killed. The reasons for not allowing release are diverse and include protecting natural populations and minimizing pain and distress to released individuals as well as those in the wild (Fair et al. 2010; Sikes et al. 2012; Sikes and Paul 2013). In any case, an IACUC should not require release to the wild in contravention of the conditions of the permit.

Permits and IACUC Protocol Review: Practical Concerns

From a purely practical point of view, permits complicate the protocol review process. The IACUC faces a quandary in that it must ask if the researcher has obtained the required permits but has no way of knowing what permits are actually required and thus must rely on the investigator's knowledge, which may be limited or erroneous. It has happened that an IACUC has insisted to a researcher that a certain permit is needed based on the IACUC's own misunderstanding. For this reason, IACUCs are urged to avail themselves of this summary, of the in-depth permits compendium on the Ornithological Council website, or by contacting others with relevant expertise. The Public Health Service (PHS) Policy encourages IACUCs to consult with experts on matters outside their own scope of knowledge, a recommendation that is particularly valid in the context of regulatory permits.

For investigators and IACUCs, permit requirements nearly always necessitate a two-stage review and approval process because investigators cannot control the timing of permit issuance. It is quite possible and indeed likely that one or more permits will not be issued until after the animal use protocol is reviewed. The National Institutes of Health Office of Laboratory Animal Welfare and the other federal agencies that follow PHS Policy do not allow conditional, contingent, or provisional approval. Assuming that the protocol as submitted includes documentation to demonstrate that permit applications have been filed, the IACUC may review the protocol. Assuming that the IACUC finds that the protocol is acceptable, the best practice for an IACUC would be to indicate in writing to the investigator that the protocol has been approved but that the animal work is not to begin until the permit is approved. The IACUC may also stipulate that the IACUC be informed about the permit issuance to administratively update the protocol. Absence of notification to the IACUC, however, is not to be construed as a hold on the research. The interval between permit application and issuance can vary greatly. If the researcher has not applied for a permit at least 30 days before the planned start date of the research, it is unlikely that the permit will be issued by that planned start date. However, USFWS permits (except CITES) are, by regulation, automatically continued if a renewal application was filed at least 30 days before the expiration date. Further, it is always possible that the permit will be issued more expeditiously than is normally the case, very shortly after the planned start date. Therefore, it would be reasonable for the IACUC to review the protocol even if it seems unlikely that the permit will be issued before the planned start date, subject to the requirement that the work may not start until the permit has been issued and provided to the IACUC. For ESA and MMPA permits, a public comment period of 30 days is required, so the minimum time span is at least 90 days between application and issuance; it can take as long as six months to obtain these permits.

Permits and IACUC Protocol Review: Information Value

Nothing in the Animal Welfare Act (7 U.S.C. §§ 2131-2159 [2011]) or the implementing regulations (9 C.F.R. §§ 1.1-12.10 [2012]), nothing in the Health Research Extension Act (42 U.S.C. § 289[d] [2011]) or PHS Policy (US DHS 2002), nothing in the US Government Principles (*Interagency Research Animal Committee* 1988), and nothing in the *ILAR Guide* (NRC 2011) requires an IACUC to consider the potential population-level impact of wildlife studies, yet IACUCs routinely delve into this issue. Population-level impacts may be difficult to predict because the researcher may not have sufficient knowledge of population sizes and species interactions. There may be no published information and a census, even if possible or practical, will not yield sufficient information. A single census at a given point in time will not produce useful population estimates because wild populations can fluctuate widely over seasons and years. IACUC review of these concerns would also require that the IACUC have extensive understanding of quantitative population biology to assess the available data. For research that requires permits, the issuance of federal and state species conservation permits and land management permits address these concerns. These permits are issued by agency staffers who have at least qualitative (overall populations status and trends) knowledge of population sizes and trends. They have determined that the extent of take needed for the study will not be detrimental to the population and that any population-level impact is justified by the value of the knowledge to be gained. Agency staffers sometimes discuss with the permit applicant the intended sample size and its potential impact on the population and may ask the applicant to consider a different study design that will reduce the level of take. Instances where permits have been issued at multiple levels provide even more assurance to the IACUC because receipt of these permits necessarily means that at least two different agencies, one at a federal level and the other much more local level, have considered the potential impacts.

In the case of banding permits, there is a further assurance for IACUCs who are rightly concerned about the training and experience of the researcher. Banding permits expressly require proof of training and experience as to both species and marking methods. The BBL requires two references from other permit holders who can attest to the applicant's skills and experience.

Finally, the IACUC should note that permit conditions may dictate some aspects of the protocol. For instance, a permit may prohibit (or sometimes require) the release of individuals that have been captured and studied in captivity. Permits may also restrict the number of hours or the specific times or places when research can be conducted.

Conclusions

The federal and state systems of permits for wildlife research are unavoidable burdens for wildlife biologists, but IACUCs

should understand that these permits are much more than administrative processes. In most cases, these permits assure IACUCs that the population-level impact, if any, has been determined by federal and state officials with the requisite knowledge and expertise to be acceptable and justified. It is also often the case that permit restrictions or requirements will dictate some aspects of the protocol. Recognizing the purpose and meaning of permits should thus aid the IACUC in reviewing wildlife research protocols.

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tors, oversight, and regulatory personnel for an open discussion about unresolved issues in the oversight of wildlife research.

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