Incidental Take Plan
for
Maine's Trapping Program

Submitted to

U. S. Department of Interior
Fish and Wildlife Service

Prepared by

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October 28, 2014

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Executive Summary

Although the U. S. Endangered Species Act (ESA) prohibits the "take" of threatened or endangered species that results in direct harm to the species or habitat destruction, the ESA authorizes the U. S. Fish and Wildlife Service (USFWS) to issue permits for the "incidental take" of listed wildlife species (See Section 10a(1)(B) of the ESA) that may occur from otherwise lawful activities. The Maine Department of Inland Fisheries and Wildlife (IFW) is submitting this incidental take plan (Plan) to the USFWS for a Section 10 permit to provide statewide protection to trappers in the event that Canada lynx (*Lynx canadensis*), a federally threatened species, are incidentally trapped in lawfully made sets during Maine's legal trapping season, animal damage control (ADC), or predator management (PM) activities. This permit will cover individuals that are licensed or otherwise authorized to trap including fur trappers, animal damage, and predator management trappers. Annually this constitutes approximately 6,000 individuals based on data from 2000-13. Trappers incidentally catching a lynx in traps that are illegally set are not covered and are liable for take under the ESA.

The incidental take authorized within the scope of the Section 10 permit issued to IFW will cover lynx that are incidentally trapped and not injured, lynx receiving minor or major trap related injuries, and lynx killed in traps. Canada lynx are the only species proposed for coverage through the incidental take permit (ITP), as no other federally listed species are anticipated to be affected by the State's trapping programs. Species that may be listed in the future will be handled through permit amendment, as necessary and appropriate. Data from Maine suggests that the majority of lynx caught in traps should be released with little or no injury. However, occasionally a lynx may die or have a trap related injury that requires veterinarian care. Therefore, IFW is requesting a permit to cover the incidental trapping of up to 195 lynx during the next 15 years that includes the lethal take of up to 3 lynx and major injury of up to 9 lynx. The duration of the permit was based on IFW's species planning period, where management objectives and plans are reviewed and updated through a public planning process approximately every 15 years.

The proposed take of lynx in this Plan will have no adverse impacts to habitat and will not affect lynx population growth rates during the permit period. Throughout the Plan, IFW provides data from more than 12 years of tracking lynx and incidental take in Maine that demonstrates that trapping in Maine does not pose a risk to Maine's lynx population and may only directly impact a few individuals ($\leq$12 lynx in a 15 year period). Since the late 1990s, Maine's lynx population increased to historic high numbers in areas where fur trapping, ADC, and PM effort occurred. If Maine's lynx population declines during the permit period in response to changes in habitat quality and prey densities, IFW expects that lynx incidental capture rates will also decline.

Although lynx are found primarily in WMDs 1-11, 14, 18, and 19, IFW is committed to adjusting trapping regulations if lynx expand into other areas of the state, and thus seeks statewide coverage for the incidental take of lynx. To minimize the incidental trapping of lynx in Maine, this Plan includes measures that

1. requires killer-type traps (<8 inch jaw spread) set on land in WMDs 1-11, 14, 18, and 19 to be set on a leaning pole in compliance with current Maine laws, on the ground as a blind set (i.e., only traps with jaw spreads ≤ 5 inches) or with an improved lynx exclusion device;
2. restricts the placement of visible bait near foothold and killer-type traps statewide;
3. requires the use of 1 swivel on foothold traps in lynx WMDs;
4. requires the mandatory reporting of any lynx caught in traps prior to releasing the lynx, unless an IFW official cannot be reached in time to prevent injury to the lynx;
5. requires IFW personnel, when it is safe to do so, to release lynx from traps to evaluate and treat any trap related injury and insure compliance with trapping regulations;
6. requires periodic staff training and evaluation of 15 lynx by a licensed veterinarian over the permit period;
7. provides care to lynx if injured;
8. provides eight outreach and education efforts to inform new and experienced trappers of measures to avoid or minimize lynx captures;
9. commitments to investigate compliance with trapping regulations that minimize lynx capture; and
10. provides 6,200 acres of lynx habitat as mitigation for permitted lethal take.

As part of this permit, IFW proposes rescinding current foothold trap size restrictions that do not reduce lynx capture rates and permitting the use of cage traps where risk of injury to lynx is low. Lethal snares set under water for beaver or other aquatic furbearers will continue to be permitted statewide as they do not pose a risk to lynx. Although currently not permitted, trappers that have been certified through an IFW training course may also be allowed to set non-lethal cable restraints for coyotes in the future. However, lethal snares set on land will not be allowed under this permit.

This Plan is divided into 8 sections that describe Maine's data on the risk of foothold, non-lethal cable restraints, cage, and killer-type traps to lynx, and IFW's plans to minimize, monitor, and mitigate impacts of Maine's furbearer trapping season, ADC, and PM activities on lynx as required by the ESA. Each section of this Plan will include a summary providing an overview of IFW's current knowledge and the key elements of the section.

1.0 Introduction and Background

1.1 Permit Coverage

This Incidental Take Plan (Plan) is prepared in conjunction with an application from IFW to the USFWS for a Section 10 permit under the federal Endangered Species Act (ESA). Incidental capture of lynx during trapping activities is anticipated during implementation of the Maine's regulated recreational furbearer trapping, predator management (PM) and the animal damage control programs (ADC). Therefore, IFW is seeking an ESA incidental take permit to cover legal trapping activities that occur through these programs.

The entities covered by the incidental take authorizations include the following:

- All licensed trappers (non-resident, resident, alien, junior (resident and non-resident), and apprentice resident and non-resident trappers, complimentary over 70 year old trappers, lifetime trapping licenses including Native Americans that trap off tribal lands, ADC agents and PM trappers.

- Other people permitted to trap without a trapping license: IFW full-time employees (e.g., district game wardens, and wildlife biologists) and landowners trapping on their own land.

Annually this constitutes approximately 6,000 individuals based on data from 2000-13. Further descriptions of these entities are provided in Title 12 Subsections 12201 and 12202. All IFW staff, including contractors and veterinarians that are designated as an "Agent of the Department" implementing this Plan are covered by IFW's Section 6 agreement with the USFWS.

1.2 Permit Duration

IFW is seeking incidental take coverage via the Section 10 permit for 15 years from permit issuance by the USFWS in accordance with IFW's species planning process. Approximately every 15 years, IFW reviews the status of wildlife species to identify species management goals and objectives from public input. Although IFW recognizes that the benefits of some management actions may take longer than 15 years, this Plan duration allows IFW and the public to respond to new information or concerns.

1.3 Regulatory/Legal Framework for Plan

The ESA of 1973, administered by the Interior Department's USFWS, is regarded as one of the most comprehensive wildlife conservation laws in the world. The purpose of the ESA is to conserve "the ecosystems upon which endangered and threatened species depend" and to recover listed species.

Section 9 of the ESA, as amended, prohibits the "take" of any fish or wildlife species listed under the ESA as endangered, and "take" of fish or wildlife species listed as

threatened is also prohibited, unless specifically authorized by Section 10 permit. Take, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

In the 1982 amendments to the ESA, Congress added a provision in Section 10 that allows for the "incidental take" of endangered and threatened species of wildlife by non-federal entities. Incidental take is defined by the ESA as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Prior to 1982, parties that undertook projects involving federal funding or approval could obtain incidental take coverage through ESA Section 7 consultations, but had no recourse under the law for exemption. Up to that time, only take occurring during scientific research and other conservation actions could be authorized under the ESA. The "incidental take permit" (ITP) process was established under Section 10(a)(1)(B) of the ESA precisely to resolve this difficulty.

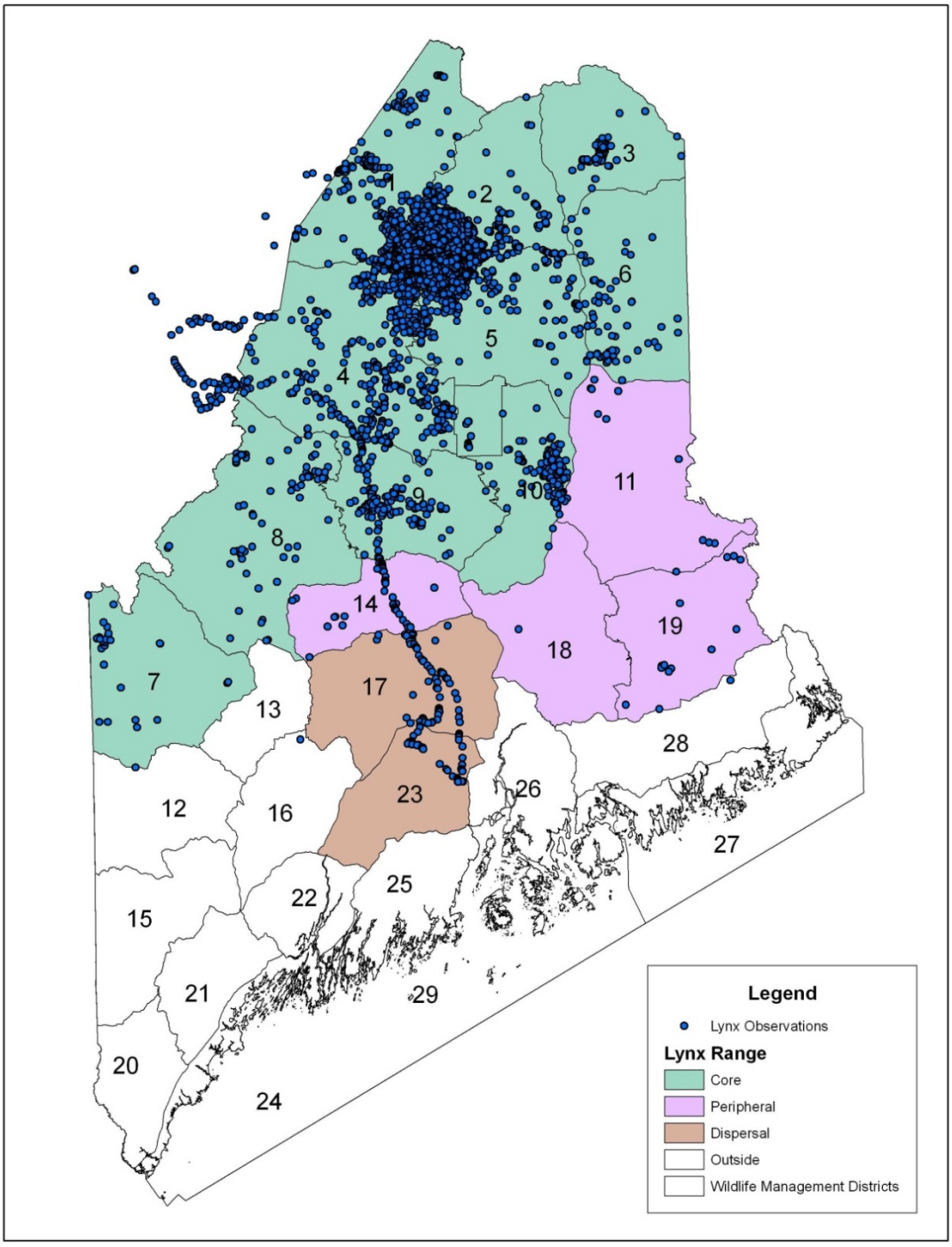
Section 10(a)(2)(A) of the ESA requires an applicant for an ITP to submit an Incidental Take Plan (also known as a habitat conservation plan, Plan, or HCP) that specifies, among other things, the impacts that are likely to result from the taking, and the measures the applicant will undertake to minimize and mitigate such impacts.

The federal HCP program has grown rapidly in recent years. In the first 10 years of the program (1983-1992), 14 ITPs were issued. By May 2006, 448 HCPs had been approved and over 718 ITPs had been issued. In a little over a decade, the HCP process has been transformed from a relatively little used option under the ESA to one of its most important and innovative conservation programs.

1.4 Plan Area

The currently defined lynx range is wildlife management districts (WMDs) 1-11 and 14, 18, and 19 (Figure 1.1). Trapping has been restricted in these WMDs to minimize lynx incidental capture and is where minimization measures in this Plan will be implemented. Lynx range in Maine is based on consistent presence of lynx as documented by verified observations described in Minimization Measure PI 1 (Section 5.2). Although lynx sometimes occur in other parts of the state (e.g., WMD 17 and 23) these areas are not currently considered part of lynx range in Maine, since the lynx did not remain in the area (Figure 1.1). Conversely, the single observation of a lynx incidentally trapped in WMD 18 meets the criteria for extending lynx minimization measures (Appendix 5). The Plan is statewide to the extent that it covers state-sanctioned trapping activities throughout Maine. Any lynx caught in a legally set trap is covered by the Plan. However minimization measures will apply to the currently defined lynx range. IFW will monitor lynx distribution and extend current trapping regulations if lynx distribution changes (See Minimization Measure PI1 – Section 5.2).

Figure 1.1 **The distribution of Canada lynx in Maine from ecoregional snow track surveys, sightings of lynx (primarily tracks) by IFW biologists, incidental takes, and telemetry data from 2000 until 2011. Points in WMD 17 and 23 are from telemetry over a 26 and 9 day period by two radiocollared lynx that did not remain in the area. Conversely, the single observation in WMD 18 was a lynx caught in a trap that meets the criteria for extending lynx minimization measures.**



1.5 Species to be Covered by Permit

IFW is seeking a Section 10 permit for Canada lynx (*Lynx canadensis*), which is a federally threatened species (but see Appendix 12) and a species of special concern[2] in Maine. There are no other federally listed species that will be impacted by the covered activities and therefore IFW is not seeking permit coverage for other listed species. The risk of take for other federal trust species (e.g., migratory birds or bald and golden eagles) is low therefore IFW is not seeking coverage for non-listed species.

[2] The special concern status is an IFW administrative designation given to species of fish or wildlife whose populations are vulnerable to various threats but do not meet the criteria for state endangered or threatened status.

2.0 Environmental Setting / Biological Resources

Summary

IFW is requesting a permit to cover the incidental take of Canada lynx, a federally threatened species, from trapping activities described in Section 1.1. No other federally threatened or endangered species are likely to be caught in traps. The USFWS must also consider the impact of the permitted activity (i.e., trapping) on other protected species before issuance.

Also in this section, IFW provides data on the status of Maine's lynx population based on 12 or more years of monitoring lynx in Maine. These data demonstrate that Maine's lynx population increased between 1995 and 2010 in areas where fur trapping, ADC, and PM occurred. The recent increase in lynx numbers in Maine is attributed to high densities of snowshoe hares, the primary prey item for lynx. Consistent with population dynamics of lynx elsewhere, the population may have plateaued in Maine over the last several years. Data collected from IFW's telemetry study were incorporated into a population model that indicate that the level of lethal take requested in this Plan will not affect lynx population growth rates during the 15-year permit period (Appendix 7).

2.1 Environmental Setting

Located at the northeast tip of the United States, the State of Maine is approximately 320 mi (515 km) long and 210 mi (338 km) wide and is about halfway between the equator and the North Pole. Among the states, it is the 39th largest (33,315 mi^2 [86,286 km^2]), but it is almost as big as the rest of the New England states combined. The northern half of the state is sparsely populated, giving the state a relatively low human population (1.3 million people) or a density of approximately 39 people / mi^2 (16 people / km^2).

Maine is bounded on the northwest and northeast by the Canadian provinces of Quebec and New Brunswick, respectively, and on the west by New Hampshire. The famed rocky coastline of the state is angled from southwest to northeast along the Atlantic Ocean.

The western half of Maine is part of the Warm Continental Mountain ecoregion (i.e., high mixed forests, coniferous forests, and tundra), while the eastern half of the state is divided into the Warm Continental Division (i.e., mixed deciduous and coniferous forests) and the Hot Continental Division (i.e., broadleaved forests – oceanic; Bailey 1997). The Warm Continental Mountain ecoregion extends into New Hampshire, Vermont, and into the Adirondacks of New York. The mixed deciduous and coniferous forests of the Warm Continental Division continue to the east into New Brunswick and Nova Scotia and to the west into Quebec; finally ending in Minnesota (Bailey 1997).

Maine abounds in natural assets. Over 90% of the state (17.5 million acres [7.1 million hectares]) is forested, giving Maine the distinction of being the most heavily forested state in the nation. Maine has nearly 6,000 lakes and ponds, 5,000,000 acres (2,023,500 ha) of wetlands, 31,800 mi (51,179 km) of rivers and streams, 4,100 mi (6,599 km) of coastline, and more than 3,000 coastal islands and ledges.

Climate

The National Weather Service separates Maine into three distinct climatological divisions – coastal, southern interior, and northern interior. The southern and coastal regions are influenced by air masses from the south and west. North of the land dividing the St. John and Penobscot River basins, air masses moving down the St. Lawrence River Basin tend to prevail. Mean annual temperatures range from 37°F to 39°F (3°C to 4°C) in the north and from 43°F to 45°F (6 to 7°C) in the southern interior and coastal regions. Mean temperatures are about 62°F (17°C) throughout the state during the summer and 20°F (-7°C) during the winter. Cloudy days average 222 per year in the south to 206 in the north. Annual precipitation averages 36 in to 48 in (91 cm to 122 cm). Snowfall averages more than 100 in (254 cm) in the north and higher elevations.

Topography / Geology

The Appalachian Mountain chain extends into Maine from New Hampshire, terminating at Mount Katahdin, at 5,268 ft (1,606 m) the state's tallest peak. The western and northwestern borders adjoining New Hampshire and Quebec are characterized by rugged terrain with numerous glacier-scoured peaks, lakes, and valleys. South and east of mountain areas lay rolling hills, smaller mountains, and broad river valleys.

Maine's coastline consists of long sand beaches interrupted intermittently by rocky promontories in the southwest and a series of peninsulas, narrow estuaries, bays, fjords, and coves located north and east of Portland, the state's largest city. The tides along Maine's coast are among the highest in the world, running between 12ft and 24ft (4m and 7m). More than 3,000 islands dot the coast, some no more than rock ledges; others are vegetated and are home to a variety of marine wildlife and people.

Geologically, Maine is something of a youngster; the oldest rocks, found in the Chain of Ponds area in the western part of the state, are only 1.6 billion years old – more than 2 billion years younger than the world's oldest rocks. The state has experienced several episodes of glaciation. The most recent was about 18,000 years ago when Maine was covered by glacial ice about a mile thick (Gawler et al. 1996). The present-day biological diversity in Maine is the result of post-glacial movements of plants, animals, and microorganisms into the state.

Hydrology / Streams, Rivers, Drainages

Maine has more than 5,000 rivers and streams comprising 31,800 mi (51,179 km) of flowing waters that provide nearly half of the watershed for the Gulf of Maine. More of these rivers and streams are undeveloped and free flowing than in any other state in the northeastern United States (Bennett 1988). The major rivers are the Penobscot (350 mi [906 km]), the St. John (211 mi [546 km]), the Androscoggin (175 mi [453 km]), the Kennebec (150 mi [388 km]), the Saco (104 mi [269 km]), and the St. Croix (75 mi [194 km]).

Maine also has nearly 6,000 lakes and ponds, most of which can be linked to a single cause -- glaciation. The state has the second largest number of natural glaciated lakes of any state east of the Mississippi River – 3,000 lakes and ponds more than 10 acres (4 ha) in size and another 2,000 between 1 and 10 acres (0.4 to 4 ha; Bennett 1988).

Northwestern Maine's Moosehead Lake, covering about 117 mi^2 (303 km^2), is the state's largest lake; in fact, the largest lake in New England to lie wholly within the boundaries of a single state. Sebago Lake in southern Maine is second to Moosehead in size, with a surface area of over 44 mi^2 (114 km^2). However, it holds the distinction of being the deepest at 316 ft (96 m), and its deepest point is 40 ft (12 m) below sea level.

Vegetation

Sixty-seven woody plant species reach their range limits in south-central Maine, and an additional 44 woody plant species define a coastal-inland transition zone, reaching their western range limits in a southwest-northeast belt bisecting the state (McMahon 1990).

There are approximately 1,432 native and 643 introduced species of vascular plants in Maine. The state's vascular plants include both typically Appalachian representatives at the northern edge of their range and typically boreal representatives at the southern limit of their range (Gawler et al. 1996). Seventeen percent of Maine's native flora (254 species) are considered rare, threatened, or endangered (Gawler et al. 1996).

Wildlife

Maine's geographical location, physical relief, and present and past land-use practices result in a diversity of vegetation and climatic conditions and a diverse and unique assemblage of wildlife. The state is a transition area and its wildlife resources represent a blending of species that are at or approaching the northern or southern limit of their range.

Invertebrates are the most diverse group of organisms in Maine, exceeding vertebrate species by several orders of magnitude. Yet, knowledge even of which species occur in Maine is very incomplete. Only basic information on the distribution and general habitat preferences for a few taxonomic orders such as butterflies (Lepidoptera), mayflies (Ephemeroptera), and dragonflies (Odonata) are available (Gawler et al. 1996).

Presently, seven invertebrates are listed as endangered under the Maine Endangered Species Act (MESA): Roaring Brook mayfly (*Epeorus frisoni*), Hessel's hairstreak (*Satyrium edwardsii*), Clayton's copper (*Lycaena dorcas claytoni*), Edwards' hairstreak (*Callophrys hesseli*), Katahdin arctic (*Oeneie polixenes katahdin*), Juniper hairstreak (*Callophrys gryneus*), and Rapids clubtail (*Gomphus quadricolor*). Likewise, 10 species are listed as threatened: tidewater mucket (*Leptodea ochracea*), yellow lampmussel (*Lampsilis cariosa*), Brook floater, (*Alasmidonta varicosa*), Ringed boghaunter (*Williamsonia lintneri*), Tomah mayfly (*Siphlonisca aerodromia*), twilight moth (*Lycia rachelae*), Pine barrens zanclognatha (*Zanclognatha martha*), Purple lesser fritillary (*Boloria chariclea grandis*), Sleepy duskywing (*Erynnis brizo*), and Boreal snaketail (*Ophiogomphus colubrinus*) (§12803; Appendix 1).

There are 34 amphibian and reptile species (18 and 16 respectively) in Maine, and their distribution in the state is relatively well known. Maine lists the eastern box turtle (*Terrapene Carolina*), Blanding's turtle (*Emydoidea blandingii*), and black racer (*Coluber constrictor*) as endangered, and the spotted turtle (*Clemmys guttata*) and loggerhead turtle (*Caretta caretta*) as threatened (§12803; Appendix 1).

Boone and Krohn (1998) listed 56 mammal species as extant in Maine. Only one mammal, the northern bog lemming (*Synaptomys borealis*), is listed as state threatened under MESA. Although its range overlaps with Canada lynx, trapping does not threaten this species. Even though Canada lynx are listed as threatened under the federal ESA, the species does not meet the listing criteria for a threatened or endangered species under MESA. Rather, Canada lynx are listed as a species of special concern in Maine. The New England cottontail rabbit (*Sylvilagus transitionalis*) is Maine's only state endangered mammal (§12803; Appendix 1). The USFWS considers the species to be warranted but precluded from listing under the federal ESA (U. S. Department of Interior 2006). The USFWS must make a final determination on the federal listing status of New England cottontail by 2015 as the result of a court settlement (2011 Multi-District Litigate Agreement). New England cottontail are only found in southern Maine (Cumberland and York Counties) and their range does not overlap with Canada lynx (Litvaitis et al. 2003).

There are more than 218 species of birds that have been documented as breeding regularly in Maine (Gawler et al. 1996). Of these, 198 species breed at inland sites in upland, wetland, or aquatic habitats (Gawler et al. 1996). Maine lists 10 species as endangered: golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), roseate tern (*Sterna dougallii*), least tern (*Sterna antillsrum*), black tern (*Chlidonias niger*), sedge wren (*Cistothorus platensis*), American pipit (*Anthus rubescens*), grasshopper sparrow (*Ammo dramus savannarum*), and least bittern (*Ixobrychus exilis*). An additional 11 species are listed as threatened in Maine: razorbill (*Alca torda*), Atlantic puffin (*Fratercula arctica*), Harlequin duck (*Histrionicus histrionicus*), bald eagle (*Haliaeetus leucocephalus*), arctic tern (*Sterna paradisaea*), upland sandpiper (*Bartramia longicauda*), black-crowned night heron (*Nycticorax nycticorax*), Common moorhen (*Gallinula chloropus*), great cormorant (*Phalacrocorax*

carbo), short-eared owl (*Asio flammeus*), and Barrow's goldeneye (*Bucephala islandica*). (§12803; Appendix 1).

Existing Land Use

Maine's present land use is characterized by extensive forests interspersed with agricultural areas in northeast Maine, scattered farms throughout the rest of the state, and many small towns. Maine's human population is densest in the southern part of the state and become less populated in the north. The human population lives primarily in small towns and in a handful of urban areas. Despite the large tracts of forestland in the state, only 5% of the land in Maine is in public ownership. For the most part, wildlife habitat is confined within large commercial forests in northwest, western, and eastern Maine, and within smaller private landholdings in southern, coastal, and central Maine.

2.2 Biological Resources

2.2.1 Canada Lynx

Description and Natural History

The Canada lynx is a medium-sized cat that averages 25 lb (11 kg) for males and 19 lb (9 kg) for females. Its general appearance is similar to the bobcat. The most notable difference between a lynx and a bobcat is paw size. Lynx paws are about twice the size of bobcat paws. Lynx also can be distinguished from bobcats by the tip of their tail, which is completely black (bobcat tail tips are only black on the upper side [dorsal side]). Lynx have more prominent ear tufts, paler coloration, less spotting, and longer legs than bobcats.

Lynx are specialized predators on snowshoe hare (*Lepus americanus*), although they will opportunistically take other small mammals. Lynx are adapted to living in areas with deep fluffy snow, where they have a competitive advantage over other predators (e.g., bobcat, coyote, and fisher). The large size of a lynx's paws distributes the animal's weight over a large surface area and enables it to walk on snow. Thus, lynx have more mobility on deep snow than other predators with smaller paws (or higher foot loading), and expend less energy acquiring food in winter than more generalist predators.

In North America, lynx occur in Alaska and Canada and extend south into the northern contiguous states. They live in subarctic forests, boreal forests, mixed deciduous and coniferous forests (immediately south of the boreal forests), and in alpine forests in the Rocky Mountains, Cascades, Great Lakes, and Northeast. Maine, New Hampshire, Washington, Montana, Minnesota, Wyoming, Idaho, and Colorado are the only states, outside of Alaska, that currently have resident lynx populations in the US.

Lynx are highly mobile and can move long distances (>60 mi [100 km]) when dispersing; Slough and Mowat 1996, and Vashon et al. 2012). They prefer to make their reproductive dens in forests with high stem densities and high amounts of woody

debris (downed logs; Organ et al. 2008). These conditions may provide some protection to kittens, and may provide ready access to snowshoe hare, which are also attracted to this type of forest structure.

Research Efforts

IFW included a description of the lynx research efforts in Maine, prior to describing Maine's lynx population, to acquaint the reader with the scope of information collected during this study. We reference the results of this study throughout this document and based many of our conclusions on the results from this research.

From 1999-2011, IFW, in cooperation with the USFWS, conducted a radiotelemetry study of Canada lynx in a 4-township area of northwestern Maine. The original objectives of this study were to 1) determine if there was a viable, self-supporting population of lynx in Maine, or if lynx occurring in Maine were simply transients from the lynx population in Canada; 2) document mortality factors affecting lynx in Maine; 3) identify habitats used by lynx in Maine and how they relate to snowshoe hare distribution and abundance; 4) investigate how lynx distribution in Maine is affected by sympatric populations of bobcats, coyotes, and foxes; and 5) test the efficacy of various survey methods used to determine the status of lynx.

Between 1999 and 2011, 85 of 88 lynx captured were equipped with radiocollars[3] including a lynx that had been initially caught by a fur trapper and radiocollared[4]. IFW biologists used #3 foothold traps with padded offset jaws, cage traps, and hounds to capture lynx. Most lynx were captured more than once; 59 lynx were caught in foothold traps 122 times and 52 lynx were captured in cage traps 339 times. Only one lynx was captured with the use of hounds. Reproduction of radiocollared adult females was monitored by visiting dens and capturing kittens. Between 1999 and 2011, 113 kittens were handled at 43 den sites. IFW biologists have worked closely with faculty at the University of Maine in Orono (U Maine) on several graduate projects related to lynx and lynx /snowshoe hare interactions. Scientific manuscripts on lynx home range size, habitat use, and den site characteristics have been published (Organ et al. 2008, Vashon et al. 2008a and b). In addition, IFW continues to work closely with the USFWS on lynx surveys and habitat management recommendations. Numerous entities have supported the study both financially and technically.

Population in Maine

Maine's lynx are part of a large lynx population that includes the Quebec's Gaspé Peninsula and northern New Brunswick (Hoving 2001, Vashon et al. 2012). In contrast to western states, most of Maine's lynx range occurs on privately owned woodlands managed for timber production. Lynx are attracted to the regenerating forests that occur on these lands, as the high stem densities of these forests provide snowshoe hare with ideal habitat. In Maine, snowshoe hare are associated with regenerating

[3] Three lynx were caught at the end of the study and released without a radiocollar.
[4] To date, six lynx have been caught by fur trappers and equipped with radiocollars.

forest (15 to 35 years of age) and are negatively associated with recent clearcuts and mature forest (>40 years old and <80 years old; Litvaitis et al 1985, Monthey 1986, Lachowski 1997, Fuller 1999, Hoving et al. 2004, Robinson 2006). Hoving (2001) suggests that good lynx habitat in the Northeast consists of complexes of regenerating forest with relatively few deciduous trees and a high annual snowfall (>105 in [268 cm]).

The age structure of Maine's forests has changed considerably since European settlement, which likely changed the abundance and distribution of lynx in the state. Seymour et al. (2002) suggested that there has been a shift from a predominately mature forest to younger forest in Maine, based on past and current disturbance factors. During pre-settlement times, Maine's forests experienced frequent but small natural disturbance events (wind, ice, and insect outbreaks) resulting in an older forest system and regenerating forests comprised approximately 3% to 5% of the pre-settlement coniferous forests in northern Maine (as cited in Vashon et al. 2012). Spruce budworm epidemics occur periodically in Maine. The most recent and widespread epidemic in 1972-1986 resulted in extensive clearcutting to salvage diseased trees. By 1995 and 2010, between 38% and 48%, respectively, of Maine's northern forest was classified as early regenerating stands. Many of these stands (50%) currently have a physical structure (stem density and height) that provides optimal cover for snowshoe hare (Vashon et al. 2012). These regenerating forests, and the subsequent high snowshoe hare densities, influenced the current abundance and distribution of lynx (Figure 1.1).

Data on the historic and present distribution of lynx comes from historical records as compiled by Hoving (2001), radiotelemetry data from the IFW/USFWS study, snow track surveys from IFW's various ecoregional surveys, snow track sightings and visual observations reported by IFW regional biologists, and incidental takes of lynx (Figure 1.1).

Population Size and Status

Lynx are found primarily in western and northern Maine's spruce/fir forest (Figure 1.1). Overall, Maine's lynx population appears to have increased dramatically since 1995. For example, IFW personnel searched for lynx tracks each winter from 1994 to 1996. For those years, a total of 4,118 km of transects in 82 townships in northwestern Maine were searched for lynx tracks (Jakubas 1997). Of the 82 townships that were surveyed, lynx were found in only 9 townships (11% of the townships searched). In 2003, 20 townships, located in the same area of the state as the 1994 to 1996 surveys, were resurveyed for lynx. In 2003, IFW observed lynx tracks in 75% and 73% of areas with a high/moderate and low probabilities of having lynx, respectively. Survey efforts were extended to eastern and western Maine. By 2008, lynx tracks were detected in 83% of the survey areas with a moderate or high probability and half the towns with a low probability of lynx occurrence (Vashon et al. 2012). These data are consistent with other indices of population change including the number of lynx struck by vehicles, number of lynx sightings, and number of incidentally trapped lynx in Maine (Figure 4.1.4). Recent estimates suggest that there were between 750 and 1,000 adult lynx in Maine in 2006 and may have reached a plateau or peaked in 2010 (Vashon et al. 2012).

Similar patterns in lynx numbers have been reported by neighboring jurisdictions (e.g., New Brunswick; Cade Libby, New Brunswick Department of Natural Resources and Energy, personal communication) and in a recent habitat model for Maine (Simons 2009).

Limiting Factors in Maine

Lynx habitat in Maine is not currently threatened with destruction or fragmentation due to agriculture, urbanization, recreational development, or by high volume/high speed roadways. Recreational development and agricultural fragmentation have not occurred in most of northwestern Maine. Human activity in WMD 1-11, 14, 18, and 19 has increased since the early 1900s, but it remains low with few permanent residences or organized towns in the region. Major development in the future (e.g., wind power, mineral exploitation, highway expansion, and building development) would require USFWS consultation.

Although a network of unpaved, private roads with low traffic volumes crisscrosses the habitat of lynx in Maine, only one radiocollared lynx has been hit by a vehicle since the start of the lynx radiotelemetry project. However, the public has reported 32 lynx struck and killed by vehicles between 2000 and 2012 (Table 2.1). A similar number of lynx have been struck by vehicles on high speed paved roads (n=17) as unpaved roads (n=15).

Maine's lynx population level is dependent on forest management practices that determine the amount and distribution of regenerating conifer stands in the state. Regenerating conifer stands that are 15 to 40 years of age provide the habitat structure (i.e., dense cover) preferred by snowshoe hare (Litvaitis et al 1985, Robinson 2006, Scott 2009), which are the principal prey of lynx. A decrease in the amount of regenerating conifer stands in Maine may reduce snowshoe hare numbers and the amount of habitat suitable for lynx to live in (Scott 2009, Simons 2009). These changes may come about if less forest is cut or if current forest harvesting techniques (e.g., partial harvesting techniques) do not produce understory cover that is as dense and as long lived as that produced by past forest harvesting techniques, such as large scale clearcutting (Vashon et al. 2012, and Simmons-Legaard et al. 2013). Additionally, hare populations may fluctuate independently of forest conditions (Scott 2009).

Table 2.1 Chronology of Canada lynx recovered after being hit by vehicles in northern Maine, from listing (2000) to 2012.

Year	Number of lynx killed by vehicles
2000	1
2001	0
2002	1
2003	1
2004	3
2005	3
2006	2
2007	4
2008	3
2009	4
2010	1
2011	4
2012	5

Most of Maine's forests are privately owned and managed for timber production. These working forests have provided the habitat necessary to allow Maine's lynx population to expand their range and numbers (Vashon et al. 2012). However, a major shift in forest cutting practices has occurred. In 1989, 44% of all timber harvesting was done using clearcutting (Maine Forest Service 1995) and, in 2005, 94.8% of all the timber harvesting in Maine was done using partial harvesting techniques (Maine Forest Service 2006). Although a model suggest that optimal hare habitat could start to decline in 2023 (Simons 2009), the extent of the recent change in forest harvesting techniques on hare and lynx numbers is not yet known.

Competition from other predators has been hypothesized in the past as being capable of limiting the distribution and growth of lynx populations (e.g., Parker et al. 1983, Buskirk et al. 2000). In Maine, interspecific interactions have been observed between lynx, bobcat, and fisher. Over the course of Maine's radiotelemetry study on lynx, fisher have killed at least 18 lynx and are suspected to have killed 9 others (Vashon et al. 2012, and McLellan et al. *in prep*). While the data show that fisher kill lynx, there is insufficient information to show that fisher may exclude lynx from habitats used by fisher or in any way limit the range of lynx.

Bobcats and lynx are usually spatially separated by snow depth, which limits competition between the species (Aubry et al. 2000). However, Parker et al. (1983) speculated that interspecific competition may have occurred between lynx and bobcat on Cape Breton Island, Nova Scotia where the distribution of lynx shrank considerably after bobcats immigrated to the Island. Twenty-five years later, lynx were restricted to highland areas where snow depths were greater and provided spatial separation from bobcats. However, no conclusive evidence was presented for interference competition between bobcat and lynx in Parker et al.'s (1983) study.

At the periphery of lynx range in Maine, where both lynx and bobcats tracks were observed, simulated home ranges around track observations suggest that bobcats were found in the best habitat for snowshoe hare (Robinson 2006). Based on this simulation, Robinson (2006) suggests that the presence of bobcats in an area could be used as a variable to predict the presence or absence of lynx on the landscape. In addition to the potential for bobcats to limit the range of lynx through competition, several lynx-bobcat hybrids have been found in the region where the ranges of the two species overlap (Homyack et al. 2008).

One factor that cannot be controlled, but may influence extent of the lynx range in Maine, is climatic change (Carroll 2007). Hoving (2001) modeled climatic changes and their potential impact on snow depth and lynx habitat. This model indicates that decreased snow depths may cause the southern boundary of the lynx range to shift to the north; thus, decreasing the extent of the lynx range in Maine.

From 1999 to 2011, IFW's radiotelemetry study documented annual mortality rates for radiocollared animals and cause of death, when possible (Tables 2.2 and 2.3). For lynx of all ages, the most common sources of mortality were starvation and predation (Table

2.3). Approximately, 11% of the lynx mortalities in the radiotelemetry study resulted from lynx traveling into Canada and being caught incidentally in lethal snares set for coyotes. Although poachers killed 3 radiocollared lynx using unknown methods, to our knowledge, trappers have not killed a radiocollared lynx in Maine. IFW documented that trappers captured 2 radiocollared lynx and neither required veterinarian care.

Table 2.2 Annual mortality rates for Canada lynx (> 1 yr) that were radiocollared in Maine from one year prior to the federal listing of lynx as a threatened species until 2012. Annual mortality rates were corrected for staggered entry of radiocollared animals into the sample (i.e., Kaplan-Meier staggered entry approach; Pollack et al. 1989).

Year[a]	Total[b]	Dead	Mortality[c]
1999-00[d]	6	3	45%
2000-01	16	5	36%
2001-02	19	2	12%
2002-03	19	4	23%
2003-04	24	5	24%
2004-05	23	5	23%
2005-06	33	4	17%
2006-07	31	13	48%
2007-08	18	1	6%
2008-09	26	8	39%
2009-10	25	9	45%
2010-11[d]	7	2	29%
2011-12[d]	1	n/a	n/a

[a] Year is defined by birth pulse(i.e., May 1, 1999 to May 1, 2000).
[b] Total = number of lynx monitored (start of the year + new captures).
[c] Mortality of radiocollared lynx >1 year old is the inverse of Kaplan-Meier survival rates.
[d] Sample size low (start or end of study (i.e., removing collars)).

Table 2.3 Mortality factors for Canada lynx tagged or radiocollared for IFW's radiotelemetry study. Data are from 1999 until 2011.

Cause of mortality	Number of mortalities	Proportion of total mortalities	Sex ratio of lynx that died
Starvation	17	26%	9M:84F
Predation	18	28%	6M:12F
Suspected Predation	9	14%	4M:5F
Disease	1	2%	1M
Illegal harvest	3	5%	1M:2F
Canada harvest	7	11%	6M:1F
Unknown	8	12%	4M:4F
Vehicles	2	3%	2F
Total	65	N/A	31M:34F

2.2.2 Wolves (Canis lupus, Canus lupus lycaon)

The gray wolf (*Canis lupus*) is listed in the Northeast as a federal endangered species and is currently being considered for delisting in the northeastern U. S. (USFWS; http://www.fws.gov/northeast/graywolf.html). The nearest wolf population to Maine is in Quebec, but is effectively separated from Maine by Quebec City, the St. Lawrence Seaway, and heavy trapping pressure in rural Quebec. Very few wolves have been reported south of the St. Lawrence Seaway, and those wolves were killed in Quebec (Villemure and Jolicoeur 2004). For a historical perspective of wolves in Maine see Krohn and Hoving (2010).

Although one gray wolf and one wolf/coyote hybrid were killed in Maine, stable isotope analysis of DNA collected from these animals indicates they were of domestic origin. In 1993, a gray wolf was killed near Caucomgomoc Lake. Although positively identified as a gray wolf (National Wildlife Forensic Laboratory, Ashland, OR), its behavior around people and human dwellings (found sleeping outside a tent and drinking from a dishpan) was more typical of captive wolves that have either escaped or have been released. Stable isotope analysis ($\delta^{13}C$) of this wolf's fur indicated that it had a history of eating domestic food with corn based products in it (Kays and Feranec 2011). The second animal, killed by a trapper in Aurora in 1996, was a wild canid with a genetic profile (National Wildlife Forensic Laboratory, Ashland, OR) similar to wolves in eastern Canada (*Canus lupus lycaon*), which have hybridized with eastern coyotes (Wilson et al. 2000). Although the genetic profile of this animal again suggested a wild origin, stable isotope analyses of the animal's bones or hair indicated that it also had a history of feeding on foods with corn in them (e.g., dog food) and was likely held in captivity at some point (Kays and Feranec 2011).

IFW is not seeking a Section 10 permit for wolves because they currently do not exist in the state. If wolves were to become established in Maine, IFW would consider specific measures to protect those animals from incidental take. For approximately 16 years, IFW has made efforts to help detect wolves that might immigrate to Maine that include:

1) Distributing wolf identification information (track measurements, size, and physical characteristics) to every licensed trapper in the state in the annual Trapper Information Booklet.
2) Conducting and participating in genetic and morphological research on eastern coyotes and eastern Canadian wolves to determine whether these animals can be readily distinguished from each other (e.g., Wilson et al. 2004; Kays et al. 2010).
3) Requesting that hunters or trappers notify IFW if any coyote over 48 inches in total length is harvested.
4) Investigating credible sightings of large canids.

2.2.3 Migratory Birds

Federal Laws

The Migratory Bird Treaty Act of 1918 has provisions in its statutes that make it a federal crime to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention…for the protection of migratory birds…or any part, nest, or egg of any such bird." (16 U.S.C. 703). Through regulation, the USFWS can permit the take of migratory birds for a variety of purposes, such as rehabilitation, scientific collection, raptor propagation, falconry, and depredation. USFWS has no explicit regulatory mechanism to authorize the incidental take of migratory birds. In Maine, except for ADC activities that can operate year round, trapping is limited to the fall and winter months when most breeding migratory birds are not present. Although there was some potential for American crows (*Corvus brachyhynchos*), common ravens (*Corvus corax*), and gray jays (*Perisoreus canadensis*) to be attracted to baited traps, regulatory changes instituted in 2007 in Maine that require bait to be covered has minimized the incidental capture of migratory birds. IFW is submitting a separate memorandum to the USFWS containing background information about the take of migratory birds to aid the USFWS response to public comments.

Bald and golden eagles are also protected under the federal Bald and Golden Eagle Protection Act (BGEPA, 16 U.S.C. 668-668c). This act prohibits the "taking" of bald or golden eagles, including body parts, nests, or eggs. The Act's definition of "take" is similar to the ESA but not the same. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb". Similar to the ESA, the BGEPA allows a limited number of eagles to be incidentally taken through a similar

permitting process. Historically through 2006, a total of 37 bald eagles have known to have been trapped, injured, or killed as a result of licensed trapping activities. However, since implementing statewide covered bait regulations in 2007, no eagles are known to have been taken in legally set traps in Maine. The only documented incident since 2006 was the live capture and release of an eagle in an illegal trap on March 21, 2010 in Alna (Lincoln County), Maine. The case was referred to Maine Warden Service and USFWS law enforcement. If IFW detects an issue with take of bald or golden eagles, IFW can pursue a permit under the BGEPA.

2.2.4 Plant Species of Concern

There are 3 federally listed plant species in Maine. The eastern prairie fringed orchid (*Platanthera leucophaea*; federally threatened species) and the Furbish lousewort (*Pedicularis furbishiae*; federally endangered species) occur in northern Maine; within geographical are where lynx occur. The small whorled pogonia (*Isotria medeoloides*), a federally threatened plant, occurs in southern Maine. The range of this plant lies outside of the lynx range. None of the trapping activities referred to in this request for a Section 10 permit will impact any of these plant species because traps are commonly set on road, road edges, fields, or in elevated sets (e.g. killer-type traps set on leaning polses) where protected plant species do not occur.

3.0 Project Description / Activities Covered by Permit

Summary

This section describes IFW's current trapping program and new capture techniques that will be allowed with the implementation of the Plan. IFW is seeking an ESA Section 10 permit to cover the incidental take of lynx that may occur in trap sets that are lawfully made by trappers, as described in Section 1.1 of the Plan, during IFW's regulated fur trapping season and ADC and PM Programs. Although the risk is lower for some traps, IFW is seeking incidental take coverage for all lawful trapping activities in Maine in the event that a lynx is caught. To date, lynx have been incidentally captured in traps set on land by trappers targeting coyote/fox, marten, and fisher during Maine's regulated fur trapping season and by PM trappers targeting coyotes. Most lynx caught in foothold traps can be released with little or no injury, and no lynx have been captured in marten and fisher sets that were lawfully made following the requirements established under a Federal Court Settlement US District Court of Maine, Case 1:06-cv-00128-JAW Document 132-2 Filed 10/03/2007 (Consent Decree).

The main difference between the three trapping programs is the time of year when the activity occurs and the species that are allowed to be trapped. ADC trappers are permitted to set traps anywhere in the state throughout the year for wildlife causing damage to property (except protected species, including lynx, unless the USFWS permits the activity under Section 10 of the ESA). Alternatively, fur trappers are restricted to setting traps for legal furbearing animals within current furbearer season framework (currently mid-October – December 31 except as allowed for under Rule 09-137 Chapter 4.01 Section G2A), and PM trappers are only permitted to set foothold traps for coyotes during the first 45 days of Maine's trapping season (mid-October to end of November). All trappers are required to follow Maine laws governing trapping, including legal trap types. PM trappers are further limited to setting foothold traps because the intent of this program is to capture coyotes near deer winter areas (DWA). If a permit is issued, PM and ADC trappers that have met the requirements for setting non-lethal cable restraints may be permitted to use these devices to capture coyotes as described in Section 3.1. Each of the programs specifically covered by this permit request are described below in more detail and in Appendices 1, 9, and 10.

Table 3.0 provides a complete summary of trapping regulations or actions in lynx range to limit the incidental take of lynx as defined in current regulations, agreed in the Consent Decree, and implement in this Plan. Briefly, the following trapping regulations established in the Consent Decree will remain in effect in lynx areas (currently WMDs 1-11, 14, 18, and 19) if a permit is issued:

1) Bait cannot be placed near traps or if visible from above.
2) Chains on foothold traps will have at least one swivel.
3) Killer-type traps (jaw spread <8 inches) must be set 4 feet off the ground on leaning poles $\leq$ 4 inches in diameter and set at $\geq$ 45 degrees.

4) Killer-type traps with a jaw spread $\leq$ 5 inches will be permitted on the ground as a blind set.
5) Snares set completely underwater for beaver and aquatic furbearers will be permitted.
6) Foot snares, a type of non-lethal cable restraint, and cage traps will be permitted for black bears.

In addition to regulations currently in place in lynx areas, IFW through the rule making process will recommend that baited killer-type traps set on the ground would only be permitted if set with a lynx exclusion device, wooden based rat traps for weasel and red squirrel would be permitted if set in a recessed wooden box with a hole no larger than 2 inches, and foothold traps with teeth or auxiliary teeth would only be permitted if set underwater. IFW would rescind current foothold trap size and cage trap restrictions in lynx areas. ADC and PM trappers that obtain the necessary training (see Appendix 13) will be allowed to set non-lethal cable restraints for coyotes. Following an evaluation of non-lethal cable restraints set by ADC or PM trappers, fur trappers may also be allowed to use non-lethal cable restraints after completing the appropriate training. Although non-lethal cable restraints may be permitted, killer-type snares will not be allowed under this permit, unless set completely underwater for aquatic furbearers. IFW will continue to monitor take of lynx in Maine's trapping programs and make adjustments when necessary to avoid future takes (See Changed Circumstance in Section 5). The rationale for trapping regulatory changes in this Plan is provided below.

Table 3.0 Summary of current actions regulations in lynx range to limit the incidental take of lynx as agreed in Consent Decree, current regulations, and implemented in this Plan.

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
1. Restricts trapping in WMD 1-6, 8-11 (as described below) to avoid incidental take of lynx	X	X	X
2. Restricts trapping in WMD 7 and 14, 18, 19 (as described below) to avoid incidental take of lynx		X	X
3. Restricts use of visible bait near traps statewide			
A. Prohibits use of exposed bait or visible attractor on covered floats-(Rule 09-137 Chapter 4.01 G 1a).		X	X
B. Prohibits exposed bait or visible attractor during Early Fox and Coyote Season-(Rule 09-137 Chapter 4.01 G 2A-d).		X	X
C. Prohibits exposed bait or visible attractor during Early Muskrat Trapping Season-(Rule 09-137 Chapter 4.01 G 2B-b).		X	X
D. Prohibits the setting of foothold or killer-type traps within 50 yards of bait that is visible from above (Rule 09-137 Chapter 4.01 K).	In WMD 1-6 and 8-11 only	statewide	statewide

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
4. Restricts use of foothold traps >5 3/8" jaw spread in WMD 1-6, 8-11 (Rule 09-137 Chapter 4.01 J)	X	X	Rescind See #21
5. Requires use of at least 1 swivel on trap chains in WMD 1-6, 8-11 (Rule 09-137 Chapter 4.01 J)	X	X	X See #19
6. Wooden based rat traps set for weasels and squirrels recessed within a wooden box with a hole no larger than 2" in diameter are prohibited in WMD 1-6 and 8-11 (Rule 09-137 Chapter 4.01 J)		X	Rescind See # 20
7. Restrict the use of killer-type traps to lean poles, aquatic sets, as blind, or stream banks			
A. Prohibits killer type traps during Early Fox and Coyote Season-(Rule 09-137 Chapter 4.01 G 2A-b).		X	X
B. Requires traps set during Early Muskrat Trapping Season in WMD's 1-6,8,10,11 to be set at or below ground level or water and killer type traps to have a jaw spread of 5 inches or less- (Rule 09-137 Chapter 4.01 G 2B-a,c).		X	X
C. Traps set for beaver are restricted to killer-type traps and drowning sets (Rule		X	X

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
09-137 Chapter 4.01 G 1a) October-April. D. Prohibits killer-type traps in WMD 1-11, 14, 18, and 19 unless set completely underwater or at least 4 ft above the ground or snow so long as such traps are affixed to a pole or tree that is at an angle of 45 degrees or greater to the ground and that is no greater than 4 inches in diameter at 4 feet above the ground or snow level (Rule 09-137 Chapter 4.01 K) except that killer-type traps within an inside jaw spread not to exceed 5 inches can be used when: 1. Set as to be partially covered by water at all times or, 2. Set under overhanging stream banks, or 3. Used as blind sets. (Rule 09-137 Chapter 4.01 K).(Blind set defined on page 29 of 09-137 Chapter 4).	In WMD 1-6 and 8-11 only	X	X

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
8. Permits use of lynx exclusion device (as described on page 30 Rule 09-137) on killer-type traps with a jaw spread not to exceed 7 ½ inches set on the ground in WMD 7, 14, 18, and 19 (Rule 09-137 Chapter 4.01 K).		X	X
9. Prohibits use of cage traps > 13 X13 inches (WMD 1-6 and 8-11) except for wildlife research, animal damage, or to capture black bears. Cage traps including suit-case style cage traps (i.e. Hancock Traps).(Rule 09-137 Chapter 4.01 J).	X	X	Rescind see #20
10. Restricts the use of snares: A. In WMD 1-6, and 8-11, prohibit the use of snares for any purpose other than to catch beaver and bear. B. Statewide, Title 12 § 12252 2A.Restrict types of snares for the purpose of trapping any wild animal or bird except as provided in section 10105, subsection 1 and section 12259.	X	X	X
11. Maintain 24hr/7 day a week phone line to report incidental catch of lynx	X	X	X

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
12. Mandatory reporting of any incidental lynx capture-(Rule 09-137 Chapter 4.01 2)		X	X
13. IFW assist with release of incidentally captured lynx	X	X	X
14. Veterinarian provides training on injury assessment and treatment and evaluates injuries on at least 2 lynx			X
15. Implement guidelines for care of lynx injuries, maintain network of veterinarians and rehabilitators to care for lynx, treat and rehabilitate any injured lynx	X	X	X
16. Trap tending requirements A. Foothold and cage traps: visit once every 24 hours B. Killer-type traps organized or incorporated place: visit once every 3 days C. Killer-type traps unorganized place: visit once every 5 days Title 12 §12255 1A, 1B		X	X
17. It is illegal to disturb or take a trap or wild animal from a trap. Title 12 §12256		X	X

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
18. Restricts the use of traps with teeth A. A person may not use auxiliary teeth on any leg-hold trap when set on land (Title 12 §12252 1). B. In WMD 12, 15-17, 20-26, unlawful to use any trap with teeth on the jaws unless completely covered by water from the opening day of the trapping season to the opening day of the deer firearm season (Rule 09-137 Chapter 4.01 J).		X X	X See #25
19. Requires use of at least 1 swivel on foothold trap chains in WMD 7, 14, 18, 19 (proposed rule)			X
20. Permit the use of cage traps statewide without size restrictions, except suit-case style cage traps (e.g. Hancock Traps) will continue to be prohibited for use during the beaver season, unless set for wildlife research, surveys, or removal of animals causing damage to property. (Proposed Rule).			X
21. Foothold trap size will not be restricted whether set on land or underwater (Proposed Rule)			X

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
22. Allow the use of wooden based rat traps set for weasels and squirrels recessed within a wooden box with a hole no larger than 2" in diameter statewide. Currently legal only in WMDs 7, 12-29. (Proposed Rule)			X
23. Permits the use of non-lethal cable restraints statewide (Proposed Rule).			X
24. Regulations to implement non-lethal cable restraints A. Tending time will be 24 hrs (Proposed rule) B. Require a cable diameter of 1/8 inch or 3/32 inch, a relaxing mechanical lock of a reverse-bend washer with a minimum diameter of 1 ¼ inches, at least one swivel, and two stops (Proposed Rule). C. Require cable restraints to be staked and free of woody vegetation ≥ ½ inch in diameter within reach of the restrained animal (Proposed Rule). D. Require cable restraints to have two stops : IFW will initially evaluate specification that include: One restricts loop size to no larger than 12" loop when			X

Regulation/Action Description	Required by Consent Decree	Existing Regulations/Actions Implemented Voluntarily by IFW	Regulations or Actions once Plan is accepted and Permit is Issued
fully open and one restricts loop size to no smaller than 2 ½ " loop when fully closed (Proposed Rule). The specifications regarding the maximum and minimum loop opening sizes will be developed in consultation with the Service, based on the best available scientific information, at the time the proposed rule is developed.			
25. Restricts the use of traps with teeth A. In all WMDs it will be unlawful to use any trap with teeth on the jaws unless completely covered by water from the opening day of the trapping season to the opening day of the deer firearm season.		X	

3.1 Project Description

Regulated Furbearer Trapping Program

IFW was given authority to establish open trapping seasons for furbearing animals in 1973 (Title 12, Chapter 301, §1960A). Furbearing animals include all mammals harvested primarily for their pelts. In Maine, these include coyote (*Canis latrans*), red (*Vulpes vulpes*) and gray fox (*Uracyon cinereoargenteus*), bobcat (*Lynx rufus*), fisher (*Martes pennanti*), marten (*Martes americana*), raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), short- (*Mustela erminea*) and long- (*Mustela frenata*) tailed weasels, mink (*Mustela vison*), otter (*Lontra canadensis*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), and opossum (*Didelphis virginiana*). Black bears are considered big game animals under IFW's current regulations. As such, trapping of bears is governed by a different set of regulations than the furbearer trapping program. Therefore, this incidental take permit will not address IFW's big game program or, more specifically, the black bear trapping regulations. In addition, the capture of a lynx in a foot snare set for bears in Maine has never been reported. IFW does not believe there will be incidental take of lynx related to bear trapping because the trap configuration includes a stop that prevents the cable from closing beyond 2 ½ inches (i.e., a lynx could pull its foot through the 2 ½ inch loop).

Maine's furbearer trapping season generally runs from mid-October through the end of December. Beaver have an extended trapping season and can be trapped statewide (Figure 3.1.1) through the end of March, and, in some parts of the state (primarily northern Maine), through the end of April. Trappers are allowed to continue trapping for muskrat, past the end of the general trapping season, in any area of the state where the beaver trapping season is open.

Furbearer trapping is a highly regulated activity and is governed by the laws and rules promulgated by Maine's legislature and IFW, respectively (Appendix 1 and 2). These regulations require all trappers (except a junior license holder) to attend a state-approved trapping education course, or show proof they have held a trapping license from another jurisdiction, before they can obtain a Maine adult trapping license for the first time (Appendix 1, Title 12, Chapter 917, §12201). Maine's trapper education course instructs students on the use of traps including, Best Management Practices for trapping, responsible trapping, and techniques to avoid the take of endangered and other non-target species, including lynx (Appendix 3). IFW's trapping education program was updated in 2008 and follows recommendations established by the Association of Fish and Wildlife Agencies (AFWA). The course is taught by experienced trappers (volunteers) and IFW staff who follow a predetermined course outline (Appendix 3).

IFW's regulations that govern the size of traps that can be used for a particular application (e.g., use of conibear "killer-type traps" over 5 inches is restricted; Appendix 2, 4.01 J), where traps can be set (Appendix 2, 4.01 K), and the methods by which traps can be set (Appendix 2, 4.01 J; Appendix 1, Title 12, Chapter 917, §12252) are

reinforced through efforts to educate trappers on proper trapping techniques. To minimize injury of individual animals caught in traps, all trappers must tend restraining-type traps (e.g., foot-hold traps) within 24 hours. Killer-type traps must be tended every 3 days when set in an organized town, and every 5 days when set in an unorganized town (Appendix 1, Title 12, Chapter 917, §12255). Trappers must identify all traps they set with their name and address (Appendix 1, Title 12, Chapter 917, §12254). Wildlife populations that are trapped are monitored using pelt-tagging records. All raw pelts must be tagged by an IFW agent or staff with the exception of weasel, raccoon, muskrat, skunk, and opossum (Appendix 2, 4.01 H). For all species except marten and fisher, there is no limit on the number of animals a trapper can take during a trapping season. Trappers are limited to harvesting only 25 marten and 10 fisher per year (Appendix 2, 4.01 G - 3).

Description of traps currently allowed for use in Maine

Trappers are currently allowed to use ordinary foothold traps (Figure 3.1.2), killer-type traps of the body-gripping variety (Figure 3.1.3), duffer-type foothold traps designed for raccoons (Figure 3.1.4), cage-type live traps (Figure 3.1.5), cage-type colony-traps designed for muskrats, snares set underwater for beaver only, suitcase-type cage traps for beaver (Figure 3.1.6), mouse-type snap-traps for weasel and red squirrel, and foot snares (cable restraints) for black bears. The jaw spread of killer-type traps varies by manufacturer. In general, most 110 and 120 killer-type traps have a 4½ inch jaw spread, 155 killer-type traps have a 5 inch jaw spread, 160 killer-type traps have a 6 inch jaw spread, 220 killer-type traps have a 7 inch jaw spread, 280 killer-type traps have an 8 inch jaw spread, and 330 killer-type traps have a 10 inch jaw spread. Killer-type snares are not permitted on land in Maine. With implementation of this Plan, the existing restrictions on foot-hold trap size could be rescinded through the rule making process.

Currently, trappers are not permitted to set lethal snares or non-lethal cable restraints on land in Maine. With implementation of this Plan, regulations could be promulgated that would allow trappers to use non-lethal cable restraints after a phased in process has been evaluated (See Appendix 13). However, lethal snares set on land would not be permitted or covered by this permit. Non-lethal cable restraints consists of a cable with a mechanical relaxing lock -- designed to hold and not kill the animal, stops, an in-line swivel, and are set so that a captured animal cannot be entangled in surrounding vegetation (Olson and Tischaefer 2004).

Description of Maine's Furbearer Harvest

Annually, approximately 22,400 furbearers -- not including weasel, raccoon, muskrat, skunk, and opossum – are caught and tagged (Table 3.1.1). Bobcat, coyote, and fox are also hunted; therefore, the harvest numbers for this species overestimate the number of animals taken by trappers (Table 3.1.1).

Maine's furbearer harvest occurs in 29 WMDs (Figure 3.1.1), with the highest number of tagged pelts coming from WMD 17 (1,833) and the fewest from WMD 27 (241 [Table 3.1.2]). Annually, approximately 6,000 licensed or otherwise authorized individuals could trap in Maine based on data from 2000-13. We assume under this permit a similar number would be authorized to trap (Table 3.1.3). We note that only a proportion of those actually trapped and not everyone is successful in capturing animals. Based on fur tag records, on average a minimum of 1,272 of these individuals trapped.

Table 3.1.1 Statewide harvest rates for Maine furbearers (2006-2012 trapping seasons). Mean harvest rates were calculated from pelt-tagging records for an even number of years (6 yr) in order to accurately portray marten and fisher harvest rates. Marten, and to a lesser extent fisher, have large annual fluctuations in their harvest rates; therefore, an equal number of good and poor years is needed to calculate their mean harvest rates. Bobcat, coyote, and fox can be hunted as well as trapped. Coyote and fox harvests include both trapped and hunter killed animals.

Furbearer	Average Annual Harvest
Bobcat	331 (120[a])
Fisher	1,271
Marten	2,401
Red Fox	1,002
Grey Fox	220
Coyote	1,774[b]
Beaver	10,270
Mink	1,866
Otter	782

[a] Average annual number of bobcat trapped in Maine. The remainder are taken by hunters.
[b] Unknown proportion trapped vs. taken by hunters.

Figure 3.1.1 Maine's Wildlife Management Districts (WMDs).

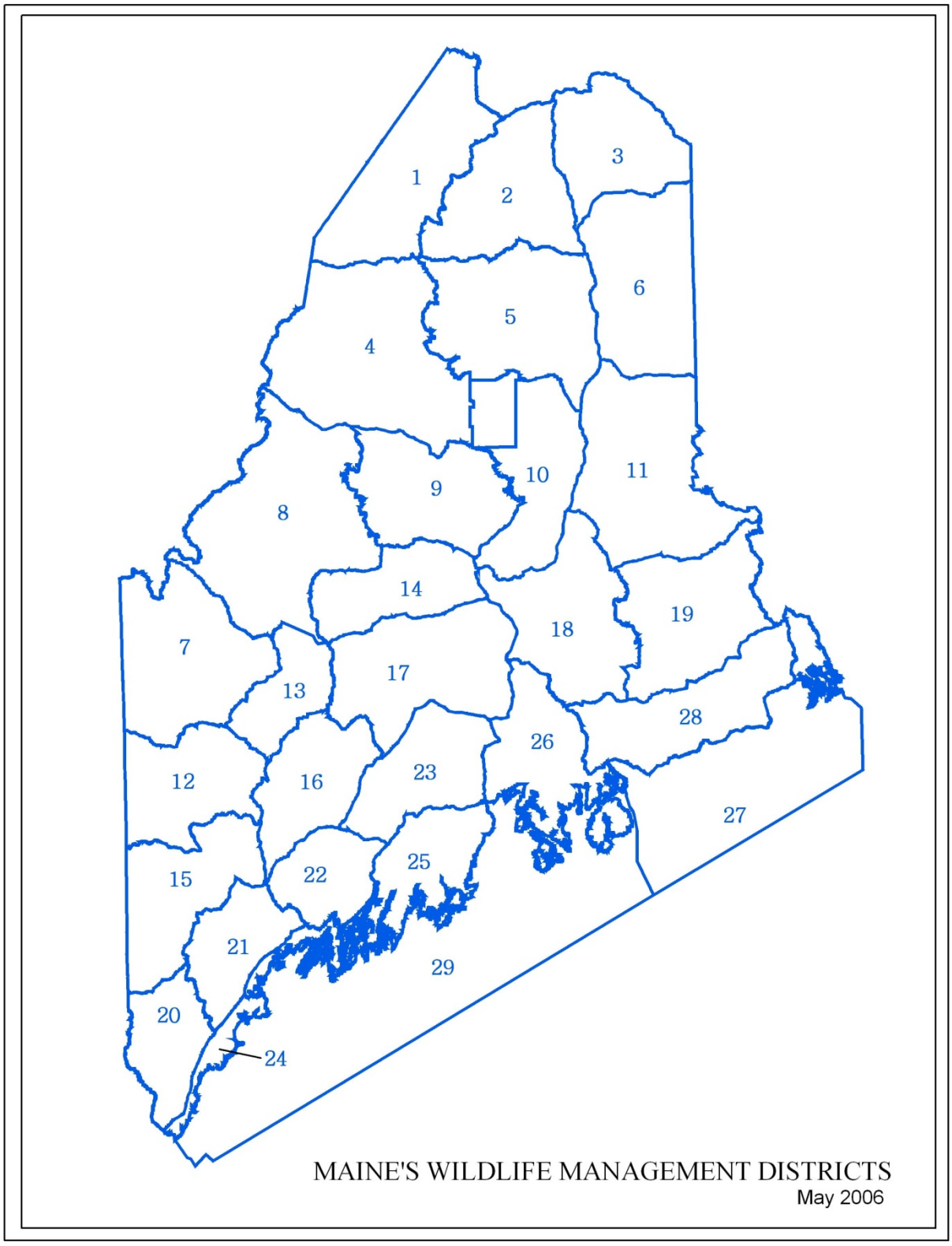
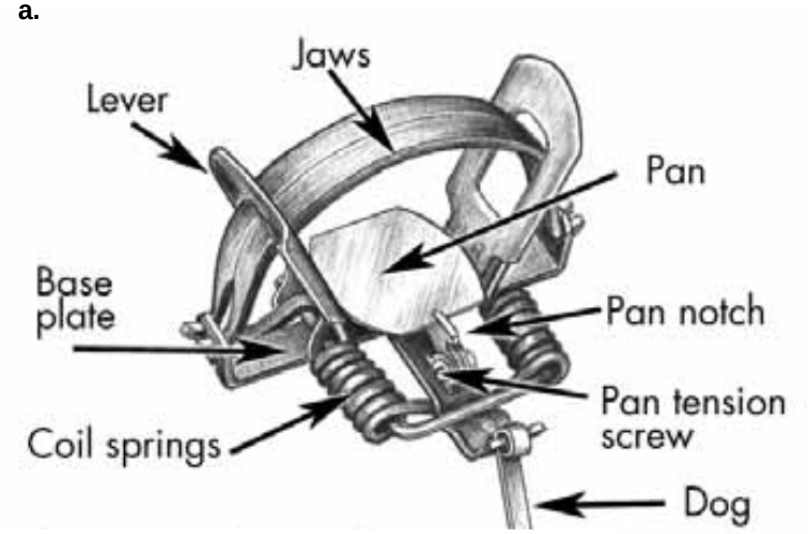
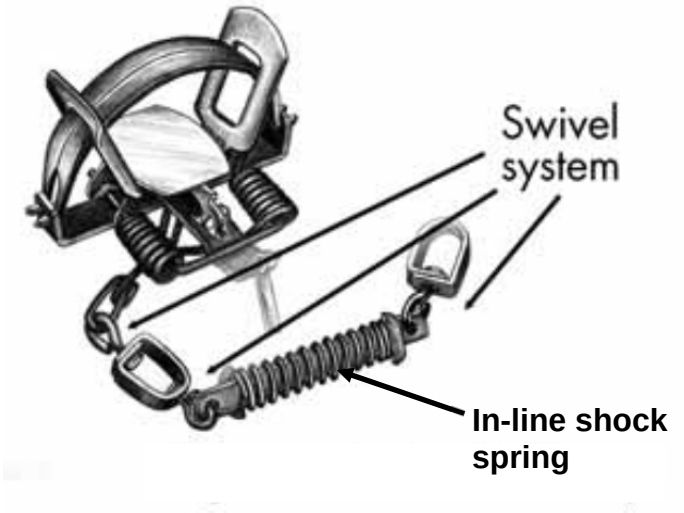


Figure 3.1.2 Diagram of a foothold trap and its various parts (AFWA 2006a).

a.



b.



c. Foothold trap anchored with stakes (AFWA 2006a).

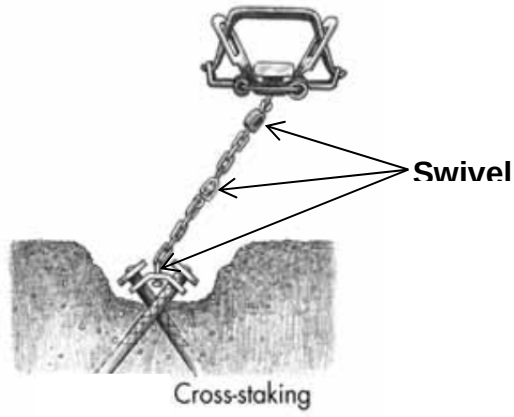


Figure 3.1.3 Diagram of a standard killer-type trap and its various parts (AFWA 2006a).

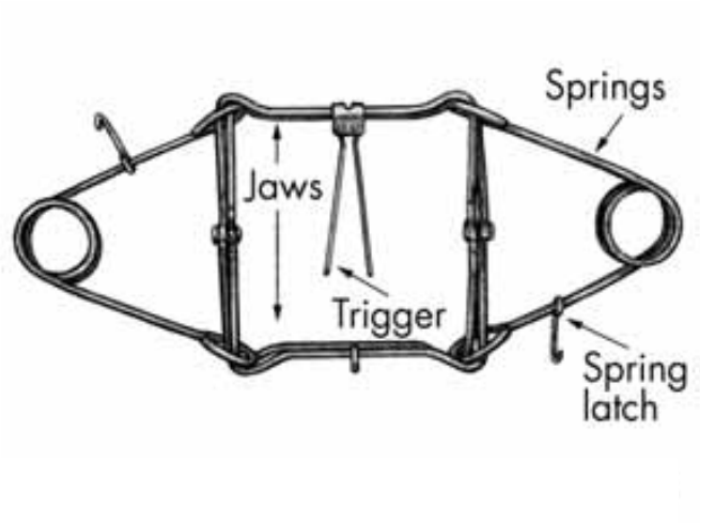


Figure 3.1.4 Diagram of a duffer trap designed for raccoons (AFWA 2006c).

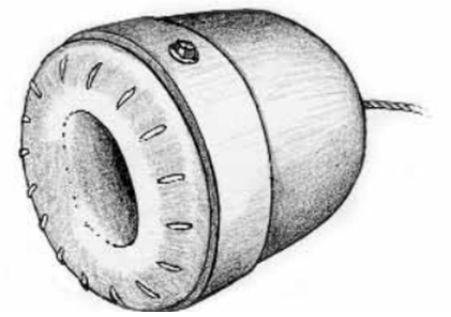


Figure 3.1.5 Diagram of a wire box or cage trap (AFWA 2006a).

Figure 3.1.6 Hancock, suitcase type live trap for beaver (AFWA 2007).

Table 3.1.2 Mean harvest rates for furbearers for each of Maine's Wildlife Management District (WMD). Mean values are calculated using pelt-tagging records from the 2006-07 to 2011-12 trapping seasons. Marten, and to a lesser extent fisher, have large annual fluctuations in their harvest rates; therefore, an equal number of good and poor years is needed to calculate their mean harvest rates. Bobcat, coyote, and fox can be hunted as well as trapped. Bobcat, coyote and fox harvests include both trapped and hunter killed animals.

WMD	Beaver	Otter	Mink	Bobcat	Coyote	Grey Fox	Red Fox	Fisher	Marten
1	186	3	1	0	12	0	3	15	138
2	99	3	4	0	17	0	4	30	194
3	247	3	16	0	30	0	26	66	83
4	153	10	19	0	39	1	13	28	252
5	251	13	29	0	36	0	10	53	311
6	543	23	98	2	71	0	40	109	173
7	155	13	43	18	126	4	47	51	142
8	291	25	33	11	70	1	19	57	237
9	136	24	47	2	48	1	14	23	173
10	243	25	58	2	32	0	15	30	141
11	861	56	115	19	84	0	53	56	187
12	414	17	115	17	120	10	55	22	9
13	188	13	66	8	60	1	30	24	10
14	154	16	60	8	46	0	21	40	97
15	569	33	91	21	120	64	81	61	2
16	396	30	127	17	65	5	32	65	2
17	1191	70	203	26	162	2	122	110	19
18	813	63	69	27	90	1	37	27	54
19	487	58	44	23	84	0	25	19	165
20	229	16	30	9	55	46	64	64	0
21	242	21	53	5	35	30	32	80	1
22	328	23	98	9	41	9	32	72	0
23	610	40	154	28	105	3	50	47	2
24	116	14	62	4	39	27	44	56	0
25	207	28	69	7	18	0	16	31	4
26	446	46	62	20	73	0	37	20	3
27	116	16	15	16	41	0	29	6	1
28	396	55	20	19	56	0	35	17	14
29	137	24	28	11	38	0	10	1	0

Table 3.1.3. Summary of ~6,000 licensed or otherwise authorized trappers covered by this Plan based from IFW's 2000-13 license data.

Entities Covered by Permit	Average number
Resident Trappers	2,123
Non-residents Trappers	73
Junior Resident Trappers	204
Resident Apprentice Trappers	25
Non-resident Apprentice Trappers	1
Over 70 year old Complimentary License	42
Native American Complimentary Lifetime License[1]	1,712
Lifetime Trapping License[2]	1,655
Game Wardens	106
Wildlife Biologists	38
Total	5,977
ADC Agent[3]	85
PM Trappers[3]	27
Landowners	Unknown[4]

[1]Sum of lifetime license (started in 2009) that allows Native American's to hunt, fish, or trap off tribal lands and likely includes individuals that although they are licensed to trap, do not.
[2]Sum of lifetime trapping licenses sold between 2000 and 2013 but excludes anyone who is 90 years or older based on date of birth.
[3]Required to have a trapping license, so these individuals are already included in the categories and total above.
[4] Landowners as defined in Title 12 § 12201 Part 2. are permitted to trap on their own land without a license. Although currently unknown, IFW estimates that there are less than 100 trappers in this category. IFW will collect names and addresses of these individuals when they register their fur, so outreach materials can be sent to them in the future.

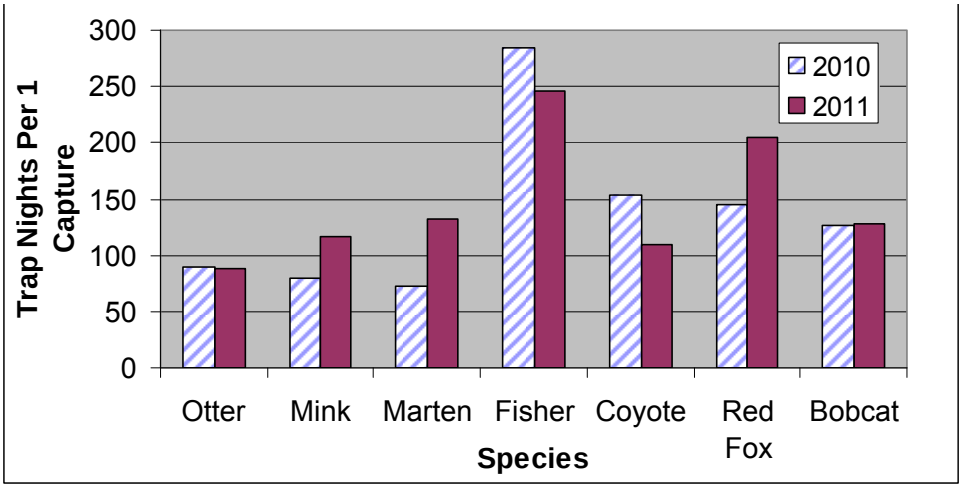
Trapper Effort

In 2010, IFW renewed its collection of trapper effort information. Since 2010, IFW annually mails data collection forms to trappers prior to each trapping season and asks that they mail in completed forms at the end of the season. This is a voluntary effort by the trappers, and, over the past two trapping seasons (2010-2012), approximately 10% of all licensed trappers have returned their completed forms. IFW requests that each trapper record the number of traps and days set for each species for each Wildlife Management District, and the number of each species captured. From the reports, IFW tracks a number of trapper-effort metrics, including the number of trap-nights (e.g., 2 traps set for 1 night = 2 trap nights) needed to catch specific furbearers (Figure 3.1.7). In general, traps set for marten and fisher are killer-type sets and those set for coyote, fox, and bobcat are foothold traps.

Based on fur registration data collected between 2005-13, on average there are 396 trappers that set killer-type traps for marten and fisher, 318 trappers that set foothold

traps for coyote, fox, and bobcats in WMDs 1-11, 14, 18 and 19 (lynx range in Maine). However, some trappers target all 5 species, on average 613 trappers set traps for marten, fisher, coyotes, bobcat, and fox. From voluntary trapper effort surveys, IFW estimates that there are approximately 110,000 foothold trap nights and 150,000 killer-type trap nights set each year in lynx WMDs.

Figure 3.1.7 Statewide trapper effort, expressed as the number of traps nights spent to capture the target species. Trap nights are defined as one trap set for a 24-hour period. Data are from the fall trapping season in Maine (mid-October through December 31) in 2010 and 2011.



3.2 Incidental Take of Lynx from Furbearer Trapping Program

Aquatic Sets

Although lynx have not been reported in traps set for aquatic furbearers, IFW provides a summary of the methods permitted to capture aquatic furbearers below. IFW has a contingency plan to address any potential future take of lynx in aquatic sets in the Changed Circumstance Section 5.4 of this Plan (see Changed Circumstance #2 and #3).

Beaver

To date, trappers have not reported the capture of a lynx in traps set for beaver in Maine. Beavers are Maine's most frequently trapped mammal (Table 3.1), and most traps for beaver are set under water or under ice. These traps pose little risk of incidental capture of lynx. Beaver sets may incorporate foothold traps (# 3 or #4), large killer-type traps (e.g., 330), or cable snares set underwater in a manner to quickly kill beaver. Hancock traps are a suitcase style cage-type traps set in the water to live

capture beaver (Figure 3.1.6). Traps set for beaver are commonly baited with aspen or other hardwood branches and set so as to be approached from the water.

Otter

Otter trapping does not pose a risk of incidental capture to lynx. Otter are caught by trappers setting traps specifically for otters or incidentally captured by beaver trappers; Trapping equipment and techniques used to capture otters is similar to that used in beaver trapping where traps are set under water. Therefore, lynx are not likely to be caught in traps set for otter; to date no lynx have been reported as an incidental capture in traps set for otter.

Muskrat

Muskrat trapping poses little risk of incidental capture to lynx. Muskrat are very common aquatic furbearer in Maine and are frequently trapped. Small foothold traps (e.g., #1 or #1½), 110 killer-type traps, and occasionally colony box traps are used to capture muskrats. These trap sets are not attractive to lynx because they are baited with vegetation and the size of the foothold trap used may be too small to hold a lynx. To our knowledge, no lynx have been caught in traps set for muskrats in Maine.

Mink

Mink trapping poses little risk of incidental capture to lynx. Mink are trapped using small foothold traps and killer-type traps. As with other semi-aquatic furbearers, underwater and drowning sets are often used for mink. On land, mink sets are made in runways, expected travel paths (e.g., along a stream bank), and with or without scent or bait for attractants. In WMDs where lynx occur, current trapping regulations (Appendix 2, 4.01 K) require that all killer-type traps be set 4 feet above the ground, except killer-type traps with openings 5 inches or less (e.g., #$_s$ 120, 110, or 155) can be set on the ground if partially covered by water at all times, under overhanging stream banks, or in blind sets that use no bait, lure, or visible attractor except animal droppings or urine.

Killer-type traps set on land for mink are unlikely to capture a lynx, since these traps are set in runways along stream banks without attractors (e.g., lures, feathers, meat). If a lynx was to encounter these traps, a lynx would be more likely to step over the trap, since the trap is less than 5” off the ground and is set without an attractor. However if this changes or new information becomes available, IFW has a contingency plan to address any potential future take of lynx in the Changed Circumstance section of this Plan (see Changed Circumstance #2 and #3).

Upland sets

Fox and Coyote

Most of the incidentally trapped lynx in Maine have been captured during fox and coyote trapping. Fox and coyote are caught using foothold traps (e.g., #1.75 and #2 coil spring traps; Figure 3.1.2) and are primarily attracted to these traps with scent or food based lures. These traps are commonly attached by chain to stakes driven into the ground, or by chain attached to a drag (typically a large double hook meant to become entangled in trees or brush). Lynx captured in these trap sets are usually released with little or no injury (see Section 4.0). Cage traps are not used by trappers targeting red fox and coyotes, because most will not enter cage traps.

Bobcat

Bobcat trapping could result in the incidental capture of lynx due to the similarity in bobcat and lynx behavior and trapping techniques; however a lynx capture in a trap set for bobcats has not been reported. The geographical distributions of lynx and bobcat overlap at the southern-most extensions of the lynx's range in Maine. It is in this area where lynx have the greatest chance of incidental capture in traps set for bobcats. Although, killer-type traps and foothold traps can be used to catch bobcats, only a few trappers target bobcats. Most bobcats are caught incidentally by canid trappers that set foothold traps. Approximately 44% of bobcats harvested from 1999 to 2005 were harvested by trappers and the rest were killed by hunters. Lynx could also be captured in cage traps set for bobcats (Figure 3.1.5); however, most lynx caught in cage traps should be able to be released without injury. In 339 captures of lynx in cage traps during IFW's lynx study, the majority (337 out of 339 captures) of lynx examined by biologists had no trap related injuries; the other two lynx had minor injuries.

In 1999 and 2002, two trappers targeting canids caught a lynx/bobcat hybrid. At the time, lynx/bobcat hybrids were unknown. Biologists that examined the animals concluded they had the general appearance of a bobcat, but some features (e.g., white hairs under the tail, long ear tufts) indicated that the animal might be a hybrid. Genetic analyses latter confirmed that these were hybrid animals resulting from the mating of female lynx with a male bobcat (Homyack et al. 2008, Schwartz et al. 2004).

Marten and Fisher

Lynx may be captured in traps set for marten and fisher. In Maine, marten and fisher are most often trapped using killer-type traps (e.g., 120 or 220; Figure 3.1.3) baited with meat and/or scent lures. To prevent the incidental capture and lethal take of non-target species, such as lynx and migratory birds, current furbearer regulations require trappers to cover the bait so that is it is not visible from above. In addition, IFW agreed as part of the Consent Decree to modify marten and fisher trapping regulations in WMDs 1-11 to further avoid the incidental capture of lynx. In these WMDs, killer-type traps with an

inside jaw spread ≤ 8 inches[5], if set on land, must be set at least 4 feet off the ground or snow level (except as described under mink trapping) on small diameter (< 4 in [10 cm]) leaning poles (≥45°) set 4 feet away from any bank, in an area that is free of objects greater than 4 inches in diameter within 4 feet of the trap (Appendix 1). In 2010, IFW extended killer-type trapping regulations to WMDs 14, 18, and 19 where lynx were recently documented, and in 2011 allowed killer-type traps (<8" jaw spread) to be set on the ground in a lynx exclusion device (Figure 5.2.1). Following regulatory changes, no lynx have been caught in a killer-type trap that was legally set in Maine. If a permit is issued, IFW will maintain these regulations and will also allow killer-type traps (<8" jaw spread) to be set on the ground in any WMD where lynx occur, if set with an approved lynx exclusion device.

None of the 74 lynx equipped with radiocollars and monitored during the trapping seasons were captured in a killer-type trap set for marten or fisher; also none of the collar signals were lost during the trapping season. Prior to regulatory changes that restricted the placement of killer-type traps for marten and fisher (1999-2006), 51 radiocollared lynx were monitored during the trapping season in 46 different towns (Figure 3.2.1). In the 12 towns where the majority of lynx locations occurred (Figure 3.2.1 – towns marked in green), 1,607 marten and 87 fisher were harvested without capturing any of the 51 radiocollared lynx. After regulatory changes to killer-type traps (2007-2011), 23 radiocollared lynx were exposed to killer-type traps in 58 towns (Figure 3.2.2). In the 22 towns where the majority of lynx locations occurred (Figure 3.2.2 - towns in green), 424 marten and 53 fisher were harvested without capturing any of the 23 radiocollared lynx (Table 3.2.1). On average, a marten is captured every 103 trap nights (i.e., 1 traps set for 2 nights = 2 trap nights). Thus, none of the radiocollared lynx were captured despite an estimated 209,193 trap nights that marten traps were sets in a subset of the area occupied by 74 radiocollared lynx during the trapping season. These data further supports IFW's assertion that most incidental lynx captures are reported and that the risk of capture in killer-type traps set for marten and fisher is low.

[5] Statewide, killer-type traps with an inside jaw spread >8 inches (e.g. 330) is only allowed when trapping beaver.

Figure 3.2.1 Locations of 51 radiocollared lynx in northern Maine during the 1999 to 2006 regular trap season when killer-type traps were set for marten and fisher. The area in green was used to estimate exposure of lynx to traps (i.e., number of marten and fisher harvested and number of trappers).

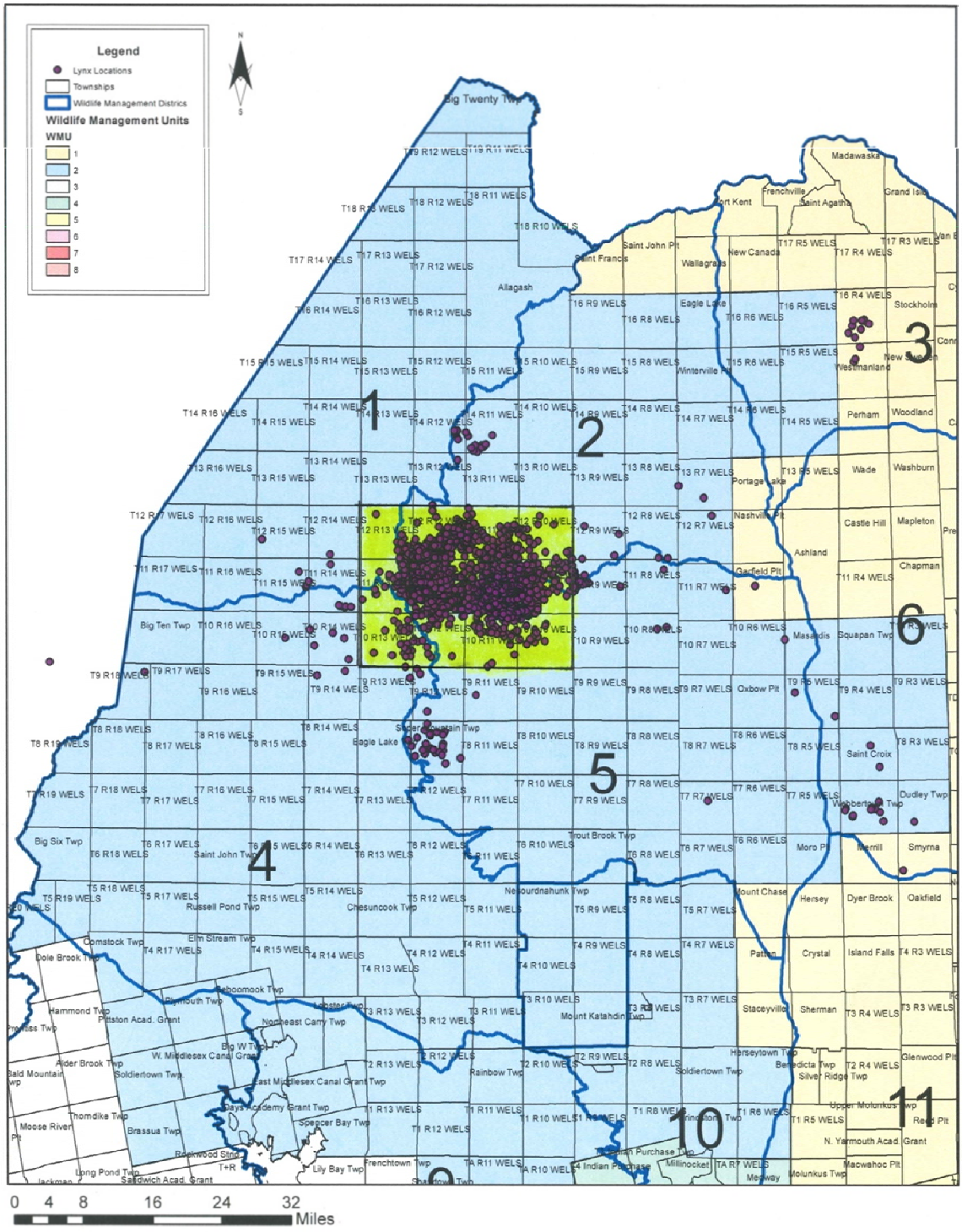


Figure 3.2.2 Locations of 23 radiocollared lynx in northern Maine during the 2007 to 2011 regular trap season when killer-type traps were set for marten and fisher. The area in green was used to estimate exposure of lynx to traps (i.e., number of marten and fisher harvested and number of trappers).

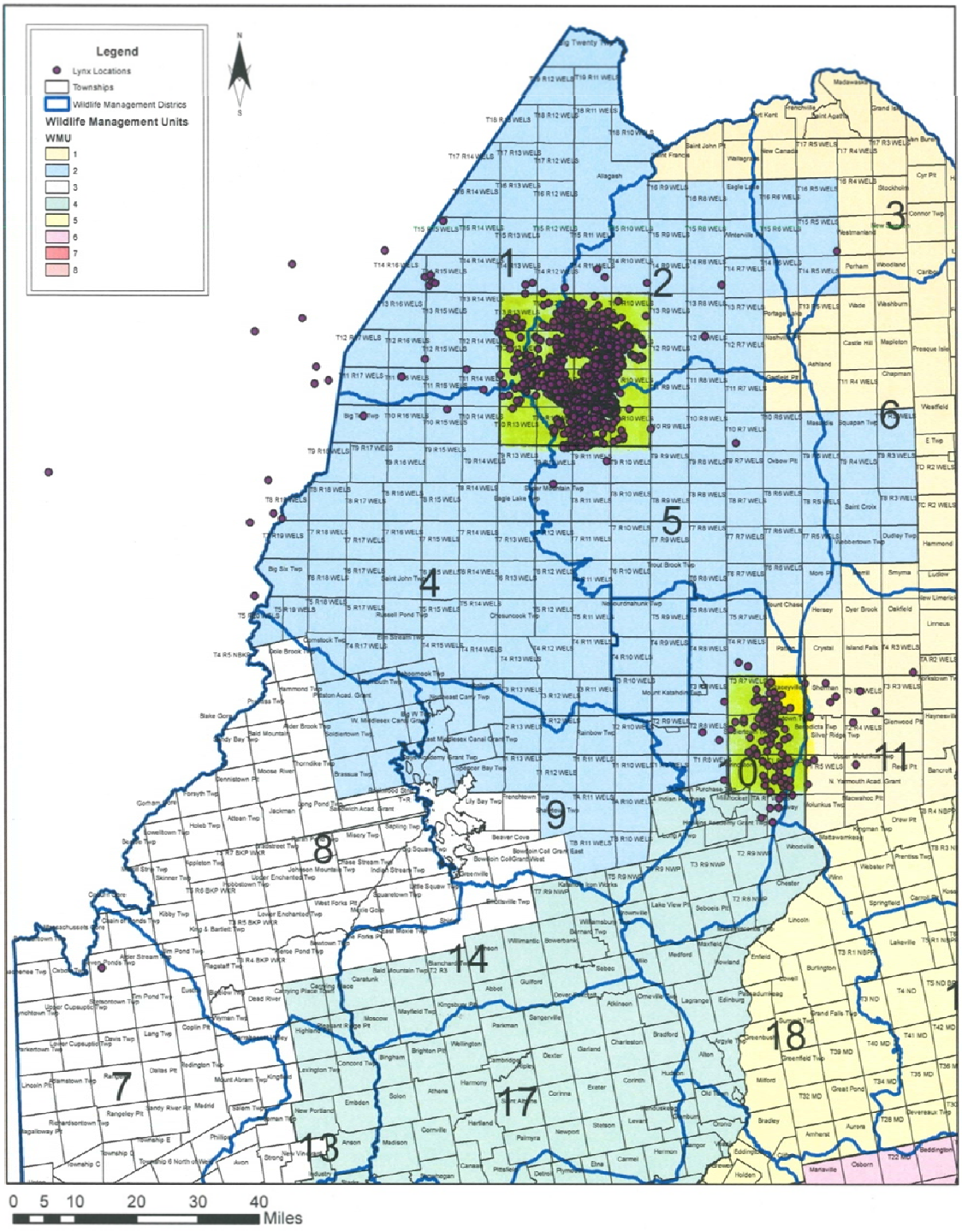


Table 3.2.1 Summary of the exposure of 74 radiocollared lynx in Maine monitored during the regular trapping season (end of October to end of December) to killer-type traps set for marten and fisher without being captured in a killer-type trap.

Time Period	Number of radioed lynx	Number of radioed lynx captures in killer-type traps or lost	where the majority of lynx locations occurred [a] # marten harvested	# fisher harvested	Estimated trap nights
1999-2006	51	0	1,607	87	165,521
2007-2011	23	0	424	53	43,672

[a] A subset of towns with radiocollared lynx was used to estimate lynx exposure to traps (i.e., 12 of 46 towns prior to regulatory changes and 22 of 58 towns after regulatory changes).

Weasels

Weasel trapping poses little risk of incidental capture to lynx. Long and short tailed weasels are very common furbearer in Maine and are frequently trapped. Weasels are trapped using a killer-type rat-trap recessed in a wooden box (Appendix 2). Lynx are unable to access the trap in the wooden box, thus unable to be caught in a trap set for weasels. Trappers have not reported the capture of a lynx in traps set for weasels.

Raccoon

Raccoon trapping poses little risk of incidental capture to lynx because raccoon densities are relatively low in areas where lynx occur and raccoons are seldom specifically targeted by trappers. Raccoon densities are often higher in semi-urban settings. In these settings, they are frequently targeted as pests by ADC trappers who use cage traps to remove them. Lynx may be caught in large cage traps; however, traps set to remove nuisance animals are normally set near human dwellings and are seldom set in areas frequented by lynx. Raccoons are trapped using small foothold traps, enclosed foothold traps (e.g., egg-trap or duffer; Figure 3.1.4), killer-type traps (e.g., 220; Figure 3.1.3), and cage traps (e.g., Havahart® cage traps; Figure 3.1.5). During the first 8 years of trapping in the lynx study (1999 to 2007), only 2 raccoons were caught in foothold traps. Given their low densities in areas where lynx occur, the lack of interest in trapping raccoon in northern Maine, and the high species specificity of some raccoon traps (e.g., enclosed foothold traps), lynx are highly unlikely to be caught in a trap set for a raccoon in Maine.

Animal Damage Control (ADC) Program

IFW is authorized under Maine's statutes (e.g., MRSA §10053.8) to coordinate and administer an ADC program (Appendix 10). The objective of this program is to resolve conflicts between people and wildlife using strategies and methods which offer the best chance for a permanent or long-term solution, and, in the process, conserves wildlife

resources when practical and possible. IFW encourages the use of preventive measures to reduce the occurrence of human/wildlife conflicts. However, selective removal of wildlife that pose a significant threat to other wildlife, fisheries, human health, safety, or property is used when preventive measures are not sufficient.

ADC trappers are only permitted to set traps to remove wildlife causing damage to property if they hold a valid Maine trapping license. ADC trappers are permitted to set traps throughout the year and are only permitted to use traps allowed during Maine's regulated trapping season, with the exception that ADC trappers can set cage and Hancock traps anywhere in the state. ADC trappers are not permitted to set lethal snares unless completely submerged underwater for aquatic furbearers.

There is very little overlap between trapping activities conducted under IFW's ADC trapping and fur trapping. The potential for incidental capture of lynx by ADC trappers is low. Much of IFW's ADC efforts in the lynx range are centered around beaver trapping. As explained earlier, beaver trapping poses few risks to lynx. Box traps set for raccoons near people's residences could potentially catch a lynx, but it seems unlikely lynx would frequent residential areas or farms and risk encountering dogs. A lynx has never been incidentally caught in IFW's ADC program as it is currently structured. Although IFW does not anticipate any lynx to be incidentally caught as a result of trapping conducted under its ADC program, IFW is seeking coverage in the event that a take occurs and will address any future take as described in the Changed Circumstance Section of this Plan (see Changed Circumstance #2 and #3).

Predator Management (PM) Program

IFW's PM program was initiated in 2010 by the Commissioner of IFW to reduce the impact of predation by coyotes on wintering deer in deer winter areas (DWA). IFW Regional Biologists identify areas currently supporting deer for coyote reduction. Some of these areas (see below for discussion) may overlap with areas used by lynx in WMDs 1-11, 19, and 28 and northern sections of WMDs 12-14 and 18 (Appendix 9). There are three components to the PM program, but trapping is the only component that will be covered by this permit. As previously described for the furbearer trapping program, most lynx that are incidentally caught in foothold traps are caught by coyote and fox trappers. Trappers are restricted to using only equipment and methods currently authorized by IFW's trapping regulations. This program involves contracts between IFW and qualified licensed trappers to trap coyotes in or adjacent to DWAs within the current season framework.

Although approved in 2010, the trapping component was first implemented in 2011 with 13 trappers participating. In 2012, 27 trappers were permitted to set traps from October 17 through November 30 in 26 priority wintering areas and 18 trappers actually set traps. The trapping component of the PM program was intentionally kept shorter in lynx area than the normal coyote trapping season, which runs from mid-October to December 31. IFW did not want to direct its contractors to trap coyotes in December, which could increase the overall trapping effort for coyotes above that of the regular

trapping season, and, in turn, incrementally increase the possibility of catching a lynx. During the regular furbearer trapping season, trappers often pull their foothold traps for coyotes when the ground starts to freeze and trapping becomes more challenging.

Trappers enrolled in the PM program are generally trappers that currently trap in these areas. The intent of the PM is not to increase overall coyote trapping effort, but rather to redirect current coyote trapping efforts to DWAs. These DWAs consist of mature forests where snowshoe hare often occur at low densities (Robinson 2006, Fuller et. al. 2007). Lynx, which rely on snowshoe hare as their primary prey item, may not be as common in mature forests. PM trappers likely have a lower probability of incidentally catching a lynx than when they normally trap for coyotes. Alternatively, the probability of catching a lynx will also be influenced by the amount of favorable snowshoe hare habitat in the landscape surrounding a particular DWA and the distance traps are set away from DWAs. If snowshoe hare are abundant in the landscape surrounding a deer wintering area, lynx may be present in these areas.

Because coyote trapping effort is not expected to increase through implementation of this program, IFW does not anticipate incidental capture (i.e., take) of lynx beyond what is anticipated in the furbearer trapping program. In fact, the number of incidental lynx captures in 2011 and 2012 was within the range reported before the PM program was implemented (Table 4.1.4). In addition, the number of coyote trappers and number of coyotes tagged declined in 2011 and 2012. Prior to Maine's PM program (1999-2010), an average of 514 trappers tagged 2,000 coyotes each year versus an average of 437 trappers tagging 1,730 coyotes in 2011 and 2012. However, if monitoring of lynx take indicates that this has changed, this Plan incorporates a strategy to address any increase in incidental take of lynx attributed to its PM program (See Change Circumstance #3 and #4 in Section 5.4).

3.3 How legal and illegal trapping action are covered by the Plan

IFW acknowledges that there are a variety of factors that determine whether a trap or trapper complies with trapping regulations. IFW is seeking coverage for any legally set trap where a lynx is captured. IFW has put forth a Plan which outlines a number of actions and regulations to minimize the incidental take of lynx in traps (see Table 3.0). Any lynx caught in a trap that complies with regulations and measures outlined in Table 3.0 shall be considered legal for purpose of calculating and mitigating take.

IFW's intent is for the permit authorization to apply to all licensed or otherwise authorized trappers who comply with trapping regulations and this Plan. However, if lynx are captured, injured, or killed in traps or trap sets due to key regulations not being followed, then IFW does not intend permit authorization to extend to those captures. Rather, those trappers would be subject to prosecution for violation of State and Federal law. For example, IFW should not be held accountable for flagrant violations such as a person intentionally trapping and killing a lynx, clearly in violation of State regulations and law. We note, however, that not all violations of trapping regulations will increase the risk of capture, injury, or fatality of lynx. In those cases, if lynx are captured and a

relatively small infraction (that did not contribute to catching the lynx) of the trapping regulations is documented (e.g., failure to properly label a trap), the permit authorization would still apply and the capture event would count towards the authorized take under the Plan. However, if lynx are captured and a violation of rule or law (Table 3.0) is found to have caused or contributed to the capture or subsequent injury or fatality, then the permit authorization would not apply and the capture will not count towards authorized take under the plan. Several different scenarios are provided below as illustrations:

- A lynx is captured in a legally set trap and subsequently shot - the capture would count towards IFW's take allocation for capture events, but the mortality would not count towards IFW's lethal take allocation.
- A lynx caught in a legal set by a trapper who failed to sign his license or label his traps – the capture would count towards IFW's take allocation for capture events.
- A trapper fails to report a lynx capture and the lynx subsequently dies or sustains a severe injury due to the capture event - the capture would count towards IFW's take allocation for capture events, but the injury or mortality would not count towards IFW's lethal or severe injury take allocation. The rationale is that had the trapper reported the incidental capture, IFW staff would have assessed and treated any injuries prior to release such that the lynx would not have died or sustained a severe injury. Therefore, lack of reporting was a violation that ultimately increased the probability of the lynx dying or sustaining a severe injury.
- A trapper fails to check his trap within the mandatory 24-hour tending time and the trap captured a lynx that subsequently dies or sustains a severe injury - the capture would count towards IFW's take allocation for capture events, but the injury or mortality would not count towards IFW's lethal or severe injury take allocation. The rationale is that had the trapper properly checked the trap, the lynx may have survived and could have been released. Therefore, lack of compliance with the tending times was a violation that ultimately increased the probability of the lynx dying or sustaining a severe injury.

Every capture event will be evaluated by IFW as described in Section 5.2 IM2, PI2, PI3. This information will be used to determine whether the incidental capture counts towards the incidental take permitted in this Plan. Capture events resulting from violations of state law (i.e., those proposed not to count against IFW's incidental take authorization) will be independently evaluated for concurrence by USFWS within 30 days of receiving the final report. Disputes will be resolved at the annual meeting with the USFWS.

If anytime during the permit period IFW adds or modifies existing regulations or actions to further minimize or avoid take, IFW will update Table 3.0 to reflect changes.

4.0 Potential Biological Impacts / Take Assessment

Summary

The majority of the anticipated incidental take of lynx from IFW's 3 programs will be from capture events related to legally set foothold traps. Lynx may also be captured using other techniques such as non-lethal cable restraints and cage traps. Results from IFW's radiotelemetry study of lynx demonstrate that the majority of lynx caught in cage traps or foothold traps will experience minor injuries that do not affect subsequent survival and reproduction. In addition, IFW has examined lynx caught by fur trappers, including several that were equipped with radio collars. Data from these examinations also supports the low injury and high post release survival of lynx from foothold traps. Based on other studies, IFW anticipates non-lethal cable restraints will also only result in minor injuries. Given the minimization measures put in effect with this ITP, IFW anticipates a low level of lethal take of lynx in traps.

IFW is requesting a permit to cover the incidental take of up to 195 lynx over the next 15 years that may occur as the result of otherwise lawful trapping activity in Maine. Take is defined by the ESA as activities that harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect federally protected wildlife within the United States. Of the 195 lynx that may be captured in legally set traps, IFW anticipates that most can be released with little or no injury; therefore, IFW is requesting a permit to cover potential severe injury of up to 9 lynx and the potential death of up to 3 lynx (lynx that are injured and cannot be released into the wild would be considered a mortality) over the next 15 years.

To evaluate the population impacts for the potential lethal take (i.e., 3 lynx over 15 years), IFW ran a demographic model (Program Vortex) using data from lynx in Maine. The results showed that the level of lethal mortality anticipated in this Plan will not affect population growth. In fact, the Vortex model showed that an annual lethal take 5 times higher than anticipated did not cause Maine's lynx population to decline (Appendix 7).

Maine's lynx population is likely at a record high number. A recent population estimate indicates between 750 and 1,000 adult lynx occupied northern and western Maine (WMDs 1-11) in 2006 (Vashon et al. 2012). The surge in lynx numbers is attributed to record levels of optimal habitat for lynx provided by the regrowth of spruce and fir forest following the 1980s spruce budworm infestation and subsequent clearcutting of affected trees. A recent habitat model for a portion of lynx range (WMDs 4, 5, 8, 9, and 14) indicates that the amount of high quality hare habit (HQHH) peaked in 2009 and will remain relatively stable through 2022. Although the model predicts a decline in HQHH as budworm stands mature, this decline will be offset by increases in HQHH due to recent heavy partial harvesting activity. However, the model predicts future HQHH may occur in smaller more isolated patches that may support lower lynx densities (Simons 2009). This could change if the major spruce budworm defoliation event expected by 2022 occurs at the anticipated level.

4.1 Direct and Indirect Impacts

Impacts from Proposed HCP Covered Activities

IFW is requesting incidental take coverage for lynx incidentally captured during lawful trapping activities that occur through the state-authorized furbearer trapping, PM, and ADC Programs. As previously explained, the majority of anticipated incidental take will likely occur as the result of trapping efforts using foothold traps that target capture of coyotes, foxes, and bobcats by fur trappers, but some may occur through other activities such as the ADC and PM programs. The impacts of these trapping techniques on lynx are explained below.

Impacts anticipated from fur trapping: Any incidental take of lynx from the fur trapping program could occur from mid-October to the end of December. Trappers would be permitted to use foothold traps, killer-type traps, and cage traps to capture furbearers. Non-lethal cable restraints will be permitted only after IFW reviews the impacts of this device in the ADC/PM program. The potential impacts from cable restraints are described below.

Impacts anticipated from the ADC program: Any incidental take of lynx from ADC activities could occur year round. ADC trappers are permitted to use foothold traps, killer-type traps, and cage traps. Most ADC activities in lynx areas occur where the probability of capturing a lynx is low (i.e., aquatic traps primarily set for beaver or near dwellings). To date, no lynx have been caught by trappers during ADC activities. Although IFW does not anticipate any additional take by ADC trappers during the permit period, IFW is requesting coverage for ADC trappers in the rare event that a lynx is captured. ADC trappers may be permitted to set non-lethal cable restraints for coyotes; the potential impacts of non-lethal cable restraints are described below.

Impacts anticipated from the PM in Maine's ADC program: Any incidental take of lynx from PM activities could occur from mid-October to November 30th. We do not anticipate any take from killer-type traps in the PM program since killer-type traps are not permitted. However, foothold traps and non-lethal cable restraints (described below) will be permitted. We anticipate the take of lynx in foothold traps by PM trappers to be similar to current levels. If new information becomes available or circumstances change, this Plan includes contingencies in the Changed Circumstance Section.

Impacts from non-lethal cable restraints: IFW would implement the use of non-lethal cable restraints with a phase-in approach by first training and evaluating their use by PM or ADC trappers prior to allowing their use by fur trappers during the regular trapping season. IFW would require a 24-hour tend on cable restraints which is consistent with trapping regulations governing other non-lethal restraining devices in Maine. Furthermore, IFW would stipulate that cable restraints could only be set by certified trappers (i.e., pass an IFW training course on how to properly set a cable restraint and avoid lynx captures; See Appendix 13).

IFW does not anticipate more lethal take or severe injuries by permitting this device since ISO scores from other studies are low (Olson and Tischaefer 2004, Munoz-Igualada et al. 2010). Although there is the potential for trapping levels to increase by allowing the use of cable restraints, requiring trappers to check their sets every 24 hours may limit the use of cable restraints especially in December when trappers generally shift to killer-type traps that have a longer tend time. In addition, some trappers may simply replace one device (e.g. foothold traps) for the other (e.g. non-lethal cable restraints). Regardless, IFW's take request should be sufficient to account for any increase in trapper effort from cable restraints. However, if new information becomes available or circumstances change regarding trapper effort or injuries, this Plan includes contingencies in the Changed Circumstance Section (Section 5.4).

Non-lethal cable restraints are currently legal to use in several states (e.g., WI, NJ, PA). Data from these jurisdictions indicate that cable restraints are a safe and efficient capture tool that minimizes injuries to target and nontarget animals (i.e., injury scores met the Association of Fish and Wildlife Agencies Best Management Practices standards; see Olson and Tischaefer 2004, Munoz-Igualada et al. 2010). During the WI study, several nontarget mammals were released unharmed (Olson and Tischaefer 2004), and 2 incidental captures of European wildcats (*Felis silvestris,* about the size of a house cat) monitored for 5 weeks post release had only minor injuries and survived (Munoz-Igualada et al. 2010).

Impacts from rescinding foothold trap size: Prior to the consent decree, coyote trappers would have used traps with an inside jaw spread ≤ 6 ¾ inches. IFW does not anticipate additional lynx captures or more severe injuries by rescinding the regulation that requires foothold traps in lynx WMDs to have an inside jaw spread less than 5 3/8 inches, based on our experience monitoring incidental take. The number of lynx captures per year did not decrease after size restrictions were put in place in 2008 (30 in 8 years vs. 33 in 5 years). In addition, the number of injuries requiring veterinarian care was similar prior to and after foothold trap size restrictions. Of the 8 lynx examined by biologists prior to size restrictions, one lynx had an injury requiring veterinarian care. Follow-up interviewers with trappers that caught and released the other 22 lynx suggest that lynx injuries where mild and similar to those examined by biologists (e.g., swollen capture foot). After size restrictions, trappers were also required to report lynx captures prior to releasing the animal. Therefore, IFW biologists examined 24 of 33 lynx caught in foothold traps and 1 lynx had an injury requiring veterinarian care. IFW does not anticipate additional lynx captures or more severe injuries by rescinding foothold trap size regulation. If new information becomes available or circumstances change, IFW's Plan includes contingencies in Changed Circumstance (Section 5.4).

Effects of non-lethal trapping

Most of the trapping related take anticipated to occur through this ITP will be non-lethal. Data from IFW's 12-year radio telemetry study on Maine lynx described below illustrates that foothold trapping did not influence lynx ability to survive and reproduce. While lynx may be captured in foothold traps, IFW anticipates that they will be released with only

minor injuries that do not affect their long-term survival. Although IFW anticipates that some lynx may have injuries that require additional care, IFW's data shows that these animals can be treated by a veterinarian and released. Any lynx that cannot be released after treatment of trap related injuries is addressed under lethal take. In addition to 12 years of telemetry data, IFW has examined lynx caught by fur trappers, including several that were equipped with radio collars. Data from these examinations also supports the low injury and high post release survival of lynx from foothold traps.

IFW's 12-year telemetry study demonstrates that majority of lynx (i.e., 54 of 57 lynx) released from foothold traps following 111 captures are not adversely affected by the capture as these animals survive and reproduce post capture. Although Withey et al. (2001) recommended allowing several days to weeks to account for the effects of capture and tagging before collecting data from radiocollared animals, IFW waited 30 days before assessing survival. Therefore, a lynx caught in a trap that lived at least 1 month was considered to have died of factors not related to the capture event (e.g., old age, predation, vehicle collisions, etc.). During IFW's study, 81 lynx were captured by IFW biologists and radiocollared; 59 lynx were captured in foothold traps during 122 capture events (i.e., some lynx were caught more than once in foothold traps), and the fate of 57 lynx following 111 capture events[6] was known. Lynx lived greater than 1 month following 108 of 111 captures (97%). In addition, there is no evidence that the mortality of 3 lynx that died within one month of capture was directly related to trapping. Although sample size is small for fur traps, a comparison of lynx survival estimates from research and fur traps provides further evidence that foothold traps does not affect long-term survival of lynx (Table 4.1.1).

Table 4.1.1 Proportion of lynx in Maine that lived more than 1 month after captured in a trap. Foothold traps were set during IFW's 12-year radiotelemetry study; while both foothold and killer-type traps are used by trappers during Maine's furbearing trapping season.

Type of Trap	Number captures examined by IFW	Number of mild/no injury	Number captures of radiocollared lynx	Number lived $\geq$ 1 months after capture
Research-Foothold	122[6]	119	111	108/111 (98%)
Fur trappers-Foothold	32	30	6[a]	5 /6 (83%)
Fur trappers-Killer-type	7		2	0/2 (0%)

[a] Four lynx caught by fur trappers were equipped with radiocollars when release and 2 trappers reported capturing lynx that were already wearing radiocollars.

[6] During the last year of the study, we removed collars following 9 captures and 2 lynx were released without functioned collars, therefore fate is known for 111 of 122 captures.

IFW has compared injury rates from IFW's 12-year telemetry study to injury rates of lynx captured during the fur trapping program. Study animals were captured using #3 Victor soft-catch traps that were staked on short chains whereas fur trappers used a variety of foothold traps and staking mechanisms. The majority of captures in research (119 out of 122 captures) and fur traps (30 out of 32 lynx) indicated that captured lynx had no visible or minor injuries from foot-hold traps (Table 4.1.1). Therefore, the rate of injury for lynx was low and not different between foothold traps set by biologists and fur trappers.

IFW acknowledges that injury scores described above were from external exams conducted by IFW biologists. Other studies have been conducted by AFWA where trapped animals that were killed were then necropsied to examine animals for injuries; the majority of had acceptable injury scores (see Table 7.3.2). Although IFW external examination of live lynx may have not detected all injuries, data from IFW's monitoring of lynx and AFWA's study indicates that any undetectable injury would not likely impact their ability to survive and reproduce after capture.

In addition to IFW's telemetry study, IFW's policy is to radiocollar any lynx incidentally trapped near IFW's study area or that had an injury that required veterinarian care. Data from these trapper caught lynx also show that lynx survive after release from foothold traps (n=3) or after treatment of injuries (n=1). Three of the 4 lynx lived more than 1 month after release. The one that died shortly after release had no visible signs of injury when captured and died from unconfirmed causes. However, we suspect predation was the cause of death based on evidence collected at the mortality site. In addition, 2 trappers reported capturing lynx that were already wearing radiocollars. Both lynx lived more than 6 months after being released from these traps (Table 4.1.1).

Capture of lynx in foothold traps does not appear to affect their ability to reproduce and raise young. Twenty-seven of 57 lynx captured in foothold traps set by IFW biologists in the fall, and 2 of the 4 radiocollared lynx captured in foothold traps set by fur trappers, were females. The majority of females (70%) gave birth to kittens the spring following their capture. However, litter production was high (14 of 16 female lynx) when snowshoe hares were common. Conversely, fewer female lynx (5 of 13) gave birth to kittens when hares were less common (Table 4.1.2). Several adult females were caught multiple times in foothold traps during the fall and produced kittens the next spring. In fact, one female lynx was caught in a foothold trap 4 times over a 16-day period and subsequently produced a litter of kittens the next spring.

Data from IFW's 12-year radio telemetry study and monitoring incidental captures of lynx illustrate that foothold trapping does not likely affect a lynx's post-capture chances of survival or ability to reproduce (Tables 4.1.1 and 4.1.2.).

Table 4.1.2 Reproductive success of adult female lynx that were radiocollared in Maine following fall capture in foothold traps set by biologists in IFW's radiotelemetry study or by licensed fur trappers during the fall fur trapping season (incidental captures). Snowshoe hare densities, which varied considerably over time and which influence lynx reproduction, are also given.

	≥ 2 hares/ha		≤ 1hare/ha	
	# Fall captures	# litters	# Fall captures	# litters
Fur trappers	2	2 (100%)	0	0
Biologists	14	12 (86%)	13	5 (38%)

Cage traps

Through implementation of this Plan, there could be an increase in use of cage traps by trappers targeting bobcats. IFW anticipates that take from cage traps will be non-lethal and risk of injury is low. During IFW's 12-year study, 52 lynx were caught in cage traps multiple times (339 captures) without any injuries requiring veterinarian care.

Effects of Lethal Take

As described above, most of the trapping related take anticipated to occur through this incidental take permit will be non-lethal. While most lynx captured in non-lethal cable restraints, foothold, and cage traps will be released with minor injuries, some may have more severe injuries. Those that cannot be rehabilitated and released back into the wild will be considered as lethal take. IFW believes that minimization measures implemented in this Plan (e.g., existing regulations restricting visible bait and requiring exclusion devices on some ground sets, and leaning pole set for non-exclusion traps,) are effective at precluding lynx from being caught in killer-type traps. If, however, lynx are caught in killer-type traps, IFW anticipates that it will result in a mortality. In the past, prior to regulatory changes, two of four lynx caught in killer-type traps died; the two that lived were caught by the foot in killer-type traps set on the ground without an exclusion device. Since regulatory changes implemented in December of 2008, 1 lynx has been killed in a killer-type trap that was not legally set. Although a few individuals may die, the level of lethal take anticipated in this plan (n=3) will not affect Maine's lynx population (Appendix 7).

Lynx Vulnerability to Trapping

Although other North American studies that reported capture rates of lynx may be of interest, these studies report on lynx that were legally harvested for their fur where trapper effort was driven by lynx pelt price and trappers targeting lynx could use visible bait and other attractors (Brand and Keith 1979, Bailey et al. 1986, Quinn and Thompson 1987, Parker et al. 1983). Data recently collected in Maine is more relevant to IFW's application and is presented here.

Over the 12 years of IFW's radio telemetry work, an equal number of male (n=28) and female (n=31) lynx were caught in foothold traps; however, male lynx were more likely to be recaptured (122 foothold captures, 71 males and 51 females) and only 1 kitten was captured in 122 captures events (IFW, unpublished data). Although the gender and age was not known for all lynx captured in foothold traps set by fur trappers in Maine, none of the 32 examined by IFW biologists were kittens, and the sex ratio (21 males and 11 females) was skewed towards males (Table 4.1.3). Quinn and Thompson (1987) observed a similar low capture ratio for kittens.

IFW does not believe kitten mortalities will result from adult females or kittens being incidentally caught in foothold traps and subsequently released. Over the course of Maine's lynx study, kittens were rarely captured (n=1) and radiocollared females that were traveling with kittens (n=17), and were subsequently trapped, always reunited with their young (IFW, unpublished data). The 1 kitten that was captured and released from a trap, reunited with its mother. In addition, when Maine's fur trapping season opens, kittens are between 5 and 7 months old, weaned, and consuming meat and capable of surviving on their own. Literature on available data to date indicates that kittens are weaned and no longer dependent on their mother by 12 weeks of age (McCord and Cardoza 1982, Tumlison 1987, Fernandez et al. 2002). Although data is sparse, Fernandez et al.'s (2002) observation of an orphaned 3 month old kitten that survived until at least 11 months of age on its own suggests that kittens can survive without their mother after they are weaned. Because of uncertainty as to the fate of orphaned weaned kittens, IFW will monitor kittens orphaned from trapping (if it occurs) and adapt procedures as necessary (Section 5.2- Minimization Measure IM 8). Any kittens that are incidentally captured in traps in Maine will be treated similarly to adult lynx for the purpose of incidental take calculations. Despite the fact that IFW does not believe that kitten fatalities will occur from the incidental capture of female lynx or kittens, the mitigation in this Plan will also support additional lynx and their progeny (Section 5.3).

Specific Causes of Mortality

Over the 12 years of IFW's radiotelemetry study, radiocollared lynx experienced roughly a 20% annual mortality rate[7] (Table 2.2). Starvation and predation were the leading causes of mortality (Table 2.3; Vashon et al. 2012). The mortality rate for lynx observed in IFW's study area was similar or lower than reported for other lynx populations (See Vashon et al. 2012); however, small sample sizes and high variability in other studies make it difficult to make direct comparisons.

[7] This is for a pooled sample of adults, juveniles, and both sexes during period where hare densities ranged from <1.0 to >2.0 hares/ha (Vashon et al. 2012).

Table 4.1.3 Description of lynx incidental trapping incidents in Maine from 1999 to 2012.

Date incident	Age Class	Sex	Type of Trap	Securing method	Response type	ISO Score (applied as reference)[1]	Type of Injury
10/18/1999	Subadult	Male	Foothold	staked	IFW released	5	Tiny bit of blood on 3rd toe, no cut on toe was evident; minor injury
10/1 /2000	Unknown	Unknown	Foothold	-	Trapper released	-	-
10/26/2000	Adult	Male	Foothold	Drag	IFW released	100/50	Broken leg (ulna and radius), x-rayed in Presque Isle; rehab at Tufts; released back to wild
10/21/2001	Adult	Female	Foothold	Drag	IFW released	5	small laceration on one toe
10/26/2002	Adult	Unknown	Foothold	-	Trapper released	-	-
10/22/2003	Unknown	Unknown	Foothold	-	Advised trapper release	-	-
11/1 /2003	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
11/2 /2003	Adult	Female	Foothold	Drag	IFW released	10	Small puncture above capture; Slight swelling; caught high just below wrist
11/22/2003	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/21/2004	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/21/2004	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/23/2004	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/23/2004	Adult	Unknown	Foothold	staked	Trapper released	-	-
10/25/2004	Unknown	Unknown	Foothold	staked	Trapper released	-	-
10/27/2004	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/28/2004	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
11/7/2004	< 1 yr	Female	Killer-type	set on ground in box	IFW released	5	Possible injury but no broken bones, just a lot of swelling.
11/12/2004	> 1 yr	Female	Foothold	staked	Trapper released	-	-
11/14/2004	Unknown	Unknown	Foothold	-	Trapper released	-	-
11/16/2004	Adult	Female	Foothold	Drag	IFW released	5	Slight cut on bottom of foot
10/1 /2005	Unknown	Unknown	Foothold	Drag	Trapper released	-	-

Date incident	Age Class	Sex	Type of Trap	Securing method	Response type	ISO Score (applied as reference)[1]	Type of Injury
10/18/2005	Adult	Male	Foothold	staked	IFW released	5	Small cut inner left toe, small cut top of foot
10/26/2005	Adult	Male	Foothold	Drag	IFW released	5	Small puncture middle two toes. Small amount of blood
11/1 /2005	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
11/1 /2005	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
11/19/2005	< 1 yr	Male	Killer-type	set on ground in box	IFW released	5	Four frozen toes, but blood flow restored at vet hospital, swelling, bone chipped on leg bone.
11/22/2005	< 1 yr	Male	Killer-type	secured to tree	IFW retrieved carcass	-	-
12/6 /2005	Adult	Male	Killer-type	set on ground in box	IFW retrieved carcass	-	-
10/15/2006	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/19/2006	Unknown	Unknown	Foothold	staked	Trapper released	-	-
10/20/2006	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/26/2006	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
11/7 /2006	Unknown	Unknown	Foothold	-	Trapper released	-	-
11/16/2006	Adult	Male	Foothold	staked	IFW released	0	no blood or cut on foot; applied normal weight to capture foot
10/15/2007	Adult	Female	Foothold	staked	IFW released	5	superficial laceration <1/8" wide and just through top layer of skin
10/17/2007	Unknown	Unknown	Foothold	Drag	Advised trapper release	-	-
10/18/2007	Adult	Male	Foothold	staked	IFW released	0	no swelling, cuts, blood, broken teeth
10/23/2007	Unknown	Unknown	Foothold	staked	Trapper released	-	-
10/25/2007	Subadult > 1 yr	Male	Foothold	Drag	IFW released	5	noticed a drop of blood, but couldn't find the source; no laceration or breaks observed
10/26/2007	Unknown	Unknown	Foothold	staked	Trapper released	-	-

Date incident	Age Class	Sex	Type of Trap	Securing method	Response type	ISO Score (applied as reference)[1]	Type of Injury
11/8 /2007	Subadult > 1 yr	Male	Foothold	Drag	IFW released	0	no broken bones or teeth, bleeding, lacerations, punctures, dislocation observed.
11/13/2007	Adult	Male	Foothold	staked	IFW released	10	shallow, small laceration; Capture foot and toes were cold but tissue soft (not frozen).
10/27/2008	Unknown	Unknown	Foothold	Drag	Trapper released	-	-
10/30/2008	Unknown	Unknown	Foothold	secured to tree	Trapper released	-	-
11/17/2008	Adult	Male	Killer-type	secured to tree	IFW retrieved carcass[2]	-	-
12/4 /2008	Adult	Male	Killer-type	-	IFW retrieved carcass[3]	-	-
10/21/2009	Subadult > 1 yr	Male	Foothold	Drag	IFW retrieved carcass[4]	-	-
11/9 /2009	Subadult > 1 yr	Female	Foothold	staked	IFW released	5	only minor edema on capture foot
11/11/2009	Adult	Female	Foothold	staked	IFW released	5	small laceration on capture ft <1/2 cm; put wt on capture ft at release; no tooth injuries
10/22/2010	Adult	Male	Foothold	staked	IFW released	10	small shallow laceration 1 mm long, slight edema on capture foot
10/22/2010	Adult	Female	Foothold	staked	IFW released	5	shallow small puncture on middle digit of rt front paw
11/4 /2010	Adult	Female	Foothold	Drag	IFW released	5	some swelling of the trap foot; walked away on all 4 feet with slight limp on capture foot

Date incident	Age Class	Sex	Type of Trap	Securing method	Response type	ISO Score (applied as reference)[1]	Type of Injury
11/14/2010	Adult	Male	Foothold	staked	IFW released	5	very minor swelling capture foot; looks similar to other feet; no chipped/broken teeth
10/18/2011	Unknown	Unknown	Foothold	staked	Trapper released	-	-
10/22/2011	Unknown	Unknown	Foothold	staked	IFW released	0	lynx appeared uninjured when assessed and released by WS at direction of biologist
10/22/2011	Adult	Male	Foothold	Drag	IFW released	5	Minor shallow laceration on capture foot
10/23/2011	Adult	Unknown	Foothold	staked	Trapper released	-	-
10/25/2011	Subadult > 1 yr	Male	Foothold	staked	IFW released	5	swelling of capture foot
11/19/2011	Adult	Male	Foothold	Drag	IFW released	10	small shallow laceration and swelling on capture foot.
11/29/2011	Unknown	Unknown	Killer-type	secured to tree	IFW retrieved carcass[5]	-	Lynx died from capture in a illegal killer-type trap, animal was scavenged and could not identify age or sex, or assess trap related injuries.
10/18/2012	Adult	Female	Foothold	staked	IFW released	0	No injury observed during exam
10/18/2012	Unknown	Unknown	Foothold	staked	Trapper Reported	-	Lynx escaped trap when approached by trapper
10/21/2012	Adult	Male	Foothold	staked	IFW released	5	Small shallow laceration on capture foot
10/21/2012	Adult	Female	Foothold	Drag	IFW released	0	No injury observed during exam
10/26/2012	Adult	Male	Foothold	staked	IFW released	5	Two small shallow lacerations on capture foot

Date incident	Age Class	Sex	Type of Trap	Securing method	Response type	ISO Score (applied as reference)[1]	Type of Injury
10/26/2012	Adult	Male	Foothold	Drag	IFW released	10	Small shallow laceration and minor swelling on capture foot; veterinarian on site concurred with injury assessment and treatment.
11/1/2012		Female	Foothold	unknown	IFW responded	50	Fracture on capture foot, animal shot by bird hunter.
11/4/2012	Adult	Male	Foothold	staked	IFW released	5	Small laceration on capture foot; vet concurred
11/5/2012	Adult	Male	Foothold	Drag	IFW released	5	small laceration on capture foot
11/7/2012	Adult	Male	Foothold	Drag	IFW released	5	Two small laceration on capture foot; vet concurred

[1] Mild injuries were those that would be assigned a trauma score $\leq$ 10 under ISO (International Standards Organization) standard (ISO/TC 191) ISO 10990-5:1999. ISO standard 10990-5:1999 is same standard used to evaluate injuries caused by restraining traps during the development of Best Management Practices for trapping in the United States. The incidental capture on 1/19/2005 would not be scored as a severe trauma under ISO standards; however, IFW was unsure of the severity of frostbite at the time and treated it as a severe injury. Later examination indicated the animal had not sustained any permanent tissue damage from frostbite.

[2] Trap not set in compliance with new laws related to killer-type sets; law was clarified to prevent future catches.

[3] Illegal take; trapper did not report capture and lethal take of a lynx; unable to determine if the trap met current regulations because trap was removed by trapper.

[4] Illegal take; lynx shot by bird hunter while in a foot-trap; trapper reported the dead lynx; hunter charged. Trap was legally set.

[5] Trap not set in compliance with new laws related to killer-type sets.

Overall, Maine's lynx population has increased since the 1990s (Simons 2009, Vashon et al. 2012). The growth of Maine's lynx population, at a time when trapping occurred and annual mortality was approximate 20%, underscores that Maine's lynx population can readily sustain low levels of mortality that might occur from incidental trapping (see Appendix 7). Maine has not had an open season on lynx since 1967; therefore, any lynx takings have either been accidental (e.g., road mortality), illegal (e.g., poaching), or incidental to trapping (Table 4.1.4.). Only 5 lynx deaths have been reported and directly attributed to trapping in the 14 years since lynx were federally listed as a threatened species (Table 4.1.4). IFW estimates that there are roughly 750 to 1,000 adult lynx in Maine (i.e., northern and western Maine; Vashon et al. 2012). Using this population figure, the highest percentage of the lynx population killed incidentally by Maine trappers during any given year was 0.6%. Consequently, the small number of lynx killed by incidental trapping has not impacted Maine's lynx population growth or stability (see Appendix 7).

Table 4.1.4 Incidents of lynx takings recorded by the Maine Department of Inland Fisheries and Wildlife since the start of IFW's lynx project in 1999.

		Number in Foothold Traps		Number in Killer-type Traps			
Date	Number Trapped	Alive	Dead	Alive	Dead	Vehicle Mortalities	Poaching
1999	1	1	0	0	0	0	1
2000	2[a]	2	0	0	0	1	0
2001	1	1	0	0	0	0	0
2002	1	1	0	0	0	1	0
2003	4	4	0	0	0	1	0
2004	11[b]	10	0	1	0	3	0
2005	8 [b,c]	5	0	1	2	3	2
2006	6	6	0	0	0	2	1
2007	8	8	0	0	0	4	1
2008	4	2	0	0	2	3	0
2009	3	2	1[f]	0	0	4	0
2010	4	4	0	0	0	1	0
2011	7	6	0	0	1[d]	4	0
2012	10[e]	9	1[f]	0	0	5	0
Totals	70	61	2	2	5	32	4

[a] One trapped lynx had a broken leg from the entanglement of a trap chain around a tree. The #3 foothold trap was set for coyote using a drag chain as an anchor. The lynx was treated, rehabilitated and released back into the wild.

[b.] One lynx had its foot caught in a killer-type trap (#120) set for marten on the ground was examined by a veterinarian, rehabilitated, and released back into the wild.

[c.] Two animals were killed in killer-type traps. One set (#120) was made on the ground for marten, and another set (#220) was made on a leaning tree (>4 dbh and <45 degree angle) for fisher.

[d] Trap was not set in compliance with trapping regulations; regulations clarified in 2008.

[e] Includes 4 lynx captured by trappers enrolled in IFW's PM Program.

[f] Lynx shot illegally in a trap by a bird hunter.

The incidental trapping rate of lynx in Maine is significantly lower than trapping rate in jurisdictions where lynx trapping is legal, because trappers were targeting lynx in those areas (Brand and Keith 1979, Bailey et al. 1986, Poole 1991, McKelvey et al. 2000, and Poole 2003). Although these studies have been informative for shaping regulations to sustain populations in areas where lynx are harvested for their fur, these studies are not relevant to IFW's application, since the majority of lynx caught in traps in Maine are released and are able to survive and produce offspring after their capture.

4.2 Anticipated Incidental Take: Canada Lynx

IFW is requesting a permit to allow the incidental trapping of up to 195 lynx over a 15-year period (Table 4.2.2). The majority (183) will be incidentally trapped and handled and released, some (9) may have trap related injuries that require medical attention (as outlined in Section 5.2), and few (3) may die from trap related injuries that may include animals that could not be released back to the wild. IFW explains how these estimates are derived below. While the estimates for the take request were developed by considering each covered activity, the accounting for the actual take will be the total of all covered activities during the 15-year permit period.

Methods for Calculating Incidental Take

Categories of Take and Predictions

IFW's incidental take request was calculated for the full 15-year time span of the requested Section 10 permit (i.e., 2013-2028; Table 4.2.2). Assumptions and calculations used to arrive at IFW's request are presented below:

1. Incidental Capture:

Baseline: Between 1999 and 2012, 70 lynx were incidentally captured by trappers at a reported annual rate of 1 to 11 (Table 4.1.4). IFW believes that data on incidental capture rates since 2008 best represent projected take during the Plan period because minimization measures were in place, trappers were more knowledgeable about lynx and efforts to minimize their capture, and reporting of lynx captures was mandatory. Since 2008, the number of lynx captures has ranged from 4 to 10 per year (Table 4.1.4) including those caught by PM trappers. Without PM trappers, the number of lynx incidental trapping ranged from 3 to 7 per year. IFW only has two years of experience with implementing the PM program (2011 and 2012) and 0 and 4 lynx were captured in foothold traps, respectively. For the purposes of the projected take calculations for this Plan, the maximum capture rate was used for both programs (Table 4.2.1).

Take Request: This Plan incorporates a number of minimization measures to reduce and avoid capture of lynx in traps through fur trapping, ADC, and PM programs. Captured lynx are rarely severely injured or killed (Table 4.1.3 and Table 4.1.4). IFW is requesting coverage for the potential incidental trapping and capture of 195 lynx during the 15-year period. IFW's take request is based on historic patterns. Given projected

stable to declining population trend, IFW assumes that incidental capture rate should not exceed 11 lynx per year (combining take from fur trapping and ADC/PM programs) during the 15-year period (Table 4.2.1). IFW is requesting an additional 20% allowance for the number of lynx trapped over the 15-year permit to allow for increased trapping effort and change that may affect susceptibility of lynx to trapping (e.g., lynx population trend, permitting cage traps and cable restraints).

Table 4.2.1. Requested allowances for incidental captures, trapping related injuries, and trapping related mortalities of Canada lynx by the Maine Department of Inland Fisheries and Wildlife (IFW). Major injuries will be injuries that required veterinarian care before the animal could be released back to the wild (e.g. broken bone, etc.).

Capture Event	Projected Annual Take	Projected Take Over Life of Permit (15 yr)
Incidental Lynx Captures		
Fur Trapping	7	105
ADC/PM Program	4	60
20% allowance for changes in effort [a]	2	30
All Take of Lynx Incidentally Trapped	13	195[b]
Proportion of capture lynx released with no injuries	19%	37
Proportion of capture lynx released with minor injuries	75%	146
Proportion of capture lynx that require additional treatment from injuries	4.4%	9
Number of captured lynx that potentially killed or not released after vet care)	1.6%	3

[a] The 20% allowance includes the potential for increases from trapper effort, new types of traps, changing susceptibility to traps, and unreported lynx captures, if there are any. Note: the failure to report a lynx capture is illegal under Maine's trapping regulations.

[b] While the estimates for the take request were developed by considering each covered activity, the accounting for the actual take will be the total of all covered activities during the 15-year permit period.

Table 4.2.2 The number of lynx incidentally trapped in Maine between 1999 and 2012 categorized by the animal's injury status.

					ISO Injury Score			
Trap Type	Number of Captures	Number Released and Not Examined	Number IFW examined	Illegal Trapping Mortality	No visible	Mild [a]	Moderate[b]	Moderate Severe to Severe[c]
Foot-hold	63	31	32	2[d]	6	24	0	2
Killer-type ≤2008	6	0	6	4[e]	0	0	2[f]	0
Killer-type >2008	1	0	1	1[e]	0	0	0	0
Total	70	31	39	7	6	24	2	2

[a] International Standards (ISO) mild traumas for animals are defined as pathological observations with an injury score between 2 and 10 points (e.g. swelling, minor cutaneous laceration, etc.).
[b] International Standards (ISO) moderate and moderately severe traumas for animals are defined as pathological observations with an injury score between 25 and 30 points (e.g. major laceration on tongue or foot pads, etc.).
[c] International Standards (ISO) moderately severe to severe traumas are defined as pathological observations with an injury score of between 50 and 55 points (e.g. simple fracture at or below the carpus) and 100 points (e.g. fracture above the carpus, etc.), respectively.
[d] Two lynx were shot illegally by a bird hunters, although these lynx were killed an injury score for trap related injuries was recorded.
[e] Lynx were killed in killer-type traps that do not comply with current regulations.
[f] These lynx were caught by the foot in killer-type traps that do not comply with current regulations.

2. Non-lethal Take:

Baseline: Of the 70 lynx caught in traps between 1999 and 2012, IFW's biologists examined 32 lynx caught in foothold traps and all 7 lynx caught in killer-type traps for injuries. The majority (30 out of 32) caught in foothold traps had no visible or mild injuries, specifically 19% (6) had no visible injury, 75% (24) had mild injuries (e.g., small laceration) that could be treated in the field, and 6% (2) had an injury requiring veterinarian care. Of the 7 lynx that were caught in killer-type traps, 2 had injuries requiring veterinary care (Table 4.2.2). However, these 2 lynx were caught in killer-type traps set on the ground without exclusion devices, which is no longer permitted. Therefore, IFW does not anticipate any injuries in killer-type traps.

Take Request: Based on the number of lynx that may be incidentally captured (195), we anticipate that 19% will have no discernible injury (37), 75% will have mild injuries (146), and 6% will have severe injuries that will require veterinarian care (12). The 6% injury rate is broken down into a non-lethal (4.4%) and a lethal component (1.6%) which is further described below. Therefore, IFW assumes that 4.4% (9) of lynx incidentally captured will be releasable after treatment of severe injuries and have survival rates commensurate with other lynx and 1.6% (3) may either die or may not be releasable. Lynx that cannot be released will be considered part of the lethal take estimate described below. IFW is requesting coverage for the non-lethal take of up to 192 lynx during the 15-year period, which may include up to 9 lynx with injuries that require veterinary care before being released (Table 4.2.2).

3. Lethal Take:

Baseline Killer-type Traps: Between 1999 and 2012, 7 lynx were caught in killer-type traps; five died from trap related injuries and two lived (Table 4.2.2). Six of the 7 were caught prior to regulatory changes. Since regulatory changes, one lynx has been killed in a killer-type trap. Although the trap did not comply with all aspect of the current regulations, it is used to project potential future lethal take for the purpose of this Plan.

Baseline Foothold Traps: No lynx fatalities have been reported from injuries that occurred from foothold traps. However, two lynx caught in foothold traps were shot and killed by bird hunters. It is illegal in Maine to disturb traps or take any wild animals from traps without the trapper's permission (Title 12 §12256). Therefore, these mortalities resulted from an illegal activity. IFW is committed to avoiding future lethal takes of this nature. In the minimization section of this plan, IFW describes additional outreach to hunters to avoid future illegal shooting of lynx in traps (i.e. lynx regulation page in IFW's annual Hunting and Trapping Regulations book).

Take Request: Although the level of lethal take has been low from trapping in Maine, IFW is including the potential for three mortalities from incidental capture events over the 15-year permit period. These mortalities may result from severe injuries from foothold traps, non-lethal cable restraints, cage traps or killer-type traps. Although 7 of 70 lynx incidental caught in traps between 1999 and 2012 died, 4 lynx were caught in killer-type traps that are no longer legal in Maine and 2 mortalities were not directly related to the trap set (i.e., illegally shot by bird hunters). Thus, these 6 lynx were excluded from lethal take calculations; the remaining 64 lynx incidentally caught in traps was used to project potential lethal take. Thus for the purpose of this Plan, IFW estimated the proportion of total potential take (i.e., 195 lynx) that may be lethal as 1.6% (i.e., up to 3 lynx may die).

Potential Biological Impacts of the Request Level of Incidental Take

IFW acknowledges that incidentally trapping a lynx is a form of take (kill, capture, harm, and harassment) as defined in the ESA. However, in the vast majority of incidental trapping incidents, there is no biological impact. IFW defines biological impact as an activity that would significantly alter the potential survival or reproductive rates of an animal. In IFW's Plan, IFW minimizes the impact of activities that kill, harm, and harass lynx and mitigates for unavoidable take.

To illustrate the effect that 3 lynx mortalities might have on Maine's lynx population, IFW used VORTEX 9.99 software to simulate lynx population dynamics. Inputs for this model came from lynx demographic data collected in Maine between 1999 and 2010 when hare densities ranged from <1 to 2 hares/hectare (Vashon et. al. 2012). This VORTEX model was built because it offered a similar platform for comparing modeling results generated by the USFWS in their review of IFW's earlier application. The purpose of the simulation was to: 1) update the inputs used in the population model

presented in Maine's 2008 Incidental Take Plan, and 2) to determine if Maine's lynx population would decline with minor losses that might result from the incidental capture of lynx in traps set for other furbearing animals. Without the incidental capture of lynx over the 15-year permit period, the Vortex model indicated a slightly increasing population growth rate (r = 0.0595; Appendix 7).

To test the assumption that Maine's lynx population size would not decline if lynx mortalities resulted from incidental trapping occurred, IFW ran simulations using a level of lethal take of 3 lynx as requested in IFW's Plan. The model indicated that Maine's lynx population could maintain a positive growth rate (r = 0.0473) with the low level of lethal take requested in the Plan. A full explanation of the model inputs, assumptions, and results is given in Appendix 7.

At this time, there is insufficient evidence to conclude whether human-related mortality in lynx populations is density dependent (i.e., greater proportion of the population trapped when population is high) or independent (i.e., proportion of population trapped is not influenced by population size; Steury and Murray 2004). Brand and Keith (1979) suggest that lynx vulnerability to trapping is dependent on prey rather than lynx numbers; when prey is scarce, lynx may increase their movements to search for food and/or become more attracted to baited traps. However, other studies indicate there was not a consistent pattern in lynx becoming more vulnerable to baited traps as snowshoe hare densities declined (Slough and Mowat 1996).

To test whether Maine's lynx population could tolerate more lethal incidental trapping, if lynx became more vulnerable to capture in traps at low population levels, IFW varies lethal incidental take rates from 1 every 5 years (i.e., 3 lethal takes over permit period) to 3 every year (i.e., 45 lethal take over permit period). Simulations indicate little change in population growth rates (r = 0.0343; Appendix 7).

Beneficial Impacts of Trapping:

In Maine, predation by fisher is a major source of mortality for lynx. If killer-type traps are not permitted in Maine, fisher densities are likely to increase without a means to harvest fisher. During IFW's 12-year radiotelemetry study on lynx, biologists observed that 42% of lynx mortalities were due to either fisher predation or suspected fisher predation. Using a weighted average of the Kaplan-Meier annual adult mortality rates, IFW calculated that lynx in the study area had an overall annual mortality rate of 27% (Vashon et al. 2012). Therefore, if the annual mortality rate of lynx (27%) is multiplied by the proportion of radiocollared lynx killed by fisher (42%), it can be shown that approximately 10% of the radiocollared lynx are killed by fisher each year. The high number of lynx mortalities being caused by fisher raises the question: what would happen to the lynx mortality rate in Maine if fisher trapping were eliminated?

IFW estimated the potential benefit of fisher trapping to the lynx population using the following data and assumptions:

1. IFW has data indicating that across the lynx range in Maine, there are approximately 2 fisher for every lynx (fisher densities from Fuller et al. [2001], and lynx densities [Adult & Juvenile] from Vashon et al. [2008a]);
2. IFW assumes that overall lynx mortality rates and mortality attributed to fisher in IFW's study area are similar to mortality rates in other parts of the lynx range in Maine;
3. IFW has data showing that approximately 578 fisher were harvested annually from WMDs 1-11 (i.e., 5-year mean fisher harvest rate from 2006 to 2010);
4. IFW assumes every fisher has an equal chance of killing a lynx;
5. IFW assumes, if trappers removed 20% of the fisher population, the fisher population would either stabilize or decrease.

Because fisher densities are twice that of lynx in Maine, it follows that in this scenario there would be 2,000 fisher living sympatrically with1,000 lynx. If the same mortality rate for lynx killed by fisher in IFW's lynx study (i.e., 10%) was used, then 100 lynx would die from fisher predation each year. IFW records show that on average 578 fisher were trapped annually out of the lynx range from 2006 to 2010. If every fisher has approximately a 1 in 20 chance (5%) of killing a lynx and harvest 578 fisher from the lynx range each year, trappers would hypothetically reduce mortalities by 29 lynx in one year.

If that increase in annual survival is extended over the 15-year period of the permit, an additional 435 lynx may survive because fisher trapping is allowed (as opposed to being banned). Even if these calculations overestimate the increase in lynx survival by half, the additional number of lynx surviving (218) is still far greater than IFW's lethal take request (3).

5.0 Conservation Program / Measures to Minimize and Mitigate for Impacts

5.1 Biological Goals and Objectives

IFW is charged with protecting and enhancing Maine's wildlife for future generations to enjoy. As such, IFW's biological goals are directed at maintenance or enhancement of Maine's lynx population (IFW 2005) and are broader than the biological goals for this Plan. At a minimum, IFW's overall biological goal for lynx will be to ensure the persistence of its population in Maine (IFW 2005), which is similar to Objective 4 in the USFWS' Recovery Outline for Canada Lynx. More specific management goals for lynx may be given to IFW in the future by public working groups as part of IFW's Strategic Planning Process (Appendix 6) and in a future federal recovery plan. Specific goals and objectives to address incidental take of lynx in traps for this Plan is described below.

Biological Goals

1. Conduct Maine's trapping program in a manner that does not alter the natural fluctuations of Maine's lynx population.
2. Maintain Maine's trapping program as an effective wildlife management tool.

Biological Objectives

1. Implement measures to minimize the potential for injuries of lynx from all traps and trap set types.
2. Implement a systematic approach to assessing all captured lynx and treating injured lynx to avoid trap related fatalities.
3. Implement measures that are effective in avoiding capture of lynx in killer-type traps.
4. Implement mitigation commensurate with the permitted lethal take that maintains or creates high quality habitat that would support lynx in the BPL Seboomook Unit.

5.2 Measures to Minimize Impacts

Since closing the State's lynx trapping and hunting season in 1967, IFW has evaluated and restricted furbearer trapping activities with the intent of minimizing incidental take of Canada lynx (Table 5.2.1). In this Section, IFW describes its minimization and monitoring commitments and implementation plan (who will do them and when they will be done). Minimization measures include regulatory (RC), incidental capture response (IM), outreach and education (O&E), and plan implementation (PI) commitments (Table 5.2.2). When IFW references all licensed trappers this includes fur (including junior trappers and trappers with complimentary licenses), ADC, and PM trappers. Although it is difficult to distribute outreach material in this Plan to landowners permitted to trap without a license, they are required to follow all trapping regulations, which can be found on IFW's website and in printed form at IFW offices throughout the State. Additionally,

IFW will provide the opportunity for landowners permitted to trap without a license to receive lynx avoidance and minimization outreach materials when they tag their fur. IFW has expanded the use of the Gov-Delivery system to provide trappers the opportunity to receive trapping information electronically via email.

Table 5.2.1 Chronological list of measures that were implemented by the Maine Department of Inland Fisheries and Wildlife prior to submission of this Plan.

Measure	Year	Measure	Year
Ending the bounty on lynx and instituting a closed season on lynx trapping and hunting	1967	Customization of 2003 brochure for Maine trappers. Brochure distributed to all licensed trappers.	2005
Conferring with trappers about incidentally caught lynx	1970's	Conferring with other jurisdictions on incidental take issues	2006
Annual trapper mailing included information on how to distinguish between a lynx and bobcat	1991	Restricting use of visible bait while trapping[a]	2007
Annual trapper mailing included an offer to help trappers release incidentally caught lynx	1996	Requiring killer-type traps to be set on leaning poles within the lynx range	2007
Annual trapper mailing included lynx track descriptions	1997	Guidelines developed for evaluating lynx injuries including contact list for veterinarian and rehabilitators.	2007
Lynx Hot Line established in annual trapper mailing	1999	New emphasis in trapper education on how to avoid incidental lynx captures	2008
Standard operating procedures developed for handling incidentally caught lynx	1999	Mandatory reporting of lynx incidental catches	2008
Recognition of trappers voluntarily reporting incidentally trapped lynx	2000	IFW implements an emergency rule that clarifies trapping regulations for setting killer-type traps in WMD 1-11.	2008
Helped develop "How to avoid the incidental take of lynx..." USFWS, IAFWA brochure"	2003	IFW permits the use of killer-type traps set on the ground if used in conjunction with an exclusion device in WMD 14,18 and 19.	2010

[a] In 2007, IFW promulgated a trapping rule to restrict the use of visible bait by trappers. The objective for this rule was to reduce the incidental trapping of eagles and lynx in killer-type or foothold traps by limiting the use of attractants (e.g., meat, bone, feathers, etc.) that a trapper might use near traps.

Table 5.2.2. Summary of the Maine Department of Inland Fisheries and Wildlife's commitments for minimizing the incidental take of Canada lynx under its furbearer trapping, ADC, and PM programs through the 15-year period of its Incidental Take Permit.

Measures that minimize incidental capture

Regulatory -- Commitments

RC 1 Restrict placements of killer-type traps on land in lynx zones
IFW will continue regulations that require killer-type sets that have a jaw spread greater than 5 inches to be set on leaning poles with the exception of blind or water sets. **NEW -** IFW will require the use of exclusion devices on killer-type traps set on the ground, killer-type traps set on the ground cannot exceed 7 ½ " inside jaw spread. Exclusion devices will not be required on blind sets or leaning poles.

RC 2 Mandatory Reporting-Statewide
IFW will continue to require all licensed or otherwise authorized trappers that incidentally catch a lynx, to report the incidental capture to IFW before releasing the lynx unless an IFW official cannot be reached in time to prevent injury to the lynx. Any lynx released under this provision must be reported to IFW within 24 hours.

RC 3 Restrict the Use of Visible Bait-Statewide
IFW will continue to prohibit the use of exposed bait or attractors during the early coyote, fox, and muskrat seasons. During the regular trapping season, bait that is visible from above must not be set within 50 yards of a foothold or killer-type trap. These measures make traps less attractive to lynx.

RC 4 Restrict the type and configuration of foothold traps set on land.
IFW will continue to require at least 1 swivel on trap chains in lynx areas and will prohibit the use of foothold traps with teeth when set on land statewide.

Measures that minimize injury and mortality

Incidental Capture Response -- Commitments

IM 1 Trapped Lynx Hotline
IFW will continue to maintain and publicize a telephone number that licensed or otherwise authorized trappers can call, anytime during the trapping season, to report a lynx that has been incidentally trapped. IFW wildlife biologists will monitor the hotline 24 hours-7days a week during the fur trapping season. ADC trappers that catch a lynx outside the fur trapping season will be instructed to contact an IFW Warden or Biologists through the 24/7 State Police call center.

IM 2 Responding to Lynx Incidental Captures-Statewide
IFW will continue to have wildlife biologists respond to lynx incidental captures (anywhere in the state) to release lynx, to assess the animal for injuries, and to transport the animal if veterinary care is warranted. Except in an extreme circumstance, as explained on page 191.

IM 3 Use Standard Operating Procedures
IFW will continue to implement standard operating procedures for responding to lynx captures (see Appendix 8) and will update these procedures with a veterinarian, every 3 years or as necessary. **NEW** - IFW will also develop and implement a field based injury scoring system for evaluating incidentally captured lynx within 1 year of permit issuance and update every 3 years or as necessary.

IM 4 Maintain List of Cooperating Veterinarians
IFW will continue to maintain a list of cooperating veterinarians who are willing to care for lynx injured by incidental trapping. This list will be updated by IFW biologists prior to the start of each trapping season.

IM 5 Rehabilitate Injured Lynx
IFW will transport lynx injured from incidental trapping (when warranted) to the nearest cooperating veterinarian, cover the costs of rehabilitating the animal, and if possible, release the animal back into the wild. As a component of effectiveness monitoring, IFW will equip rehabilitated lynx with radio-collars to determine whether the treated injury contributed to the mortality of the animal post-release.

IM 6 Injury Evaluation Training for Staff NEW
Every 3 years, IFW biologists will be trained by a veterinarian on how to evaluate injuries of incidentally captured lynx. Any new biologists will not respond to lynx captures until they have received such training unless they accompany trained biologists.

IM 7 Veterinary Oversight NEW
IFW will have a veterinarian accompany staff on at least 3 lynx incidental captures within each 3-year period of the permit for a minimum of 15 evaluations to ensure affective injury evaluations.

Table 5.2.2 (continued). Summary of IFW's commitments for minimizing the incidental take of Canada lynx.

IM 8 Response to orphaned kittens NEW
If an adult female lynx with kittens is killed or held for treatment of capture related injuries, IFW may capture and radiocollar or hold kittens in captivity until the female can be released or until the kitten reaches dispersal age (i.e., 1 year old) as described in Section 5.2.1.

Measures to educate trapper to avoid or minimize incidental captures

Outreach and Education -- Commitments

O&E 1 Reinforce Compliance
IFW biologists and wardens will continue to promote compliance with trapping regulations when lynx are incidentally captured, at annual Maine Trappers Association meetings, in annual trapper mailings, at fur rendezvous events, and during casual interactions with licensed or otherwise authorized trappers.

O&E 2 Publish a Regulation Booklet
IFW will continue with annual publication of the summary law book that describes all current laws that govern hunting and trapping including a lynx regulation page.

O&E 3 Trapper Information Booklet
IFW will annually distribute the lynx avoidance measures in the Trapper Information Booklet to all licensed and otherwise authorized trappers. These materials will be updated as needed and would also be available on the website.

O&E 4 "How to avoid the incidental take of lynx" Booklet
IFW will update and distribute this booklet to all licensed and otherwise authorized trappers within1 year after the permit is issued, every 5 years thereafter, and any time new regulations or information may affect the methods the trappers use to avoid incidentally trapping lynx. IFW will maintain a copy on the website.

O&E 5 Maintain Website Information
IFW will maintain a webpage that contains information on lynx biology, avoiding lynx incidental captures, and trapping regulations. The webpage will be updated as needed by IFW Information and Education staff in consultation with wildlife biologists.

O&E 6 Trapper Education Course
IFW will provide the materials and oversight needed to keep students in IFW's trapping education course up-to-date on techniques and regulations that minimize the incidental trapping of lynx. IFW's wildlife biologists and Safety Officers will annually review regulations, laws, research results, and to determine if additional information needs to be presented to students.

O&E 7 Trapper Video NEW
IFW will produce and distribute a video to all licensed or otherwise authorized trappers that demonstrates techniques for reducing incidental lynx captures and injuries within 2 years after a permit is issued. This video will be produced by IFW Information and Education staff in consultation with wildlife biologists and will be used in trapper educational courses (by students and instructors). ADC and PM trappers will be required to review this video during their certification/recertification training. Upon completion, this video will remain on IFW's website.

O&E 8 Continued Education for Instructors
IFW will ensure instructors are informed of current measures to minimize lynx captures through annual staff meeting with IFW's Regional Safety Coordinators, biannual instructors training sessions and periodic newsletters to instructors.

Measures related to monitoring, reporting, or implementation.

Plan Implementation -- Commitments

PI 1 Extending lynx measures
If lynx establish residence in new areas of the state, IFW will modify trapping regulations to ensure that trapping regulations offer the same level of protection for lynx in these new locations.

PI 2 Investigate all lynx incidental captures
IFW Warden Service will continue to investigate all lynx incidental captures in traps.

PI 3 Cooperate with USFWS on Investigations
IFW biologists or wardens will continue to inform USFWS special agents of any lynx incidental captures or other takings when they occur.

PI 4 Conduct compliance monitoring NEW
Each year, IFW Wardens will check a sample of traps set by at least 80 trappers setting killer-type traps in the lynx range to record the number of traps set in compliance with lynx minimization measures . IFW biologists will analyze the data to inform IFW's changed circumstances plan.

PI 5 Consult with trappers
Wildlife biologists and game wardens will continue to consult with trappers on ways to minimize lynx injuries and avoid trapping lynx at annual MTA meetings, fur rendezvous events, and during casual interactions.

5.2.1 Minimization Measures Commitments, Implementation, Monitoring, and Reporting

The USFWS's addendum to the HCP handbook (FR 65(106):35242-35257; the "5-point policy) focuses on the expanded use and integration of monitoring as an integral part of habitat conservation plans. Biological goals and objectives provide a framework for developing a monitoring program that measures progress toward meeting those goals and objectives. Monitoring is also integral to detecting changed circumstances and guiding management. Monitoring programs assess the implementation and effectiveness of the ITP by determining the level of incidental take after minimization measures are in place. This monitoring strategy has been designed to ensure the biological goals (Section 5.1) are being achieved by: 1) minimizing the number of Canada lynx incidentally trapped in Maine; 2) minimizing the injury severity and mortalities to captured Canada lynx, and 3) providing effective mitigation for any trapping related mortalities (Section 5.1) are being met.

The monitoring strategy incorporates both implementation and effectiveness monitoring. Implementation monitoring ensures implementation of IFW's conservation commitments throughout the ITP term by tracking, reporting, and evaluating whether the covered activities are being performed in compliance with the HCP requirements (Sections 5.2; 5.3). Implementation will be documented through checklists maintained in a database for compilation into annual updates and 5-year monitoring reports to the USFWS. The objectives of this database are to 1) determine whether all commitments are being appropriately implemented, 2) identify areas for potential improvement, and 3) verify that any required communications with or approval from the USFWS were executed.

IFW will also monitor the effectiveness of minimization measures to reduce incidental trapping of lynx and injury or mortality to lynx if caught in traps. ***Effectiveness monitoring*** will include investigating, documenting, and evaluating the circumstance and severity of injury (injury assessment or mortality) of each incidental lynx capture whether a lynx is caught in a legal or illegal set. These data will help the USFWS and IFW assess whether our minimizations efforts are effective. If circumstances have changed, these data can be used to identify any relationship between the circumstance (e.g., trap type, set type, weather, disturbance, trapper effort, etc.) and the incidental trapping of a lynx to identify an appropriate management response if it becomes necessary (Section 5.4).

<u>Regulatory Measures</u>

Rationale: As a state wildlife agency, IFW makes its most significant contribution towards Canada lynx conservation through its regulatory authority, management procedures, and public outreach efforts. Regulations (rules) and laws (statutes) are the most common tools used by state wildlife agencies to communicate with the public and modify an individual's behavior when they are trapping, hunting, or using public or private lands. IFW can use rulemaking to reduce injuries (e.g., requiring 1 swivel on trap chains) and the number of lynx being incidentally caught by trappers (e.g.,

restricting use of visible bait, leaning pole set for killer-type traps), and to assist in the monitoring of the number of lynx that are incidentally caught in traps (e.g., mandatory reporting). Regulations are widely distributed in print form and on the internet and can be packaged for target audiences. IFW enforces laws and regulations through the Maine Warden Service.

IFW's lynx management efforts include a proven record of using proactive management to decrease the number of lynx being incidentally caught in killer-type traps. Killer-type traps are the only furbearer trap type that has killed lynx in Maine. To address the mortality risk from these traps, IFW worked with the USFWS and AFWA to develop and improve leaning-pole sets.

This Plan incorporates several minimization measures aimed at avoiding capture of lynx. These largely rely on regulatory changes that were made since 2008, clarification made to trappers, and measures implemented for this Plan.

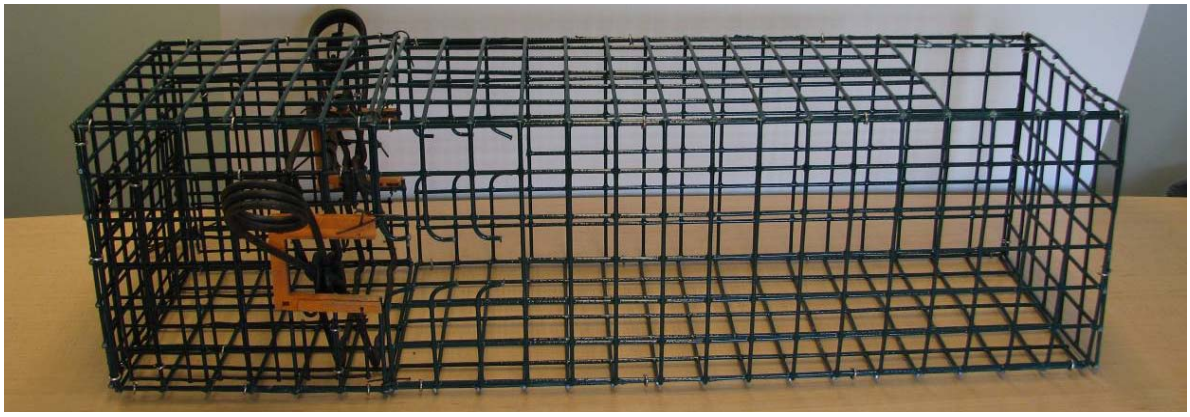
RC 1 Restrict placement of killer-type traps set on land in all WMDs that have resident lynx

Rationale: Both leaning pole sets and lynx exclusion devices (Figure 5.2.1) are effective at preventing lynx captures in killer-type traps set for marten and fisher. IFW has been implementing the leaning pole measure since 2007 and it was also incorporated into the Consent Decree for WMDs 1-6 and 8-11. Since a rule clarification in 2008, trappers have used leaning-pole sets in WMDs 1-6 and 8-11 for over 750,000 trap nights without catching a lynx in a legal set. However, during that time period the Warden Service recorded 1 lynx capture in a killer-type trap set illegally.

IFW currently allows killer-type traps (≤7 ½ inch inside jaw spread) to be set on the ground when the trap is set in an exclusion device in WMDs where lynx are found and that are not covered by the Consent Decree (currently WMDs 7, 14, 18, and 19) or set on the ground as blind sets (< 5 inch inside jaw spread) for mink without an exclusion device (statewide). To date, lynx have not been incidentally captured in blind sets for mink or killer-type traps set on the ground for marten and fisher with a lynx exclusion device. However, if this changes or new information becomes available, IFW's changed circumstance section of the Plan will address this (Section 5.4).

Commitment: Following issuance of the permit, IFW will maintain the current regulation that requires killer-type traps that have a jaw spread greater than 5 inches to be set on leaning poles. Although exclusion devices are currently permitted in WMD 7, 14, 18 and 19, through the rule making process, IFW intends to permit killer-type traps with an inside jaw spread ≤ 7 ½ inches to be set on the ground if placed within a lynx exclusion device in WMD 1-6 and 8-11 (currently not permitted by the Consent Decree). An exclusion device will not be required for blind sets (as described in Section 3) or leaning pole sets.

Figure 5.2.1 An example of a lynx exclusion device for killer-type traps. Note the opening for a fisher or marten to enter the trap is located on the top panel on the far right end. The killer-type trap (shown) is set near the left end of the trap, and the bait would be placed to the left of the trap in the cage. Specifications for a lynx exclusion device are described in Maine's trapping rules[8].



Implementation: IFW is not proposing any changes to the leaning pole regulations identified in this Plan. However, within 1 year after the permit is issued of an ITP, IFW will promulgate regulations to allow killer-type traps to be set on the ground in WMDs 1-6 and 8-11 with an approved lynx exclusion device that covers the trap. Until the regulation is promulgated the current rule prohibiting the setting of killer-type traps on the ground will remain in effect. IFW will notify the USFWS when this change is made.

Compliance monitoring: Killer-type traps are currently restricted, so compliance has already been met. However, IFW will notify the USFWS when regulations go into effect that extend the use of killer-type traps set on the ground, with the use of an approved lynx exclusion device that covers the trap, in WMDs 1-6 and 8-11.This would not change the current regulation that allows killer-type traps with an inside jaw-spread less than or equal to 5 inches to be set on the ground. These are often used for trapping mink and other aquatic species.

[8] Lynx exclusion device rule (2011): In WMDs 7, 14, 18, and 19 killer-type traps with a jaw spread not to exceed 7 ½ inches may be used on the ground level if the trap is placed within a lynx exclusion device. The trap jaws must be completely within the device, the trap springs can be outside of the device. The lynx exclusion device must not have an opening greater than 6 inches by 8 inches, the set trap within the device must be a minimum of 18 inches from the closest edge of the opening to the trap (intended for 160 and 220 killer-type traps) or; if the device has a 4 inches by 4 inches or less opening, the trap must be a minimum of 12 inches from the closest edge of the opening to the trap (intended for 120 killer-type traps). The back of the device must be secured to withstand heavy pulling; if using wire mesh with a wood box, the wire mesh must wrap around two opposite sides of the box and be secured. There must be at least 2 attachment points for each side of the device where a joint or panels come together. The exclusion device can be constructed of wood, or wire mesh that does not exceed 1½ inches opening. The wire mesh has to be 16 gauge or less (wire diameter of 0.05 or greater). The opening slot in the exclusion device that allows the trap springs to extend outside the device can be no more than 7 ½ inches wide and a height of no more than 1 ½ inches. The trap must be anchored outside of the exclusion device.

Effectiveness monitoring: IFW will track and report annually on the number of lynx caught in killer-type traps. IFW will immediately notify the USFWS if changed circumstance #2 and 3 are triggered (Section 5.4).

Reporting: In addition to reporting described in monitoring section, IFW will inform the USFWS of any rule changes annually.

RC 2 Mandatory Reporting

Rationale: In 2008, IFW made it mandatory for trappers to report lynx caught in traps before releasing the lynx (Table 5.2.1). This rule-change increased the likelihood that all lynx caught in traps would promptly be reported to IFW, permitting IFW staff the opportunity to assess and treat any injuries prior to releasing the lynx from the trap and investigate compliance with trapping regulations. Additionally, mandatory reporting ensures the level of incidental take that occurs during IFW's trapping programs is documented (i.e., take does not exceed 195 lynx in 15 years).

Commitment: IFW will continue to require any lynx caught incidentally, dead or alive, during any trapping season to be reported to an IFW official as soon as possible and prior to releasing the lynx from the trap, unless an IFW official cannot be reached in time to prevent injury to the lynx. Any lynx released under this provision must be reported to IFW within 24 hours of the time it was discovered.

Implementation: N/A

Compliance monitoring: Mandatory reporting is currently required, so compliance has already been met.

Effectiveness monitoring: IFW will track the number of reported lynx incidental captures in a database and annually review this information to evaluate compliance with reporting requirements.

Reporting: Data on reporting rate will be compiled by IFW biological staff and reported to the USFWS in an annual report.

RC 3 Restrict the Use of Visible Bait

Rationale: In 2007, IFW restricted the use of bait to reduce the incidental take of lynx and other non-target species. During the early coyote and fox (2 weeks before the start of the general trapping season), and muskrat seasons (1 week before the start of the general trapping season) it is illegal to use any exposed bait or visible attractor (Rule 09-137 Chapter 4.01 G 1a, 2A-d, 2B-b). During the regular trapping season, foothold traps and killer-type traps may not be set within 50 yards of bait that is visible from above. Bait may be used for trapping if it is completely covered in such a way to withstand wind action or other natural elements. Bait is defined as animal matter, skin,

bones, feathers, hair or any solid substance that used to be part of an animal or fish. Bait does not include animal droppings or urine, or an animal held in a trap (Rule 09-137 Chapter 4.01 K). These measures were put in place to make traps less attractive to lynx and other non-targets. In addition to lynx, during the early coyote and fox season, bobcats, fisher, and marten must also be released from traps.

Commitment: IFW will continue to restrict the use of visible bait (e.g., meat, bones, feathers, hair) that may attract a lynx to a set.

Implementation: N/A

Compliance monitoring: Visible bait is currently prohibited, so compliance has already been met.

Effectiveness monitoring: IFW will document whether visible bait was used at each lynx incidental capture to ensure compliance with this regulation. Any use of visible bait by trappers will be tracked in a database. Additional information may come from IFW's evaluation of data collected through IFW's Warden Service check commitment in lynx WMDs (see minimization measure PI4).

Reporting: IFW biological staff will compile data on use of visible bait, if any, and provide in an annual report to the USFWS.

RC 4 Restrict foothold traps types and configurations when set on land

Rationale: IFW, in an agreement with plaintiffs in the Consent Decree, restricted the size of foothold traps in WMD 1-6 and 8-11 (areas where lynx had been caught by trappers) to traps with an inside jaw spread < 5 3/8 inches and required at least one swivel on trap chains. Prior to the consent decree, coyote trappers would have used traps with an inside jaw spread $\leq$ 6 ¾ inches. IFW's data shows that trap size has not affected the rate of lynx captures, injury, or injury severity. The number of lynx incidentally captured in foothold traps did not decrease after the size restriction was put in place and the type and severity of injuries did not change. Therefore, restricting foothold trap size is not expected to minimize the number of lynx captured or the severity of injury during the permit period.

Commitment: IFW will continue to require at least one swivel on the chain of foothold traps in lynx WMDs and will prohibit the upland use of traps with teeth statewide.

Implementation: Within 1 year after the permit is issued, through the rule making process, IFW will clarify the language in rule to prohibit the use of foothold traps with teeth statewide when set on land[9] and will implement new regulations to rescind the

[9] Since this application was submitted, IFW established a rule prohibiting use of any trap with teeth on the jaws unless when set, placed and tended, the trap is completely covered with water.

restriction of foothold traps with an inside jaw spread of greater than 5 3/8" in lynx WMDs.

Compliance monitoring: IFW will notify the USFWS when regulations go into effect that prohibit the use of foothold traps with teeth statewide, and the restriction of foothold traps with an inside jaw spread of 5 3/8" in lynx WMDs is rescinded. At least one swivel is currently required on foothold traps set in lynx WMDs, so compliance has already been met.

Effectiveness monitoring: IFW will immediately notify the USFWS if changed circumstance #2 (i.e., injury rate increases) is triggered.

Reporting: IFW will notify the USFWS in annual reports of when regulatory changes occurred.

Measures that minimize injury and mortality - Incidental Capture Response Commitments

Rationale and Background: The ESA protects endangered and threatened species, including individual animals, populations, and the ecosystems on which they depend. While IFW may not be able to prevent lynx from being caught in foothold traps, IFW can evaluate and treat most injuries a lynx might receive after being held in a foothold trap. Such actions contribute towards "minimizing the impact[10]" of IFW's trapping program and address IFW's Biological Goal for this Plan.

Since 1999, IFW has publicized a telephone number that trappers can call 24-hours a day, 7 days a week, during the trapping season, to report lynx that have been incidentally trapped. Wildlife biologists monitor the hotline; coordinate their response with regional biologists, Wardens, and USFWS special agents; travel to the trapping site to sedate the animal; examine it for injuries; treat minor wounds; collect biological information; and release the animal back into the wild. If the animal has an injury that cannot be treated in the field, biologists will transport the lynx to the nearest cooperating veterinarian, and, if necessary, arrange for further treatment or rehabilitation. IFW maintains a list of cooperating veterinarians who are willing to care for lynx injured by incidental trapping. IFW has a goal of examining 90% of the lynx that are incidentally trapped. To date, IFW wildlife biologists and trappers have successfully released 63 out of 70 lynx (90%) that were incidentally caught by trappers. IFW biologists have examined 39 of 70 (56%) lynx caught in traps. Three lynx were taken to a veterinarian because of incidental trapping injuries. All were successfully rehabilitated and released into the wild. Since mandatory reporting of lynx captures has been in place, IFW biologists have examined 24 of 28 lynx (86%) caught by trappers.

[10] The USFWS' handbook on Habitat Conservation Planning and Incidental Take Permit Processing (1996) lists "minimizing the impact" as one of the five forms of mitigation action.

IFW is committed to continuing its response to lynx that are incidentally trapped. Implementation of IFW's response to lynx incidental captures includes the following components.

IM 1 Trapped Lynx Hotline

Rationale: The overall objective of IFW providing a hotline for reporting lynx captures is to insure a quick response to lynx incidental captures by IFW staff and minimize any injuries that may occur to lynx as the result of incidental trapping or other accidents. Given the remote nature of areas where lynx occur, it may not always be possible for trappers to contact IFW staff in a timely manner. Although we may strive for 100%, IFW's goal is for at least 90% of the trappers to call prior to releasing a lynx. Regardless, IFW Game Wardens will investigate all incidental captures to determine if traps were set in compliance with trapping regulations designed to reduce lynx takes.

Commitment: IFW will continue to maintain and publicize a telephone number that all licensed or otherwise authorized trappers or the general public can call anytime during the trapping season to report a lynx that has been incidentally captured in a trap. IFW wildlife biologists will monitor this number 24-hours a day, 7-days a week, during the fur trapping season. In the event that an ADC trapper captures a lynx outside the fur trapping season, ADC trappers are instructed to contact an IFW warden or biologist through the 24-hour/7-day a week State Police Call Center for assistance with the release and care of trapped lynx.

Implementation: Each trapping season, several wildlife biologists will carry cell phones, linked through call forwarding, to ensure that anyone calling the lynx hotline can contact a biologist 7 days a week, 24-hours a day. These biologists will be trained to collect the appropriate information from the caller, advise the caller, and initiate IFW's response to the incident.

Compliance monitoring: IFW will track in a database the number of confirmed lynx reports, and whether the report was received prior to the animal's release. Data from each lynx capture will be entered into a database annually.

Effectiveness monitoring: IFW biologists will analyze the data to determine whether the goals were achieved.

Reporting: IFW will summarize data in annual reports.

IM 2 Responding to Lynx Incidental Captures

Rationale and Background: Since 1999, IFW's game wardens and biologists have responded and/or assisted with the release of lynx caught in traps to: 1) document the number of incidental takes each year, 2) investigate compliance with trap laws, 3) identify and correct any problems with current trapping regulations (see Minimization

Measures PI2 and PI3), and 4) assess, treat, and release lynx from traps or seek veterinarian care, when necessary.

Although a goal of responding to 100% of lynx captures is desirable, given the remote nature of areas where lynx occur, it may not always be possible for IFW staff to respond in a timely fashion. Although we may strive to respond to every lynx incidental trapping event, IFW's goal is for IFW biological staff to go to at least 90% lynx captured in traps to evaluate, treat, and release lynx. Game wardens will investigate all incidental captures to determine if traps were set in compliance with trapping regulations designed to reduce lynx takes.

Commitment: IFW will continue to have biologists respond to lynx incidental captures (anywhere in the state) to release or assist in the release of the animal, to assess the animal for injuries, treat injuries, and to transport the animal if veterinary care is warranted. Exceptional circumstances that may prevent a wildlife biologists from releasing and examining a lynx include insufficient time to travel to the trapping site before nightfall, prior release of the lynx by a warden or trapper out of safety concerns for the animal (e.g., disturbance from a busy road), or inclement weather that would make traveling hazardous (Appendix 8).

Implementation: No further details are required (see commitment).

Compliance monitoring: IFW will track in a database the number of confirmed incidental lynx takes, whether the report was received prior to the animal's release, who released the lynx, the animal's fate (i.e., released with no or minor injuries, treated by veterinarian and released, treated by veterinarian but not able to release, died from injuries), whether the trap or trap set was legal, and the trap configuration (type of trap, set type, etc.). Data from each lynx capture will be entered into a database annually.

Effectiveness monitoring: IFW will summarize the data tracked in the database to assess whether the goals of the Plan have been met (i.e., that the majority of lynx are released after incidental capture with no more than 9 lynx requiring veterinarian care for a severe injury, and no more than 3 lynx dying from trap related injuries during the 15-year permit period).

Reporting: IFW will summarize data on lynx incidental captures in traps in annual reports and will include information on whether the goals were achieved or changed circumstance was triggered.

IM 3 Use Standard Operating Procedures and NEW- Develop Injury Score System

Rationale and Background: Since 2007, IFW has used standard operating procedures for responding to incidental lynx captures (Appendix 8). For the purposes of this Plan, IFW assigned ISO injury scores as a point of reference for lynx examined by IFW biologists. However, this score system relies upon the result of a pathologist necropsy to assign a score. Having a practicable field based scoring systems that can be used

by responders on live animals may improve injury assessment and treatment (i.e., minimize injury rates) for incidentally captured lynx. In 2012, Dr. Stuart Sherburne, DVM[11] provided guidance in updating capture response protocols, datasheets, and standardizing injury assessment (see SOAP-procedures Appendix 8).

Commitment: IFW will continue to implement standard operating procedures for responding to lynx captures (see Appendix 8) and will update these procedures in consultation with a veterinarian, every 3 years or as necessary. Any changes to these protocols will be communicated to the USFWS in annual reports.

Within 1 year of permit issuance, IFW, in consultation with a veterinarian, will develop an injury score system that is appropriate for live animals. IFW will work with a licensed veterinarian to update the score system every 3 years or as necessary during the permit period.

Implementation: No further details are required (see commitment).

Compliance monitoring: Standard operating procedures for assessing and treating lynx injuries have already been developed (Appendix 8), so compliance has already been met. IFW will notify the USFWS when the procedures are updated (at least every 3 years). IFW will notify the USFWS when an injury scoring system for live animal has been developed for lynx caught in traps.

Effectiveness monitoring: None

Reporting: IFW will provide a copy of updated standard operating procedures and injury scoring system in annual reports.

IM 4 Maintain List of Cooperating Veterinarians

Rationale: This measure insures that an injured lynx receives adequate care as soon as possible to facilitate its release back to the wild.

Commitment: IFW will continue to maintain a list of cooperating veterinarians who are willing to care for lynx injured by incidental trapping.

Implementation: This list will be updated annually prior to the start of the trapping season.

Compliance monitoring: A list of cooperating veterinarians has already been developed (Appendix 8) and is updated annually, so compliance has already been met.

[11] Sherburne Veterinary Services, P. O. Box 711, Winterport, ME 04496. Dr. Sherburne also provides veterinary oversight for the Department's chemical immobilization program, and was contracted to conduct the initial training session on injury evaluation for IFW staff.

Effectiveness monitoring: None.

Reporting: IFW will provide the list of cooperating veterinarians in annual reports.

IM 5 Rehabilitate Injured Lynx

Commitment: IFW will transport lynx injured from incidental trapping (when warranted as described in Appendix 8) to the nearest cooperating veterinarian, cover the costs of rehabilitating the animal, and, if possible, release the animal back into the wild. If a veterinarian determines that a lynx requires special medical attention or rehabilitation, the animal will be transported to a facility that can provide these services. This may include transporting the lynx out-of-state (e.g., Tufts University). As a component of effectiveness monitoring, IFW will equip rehabilitated lynx released back to the wild with radio collars to assess whether the treated injury contributes to the mortality of the animal post release.

Implementation: If after following established procedures a lynx requires veterinarian care, IFW wildlife biologists or contractors as "Agents of the Department" will transport the lynx to an appropriate facility, consult with veterinarians on treatment options, and establish a contract with the veterinarian and rehabilitation facility to cover the cost of the treatment and post treatment care. Following rehabilitation, and if the lynx can be released back into a wild environment, IFW biologists will equip the lynx with a radio collar prior to releasing the animal. If the lynx dies post release, IFW biologists and game wardens will immediately investigate and submit the carcass (if available) for necropsy by a wildlife pathologist. Only mortalities where there is direct evidence that the animal died from a trap related injury will be considered a lethal take.

If veterinarians advise IFW that the animal cannot be released back into the wild but could thrive in a captive environment, IFW will try to place the animal with an organization that would use it to either provide environmental education to the public or further lynx conservation. IFW will notify the USFWS if the attending veterinarian determines that euthanasia is the most humane option for the animal.

Compliance monitoring: IFW will notify the USFWS of lynx requiring veterinarian care.

Effectiveness monitoring: IFW will track in a database and report annually on the number of lynx that require veterinarian care, the outcome of the treatment (i.e., released, held in captivity, euthanized), and post-release monitoring. If the number of severe injuries increases and triggers changed circumstances, IFW will implement a contingency plan that is described in change circumstance #2 (see Section 5.4).

Reporting: IFW will provide a summary of any lynx treated for capture related injuries in annual reports.

***IM 6 Injury Evaluation Training for Staff* NEW**

Rationale and Background: In the fall of 2012, IFW, with a local veterinarian, established a one-day training session on injury detection and evaluation to ensure that all wildlife biologists[12] receive similar training on lynx injury assessment. The first class was held in 2012 and again in 2013. All staff currently approved to respond to lynx captures attended this training.

Commitment: IFW wildlife biologists will be required to attend this course at least once every 3 years if their responsibilities include responding to incidentally trapped lynx. Any new biologists will not be permitted to respond to lynx captures until they have received such training, unless they accompany trained biologists.

Implementation: No further details are required (see commitment).

Compliance monitoring: Initial training on injury assessment of captured lynx was provided to IFW biological staff in 2012, therefore initial compliance has been met. IFW will notify the USFWS of additional staff training, scheduled to occur every 3 years during the permit period. IFW will develop a database to track training dates and a list of personnel receiving trainings.

Effectiveness monitoring: None.

Reporting: IFW will provide summary of trainings in annual reports (Table 5.4.3).

IM 7 Veterinary Oversight NEW

Rationale and Background: In the fall of 2012, IFW established a contract with a local veterinarian to oversee animal care procedures provided by IFW. The veterinarian accompanied IFW wildlife biologists on 3 incidental capture events and concurred with IFW's injury assessments, each of which were minor.

Commitment: IFW will have a veterinarian accompany staff on at least 3 lynx incidental captures within each 3 year period for a minimum of 15 evaluations of captured lynx during the permit period to ensure injury evaluations by IFW staff are assessed correctly.

Implementation: No further details are required (see commitment).

Compliance monitoring: IFW will provide confirmation of a veterinarian visit in incidental lynx capture reports.

[15] As of 2012, only IFW wildlife biologists are trained to sedate animals. All lynx removed from traps are first chemically immobilized to allow biologists to thoroughly evaluate the animal for injuries. If in the future Wardens are allowed to sedate animals, they will receive the same training as wildlife biologists.

Effectiveness monitoring: None.

Reporting: IFW will provide summary of veterinarian oversight in annual reports.

IM 8 Radiocollar orphaned lynx kittens or hold kittens in captivity until their mother is released from rehabilitation facility NEW

Background: Maine's furbearer trapping season occurs at a time when female lynx may be accompanied by kittens. If adult female lynx are captured incidentally in traps, most will be released from the traps with no or only minor injuries. Data from IFW's 12-year radio telemetry study shows that the adult females released from traps are not separated from their kittens. However, there may be some instances when an adult female lynx with kittens is more severely injured (therefore taken by IFW for treatment at a rehabilitation center) or killed. In these rare cases, although the kittens are orphaned they could survive on their own.

IFW anticipates that the instances of orphaned kittens from trapping will be low and that orphaned kittens could survive. When Maine's trapping season occurs, lynx kittens are between 5 and 7 months old, weaned, and consuming meat. Although no longer dependent on their mother for milk, the survival of kittens may be lower if she dies, since the family group normally remains intact until kittens disperse at 9 to 10 months of age (Parker et al. 1983, Koehler 1990). Data on the survival of kittens that are orphaned after they are weaned is limited since direct observation of most wild felids is almost impossible (Fernandez et al. 2001). Improvements in radiocollar technology has facilitated some study of lynx breeding behavior (see Fernandez et al. 2001, Olsen et al. 2011), however data remains limited. More knowledge may be gleaned from studies of other wild felids since kitten development is similar among felids (as cited by Fernandez et al. 2001). For example, in a study of Iberian lynx, a 3 month old orphaned kitten lived for at least 11 months (Fernandez et al. 2001) suggesting that weaned lynx are capable of surviving to dispersal age without their mother.

As part of this Plan, IFW will use any instances of kittens orphaned from trapping activities as an opportunity to gain new information on the fate of these animals and to inform development of future orphan kitten response options. Since some kittens will die even if they remain with their mother until dispersal age (e.g., in Maine 22% of kittens still traveling with their mother did not survive (Vashon et al. 2012)), it may be difficult to assess whether the loss of the adult female led to the death of kittens. Additionally, the sample size of kittens orphaned from trapping activities will likely be so low that it will be difficult to compare survival rates between orphaned and unorphaned kittens to ultimately understand the impacts of trapping mortality on kittens. However, information collected from orphaned kittens could be useful in adapting procedures for future responses. For example, if all orphaned lynx kittens die, even if the number of orphaned kittens is low, then IFW could require, until new information becomes available, that all orphaned kittens be held in captivity until they reach maturity. Conversely, if they all survive, IFW may not capture orphaned kittens in the future. These options will be assessed at the end of the permit period.

Commitment: If an adult female with kittens is killed in a trap or taken by IFW for treatment at a rehabilitation center, IFW will work to capture the kittens if they are still in vicinity of the capture site (unless as described below). Captured kittens will either be equipped with radio collars to document their survival or held in captivity until the female can be released. In the event that rehabilitated females cannot be released back to the wild, kittens that are captured will be equipped with radio collars and released near the capture site.

Specifically, IFW staff will:

1. Examine the animal captured in the trap to identify sex and age;
2. Examine adult females for evidence that she raised kittens this year;
3. Interview individuals at the location and search the capture site for sign of kittens;
4. If kittens were observed at the capture site, IFW will estimate how many kittens were present. If the family group includes more than 1 kitten, it may be difficult to capture every kitten. Reducing the size of the family group may further influence survival of uncaptured kittens. Therefore, IFW staff will not attempt to capture kittens from family groups of 2 or more kittens, unless circumstances suggest capture of all kittens is likely (e.g., behavior of kittens and affinity to capture site);
5. If capture of kittens is appropriate, cage traps will be set near the capture site;
6. Any kitten that is captured will be examined as described in Appendix 8:
    a. If the adult lynx was killed in a trap, then kittens will be equipped with radiocollars and released at the capture site;
    b. If the adult lynx is at a rehabilitation facility, the kittens will be transported and held at the facility until the female can be released;
    c. If the adult female cannot be released, the kittens will be equipped with radiocollars and released near the capture site.

Note: If kittens are later observed near the capture site of an adult female that is killed or taken to a rehabilitator, IFW will not attempt to capture these kittens because they may not be related and separating kittens from healthy females could impact additional lynx.

Implementation: No further details are required (see commitment).

Compliance Monitoring: IFW will track in a database the number of orphaned kittens and their fate.

Effectiveness Monitoring: None.

Reporting: IFW will continue to immediately notify the USFWS of any incidental lynx captures (see minimization measure PI 3 in Section 5.2). IFW will annually report to USFWS any activities involving orphaned kittens including the number, response, and outcome (e.g., collared, held in captivity).

Outreach and Education Commitments (O&E 1 - 8)

Rationale and Background: IFW has multi-pronged outreach and education approaches that address the informational needs of the general public and the concerns of trappers. IFW is committing to 8 outreach and education measures to minimize the effects of incidental lynx trapping on lynx (Table 5.2.2). Of these 8 commitments, 1(O&E 7) contains new activities that IFW will undertake. The other activities IFW has proactively undertaken to minimize the effects of incidental trapping on lynx (Table 5.2.1).

Maine trappers are passionate about ensuring that their avocation (i.e., furbearer trapping) continues into the future, and are concerned about how the incidental trapping of lynx may affect state regulations and future trapping opportunities. When IFW wildlife biologists work with trappers, they are committed to making the experience a positive one. This is especially true when a trapper incidentally catches a lynx. This positive experience spreads by word of mouth throughout the trapping community.

When appropriate, IFW uses an informational approach for solving problems. Problem solving through the use of information and education is effective in achieving compliance and promotes a sense of cooperation between the public and IFW. Such an approach allows resource users a chance to help resolve the problem, lessens the chance that an adversarial response will develop between the resource user and the regulatory agency, does not overburden the regulatory or legal process with matters that could have been resolved in a less restrictive way, and maintains a greater degree of trust and respect between the resource user and the regulatory agency.

Outreach and Education (O&E; Table 5.2.2) includes Trapper Relation Commitments (O&E 1), Publications and Website Commitments (O&E 2-7), and Trapper Education Course Commitments (O&E 8-10). The objective of IFW's outreach and education measures are to keep new and experienced trappers informed of current trapping regulations to insure compliance with IFW's laws and reduce incidental trapping of lynx. IFW will provide the USFWS brief summaries of activities conducted under these minimization measures in its annual report. In addition to keeping new and experienced trappers informed of current trapping regulations to reduce incidental trapping of lynx, IFW's participation in trapper meetings and casual interactions with trappers are also expected to facilitate discussions on any alternative methods for reducing lynx captures or injuries.

Trapper Relation Commitments and Implementation (O&E 1)

O&E 1 Reinforce Compliance

Commitment: IFW wildlife biologists and game wardens will continue to promote compliance with trapping regulations through interactions with trappers at annual Maine Trappers Association (MTA) meetings, at fur rendezvous events, and during casual

interactions with trappers (i.e., responding to incidental lynx captures, investigating compliance with trapping laws).

Implementation: IFW is not proposing any changes to interactions with all licensed or otherwise authorized trappers. No further details are required (see commitment).

Compliance monitoring: This is an ongoing activity where the furbearer biologist and wardens interact with all licensed or otherwise authorized trappers at meetings or when investigating compliance with trapping regulations, therefore compliance has already been met.

Effectiveness monitoring: None.

Reporting: IFW will notify the USFWS of meetings with the MTA and other significant interactions with licensed or otherwise authorized trappers in annual reports.

Publications and Website Commitments and Implementation (O&E 2- O&E 5)

O&E 2 Update the Annual Regulation Booklet

Commitment: Each year, IFW will update a summary booklet that describes the current laws and regulations that govern hunting and trapping in Maine. This booklet includes a special lynx regulation page that describes all the current regulations to minimize and report lynx captures. IFW's Information and Education Division will annually produce the Regulation Booklet (i.e., State of Maine Hunting and Trapping Laws and Rules). Wildlife biologists will work with the Information and Education Division to annually review and update regulations that may affect the incidental take of lynx. The regulation booklet will be distributed to the public via printed copies at IFW offices and on the internet.

Implementation: No further details are required (see commitment).

Compliance monitoring: This is an ongoing activity and IFW is not proposing any changes to publication of IFW's annual regulation booklet. Thus, compliance has been met. IFW will notify the USFWS when updates are available.

Effectiveness monitoring: None.

Reporting: IFW will provide a web link to the regulation booklet in annual reports.

O&E 3 Update Annual Trapper Information Booklet

Commitment: IFW will annually update the Trapper Information Booklet (Appendix 4) and will include the section of the booklet (approximately 4 pages) that pertains to lynx avoidance in its annual trapper mailing (i.e. letter) to all licensed or otherwise authorized trappers. For landowners that trap on their own land, IFW will gather contact

information through IFW's fur registration system and include these individuals in the annual mailing. The booklet, in its entirety, will be available on IFW's website, emailed through Gov-Delivery, or a printed copy will be mailed upon request.

Implementation: Wildlife biologists in the Research and Assessment Section will annually review and update, if necessary, information in the Annual Trapper Information Booklet on recognizing lynx, lynx sign, and how to avoid incidentally capturing a lynx.

Compliance monitoring: None.

Effectiveness monitoring: None.

Reporting: IFW will confirm that the mailing occurred and provide a copy of the section of the booklet mailed to all licensed or otherwise authorized trappers in annual reports.

O&E 4 "How to avoid the incidental take of lynx" Brochure

Background: In 2003, the USFWS and state partners developed a general brochure describing recommendations to avoid or minimize the incidental take of lynx throughout lynx geographic range. In 2005, IFW customized the brochure for Maine trappers and mailed a copy to all licensed fur trappers.

Commitment: Within 1 year after the permit is issued and every 5 years thereafter, or anytime when trapping regulations change that affect the methods trappers use to avoid incidentally trapping lynx , IFW will update, print, and distribute the brochure "How to avoid the incidental take of lynx", to all license or otherwise authorized trappers. This brochure will include a description of the avoidance and minimization measures described in this Plan and will also be available on IFW's website.

Implementation: No further details are required (see commitment).

Compliance monitoring: IFW will notify the USFWS when the brochure has been updated and will track the distribution of the booklet in a database.

Effectiveness monitoring: None.

Reporting: IFW will provide information on any updates and the distribution of brochures to licensed trappers in annual reports.

O&E 5 Maintain Website Information

Commitment: IFW will maintain and update one or more webpages on IFW's website that presents information on lynx biology, avoiding lynx incidental captures, and current trapping regulations during the 15-year permit period.

Implementation: The website will be updated as necessary by IFW Information and Education staff in consultation with IFW wildlife biologists.

Compliance monitoring: This is an ongoing activity and is updated annually as needed; thus, compliance has been met. IFW will notify the USFWS when updates have been made.

Effectiveness monitoring: None.

Reporting: IFW will provide a web link to IFW's lynx page in annual reports.

Trapper Education Commitments and Implementation (O&E 6-8)

Rationale and Background: Since 1978, a person who applies for a state license to trap, (with other than a junior trapping license), must submit proof of having successfully completed a trapper education course or satisfactory evidence of having previously held an adult license to trap in Maine or any other state. When proof or evidence cannot be provided, the applicant must complete the required trapper education course before receiving a Maine trapping license.

IFW's trapping education course is targeted at individuals that have little trapping experience, but who are interested in trapping furbearers in Maine. IFW's trapper education course provides students a structured approach for learning about trapping methods, safety while trapping, furbearer management, regulations governing trapping, and furbearer utilization (Appendix 3). Instructors and students use a standardized instruction manual to insure that all students are exposed to the same material. This manual is periodically updated to reflect new methods (e.g., Best Management Practices [AFWA 2006a]) and laws. Periodic updates to this manual provide IFW the opportunity to modify or enhance sections on incidental take and selective trapping, including providing information on how to avoid the incidental take of lynx. Currently, written materials are given to trappers on how to avoid incidental lynx captures. This includes the booklet, "How to Avoid Incidental Take of Lynx, while Trapping or Hunting Bobcats and other Furbearers", and flyers on how to handle lynx incidental catches (Appendix 3).

The objectives of IFW's trapper education commitments are to ensure that new trappers are informed of lynx avoidance and minimization measures by updating trapper education course material and providing training to trapper instructors.

O&E 6 Trapper Education Course

Rationale and Background: Existing trappers are very familiar with lynx avoidance measures in Maine based on years of outreach activities (see Table 5.2.1). In addition, other I&E measures in this plan will target all trappers on annual basis. This measure is intended to get new trappers up to speed on lynx avoidance measures. Therefore this

measure will apply to new trappers, which is a small subset of trappers covered by this permit.

Commitment: IFW will continue to require trappers that have not previously attended a trapper education course or held a trapping license to attend a trapper education course before being licensed to trap in Maine. IFW will provide the materials and oversight needed to keep instructors in IFW's mandatory trapping education course up-to-date on techniques and regulations that minimize or avoid incidental trapping of lynx throughout the permit period as described in O&E8. Maine's trapper training course will continue to be developed in consultation with professional wildlife biologists and use the national standards developed for trapper training programs by AFWA. All trapping instructors will continue to teach from the same manual.

Implementation: IFW will update trapper education manual within 1 year after the permit is issued and as necessary thereafter to reflect current regulations and minimization measures for avoiding the incidental trapping of lynx.

Compliance monitoring: Within 1 year after the permit is issued and anytime thereafter, IFW will notify the USFWS on updates to trapper education course material in annual reports.

Effectiveness monitoring: None.

Reporting: IFW will provide a copy of trapper education course material that addresses lynx avoidance and minimization measures in the initial annual report to the USFWS. Any updates to course material will be included in annual reports when they occur.

O&E 7 Trapper video NEW

Rationale and Background: IFW currently provides information on lynx avoidance and minimization measures, including how to identify a lynx, procedures for reporting a lynx that is incidentally trapped, what to expect when biologists and wardens respond to an incidental catch, and methods for releasing a live lynx from a trap if a biologist or warden cannot respond in various printed forms (e.g., annual regulation books, trapper information booklet, IFW's website).

Commitment: In addition to printed materials, IFW will produce and distribute a video to all licensed or otherwise authorized trappers that demonstrates techniques for reducing incidental lynx captures and injuries within 2 years after a permit is issued. IFW will consult with the USFWS on the content of the video in advance of filming and producing. This video will be used in trapper educational courses (by students and instructors). ADC and PM trappers will be required to review this video during their certification/recertification training. Upon completion, this video will remain on IFW's website.

Implementation: This video will be produced by IFW Information and Education staff in consultation with wildlife biologists experienced in responding to lynx incidental captures. Within 2 years of issuances, IFW will distribute videos to all licensed or otherwise authorized trappers, trapper education instructors, and the MTA. Thereafter, it will be available to trappers attending trapper education courses, on IFW's website, or upon request.

Compliance monitoring: IFW will inform the USFWS of the availability and distribution of the DVD to all licensed trappers.

Effectiveness monitoring: None.

Reporting: IFW will provide the USFWS with a copy of the trapper DVD in IFW's 2nd annual report.

O&E 8 Continued Education for Instructors

Rationale and Background: IFW relies on volunteer instructors to teach hunter and trapper education safety courses. This program is overseen by IFW's Hunting and Trapping Education Administrator working with a staff of regional safety coordinators. IFW's Regional Safety Coordinators attend staff meetings twice a year. To become a volunteer instructor, applicants must have completed a trapper education course within the last 5 years and an instructor training session given by a Regional Safety Coordinators. Every year, instructor training updates are held throughout the State. Volunteer instructors are required to participate at least every other year. In addition, instructors receive periodic newsletters and targeted mailings as needed on specific topics related to hunter and trapper education.

Commitment: IFW will ensure instructors are informed of current regulations and recommendations to minimize lynx captures at IFW's Regional Safety Coordinators staff meetings held before the start of the trapping season each year, volunteer instructors training sessions held every other year, and periodic newsletters to instructors. Wildlife biologists will attend the first staff meeting of IFW's Regional Safety Coordinators following issuance of the permit to review and discuss regulatory changes in Maine's trapping laws, protocols for reporting incidental captures, and techniques for releasing trapped lynx. Any updates to lynx avoidance and minimization measures will be distributed to volunteer instructors through periodic newsletters or targeted mailings and at biannual trainings. These updates would also be incorporated into the new instructor training program.

Implementation: No further details are required (see commitment).

Compliance monitoring: Every other year, all trapper education instructors participate in an instructor training update session on changes to IFW's trapping regulations that includes information on lynx avoidance and minimization measures.

Effectiveness monitoring: None.

Reporting: IFW will report trainings and communications with trapper education instructors in annual reports.

Plan Implementation Commitments

PI 1 Extend lynx avoidance and minimization measures to new areas occupied by lynx

Rationale and Background: IFW is requesting incidental take coverage for any lynx incidentally captured through legally set traps in the state. However, avoidance and minimization measures primarily apply to WMDs that are currently known to have consistent presence of lynx since that is where incidental capture may occur. Through this Plan, however, IFW will extend avoidance and minimization measures to new WMDs when information suggests there is consistent presence of lynx as described in Appendix 5. For example, in December of 2010, IFW's Advisory Council extended trap restrictions currently in place in WMDs 1-6 and 8-11, to WMDs 14, 18, and 19 in response to IFW's observations of lynx tracks during 2 or more consecutive winters in WMDs 14 and 19, and the incidental catch of a lynx in WMD 18.

Commitment: IFW will document credible lynx observations to determine changes in the lynx range in Maine including evidence that lynx have become established in a new WMD (e.g., repeated observations, presence of kittens, etc.). To ensure that trapping regulations will offer the same level of protection for lynx in these new areas, IFW will adjust trapping regulations by WMD when verified observations are sufficient to indicate a consistent presence.

Implementation: No further details are required (see commitment).

Compliance monitoring: IFW biological staff will document confirmed tracks, sightings, and takes (including road mortality) as described by the survey commitments in Appendix 5. This information will be used to extend/rescind lynx avoidance and minimization measures by adjust trapping regulations in these areas. IFW will notify USFWS of any trapping regulatory changes during the permit period.

Effectiveness monitoring: None.

Reporting: IFW will include in annual reports any new information on areas used by lynx and when regulatory changes to avoid or minimize lynx captures were put in effect.

PI 2 Investigate all lynx incidental captures

Rationale and Background: Trapping seasons for lynx have been closed since 1967. However, sometimes lynx are incidentally captured in traps set for other legal furbearers. IFW Wardens investigate all incidental captures of lynx to document take,

whether traps where set in compliance with Maine laws, and identify outreach and education or regulatory changes that may minimize future lynx incidental captures.

Commitment: IFW Warden Service will continue to investigate all lynx incidental captures throughout the 15-year permit period to document take levels and compliance with trapping regulations.

Implementation: No further details are required (see commitment).

Compliance monitoring: At each incidental capture of lynx, Maine Wardens and/or USFWS special agents will investigate compliance with Maine's trapping regulations and the circumstances related to the take of a listed species. IFW will track compliance with trapping regulations at lynx incidental captures in a database.

Effectiveness monitoring: If compliance decreases, IFW will implement contingency plan described in Changed Circumstance # 1-3 and #5 (Section 5.4).

Reporting: Data will be compiled annually by IFW biological staff and reported to the USFWS in an annual report.

PI 3 Cooperate with USFWS on Investigations

Background: Since lynx were listed as Threatened by the USFWS in 2000, IFW has notified USFWS Special Agents of lynx incidental captures or other takings when they have occurred.

Commitment: IFW will continue to inform USFWS Special Agents of lynx incidental captures.

Implementation: IFW's wildlife biologists monitoring the "lynx hotline" will notify USFWS Special Agents immediately after the Warden Service and other IFW biologists, who may respond to the incidental capture, receive the initial report. This immediate notification provides USFWS special agents the opportunity to participate in the investigation.

Compliance monitoring: IFW currently notifies USFWS law enforcement of lynx incidental captures before responding to captures; therefore, compliance has already been met. IFW will immediately notify USFWS law enforcement of lynx captures throughout the 15-year permit period.

Effectiveness monitoring: None.

Reporting: IFW will report in annual reports.

PI 4 Conduct targeted compliance monitoring NEW

Rationale and Background: IFW wardens currently enforce Maine's trapping laws; although violations are recorded, the number of traps set in compliance with Maine's laws are not recorded. Therefore, IFW agreed to undertake compliance monitoring (RC

6; Table 5.2.2) to address concerns expressed by the USFWS (personal communication, June 18, 2012 meeting between USFWS and IFW) regarding trapper compliance with regulations on the use of leaning pole sets for killer-type traps. Compliance monitoring is not directed to foothold traps because they are concealed sets that are completely buried with no visible bait.

The overall goal of compliance monitoring is to document and minimize take (i.e., ≤195 takes, ≤9 lynx with severe injuries that require veterinarian care, ≤3 lynx mortalities, during the 15-year permit period). The immediate objective for monitoring killer-type traps will be to determine regulatory compliance over the 15-year permit period and implement measures to increase compliance, if needed. IFW's goal is to demonstrate an increase in compliance through trapper interactions, education and outreach, and enforcement of trapping regulations during the 15-year permit period. For the purpose of this commitment, a trapper will be considered to be in compliance if all of their traps are set in compliance with visible bait, height of trap, pole diameter, and angle of pole regulations for killer-type traps in lynx areas. Any trap that is not in compliance will result in the trapper being provided a warning or summons depending on the type and severity of the violation according to rule or law. This interaction between IFW and trappers is expected to increase compliance over the permit period.

During the 2012 marten and fisher season, Maine Wardens checked 786 killer-type traps set for marten and fisher in lynx WMDs. The majority (87%) of traps checked were set in compliance with Maine's trapping regulations. Although the number of trappers checked was not recorded, Wardens checked compliance with killer type traps on at least 128 occasions.

Commitment: IFW Warden Service will check a sample of traps set by at least 80 of 396 trappers (20%) setting killer-type traps in the lynx range each trapping season during the permit period for compliance with current regulations[13]. IFW biologists will analyze these data and use information from compliance monitoring to inform IFW's contingency plans (Section 5.4).

Implementation: During the first trapping season after the permit is issued, Maine Wardens will begin documenting compliance monitoring of killer-type traps in WMDs occupied by lynx. Two units of measure will be recorded: 1) the proportion of killer-type traps checked that comply with current regulations (i.e., number of trap violations/number of traps) and 2) the proportion of trappers checked with traps set in violation (i.e., number of trap violations/number of traps). Any violation of existing regulations will be recorded (e.g., visible bait, trap size, animals caught out of season, leaning pole regulations, incorrectly designed exclusion device, etc.). Data on the nature of the violation or specific problems that rendered the trap sets non-compliant (i.e. pole too shallow angle, trap not correct height, bait not adequately covered, pole

[13] *Study Limitations:* There is no way to sample specific trappers without their knowledge. Maine trappers have no legal requirement to disclose the location of their traps or trap lines. Wardens often put more effort on checking past or suspected violators; therefore, the rate of non-compliance may be higher than from a random sample of trappers.

too large diameter, embankments, new innovations such as horizontal boards, etc.) will be gathered to assist the MDIFW address specific problems. In addition, wardens will collect data on incidental take of migratory birds. All the data collected by the Wardens will be entered into a database and summarized by a wildlife biologist. For traps in violation, IFW will determine whether any particular violation is more common than others and whether there is a trend in the frequency of certain violations. This information will be used to target messaging to trappers and to examine the effectiveness of current regulations or regulatory language.

Compliance monitoring that occurs during the first 2 years of implementation of the Plan will be used to identify the baseline rate of compliance of killer-type traps set on leaning pole sets. Every year thereafter, IFW will determine the proportion of trappers and killer-type traps checked that were set in compliance with existing regulations. If the proportion of trappers that set legal elevated killer-type traps (i.e., visible bait, pole diameter, angle of pole and height of trap) drops below the average of the first 2 years, IFW will follow the procedures outlined in Section 5.4 Changed Circumstance #5. At no time, will compliance drop below 90% without triggering Changed Circumstance #5.

Compliance monitoring: In 2012, IFW Wardens checked a sample of killer-type traps for compliance with trapping regulations in lynx areas. Additional compliance checks are scheduled annually during the permit period. IFW will notify USFWS of additional compliance checks in annual reports.

Effectiveness monitoring: IFW will track compliance in a database and notify the USFWS if the contingency plan in the changed circumstance section of the Plan is triggered (Section 5.4).

Reporting: IFW will track and report annually on compliance with killer-type trap regulations in lynx WMDs. IFW will summarize and report trapping compliance data annually to include such items as how many illegal sets, how many instances of non-reporting, what type of non-compliance, different categories (warnings, summons, etc) and frequencies. IFW will summarize trapper effort data from voluntary trapper surveys and generated from license numbers and furbearer harvest data in annual reports.

PI 5 Consult with trappers

Rationale and Background: Trapper relations can be strengthened by working with trappers to improve trapping techniques for minimizing lynx take. For example, IFW wildlife biologists have worked with trappers to develop and test lynx exclusion devices for killer-type traps.

Commitment: IFW will continue to consult with trappers on ways to minimize lynx injuries and the incidental trapping lynx at annual IFW / MTA meetings, monthly MTA chapter meetings, MTA board meetings, bi-annual fur rendezvous events, and casual encounters. IFW is committed to continuing this outreach to trappers throughout the year for the 15 years of its incidental trapping permit.

Implementation: No further details are required (see commitment).

Compliance monitoring: This is an ongoing activity where IFW staff interacts with trappers at meetings or when investigating compliance with trapping regulations, therefore, compliance has already been met.

Effectiveness monitoring: None.

Reporting: IFW will report annually in reports.

Table 5.2.3 Timeline for implementing and reporting lynx avoidance and minimization measures in this Plan.

	Compliance		Implementation		
	Met	Ongoing[a]	After Issuance[b]	Thereafter	Reporting
RC 1 Restrict killer-type traps-LYNX WMDs	X	X	X		After regulatory change[c]
RC 2 Require mandatory reporting-STATEWIDE	X	X		Annually	
RC 3 Restrict use of bait-STATEWIDE	X	X		Annually	
RC 4 Restrict foot-hold traps-LYNX WMDs	X	X	X		After regulatory change[d]
IM 1 Maintain lynx hotline	X	X		Annually	Annual
IM 2 Respond to lynx captures-STATEWIDE	X	X		Annually	Annual
IM 3 Standard operating procedures and injury scores	X	X	X	Every 3 years as needed	Annual
IM 4 Maintain list of cooperating veterinarians	X	X	X	Annually	Annual
IM 5 Rehabilitate injured lynx		X		As needed	Annual
PI 1 Extend lynx avoidance/minimization measures		X		As needed	Annual
PI 2 Investigate all lynx captures		X		Annually	Annual
PI 3 Cooperate with USFWS on investigations		X		Annually	Annual
PI 5 Work with trappers on minimization measures		X		Annually	Annual
O&E 1 Reinforce regulatory compliance		X		Annually	Annual
O&E 2 Publish regulation book		X		Annually	Annual
O&E 3 Update trapper information booklet		X		Annually	Annual
O&E 4 Update, publish, distribute lynx brochure		X	X	Every 5 yrs or as needed	Every 5 yrs.
O&E 5 Update website information		X		Annually as needed	Annual
O&E 6 Update trapper education course		X	X	Every 5 years or as needed	Every 5 yrs.
O&E 8 Train safety coordinators/instructors		X	X	Annually	Annual
IM 6 Conduct injury evaluation training NEW			X	Every 3 years	Every 3 yrs.
IM 7 Obtain veterinarian oversight NEW			X	3 lynx during 3 yr period	Annual
IM 8 Respond to orphaned kittens (if it occurs) NEW		X		Annually as needed	Annual
PI 4 Conduct compliance monitoring-LYNX WMDS NEW			X	Annually	Annual
O&E 7 Make Trapper/Instructor video NEW			Within 2 yrs.		One-time

[a] Ongoing measures are measures that are currently in place and will be maintained throughout the permit period.
[b] Within 1 year after the permit is issued, unless otherwise specified.
[c] IFW through rule making will permit the use of killer-type traps set on the ground using a lynx exclusion device in lynx WMDs (currently WMD 1-11, 14, 18,19).
[d] Rescind foothold trap size restrictions.

5.3 Measure to Mitigate Unavoidable Impacts

The USFWS' Habitat Conservation Planning Handbook (p. 3-19) describes mitigation as usually taking one of the following forms: 1) avoiding the impact (to the extent practicable), 2) minimizing the impact, 3) rectifying the impact, 4) reducing or eliminating the impact over time, or 5) compensating for the impact. Furthermore, the USFWS states that, "mitigation programs should be based on sound biological rationale; they should also be practicable and commensurate with the impacts they address" (USFWS 1996).

As previously described (section 4), IFW anticipates the incidental trapping of up to 195 lynx over the requested 15-year permit period from fur, ADC, and PM trapping. Several minimization measures in this Plan are anticipated to reduce the incidental trapping of lynx, particularly from killer-type traps that are most often lethal to lynx if they occur. The majority of minimization measures in the Plan are designed to reduce injury and or fatality of captured lynx. However, IFW anticipated some lynx (up to 9 lynx) could have severe injuries from traps and a few (up to 3 lynx) could either die or not be able to be released back into the wild.

While, for the purposes of this Plan, IFW considers take to include all components of the incidental capture of lynx (i.e., trapping, capture, handling, treatment, release, mortality, etc.), HCP regulations under the ESA require applicants to minimize and mitigate for the impacts of the take. As explained in Section 4, IFW's data shows that lynx captured with no or minor injuries are released and have no demonstrated impacts from the capture event. Lynx more severely injured can be treated and released and have no permanent or long-term impacts that change the behavior or survivorship in the wild. However, lynx fatalities or injured lynx that cannot be released result in individual lynx being removed from the population in Maine. While IFW's demographic analysis shows this does not have population level consequences (Appendix 7), it is an impact that the USFWS wants IFW to mitigate for in this Plan.

IFW's mitigation plan relies on maintaining and enhancing high quality foraging habitat (i.e., habitat that provides high snowshoe hare density) that would otherwise be declining over the permit period because of lack of or incompatible forest management activities. The anticipated benefits are to maintain the lynx that may currently use this area over the permit period and to provide enhanced habitat to support additional lynx. In addition, IFW's research shows that by providing the amount and quality of foraging habitat that is in this Plan, lynx will also likely have increased fecundity rates that may produce even more lynx through the permit period.

To accomplish this, IFW worked with the Bureau of Parks and Land (BPL) to identify an area of state ownership where habitat improvements could support lynx over the permit period. The Seboomook Unit was chosen due to its current condition and forest types (i.e., conifer forest) and its proximity to other areas that provide habitat to support lynx.

Maine's Department of Agriculture, Conservation, and Forestry (DACF) has a policy of cooperating with IFW, USFWS, and other agencies concerning habitat management on state lands for endangered, threatened, or candidate species. For the purpose of this Plan, IFW entered into a Memorandum of Understanding (MOU) with the Bureau of Parks and Land (BPL), a Bureau within DACF (Appendix 11a and 11b), to manage an area for lynx for mitigation for this Plan. The parties recognize that disputes concerning implementation of the ITP or the permit may arise from time to time. The procedures to resolve any disputes should they arise between the State of Maine and USFWS are outlined in Appendix 11c. BPL's Integrated Resource Policy reads (p. 44):

> The U. S. Fish and Wildlife Service and the National Marine Fisheries Service are the lead agencies in matters pertaining to federally listed threatened and endangered species, and IFW and MNAP (*Maine Natural Areas Program*) are the lead agencies for state listed species. The Bureau will cooperate with those agencies in activities such as the delineation of critical habitat and recovery plans on Bureau lands.
>
> In cooperation with IFW and consistent with the purposes of the Endangered Species Act (16 USC 1531 et. seq.) and the Maine Endangered Species Act, the Bureau will identify and promote the conservation of all state and federally listed, endangered, threatened, or candidate species of plants and animals and their critical habitats within the boundaries of lands managed by the Bureau. As necessary, the Bureau will control visitor access to and uses of critical habitats, and it may close such areas to entry for other than official purposes. Active management programs will be conducted as necessary to perpetuate the natural distribution and abundance of threatened or endangered species and the ecosystems on which they depend. The Bureau also will identify all state and federally listed threatened and endangered species and their critical habitats that are native to and present on its lands. Protection and management of endangered and threatened species and their critical habitats will be integrated into all levels of management planning activities, and new information on these species will be incorporated as it becomes available.

Continuing on page 74:

> Threatened & Endangered species - Timber harvesting will comply with all Federal and State regulations concerning listed threatened and endangered species, and species of special concern. Compartment exams/prescriptions and any subsequent timber sale planning will research the presence of these species and manage accordingly.

<u>Basis for calculating mitigation requirements for take of 3 lynx:</u>
To estimate how many lynx may currently and are likely to occupy the HMA following mitigation, IFW used data from a 12-year telemetry study to estimate the amount of HQHH in a lynx home range. This analysis indicates that lynx share some of the same resources (Vashon et al. 2008a, Figure 5.3.1). Across all 5 groups of lynx, 2 or more

lynx shared more than 2,000 acres of HQHH (Table 5.3.1). This equates to 1,595 acres of HQHH per lynx. Therefore, to determine the amount of HQHH to provide for mitigation, IFW multiplied 1,595 by 3 which results in providing 4,785 acres of HQHH on the 10,411 acre HMA. This is further supported by the fact that the average amount of HQHH shared by a breeding group was 4,147 acres and the breeding group sizes ranged from 2-4 adult lynx. Therefore, the 4,785 acres of HQHH provided in the mitigation proposal included in the July 29, 2013 submission is more than sufficient mitigation to support at least 3 adult lynx (Table 5.3.1).

The USFWS request for mitigation:
The USFWS acknowledges that forest management is an acceptable means to offset the take of lynx killed (or not releasable) from trapping. The USFWS requested that IFW use the Service's lynx forest management guidelines and Simons-Legaard et al. (2013) recommendation of maintaining 27% of HQHH in 100 km^2 areas to promote landscape hare densities >0.5 hares/ha. The Service's 2007 guidelines acknowledge lynx management can be readily incorporated into forest management plans for multiple use including harvesting forest products, providing for wildlife habitat, and outdoor recreation. These guidelines state that creating or maintaining 7,000 acres of HQHH on a 35,000 acre parcel could support 8 adult lynx and their offspring. Simons-Legaard et al. (2013) does not model the potential number of lynx that could be supported in landscapes with >0.5 hares/ha. It is reasonable to expect that these landscapes will support at least one breeding group of 3 or more adult lynx.

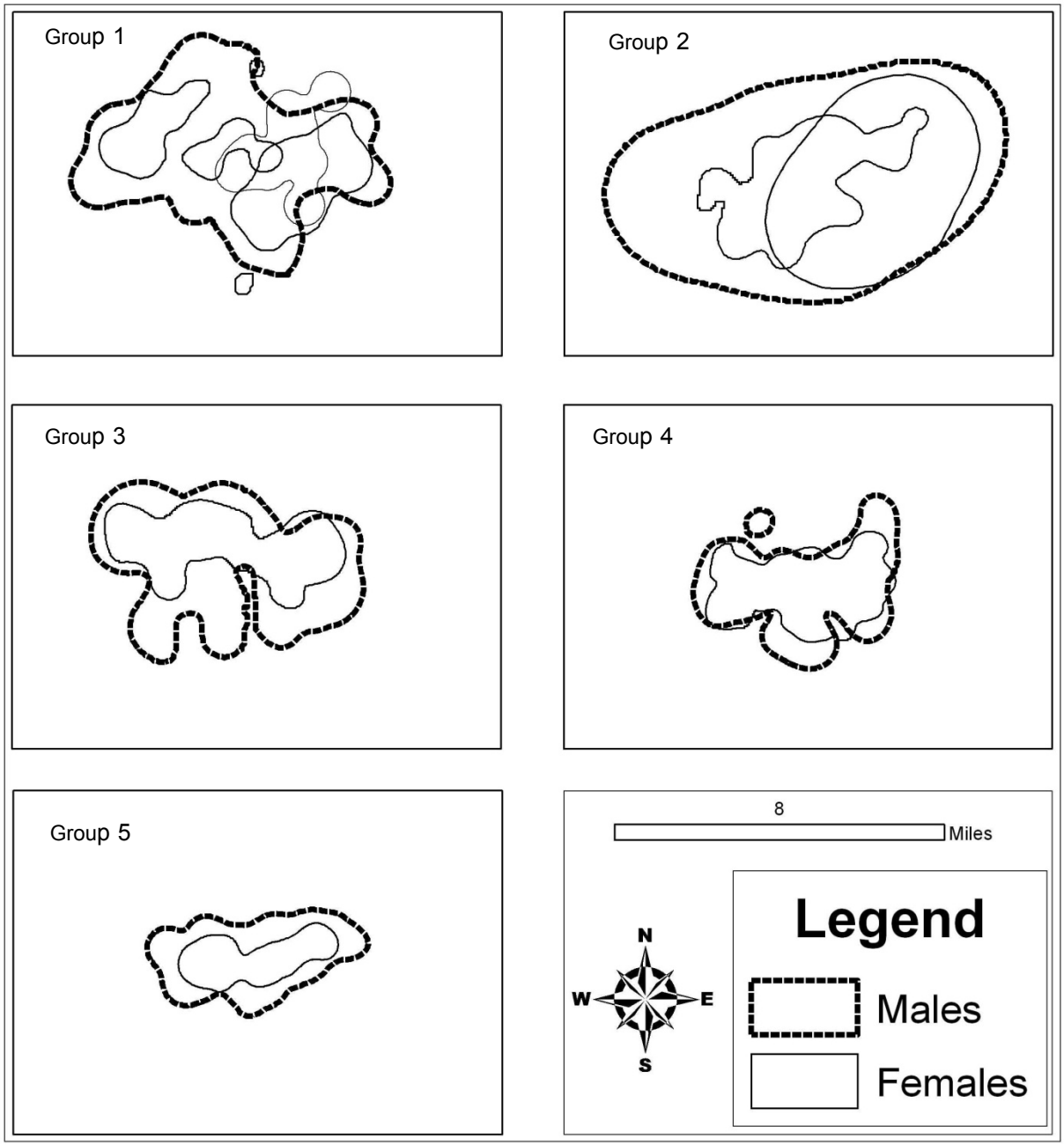
Although IFW proposed 4,785 acres on 10,411 acres to mitigate for the lethal take of up to 3 lynx during the 15-year permit period, IFW and BPL have agreed to provide 6,200 acres of HQHH on 22,046 acres of BPL's Seboomook Unit. IFW contends that 6,200 acres of HQHH should more than mitigate for the lethal take requested in this Plan.

Table 5.3.1 To estimate the amount of high quality hare habitat (HQHH) to provide as mitigation for lethal take of incidental capture of lynx in Maine's trapping program, IFW estimated the amount of HQHH in an area completely shared by 2 or more lynx during IFW's 12-year radio telemetry study. To offset the take of a lynx IFW proposes providing 1,595 acres of HQHH for each lethal lynx take on the HMA.

Space Sharing Lynx	# Adult Males	# Adult Females	Total # lynx	Acres of HQHH shared by 2 to 4 lynx	Average acres/lynx
Group 1	1	3	4	5,245	1,311
Group 2	1	2	3	7,257 [b]	2,419
Group 3	1	1	2	3,701	1,851
Group 4	1	1	2	2,433	1,217
Group 5	1	1	2	2,100	1,050
Total	5	8	13	20,736	
Average				4,147	1,595[a]

[a] Average number of acres per lynx for all group arrangements calculated by dividing the total acres shared by the total number of lynx.
[b] Although the male in this group moved and occupied a new area to the east, we used the entire area he used to estimate the amount of HQHH, which likely overestimates the amount of HQHH used by this group (see Figure 5.3.1).

Figure 5.3.1 This figure shows how the five groups of radiocollared lynx used the same areas and the appropriateness of IFW estimates of high quality hare habitat (HQHH) as mitigation for lethal take of incidental capture of lynx in Maine's trapping program.



Location and Site Condition

The proposed site for mitigation (22,046 acres) is located within the BPL managed 40,000 acre Seboomook Unit just north of Moosehead Lake in north-central Somerset County near the eastern boundary of Seboomook Township (TWP) and Little W TWP. The HMA proposed for this Plan is owned by the State of Maine and is permanently protected from development by legislative statute and forest management is mandated that benefits, among other things, Maine's wildlife.

It is within an area bounded on the east by the Little W/Northeast Carry town line, on the south and west by Moosehead Lake, and on the north by the Golden Road (see Figures 5.3.2 and 5.3.3). The area is commercial forest land with no development except for some seasonal camps located along the shore of Moosehead Lake.

The proposed Habitat Management Area (HMA) is accessed by gravel logging roads that receive low use and minimal maintenance unless there is an active timber harvest. The roads are suitable for low speed travel and are used primarily by hunters, trappers, camp owners, and snowmobilers. Although BPL may maintain interior roads in the HMA to facilitate forest management, BPL will not construct new high speed/high traffic volume roads or pave dirt or gravel roads that traverse lynx habitat on the HMA during the 15-year permit period.

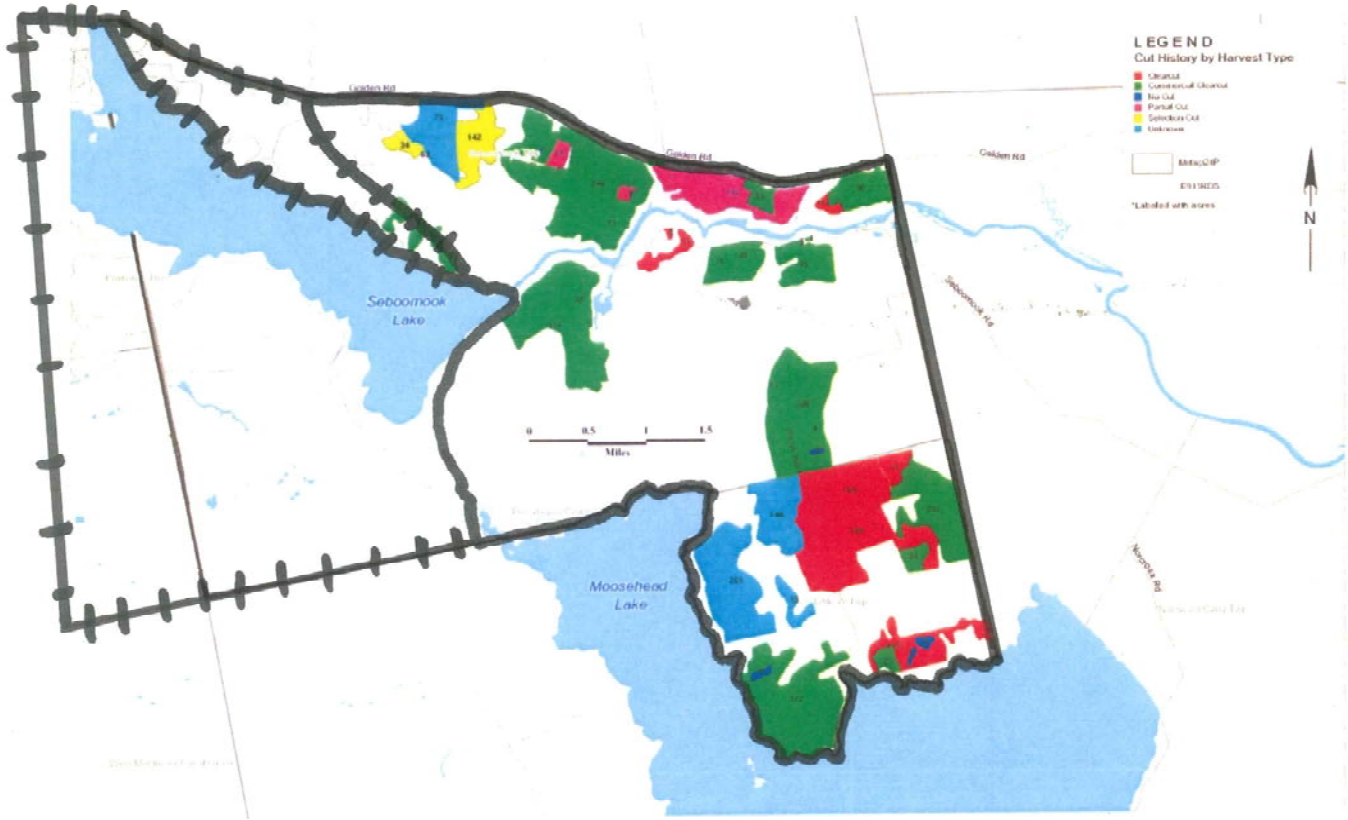
The state acquired this land from Merriweather Limited Liability Company (LLC) in 2004. The area was extensively harvested by a previous owner, Great Northern Paper Company / Bowater, in response to the 1970s to 1980s spruce budworm outbreak. Most harvests were clearcuts that removed all merchantable timber. The natural regeneration resulting from the clearcutting was sprayed with herbicide to reduce the proportion of hardwood in the new forest and was never thinned to promote growth as is sometimes done (e.g., pre-commercial thinning [PCT]).

Due to variations in site quality and drainage, the area now supports many young, diverse, coniferous forest stands composed primarily of red spruce and balsam fir that are about 25 years-old. This seral stage of regenerating conifer supports maximum snowshoe hare densities according to numerous research studies done in Maine (Scott 2009). Within this area, forest conditions range from regenerating stands that are very dense to stands that are interspersed with areas of more mature trees. This range of forest conditions contains the structure and resources that can benefit both hare and Canada lynx at the southern extent of its range (Organ et al. 2008, Murray et al. 2008, Vashon et al. 2008b, Berg et al. 2012).

Past harvest maps (Bowater ownership), aerial photos, and a recently completed BPL forest-inventory of 25 plots in the Seboomook Unit were used to provide a preliminary description of current conditions. The recent forest inventory indicates that currently at least 3,798 acres in the HMA is comprised of moderate to densely stocked coniferous or mixed seedling/saplings (i.e., S1A, M1A, Table 5.3.2 and Figure 5.3.4). Although some stands may not provide optimal cover for hares (i.e., either too young or too old),

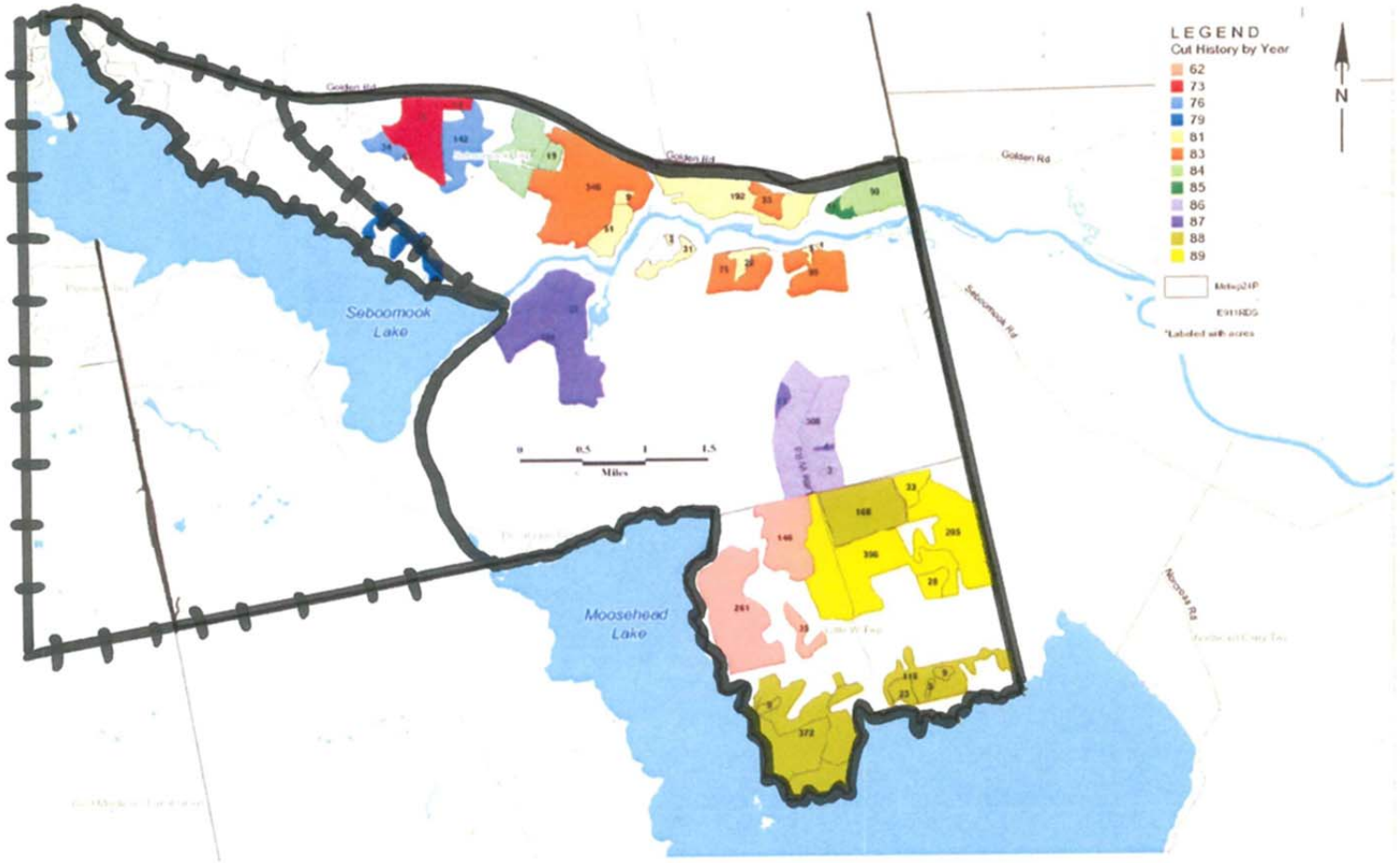
harvest maps for the areas clearcut by Bowater between 1986 and 1989 (Figures 5.3.2 and 5.3.3) indicates most of these stands are within the age range identified by the USFWS as providing optimal hare cover and lynx foraging habitat (i.e., 12–35 years-old post-harvest; McCollough 2007). In July of 2013, BPL visited the proposed HMA described in the July 29, 2013 Plan to insure that the area is sufficient for meeting the obligations in this Plan and MOU (i.e., provide at least 4,785 acres of habitat for lynx). By July 31st of 2015, BPL will finalize the western boundary of the additional mitigation area and insure that the entire 22,046 acre mitigation area can meet the 6,200 acre HQHH requirement. Updated maps will be provided to the USFWS by July 31st 2015.

Figure 5.3.2 Provisional map[14] of the proposed 22,046 acre HMA (black dashed line; original 10,411 acre HMA solid black line in IFW's July 29, 2013 Plan) for Canada Lynx in Maine showing the year in which stands were commercially cut. The harvest treatment for each stand is given in Figure 5.3.3.



[14] Final map to be provided to the USFWS by July 31st 2015.

Figure 5.3.3 Provisional map[15] of the proposed 22,046 acre HMA (black dashed line; original 10,411 acre HMA solid black line in IFW's July 29, 2013 Plan) for Canada Lynx in Maine showing the harvest treatment each forest stand received. The year in which the stand was cut is given in Figure 5.3.2.



[15] Final map to be provided to the USFWS by July 31st 2015.

Figure 5.3.4. Current forest type map of the 22,046 acre proposed habitat management area (HMA) for lynx on the State of Maine Bureau of Parks and Land's Seboomook Unit in northern Maine. The dark black line marks the boundaries of the 22,046 acre HMA.

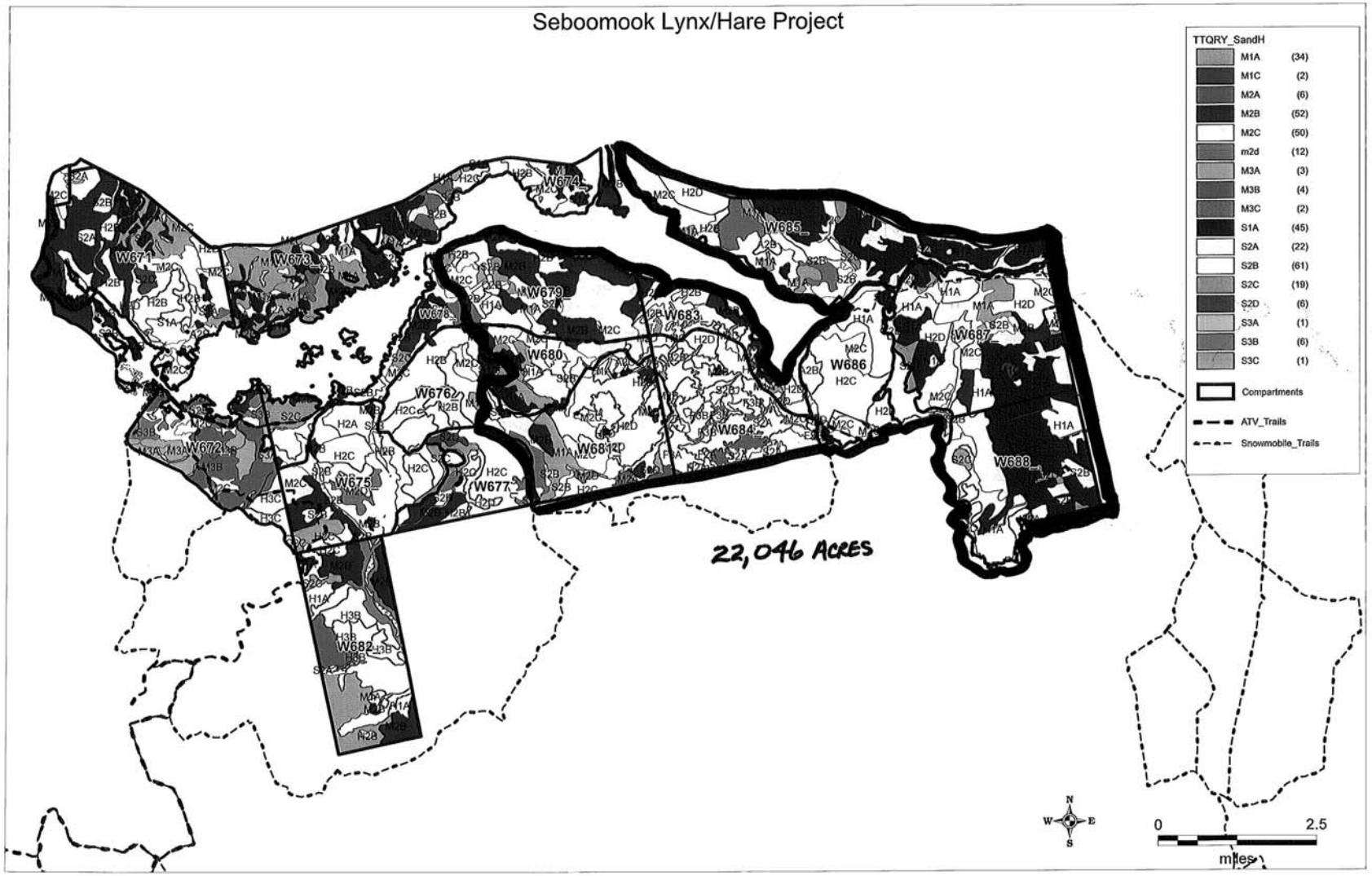


Table 5.3.2 Summary of stand types classified from fall aerial photo in the lynx habitat management area described in MDIFW July 29, 2013 plan of the BPL Seboomook Unit that currently supports optimal lynx foraging habitat [16].

Timber types	Cover-type	Size class[a]	Age class	Density	Acres
S1A	Softwood	<4.5 in	Seedling-Sapling	84-100%	3,483
M1A	Mixed[b]	<4.5 in	Seedling-Sapling	84-100%	315

[a] Stand average size class is measured in inches at 4.5 feet or diameter breast height (DBH).
[b] Mixed is identified as stands that are not dominated by softwood or hardwood (i.e., 50% softwood and 50% hardwood).

It is also important to recognize that, although the state does not have management authority over the adjacent townships, the HMA is not an isolated area of lynx habitat. These adjacent areas also contain patches of regenerating spruce and fir including one of the state's largest budworm impacted areas (i.e., the Ragmuff clearcut). This area is privately owned and remains in active forest management that will likely provide habitat for lynx in the future. In addition, the mitigation area is part of the 40,000 acre Seboomook Unit owned by DACF and maintained as forest. The proximity of the HMA to other areas supporting lynx habitat conditions improves the chances that lynx will occupy or continue to occupy the HMA during the permit period.

Proposed Mitigation

The proposed mitigation plan will offset the potential take of up to 3 lynx (Appendix 11a). In this plan, BPL will conduct forest management on a 22,046 acre habitat management area (HMA) to provide habitat for lynx. The habitat management goal will be to maintain or create at least 6,200 acres in HQHH over the 15-year permit period. As a result of this mitigation, there will be at least 3 additional lynx on the HMA by 2029 (Table 5.3.3).

To calculate the amount of HQHH needed per lynx on the HMA, we used information on lynx habitat use from IFW's 12-year telemetry study (see p. 108 of this Plan). This study found that 13 lynx shared areas with an average of 1,595 acres of HQHH per lynx. This estimate of HQHH needed per lynx is likely an over estimate because it includes data from a group of 3 lynx (Group 2, Table 5.3.1) for which the amount of HQHH was influenced by the male shifting his home range to the east. This home-range shift inflated the estimate of the size of the area this group used, by including both the male's previous home range and new home range. If we exclude this group of 3 lynx, this study indicates that 10 lynx used areas with an average of 1,350 acres of HQHH per lynx (Table 5.3.1).

Without the proposed mitigation plan, BPL estimates that there will be approximately 2,000 acres of HQHH on the HMA by 2023. This amount of HQHH should be capable

[16] By July 31st 2015, the USFWS will be provided with an update based on the new mitigation (6,200 acres HQHH) on 22,046 acre HMA.

of supporting at least 1 lynx. BPL has committed to providing at least 6,200 acres of HQHH on the HMA by 2029 that should support between 4 and 5 lynx (i.e., 6,200 acres/1,595 acres per lynx) and (6,200 acres/1,350 acres per lynx, respectively; Table 5.3.3). Therefore, IFW's mitigation commitments exceed the USFWS' forest management guidelines for Maine. These guidelines state that 7,000 acres of HQHH on a 35,000 acre parcel could support up to 8 adult lynx and their offspring (McCollough 2007). Under these guidelines, only 875 acres of HQHH would be provided per lynx compared to a minimum of 1,350 acres of HQHH that IFW's mitigation plan would provide. Based on estimates in our Plan and the USFWS guidelines, IFW feels confident that BPL's commitment of creating an additional 4,130 acres of HQHH on the HMA by 2029 will result in at least 3 more lynx.

For mitigation, IFW and BPL selected an area where lynx habitat already exists and lynx likely occur. Harvest maps and aerial photos indicate that baseline (current) conditions on the 10,411 acres on the HMA include at least 3,798 acres of sapling conifer dominated forest. Without mitigation, BPL would have managed for mature conifer with pre-commercial or commercial thinning to promote shorter time to mature forest conditions (Eickenberg et al. 2007). Future trends in lynx habitat are therefore expected to decrease during the 15-year permit period as stands mature from natural succession (Table 5.3.3). This management would reduce the amount and quality of foraging habitat for lynx. By the end of the permit period without active forest management, lynx may no longer use this area. Therefore, this provides the opportunity for BPL to maintain and improve current habitat quality for lynx on the HMA (i.e., at least 6,200 acres) over the permit period. Within 3 years of issuance of the permit, a forestry plan with the specific forest management activities will be submitted to the USFWS.

Table 5.3.3 Baseline and projected future amounts (acres) of high quality hare habitat (HQHH; dense conifer dominated sapling stands or understories) on the proposed 22,046 acre HMA with and without mitigation[17].

	Preliminary Baseline (2013)	2018 (acres)	2023 (acres)	2029 (acres)
Without Mitigation[a]				
Acres	3,798	3,798	2,070	2,070
Adult lynx	≥2	≥2	≥1	≥1
With Mitigation[b]				
Acres	3,798	3,798	≥4,785	≥6,200
Adult lynx	≥2	≥2	≥3	4-5

[a] Management goal is to promote shorter time to mature forest conditions through harvest (e.g., pre-commercial or commercial thinning).

[b] Management goal is at a minimum no net loss of HQHH and increased by 4,785 acres in IFW's July 29, 2013 plan, the commitment has increased to 6,200 acres HQHH.

Currently, the amount of HQHH on the HMA likely supports at least 2 adult lynx. However, as the forest matures and foraging habitat quality declines, IFW anticipates the number of lynx using the area and their reproductive rates to decline. With the proposed mitigation, IFW anticipates that those 2 lynx will not be lost, additional lynx willuse this area, and that their reproductive rates will be higher. IFW's 12-year telemetry study shows that lynx produced smaller litter sizes when hare densities were lower, whereas higher litter size occurred when hares were more abundant (Vashon et al. 2012). As described below, BPL commits to creating additional HQHH on the HMA by removing the overstory on at least 4,130 additional acres to release existing softwood regeneration. These stands are younger and less developed than HQHH established by clearcuts; these areas will become optimal HQHH in 3 to 7 years after the overstory is removed. BPL's management of wintering areas for deer starts with well-established softwood stands resembling HQHH and is compatible with management for lynx. HQHH transitions into secondary winter shelter for deer over time. Forest management practices such as PCT and commercial thinning could potentially accelerate the transition between HQHH and secondary deer winter shelter. PCT and commercial thinning are common practices used by other landowners in the region to shorten time between regeneration and commercial harvest. BPL has committed to conduct forest management practices compatible to maintaining HQHH for 3 or more lynx for the duration of the permit.

Mitigation Plan and Timeline:

The Seboomook Unit is a relatively recent acquisition for BPL and a management plan has been written for the unit (Eickenberg et al. 2007). However, the Seboomook Unit

[17] By July 31st 2015, the USFWS will be provided with an updated table of the new mitigation acreage (6,200 acres HQHH) on 22,046 acre HMA.

has not been cruised by a forester; therefore, this plan does not contain the detail necessary for outlining the timing and spatial arrangement of specific future forest management practices. Additional detail regarding forest management planning in the Seboomook Unit will be available when BPL cruises the land and develops a harvest schedule and proposed treatments. It typically takes 6 to 9 months to cruise forest compartments of 1,000 to 2,000 acres. Therefore, it is expected to take 3 years to cruise and develop a forest management plan for the 22,046 acre HMA. This plan may include future timber harvest to maintain optimal hare habitat (6,200acres) in the HMA.

Lynx habitat on the HMA is a legacy of past spruce budworm harvesting and is projected to decline on the HMA without active management activities starting in 2023. BPL intends to manage this area using the appropriate forest harvest prescription for the stand (e.g., overstory removals, shelter woods) that will foster understory conditions (i.e., dense conifer dominated regenerating sapling size class) that will benefit snowshoe hare and lynx.

In addition to providing the 6,200 acres as mitigation, BPL will implement the following additional measures (which are consistent with the USFWS' *Canada lynx habitat management guidelines for Maine)*:

1) Avoid upgrading or paving dirt or gravel roads traversing lynx habitat. Avoid construction of new high speed/high traffic volume roads in lynx habitat;
2) Employ silvicultural methods that will create regenerating conifer-dominated stands 12-35 feet in height with high stem density (7000-15,000 stems/acre) and horizontal cover above the average snow depth that could support >1.1 hares/ha;
3) Maintain land in forest management. Development and associated activities should be consolidated to minimize direct and indirect impacts. Avoid development projects that occur across large areas, increase lynx mortality, fragment habitat, or result in barriers that affect lynx movements and dispersal;
4) Encourage coarse woody debris for den sites by maintaining standing dead trees after harvest. Where windthrow occurs, the Bureau will leave randomly distributed ¾ acre patches sufficient for den sites for 3 female lynx.

Implementation Plan:

- By July 31st 2015, BPL will finalize the western boundary of the additional mitigation area and insure that the entire 22,046 acre mitigation area can meet the 6,200 acre HQHH requirement. Updated maps will be provided to the USFWS by July 31st 2015.
- BPL will inventory the 22,046 acre HMA and cross-walk the inventory to HQHH within 3 years of issuance;
- BPL does not currently have forest models for their ownership. However, BPL expects this capability will be available in the next few years and will implement a forest model to assess the trajectory of the existing habitat and demonstrate when, where, and how sufficient HQHH habitat will be maintained and or created when it becomes available.

- BPL will provide an updated table 5.3.3 for the 22,046 acre area demonstrating how the mitigation will achieve the net conservation benefit to compensate for the loss of at least three lynx by July 31st 2015.
- BPL will develop a detailed forest management plan (compartment exam and harvest prescription) for at least the HQHH portion of the HMA with the assistance of IFW RAS staff within 3 years of issuance of an ITP. This plan will include provisions for avoiding take of northern long-eared bats in the event that it is listed under ESA or MESA[18]. IFW and BPL will meet at least every 3 years to review the status of the forest management plan for the HMA;
- USFWS (Maine Field Office) will review and comment on the forest management plan within 90 days of receipt of the plan;
- Within 15 years of issuance of an ITP (~2029), BPL will have implemented harvest prescriptions (e.g., overstory removal) to maintain or create forest conditions that will lead to HQHH on the HMA; and
- By the end of the permit period (~2029), BPL will have increased the acreage of HQHH on the HMA to at least 6,200 acres.

Monitoring Plan:

- Each year, for the first 5 years and every 5 years thereafter, IFW will conduct winter snow track surveys (e.g., MDIFW lynx ecoregional surveys-Vashon et al. 2010) to monitor whether lynx are present and estimate the number of lynx on the HMA. For the first 5 years, ensure surveys are conducted to estimate hare densities in HMA (e.g., participation in Continental Hare Survey).
- BPL will annually provide an update to IFW on the forest management activities conducted on the HMA and every 5 years provide an estimate of HQHH on the HMA.
- BPL will complete compartment exams (i.e., timber cruises) to update forest maps and management plans every 15 years. This inventory will be used by IFW to calculate the acreage of HQHH on the HMA at the end of the permit period to ensure the mitigation objectives are achieved. The IFW wildlife biologist assigned to BPL will be the primary contact between BPL and IFW, and the person responsible for communicating developments on the HMA to IFW's Research and Assessment Section (RAS).

Although the specifics regarding future forest management activities are not currently available, BPL does not typically employ clearcutting in its forest management. If harvest plan(s) are developed as part of the forest management plan to meet the mitigation goal (i.e., increase from 3,798 to at least 6,200 acres of moderately to densely stocked conifer dominated saplings), it is likely that other even-age silvicultural techniques (i.e., shelterwood and overstory removal systems) would be used, where forest stand conditions permit, that would be expected to create large blocks of regenerating conifer stands for future hare habitat within the HMA (Simons 2009). The

[18] Examples of measures that may be taken to avoid adverse effects include but are not limited to pre-survey of harvest areas or time of year restrictions on harvest activities.

BPL will not thin regenerating conifer stands within the HMA during the time period that these stands meet the criteria for optimal hare cover. By policy, the BPL maintains wildlife trees and large woody material on their lands for a variety of wildlife including denning sites for lynx (Organ et al. 2008).

Trapping will be allowed in the proposed HMA, since the chance of capturing a lynx in a trap is low and the benefits from reducing fisher are high. Each year, less than 12 lynx are caught (and the majority released unharmed) by more than 600 trappers that have more than 260,000 traps set in lynx range in Maine (~7 million acres). Thus the risk of capture is low on the 22,046 acre HMA. If an incidental lynx capture occurred on the HMA, IFW has no evidence that suggests the incidental trapping of lynx is detrimental to the lynx population or would reduce recruitment rates in the proposed HMA. In addition, BPL land is managed for multiple use according to legislative direction , "in a manner consistent with the principles of multiple use and shall produce a sustained yield of products and services in accordance with both prudent and fair business practices and the principles of sound planning" (12MRSA 1833.1,1847.1). Additionally, Public Reserved Lands are to be managed "to demonstrate exemplary land management practices, including silvicultural, wildlife and recreation management practices, as a demonstration of state policies governing management of forested and related types of lands" (12 MRSA 1833.1).

5.4 Changed Circumstances

Adaptive Management vs. Changed Circumstances

IFW considered whether an adaptive management plan was appropriate for Maine's Plan. As stated in the USFWS Five Point Policy, adaptive management is a strategy to address uncertainty in the conservation of a species covered by a Habitat Conservation Plan or Incidental Take Plan (Plan). Furthermore, adaptive management is essential for Plans that would otherwise pose a significant risk to the species due to significant data or information gaps. This is not the case with IFW's data. IFW has more than 12 years of data on the rate of lynx incidental captures, trap-type and configuration, and degree of harm to lynx captured in traps. In addition to information collected from traps set for other furbearing animals that sometimes capture lynx, IFW biologists have captured lynx in foothold traps over the course of a 12-year radiotelemetry study. Collectively, these data indicated that, if caught in a foothold trap[19], most lynx can be released with little or no harm and most survive to produce offspring (see Section 4). IFW believes that an information gap does not exist on the fate of lynx caught in foothold traps and that incidental captures in foothold traps do not represent a significant risk to the species population.

Although foothold traps pose little risk to lynx, lynx can also be caught in killer-type traps set by trappers to capture marten and fisher. In the 13 years since lynx were listed, 7 lynx have been caught in killer-type traps in Maine. A regulatory change by IFW in 2007

[19] Lynx were caught in foothold traps during October and November when temperatures did not drop substantially below freezing overnight.

made it illegal to set a killer-type trap on the ground (except in terrestrial blind sets or water sets) in WMDs 1-6 and 8-11 (Appendix 2). In 2008, following the capture of two lynx in killer-type traps, the rule was clarified. These regulatory changes have reduced the number of lynx caught in killer-type traps to the point where no lynx have been caught during the past 4 trapping seasons (2009-2012) in a legal set. However, during this time, 1 lynx was caught in an illegal set trap. In addition, none of the 74 radiocollared lynx monitored during 13 fur trapping season were caught in a killer-type trap. These lynx lived in an area where more than 2,000 marten were caught in killer-type traps set for more than 210,000 trap nights.

IFW is not pursuing an adaptive management plan because data from IFW's telemetry study and monitoring incidental take indicates that probability of a lynx being caught in a killer-type trap (even illegally) is low. Further, the potential lethal take requested in this Plan does not pose a significant risk to individual lynx or the species population.

Changed Circumstances

As part of IFW's Plan, IFW developed contingencies that provide the flexibility to implement alternative minimization and mitigation measures should circumstances change. The USFWS addresses two types of changed circumstances: 1) those that can be anticipated and planned for (i.e., changed circumstances) and 2) those that cannot be anticipated (i.e., unanticipated or extraordinary circumstances; USFWS 1996). We address both types of circumstances in Sections 5.3 and 5.5 with an emphasis on changed circumstances.

IFW has identified seven changed circumstances that may require changes in the conservation strategy for this Plan. In the event, a changed circumstance is triggered and IFW implements a response that proves to be effective then the modified measure(s) will be considered as an amendment to the Plan. Implementation for any actions that are triggered in response to a changed circumstance, IFW will provide written documentation that explains the action that will be implemented, including the rationale and how it will be subsequently evaluated for compliance. USFWS would then concur or not with that written document. These are outlined below and discussed individually, in detail, throughout the rest of this section.

IFW acknowledges that incidental lynx trapping and injury rates may be influenced by a variety of natural and human-related factors. However, IFW believes that the seven Changed Circumstances it has outlined in this Plan covers the contingencies that might occur with these other factors (Table 5.4.1)

Changed Circumstances

1) Incidental trapping of lynx increases;
2) The rate of severe injuries to lynx caught in traps increases;
3) The rate which lynx are incidentally killed in legally set traps increases;

4) There is new information on lynx or trapping or technological advances in trap design or monitoring;
5) The proportion of trappers setting killer-type traps in compliance with Maine's leaning pole regulations falls below the 90%;
6) Mitigation acreage is not achieved; and
7) Population of lynx declines.

Changed Circumstance #1: Lynx are being caught in traps at a higher rate than expected

There are a number of potential reasons that may lead to more lynx than expected being caught in traps (Table 5.4.1). IFW previously stated that lynx cannot be excluded from foothold traps that are set to catch canids or bobcat. However, these traps pose little risk to lynx in terms of injuries that would significantly affect their behavior or ability to survive and reproduce in the wild. Nevertheless, IFW proposes to continue to collect data on trap sets at lynx captures and trapper effort (i.e., voluntary trapper effort cards, license sales, fur harvest) to identify the probable cause of any increase in the rate of lynx incidental catches during the 15-year period of its permit. These data may also inform any trends in lynx injury rates.

IFW is seeking coverage for the incidental trapping of up to 195 lynx by licensed Maine trappers during the 15-year permit period. These 195 lynx could include up to 9 lynx with severe injuries and 3 lynx mortalities resulting from trapping or lynx with severe injuries that cannot be released (see Section 4.2 for details).

Trigger 1: IFW documents more than an average of 13 lynx incidentally captured per year in legal traps over a rolling 5-year period (Figure 5.4.1) for the permit duration.

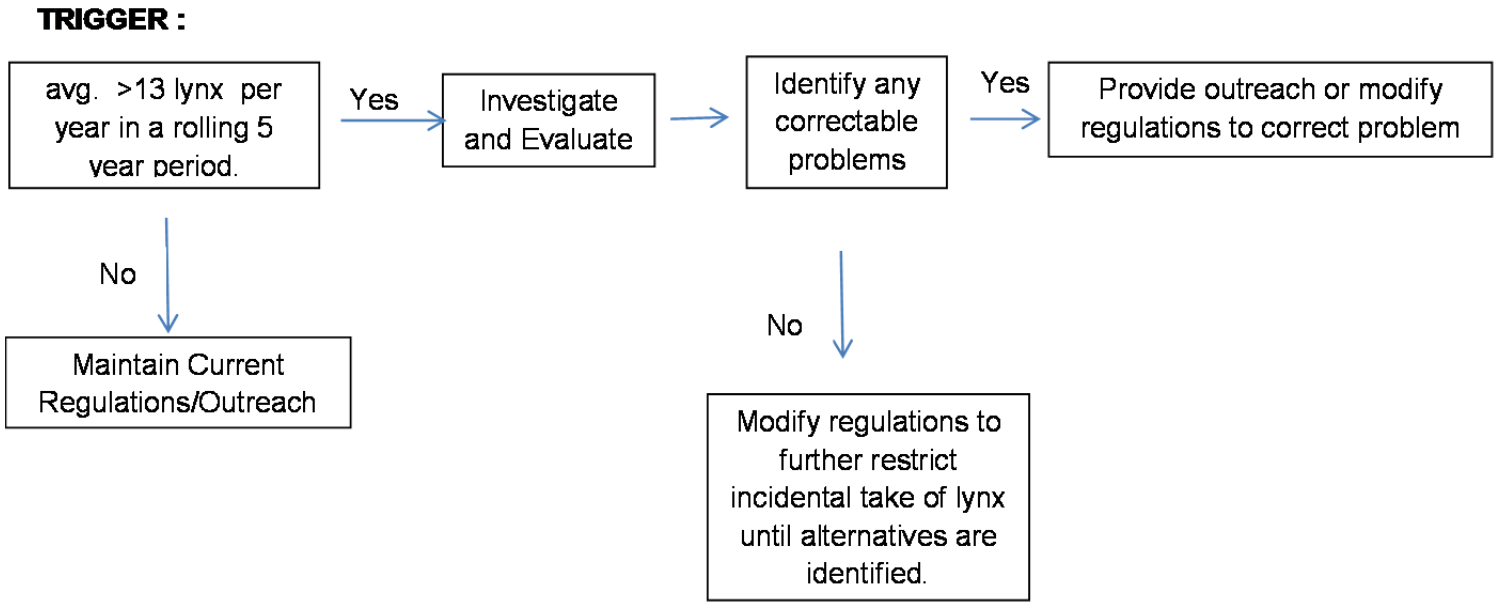
Response:

1. In consultation with the USFWS, IFW will implement additional minimization measures to reduce capture rates of lynx prior to the trapping season that follows the trigger being tripped. Options may include identifying non-regulatory (e.g., increased outreach or incentives) or regulatory options (e.g., adjusting trapping season dates or durations, restricting trapping in higher density lynx WMDs, restricting traps or trap sets that are particularly prone to catching lynx, and/or limiting the number of trappers or traps in lynx WMDs) . IFW would identify and implement the least restrictive option that is anticipated to reduce lynx captures.
2. The implemented measure will be evaluated within the following year and if found to be ineffective in reducing the capture of lynx, further measures will be implemented.

Rationale: IFW does not believe that trappers are going to capture more than 195 lynx over the 15-year permit period. As part of IFW's commitments to avoid and minimize lynx captures, IFW wildlife biologists and/or wardens will continue to investigate and evaluate each incidental lynx capture (Section 5.2). If during this process, IFW identifies a problem involving the manner in how traps were set or configured, IFW will

correct the problem through regulatory changes and/or outreach to trappers. However, if trappers are catching more than an average of 13 lynx per year, that would suggest that the rate of capture is on pace to exceed the requested take authorization. A variety of factors (weather conditions, pelt or gas prices, lynx and trapper number, etc.) may influence the incidental capture rate of lynx. We note that even, if this is the case, the majority would have no or minor injuries. However, IFW will have to take measures to reduce the rate of capture to ensure compliance with the take authorization on the permit.

Figure 5.4.1 Decision Tree Changed Circumstance #1: Lynx are being caught in traps at a higher rate than expected.



Changed Circumstance #2: Lynx are being severely injured in traps at a higher rate than expected.

Trigger 1: IFW documents more than 3 lynx in any rolling 5-year period during the permit duration having severe injuries.

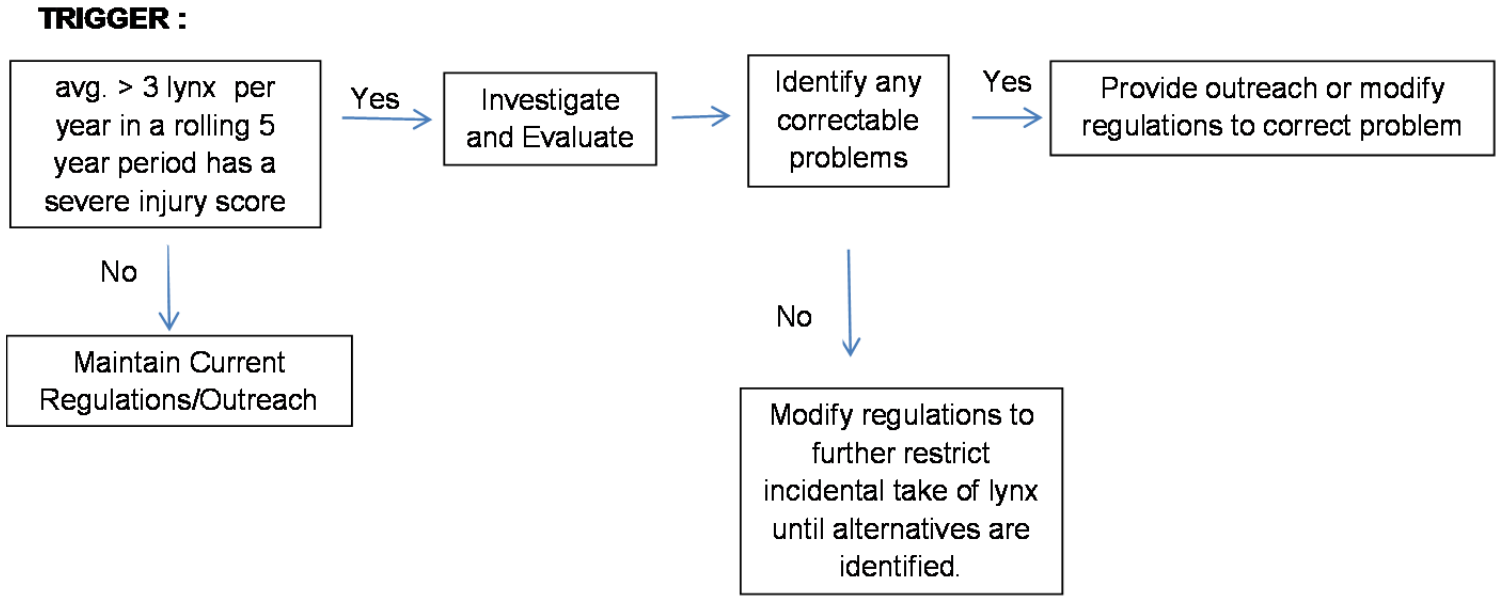
Response:

1. In consultation with the USFWS, IFW will implement additional minimization measures to reduce lynx injury rates prior to the trapping season that follows the trigger being tripped. Options may include non-regulatory or regulatory measures (e.g., outreach, restricting traps or trap sets that are particularly prone to injuring lynx, and/or instituting emergency area closures).

Rationale: IFW does not anticipate more than 9 lynx (not to include 3 anticipated mortalities) to be severely injured in traps over the 15-year permit period. However, if lynx are injured more than 3 lynx in 5 years, that would suggest that the rate of injury is on pace to exceed the requested take authorization. Therefore, IFW will take measures to reduce the rate of injury. If the severe injuries can be related to a particular type of trap or trap configuration, IFW will modify trapping regulations to correct the problem. For instance, if all of the severe injuries occur in foothold traps with an inside jaw spread greater than 5 3/8" with no other contributing factors identified, IFW would restrict the size of foothold traps.

This trigger is based on the rate of severe injuries to lynx that are incidentally trapped. If the proportion of lynx with minor injuries remains the same, (i.e. injury from incidental trapping has not increased) and a problem was not identified during the investigation of the incident, IFW will continue its current regulations and outreach. However, if the rate of severe injuries increases (i.e., >3 lynx in 5 years has a severe injury), IFW will take additional steps to identify and correct the problem before the next trapping season.

Figure 5.4.2 Decision Tree Changed Circumstance #2: Lynx are being injured in traps at a higher rate than expected.



Changed Circumstance #3: Lynx are being killed in traps at a higher rate than expected

Trigger 1: One lynx is killed in a legally set trap (foothold, killer-type, or non-lethal cable restraints [if implemented]) or cannot be released after treatment of a severe injury.

Response: If the fatality or severe injury where the animal can't be released is attributed to either:

1. An aspect of the trap type or trap set that can be corrected and implemented more broadly with a practicable solution by other trappers to prevent additional incidences. In consultation with the USFWS, IFW will address the problem through regulatory changes and/or outreach to trappers prior to the trapping season following the trigger being tripped. In making such changes, IFW will work with stakeholders (e.g., trappers) to evaluate potential measures to better avoid future lethal take. This may include researching or evaluating other traps or trap sets. An example of this is when IFW required killer-type traps to be set on leaning poles in lynx areas. OR
2. A low probability or random event (i.e., fluke), no additional regulatory or non-regulatory measures will be implemented.

Rationale: Although the capture of 1 lynx in a killer-type trap does not exceed IFW's permit request and may be a rare and inexplicable occurrence, IFW is committed to investigating each capture and correcting problems with trap sets or regulations when there is a practicable solution.

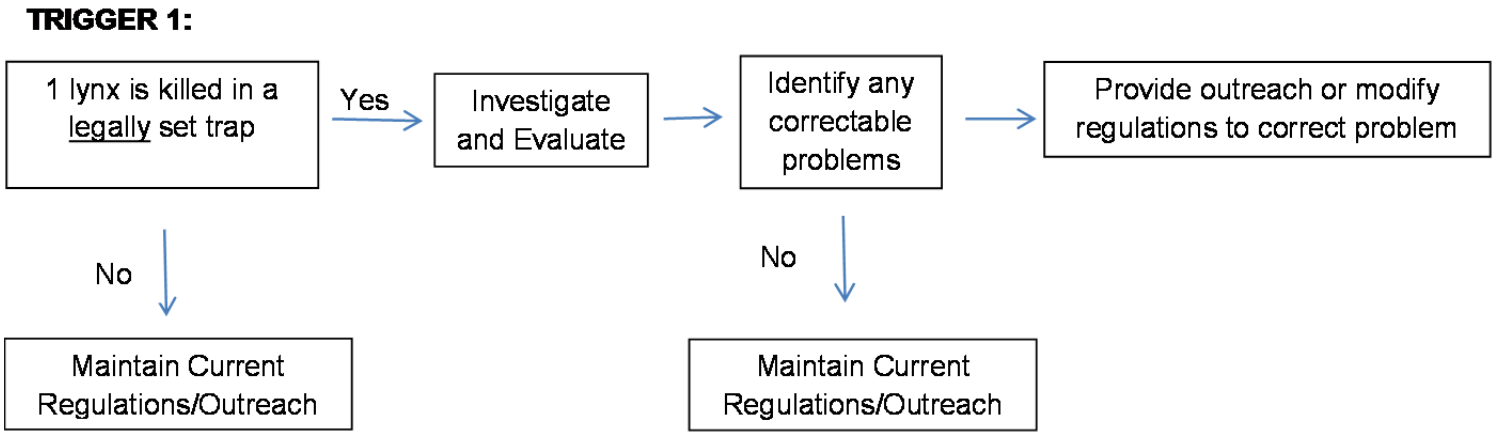
Stakeholders are individuals or groups that can provide information on ways to minimize the incidental trapping of lynx in killer-type traps that are also easy to use and effective for catching fisher and marten. Possible stakeholders include Maine trappers or MTA (primary stakeholder), AFWA, Northeast Furbearer Resources Technical Committee, and the Maine Chapter of The Wildlife Society (wildlife professional organization).

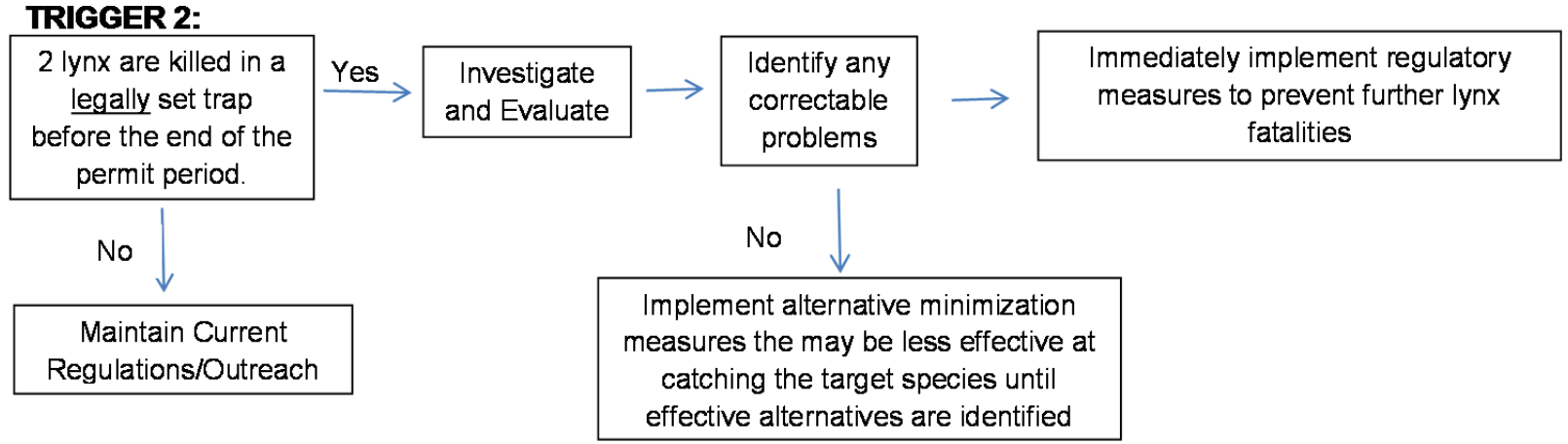
Trigger 2: Two lynx are killed in legally set traps (foothold, killer-type, or non-lethal cable restraints [if implemented]) or cannot be released after treatment of a severe injury.

Response:
In consultation with the USFWS, IFW will immediately implement regulatory measures to prevent further lynx fatalities (e.g., require the use of exclusion devices on all killer-type traps, or equally effective measure).

Rationale: IFW does not anticipate more than 3 lynx will be killed or removed from the population from trapping over the 15-year permit period. If 2 lynx die before the end of the permit period, lethal take could exceed the requested take authorization. Therefore, IFW will take measures to reduce the rate of mortality until the permit can be amended.

Figure 5.4.3 Decision Tree Change Circumstance #3: Lynx are being caught in traps at a higher rate than expected.





Changed Circumstance #4: Use of New Information or Technological Advances

Over the course of the ITP term, new information on Canada lynx and trapping may become available (e.g., additional exclusion devices), new methods for monitoring, or technological advances may be developed to avoid or minimize capture of lynx from trapping. IFW may wish to apply some of these new developments into the operations and/or monitoring outlined in IFW's Plan. IFW may choose to use such measures should they be demonstrated, based on the best available science, to be as or more effective than the methods described in this Plan. IFW will work with USFWS to ensure that any new information or techniques that are planned to be used are compatible with the biological goals and objectives of IFW's Plan. Any new method, information, or technology will only be considered if it has been demonstrated in an acceptable scientific study and will not require an increase in the take authorization for the Plan.

Changed Circumstance #5: Trapper compliance with elevated killer-type trap regulations is less than 90%.

Trigger: This changed circumstance will be triggered if less than 90% of the trappers checked are in compliance with the regulations. For the purpose of this commitment, a trapper will be considered to be in compliance if all of their traps are set in compliance with visible bait, height of trap, pole diameter, and angle of pole regulations for killer-type traps in lynx areas.

This trigger is going to be assessed by the annual monitoring commitments described in Section 5.2 (PI 4).

Response: If after the initial 2 years of monitoring, the percentage of trappers checked in compliance is less than 90% as described above then IFW will meet with stakeholders (e.g., game wardens and trappers), prior to the next trapping season, to identify and correct the problem through outreach and education. If subsequent years of monitoring do not show improvement, IFW will implement measures such as increased law enforcement details or increased penalties before the start of the next trapping season. If after 5 years of monitoring, trapper compliance with the four lynx avoidance measures listed above has not reached the target levels, IFW in consultation with the USFWS will implement additional corrective measures to improve compliance. Measures may include additional outreach, increased penalties for trapping violations, or restricting traps or trap sets that are particularly difficult for trappers to achieve compliance with or restricting the use of these traps in lynx areas.

Changed Circumstance #6: Mitigation acreage is not achieved

Background: To mitigate the potential lethal take of up to 3 lynx during the 15 year permit period, IFW and BPL have entered into an agreement to create or maintain a minimum of 6,200 acres of high quality hare habitat for lynx on the BPL Seboomook Unit by the end of the 15-year permit period.

Trigger: Mitigation acreage is not achieved by the end of the 15-year permit period. Although there are several different circumstances that could lead to the mitigation not being achievable, the triggers and responses would be the same.

Response: BPL will either increase the size of the mitigation area (currently 23,000 acres) to achieve the mitigation acreage or extend the MOU period beyond 2029.

Changed Circumstance #7: Population of lynx declines.

If there is a catastrophic decline in the number of lynx in Maine (e.g., below 100 lynx), we expect the level of incidental take to decline. If lynx take does not decline, IFW will consult with the USFWS to discuss additional minimization measures that may be necessary to avoid take.

5.5 Unforeseen Circumstances

Unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the USFWS at the time of the negotiation and development of the plan and that result in a substantial and adverse change in the status of the covered species (50 C.F.R. § 17.3).

The USFWS bears the burden of demonstrating that unforeseen circumstances exist using the best available scientific and commercial data while considering certain factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C)). In deciding whether unforeseen circumstances exist, the USFWS will consider, but not be limited to, the following factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C)):

1. The size of the current range of the affected species;
2. The percentage of the range adversely affected by the covered activities;
3. The percentage of the range that has been conserved by the HCP;
4. The ecological significance of that portion of the range affected by the HCP;
5. The level of knowledge about the affected species and the degree of specificity of the conservation program for that species under the HCP; and
6. Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the species in the wild.

In negotiating unforeseen circumstances, the USFWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the HCP without the consent of the permittee (50 C.F.R. §§ 17.22(b)(5)(iii)(A)). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the USFWS may require additional measures of the permittee, where the HCP is being properly implemented, only if such

measures are limited to modifications within conserved habitat areas, if any, or to the HCP's operating conservation program for the affected species, and maintain the original terms of the plan to the maximum extent possible (50 C.F.R. §§ 17.22(b)(5)(iii)(B)). Additional conservation and mitigation measures will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the conservation plan without the consent of the permittee.

Notwithstanding these assurances, nothing in the No Surprises Rule "will be construed to limit or constrain the USFWS, any federal agency, or a private entity, from taking additional actions, at its own expense, to protect or conserve a species included in a conservation plan" (50 C.F.R. §§ 17.22(b)(6))

6.0 Funding

One of the five issuance criteria for an ITP states that the applicant will ensure that adequate funding is available for implementing all components of their Plan, including minimization measures, mitigation measures, and unforeseen circumstances ((50 C.F.R. §§ 17.22(b) (2)); 10-1-06 edition). To meet these criteria, the following section describes IFW's funding structure and budget process, how the Plan will be funded, and the costs associated with Plan implementation.

6.1 Funding for Plan Measures

IFW obtains its revenues from license sales (e.g., hunting and fishing licenses), federal matching dollars (Pitman-Robertson (PR) funds), general funds from the Maine Legislature, federal threatened and endangered species funds (i.e., Section 6 funds from the USFWS), sale of state conservation license plates, the USFWS' State Wildlife Grant program, and grants from a variety of private and governmental organizations. Funds that will be used for the minimization measures in IFW's Plan (Section 5) are collectively administered by three Bureaus within IFW: Information and Education, Warden Service, and Resource Management. In addition, the Department of Conservation, Bureau of Parks and Public Lands, will provide logistical support and personnel time for overseeing the management of the proposed mitigation area. IFW recognizes that PR funds have limitations on what activities they can be spent on (e.g., cannot be spent on law enforcement). IFW will ensure that PR funds are only used on eligible minimization activities in its Plan. IFW will make funding activities that are not PR eligible a priority and obtain those funds from its General Fund account.

IFW's spending authority is granted through the biennial legislative process, with fiscal years beginning on July 1. Therefore, IFW cannot guarantee State funds for future activities to administer the requirements set forth in the ITP, which are not yet appropriated by the State legislature. Additionally, IFW cannot guarantee acceptance of grant monies unless it has received authorization from the Maine legislature to apply for and accept these monies. However, as a commitment of this Plan, IFW will incorporate in its biennial budget request to the Maine State Legislature a budget that will be adequate to fulfill its obligations under the ITP. IFW will provide evidence that the Legislature has appropriated sufficient funding to implement this plan by July 15th each year. IFW recognizes that failure to annually ensure adequate funding to implement the Plan may be grounds for suspension or partial suspension of the ITP. Incidental take authorization under the permit is contingent on demonstrating adequate annual funding for plan implementation, including both IFW and MBPL (as pertaining to implementation of the mitigation).

6.2 Plan Implementation Costs

While developing the conservation commitments in this Plan, IFW worked to incorporate existing program resources, to the extent practicable, to meet the biological goals and objectives of the Plan. This approach allows IFW to implement much of the Plan within

its existing programs. Table 6.2.1 identifies the costs for implementing the Plan (other than mitigation measures), which are anticipated to average up to $69,000 annually. These costs do not reflect personnel costs associated with implementing this Plan, which will be covered by existing staff. The diversion of personnel time to IFW's Incidental Trapping Plan will come at the expense of other wildlife programs or law enforcement activities. The amount of personnel time needed to implement IFW's Plan will be fairly high, especially for the first couple of years. For example, the lead wildlife biologist for responding to lynx incidental trapping incidents spent 50% of her time preparing for and responding to lynx incidental catches in 2012 (over an 8 week period). This does not include the time that other staff supported her in this effort. In the event that staff positions critical for ITP implementation are lost or eliminated, IFW will be committed to reassigning staff resources to ensure effective implementation of all ITP commitments. In addition to costs provided in Table 6.2.1, IFW estimates the cost of training for the use of non-lethal cable restraints described in Appendix 13 to be $500/year.