during normal business hours (8:30 a.m. to 5 p.m. Eastern time) at 888 First Street, NE., Room 2A, Washington DC 20426.

17. From FERC's Home Page on the Internet, this information is available on eLibrary. The full text of this document is available on eLibrary in PDF and Microsoft Word format for viewing, printing, and/or downloading. To access this document in eLibrary, type the docket number excluding the last three digits of this document in the docket number field.

18. User assistance is available for eLibrary and the FERC's Web site during normal business hours from FERC Online Support at 202–502–6652 (toll free at 1–866–208–3676) or e-mail at *ferconlinesupport@ferc.gov*, or the Public Reference Room at (202) 502–8371, TTY (202) 502–8659. E-mail the Public Reference Room at *public.referenceroom@ferc.gov*.

List of Subjects in 18 CFR Part 35

Electric power rates, Electric utilities, Reporting and recordkeeping requirements.

By the Commission.

Kimberly D. Bose,

Secretary.

[FR Doc. E8–20546 Filed 9–4–08; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[REG–161695–04]

RIN 1545–BE23

Farmer and Fisherman Income Averaging; Correction

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Correction to notice of proposed rulemaking by cross-reference to temporary regulations.

SUMMARY: This document corrects a notice of proposed rulemaking by cross-reference to temporary regulations (REG–161695–04) that was published in the **Federal Register** on Tuesday, July 22, 2008 (73 FR 42538) relating to the averaging of farm and fishing income in computing income tax liability.

FOR FURTHER INFORMATION CONTACT: Amy Pfalzgraf, (202) 622–4960 (not a toll-free number).

SUPPLEMENTARY INFORMATION:

Background

The notice of proposed rulemaking by cross-reference to temporary regulations (REG–161695–04) that is the subject of this correction is under section 1301 of the Internal Revenue Code.

Need for Correction

As published, REG–161695–04 contains an error that may prove to be misleading and is in need of clarification.

Correction of Publication

Accordingly, the publication of the proposed rulemaking by cross-reference to temporary regulations (REG–161695–04), which was the subject of FR Doc. E8–16664, is corrected as follows:

On page 42538, column 2, in the preamble, under the caption ''For Further Information Contact'', line 2, the language ''Amy Pfalzgraf, (202) 622–4950 (not a'' is corrected to read ''Amy Pfalzgraf (202) 622–4960 (not a''.

LaNita Van Dyke,

Chief, Publications and Regulations Branch, Legal Processing Division, Associate Chief Counsel, (Procedure and Administration).

[FR Doc. E8–20552 Filed 9–4–08; 8:45 am]

BILLING CODE 4830–01–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 226

[Docket No. 0808061060–81062–01]

RIN 0648–AW77

Endangered and Threatened Species; Proposed Critical Habitat for the Gulf of Maine Distinct Population Segment of Atlantic Salmon

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: We, the National Marine Fisheries Service (NMFS), propose to designate critical habitat for the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (*Salmo salar*). We previously determined that naturally spawned and several hatchery populations of Atlantic salmon which constituted the GOM DPS warrant listing as endangered under the Endangered Species Act of 1973, as amended (ESA). We are required to designate critical habitat for the GOM DPS as a result of this listing. We propose to designate as critical habitat 45 specific areas occupied by Atlantic salmon at the time of listing that comprise approximately 203,781 km of perennial river, stream, and estuary habitat and 868 square km of lake habitat within the range of the GOM DPS and on which are found those physical and biological features essential to the conservation of the species. The entire occupied range of the GOM DPS in which critical habitat is being proposed is within the State of Maine. We propose to exclude approximately 1,463 km of river, stream, and estuary habitat and 115 square km of lake habitat from critical habitat pursuant to section 4(b)(2) of the ESA.

DATES: Comments on this proposal must be received by November 4, 2008. Two public hearings on the proposed rule will be held in conjunction with the Atlantic salmon proposed listing rule (See the notice, Proposed Endangered Status for the Gulf of Maine Distinct Population Segment of Atlantic Salmon, published in the Proposed Rules section of the September 3, 2008, issue of the **Federal Register**) and we will alert the public of the locations and dates of those hearings in a subsequent **Federal Register** notice.

ADDRESSES: You may submit comments, identified by RIN 0648–AW77, by any of the following methods:

- Electronic Submission: Submit all electronic public comments via the Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the instructions for submitting comments.
- Mail: Assistant Regional Administrator, Protected Resources Division, NMFS, Northeast Regional Office, Protected Resources Division, One Blackburn Drive, Gloucester, MA 01930.
- Facsimile (fax) to: 207–866–7342, Attention: Dan Kircheis.

Instructions: All comments received are a part of the public record and will generally be posted to *http://www.regulations.gov* without change. All personal identifying information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information. NMFS will accept anonymous comments (enter N/A in the required fields, if you wish to remain anonymous). Attachments to electronic comments will be accepted in Microsoft Word, Excel, Word Perfect, or Adobe PDF file formats only.

The proposed rule, list of references and supporting documents, including the Biological Valuation, Economic Analysis, IRFA Analysis, and 4(b)(2) Report, are also available electronically at the NMFS Web site *http://www.nero.noaa.gov/prot_res/altsalmon/*.

FOR FURTHER INFORMATION CONTACT: Dan Kircheis, NMFS, at 207–866–7320, *dan.kircheis@noaa.gov*; Mary Colligan, NMFS, at 978–281–9116; or Marta Nammack, 301–713–1401.

SUPPLEMENTARY INFORMATION:

Background

NMFS and the U.S. Fish and Wildlife Service (USFWS; collectively ''the Services'') issued a final rule listing the GOM DPS of Atlantic salmon as endangered on November 17, 2000 (65 FR 69459). The GOM DPS was defined in the 2000 rule as all naturally reproducing wild populations and those river-specific hatchery populations of Atlantic salmon, having historical river-specific characteristics found north of and including tributaries of the lower Kennebec River to, but not including, the mouth of the St. Croix River at the U.S.-Canada border and the Penobscot River above the site of the former Bangor Dam.

In September of 2006, a new Status Review for Atlantic salmon in the United States (Status Review report) was made available to the public (*http://www.nmfs.noaa.gov/pr/pdfs/statusreviews/atlanticsalmon.pdf*). The 2006 Status Review report identified the GOM DPS of Atlantic salmon as being comprised of all anadromous Atlantic salmon whose freshwater range occurs in the watersheds of the Androscoggin River northward along the Maine coast to the Dennys River, including all associated conservation hatchery populations used to supplement natural populations; currently, such populations are maintained at Green Lake and Craig Brook National Fish Hatcheries. The most substantial difference between the 2000 GOM DPS and the GOM DPS described in the 2006 Status Review report is the inclusion of the Androscoggin, Kennebec, and Penobscot River basins. Subsequent to the 2006 Status Review report, the Services proposed to list Atlantic salmon in the GOM DPS as endangered (See the notice, Proposed Endangered Status for the Gulf of Maine Distinct Population Segment of Atlantic Salmon, published in the Proposed Rules section of the September 3, 2008, issue of the **Federal Register**).

This proposed rule would designate critical habitat for the GOM DPS pursuant to section 4(b)(2) of the ESA. Critical habitat is defined by section 3 of the ESA as ''(i) the specific areas within the geographical area occupied by the species, at the time it is listed * * * on which are found those physical and biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed * * * upon a determination by the Secretary that such areas are essential for the conservation of the species.'' Section 3 of the ESA (16 U.S.C. 15332) defines the terms ''conserve,'' ''conserving,'' and ''conservation'' as ''to use, and the use of, all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.''

Section 4(b)(2) of the ESA (16 U.S.C. 1533) requires that, before designating critical habitat, we consider the economic impacts, impacts on national security, and other relevant impacts of specifying any particular area as critical habitat. Further, the Secretary may exclude any area from critical habitat upon a determination that the benefits of exclusion outweigh the benefits of inclusion, unless excluding an area from critical habitat will result in the extinction of the species concerned.

Once critical habitat for Atlantic salmon in the GOM DPS is designated, section 7(a)(2) of the ESA (16 U.S.C. 1536) requires that each Federal agency in consultation with and with the assistance of NMFS, ensure that any action it authorizes, funds, or carries out is not likely to result in the destruction or adverse modification of critical habitat.

This proposed rule summarizes the information gathered and the analyses conducted in support of the proposed designation, and announces our proposal to designate critical habitat for Atlantic salmon in the GOM DPS proposed for listing under ESA.

Atlantic Salmon Life History

Atlantic salmon have a complex life history that includes territorial rearing in rivers to extensive feeding migrations on the high seas. During their life cycle, Atlantic salmon go through several distinct phases that are identified by specific changes in behavior, physiology, morphology, and habitat requirements.

Adult Atlantic salmon return to rivers from the sea and migrate to their natal stream to spawn. Adults ascend the rivers of New England beginning in the spring. The ascent of adult salmon continues into the fall. Although spawning does not occur until late fall, the majority of Atlantic salmon in Maine enter freshwater between May and mid-July (Meister, 1958; Baum, 1997). Early migration is an adaptive trait that ensures adults have sufficient time to effectively reach spawning areas despite the occurrence of temporarily unfavorable conditions that occur naturally (Bjornn and Reiser, 1991). Salmon that return in early spring spend nearly 5 months in the river before spawning; often seeking cool water refuge (e.g., deep pools, springs, and mouths of smaller tributaries) during the summer months.

In the fall, female Atlantic salmon select sites for spawning. Spawning sites are positioned within flowing water, particularly where upwelling of groundwater occurs to allow for percolation of water through the gravel (Danie *et al.*, 1984). These sites are most often positioned at the head of a riffle (Beland *et al.*, 1982b), the tail of a pool, or the upstream edge of a gravel bar where water depth is decreasing, water velocity is increasing (McLaughlin and Knight, 1987; White, 1942), and hydraulic head allows for permeation of water through the redd (a gravel depression where eggs are deposited). Female salmon use their caudal fin to scour or dig redds. The digging behavior also serves to clean the substrate of fine sediments that can embed the cobble/gravel substrate needed for spawning and reduce egg survival (Gibson, 1993). As the female deposits eggs in the redd, one or more males fertilize the eggs (Jordan and Beland, 1981). The female then continues digging upstream of the last deposition site, burying the fertilized eggs with clean gravel. A single female may create several redds before depositing all of her eggs. Female anadromous Atlantic salmon produce a total of 1,500 to 1,800 eggs per kilogram of body weight, yielding an average of 7,500 eggs per 2 sea-winter (SW) female (an adult female that has spent two winters at sea before returning to spawn) (Baum and Meister, 1971). After spawning, Atlantic salmon may either return to sea immediately or remain in freshwater until the following spring before returning to the sea (Fay *et al.*, 2006). From 1967 to 2003, approximately 3 percent of the wild and naturally reared adults that returned to rivers where adult returns are monitored—mainly the Penobscot River—were repeat spawners (USASAC, 2004).

Embryos develop in the redd for a period of 175 to 195 days, hatching in late March or April (Danie *et al.*, 1983). Newly hatched salmon, referred to as larval fry, alevin, or sac fry, remain in the redd for approximately 6 weeks after hatching and are nourished by their yolk sac (Gustafson-Greenwood and Moring, 1991). Survival from the egg to fry stage in Maine is estimated to range from 15 to 35 percent (Jordan and Beland, 1981). Survival rates of eggs and larvae are a function of stream gradient, overwinter temperatures, interstitial flow, predation, disease, and competition (Bley and Moring, 1988). Once larval fry emerge from the gravel and begin active feeding they are referred to as fry. The majority of fry (> 95 percent) emerge from redds at night (Gustafson-Marjanen and Dowse, 1983).

When fry reach approximately 4 cm in length, the young salmon are termed parr (Danie *et al.*, 1984). Parr have eight to eleven pigmented vertical bands on their sides that are believed to serve as camouflage (Baum, 1997). A territorial behavior, first apparent during the fry stage, grows more pronounced during the parr stage as the parr actively defend territories (Allen, 1940; Kalleberg, 1958; Danie *et al.*, 1984). Most parr remain in the river for 2 to 3 years before undergoing smoltification, the process in which parr go through physiological changes in order to transition from a freshwater environment to a saltwater marine environment. Some male parr may not go through smoltification and will become sexually mature and participate in spawning with sea-run adult females. These males are referred to as ''precocious parr.''

First year parr are often characterized as being small parr or 0+ parr (4 to 7 cm long), whereas second and third year parr are characterized as large parr (greater than 7 cm long) (Haines, 1992). Parr growth is a function of water temperature (Elliott, 1991), parr density (Randall, 1982), photoperiod (Lundqvist, 1980), interaction with other fish, birds, and mammals (Bjornn and Resier, 1991), and food supply (Swansburg *et al.*, 2002). Parr movement may be quite limited in the winter (Cunjak, 1988; Heggenes, 1990); however, movement in the winter does occur (Hiscock *et al.*, 2002) and is often necessary, as ice formation reduces total habitat availability (Whalen *et al.*, 1999a). Parr have been documented using riverine, lake, and estuarine habitats; incorporating opportunistic and active feeding strategies; defending territories from competitors including other parr; and working together in small schools to actively pursue prey (Gibson, 1993; Marschall *et al.*, 1998; Pepper, 1976; Pepper *et al.*, 1984; Hutchings, 1986; Erkinaro *et al.*, 1998; Halvorsen and Svenning, 2000; Hutchings, 1986; O'Connell and Ash, 1993; Erkinaro *et al.*, 1998; Dempson *et al.*, 1996; Halvorsen and Svenning, 2000; Klemetsen *et al.*, 2003).

In a parr's second or third spring (age 1 or age 2, respectively), when it has grown to 12.5 to 15 cm in length, a series of physiological, morphological, and behavioral changes occur (Schaffer and Elson, 1975). This process, called ''smoltification,'' prepares the parr for migration to the ocean and life in salt water. In Maine, the vast majority of naturally reared parr remain in freshwater for 2 years (90 percent or more) with the balance remaining for either 1 or 3 years (USASAC, 2005). In order for parr to undergo smoltification, they must reach a critical size of 10 cm total length at the end of the previous growing season (Hoar, 1988). During the smoltification process, parr markings fade and the body becomes streamlined and silvery with a pronounced fork in the tail. Naturally reared smolts in Maine range in size from 13 to 17 cm, and most smolts enter the sea during May to begin their first ocean migration (USASAC, 2004). During this migration, smolts must contend with changes in salinity, water temperature, pH, dissolved oxygen, pollution levels, and predator assemblages. The physiological changes that occur during smoltification prepare the fish for the dramatic change in osmoregulatory needs that come with the transition from a fresh to a salt water habitat (Ruggles, 1980; Bley, 1987; McCormick and Saunders, 1987; McCormick *et al.*, 1998). Smolts' transition into seawater is usually gradual as they pass through a zone of fresh and saltwater mixing that typically occurs in a river's estuary. Given that smolts undergo smoltification while they are still in the river, they are pre-adapted to make a direct entry into seawater with minimal acclimation (McCormick *et al.*, 1998). This pre-adaptation to seawater is necessary under some circumstances where there is very little transition zone between freshwater and the marine environment.

The spring migration of post-smolts out of the coastal environment is generally rapid, within several tidal cycles, and follows a direct route (Hyvarinen *et al.*, 2006; Lacroix and McCurdy, 1996; Lacroix *et al.*, 2004, 2005). Post-smolts generally travel out of coastal systems on the ebb tide, and may be delayed by flood tides (Hyvarinen *et al.*, 2006; Lacroix and McCurdy, 1996; Lacroix *et al.*, 2004, 2005); although Lacroix and McCurdy (1996) found that post-smolts exhibit active, directed swimming in areas with strong tidal currents. Studies in the Bay of Fundy and Passamaquoddy Bay suggest that post-smolts aggregate together and move near the coast in ''common corridors'' and that post-smolt movement is closely related to surface currents in the bay (Hyvarinen *et al.*, 2006; Lacroix and McCurdy, 1996; Lacroix *et al.*, 2004). European post-smolts tend to use the open ocean for a nursery zone, while North American post-smolts appear to have a more near-shore distribution (Friedland *et al.*, 2003). Post-smolt distribution may reflect water temperatures (Reddin and Shearer, 1987) and/or the major surface-current vectors (Lacroix and Knox, 2005). Post-smolts live mainly on the surface of the water column and form shoals, possibly of fish from the same river (Shelton *et al.*, 1997).

During the late summer/autumn of the first year, North American post-smolts are concentrated in the Labrador Sea and off of the west coast of Greenland, with the highest concentrations between 56 °N. and 58 °N. (Reddin, 1985; Reddin and Short, 1991; Reddin and Friedland, 1993). The salmon located off Greenland are composed of both 1SW fish and fish that have spent multiple years at sea (multi-sea winter fish, or MSW) immature salmon from both North American and European stocks (Reddin, 1988; Reddin *et al.*, 1988). The first winter at sea regulates annual recruitment, and the distribution of winter habitat in the Labrador Sea and Denmark Strait may be critical for North American populations (Friedland *et al.*, 1993). In the spring, North American post-smolts are generally located in the Gulf of St. Lawrence, off the coast of Newfoundland, and on the east coast of the Grand Banks (Reddin, 1985; Dutil and Coutu, 1988; Ritter, 1989; Reddin and Friedland, 1993; and Friedland *et al.*, 1999).

Some salmon may remain at sea for another year or more before maturing. After their second winter at sea, the salmon over-winter in the area of the Grand Banks before returning to their natal rivers to spawn (Reddin and Shearer, 1987). Reddin and Friedland (1993) found non-maturing adults located along the coasts of Newfoundland, Labrador, and Greenland, and in the Labrador and Irminger Sea in the later summer/autumn.

Critical Habitat

Methods and Criteria Used To Identify Proposed Critical Habitat

Critical habitat is defined by section 3 of the ESA (and 50 CFR 424.02(d)) as ''(i) the specific areas within the geographic area occupied by the species, at the time it is listed in accordance with the provisions of [section 4 of this Act], on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of [section 4 of this Act], upon a determination by the Secretary that such areas are essential for the conservation of the species.'' The Department of the Interior and the Department of Commerce provide further regulatory guidance under 50 CFR 424.12(b), stating that the Secretaries shall ''focus on the principal biological or physical constituent elements within the defined area that are essential to the conservation of the species * * * Primary constituent elements may include, but are not limited to, the following: roost sites, nesting grounds, spawning sites, feeding sites, seasonal wetland or dry land, water quality or quantity, host species or plant pollinator[s], geological formation, vegetation type, tide, and specific soil types.''

Identifying the Geographical Area Occupied by the Species and Specific Areas Within the Geographical Area

To designate critical habitat for Atlantic salmon, as defined under Section 3(5)(A) of the ESA, we must identify specific areas within the geographical area occupied by the species at the time it is listed.

The geographic range occupied by the GOM DPS of Atlantic salmon includes freshwater habitat ranging from the Androscoggin River watershed in the south to the Dennys River watershed in the north (Fay *et al.*, 2006), as well as the adjacent estuaries and bays through which smolts and adults migrate.

The geographic range occupied by the species extends out to the waters off Canada and Greenland, where post-smolts complete their marine migration. However, critical habitat may not be designated within foreign countries or in other areas outside of the jurisdiction of the United States (50 CFR 424.12(h)). Therefore, for the purposes of critical habitat designation, the geographic area occupied by the species will be restricted to areas within the jurisdiction of the United States. This does not diminish the importance of habitat outside of the jurisdiction of the United States for the GOM DPS. In fact, a very significant factor limiting recovery for the species is marine survival. Marine migration routes and feeding habitat off Canada and Greenland are critical to the survival and recovery of Atlantic salmon, but the regulations prohibit designation of these areas as critical habitat.

Because Atlantic salmon are anadromous, spending a portion of life in freshwater and the remaining portion in the marine environment, it is conceivable that some freshwater habitat may be vacant for up to 3 years under circumstances where populations are extremely low. While there may be no documented spawning in these areas for that period of time, they would still be considered occupied because salmon at sea would return to these areas to spawn.

Current stock management and assessment efforts also need to be considered in deciding which areas are occupied. In addition to the stocking program managed by USFWS and the Maine Department of Marine Resources (MDMR), there are small-scale stocking efforts carried out by non profit organizations. Furthermore, in addition to stocking programs, straying from natural populations can result in the occupation of habitat.

Hydrologic Unit Code (HUC) 10 (Level 5 watersheds) described by Seaber *et al.* (1994) are proposed as the appropriate ''specific areas'' within the geographic area occupied by Atlantic salmon to be examined for the presence of physical or biological features and for the potential need for special management considerations or protections for these features.

The HUC system was developed by the United States Geological Survey (USGS) Office of Water Data Coordination in conjunction with the Water Resources Council (Seaber *et al.*, 1994) and provides (1) a nationally accessible, coherent system of water-use data exchange; (2) a means of grouping hydrographical data; and (3) a standardized, scientifically grounded reference system (Laitta *et al.*, 2004). The HUC system currently includes six nationally consistent, hierarchical levels of divisions, with HUC 2 (Level 1) ''Regions'' being the largest (avg. 459,878 sq. km.), and HUC 12 (Level 6) ''sub-watersheds'' being the smallest (avg. 41–163 sq. km.).

The HUC 10 (Level 5) watersheds were used to identify ''specific areas'' because this scale accommodates the local adaptation and homing tendencies of Atlantic salmon, and provides a framework in which we can reasonably aggregate occupied river, stream, lake, and estuary habitats that contain the physical and biological features essential to the conservation of the species. Furthermore, many Atlantic salmon populations within the GOM DPS are currently managed at the HUC 10 watershed scale. Therefore, we have a better understanding of the population status and the biology of salmon at the HUC 10 level, whereas less is known at the smaller HUC 12 sub-watershed scale.

Specific areas delineated at the HUC 10 watershed level correspond well to the biology and life history characteristics of Atlantic salmon. Atlantic salmon, like many other anadromous salmonids, exhibit strong homing tendencies (Stabell, 1984). Strong homing tendencies enhance a given individual's chance of spawning with individuals having similar life history characteristics (Dittman and Quinn, 1996) that lead to the evolution and maintenance of local adaptations, and may also enhance their progeny's ability to exploit a given set of resources (Gharrett and Smoker, 1993). Local adaptations allow local populations to survive and reproduce at higher rates than exogenous populations (Reisenbichler, 1988; Tallman and Healey, 1994). Strong homing tendencies have been observed in many Atlantic salmon populations. Stabell (1984) reported that fewer than 3 of every 100 salmon in North America and Europe stray from their natal river. In Maine, Baum and Spencer (1990) reported that 98 percent of hatchery-reared smolts returned to the watershed where they were stocked. Given the strong homing tendencies and life history characteristics of Atlantic salmon (Riddell and Leggett, 1981), we believe that the HUC 10 watershed level accommodates these local adaptations and the biological needs of the species and, therefore, is the most appropriate unit of habitat to delineate ''specific areas'' for consideration as part of the critical habitat designation process.

Within the United States, the freshwater geographic range that the GOM DPS of Atlantic salmon occupy includes perennial river, lake, stream and estuary habitat connected to the marine environment ranging from the Androscoggin River watershed to the Dennys River watershed. Within this range, HUC 10 watersheds were considered occupied if they contained either of the primary constituent elements (PCEs) (*e.g.*, sites for spawning and rearing or sites for migration, described in more detail below) along with the features necessary to support spawning, rearing and/or migration. Additionally, the HUC 10 watershed must meet either of the following criteria:

(a) Naturally spawned and reared Atlantic salmon have been documented in the HUC 10 watershed or the watershed is believed to be occupied based on the biological valuation of HUC 10 watershed (See Biological Valuation of Atlantic Salmon Habitat in the Gulf of Maine Distinct Population Segment (2008)) and best professional judgment of state and Federal biologists;

(b) The area is currently managed by the MDMR and the USFWS through an active stocking program in an effort to enhance or restore Atlantic salmon populations, or the area has been stocked within the last 6 years through other stocking programs, including those efforts by the ''Fish Friends'' program, where juvenile salmon could reasonably be expected to migrate to the marine environment and return to that area as an adult and spawn.

Within the range of the GOM DPS, 105 HUC 10 watersheds were examined for occupancy based on the above criteria. Based on our analysis, we considered 48 of these HUC 10 watersheds within the geographic range to be occupied. Estuaries and bays within the occupied HUC 10s in the GOM DPS are also included in the geographic range occupied by the species.

Occupied areas also extend outside the estuary and bays of the GOM DPS as adults return from the marine environment to spawn and smolts migrate towards Greenland for feeding. We are not able at this time to identify the specific features characteristic of marine migration and feeding habitat within U.S. jurisdictional waters essential to the conservation of Atlantic salmon and are, therefore, unable to identify the specific areas where such features exist. Therefore, specific areas of marine habitat were not proposed as critical habitat.

Physical and Biological Features in Freshwater and Estuary Specific Areas Essential to the Conservation of the Species

We identify the physical and biological features essential for the conservation of Atlantic salmon that are found within the specific occupied areas identified in the previous section. To determine which features are essential to the conservation of the GOM DPS of Atlantic salmon, we first define what conservation means for this species. Conservation is defined in the ESA as using all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided by the ESA are no longer necessary. Conservation, therefore, describes those activities and efforts undertaken to achieve recovery. For the GOM DPS, we have determined that the successful return of adult salmon to spawning habitat, spawning, egg incubation and hatching, juvenile survival during the rearing time in freshwater, and smolt migration out of the rivers to the ocean are all essential to the conservation of Atlantic salmon. Therefore, we identify features essential to successful completion of these life cycle activities. Although successful marine migration is also essential to the conservation of the species, we are not able to identify the essential features of marine migration and feeding habitat at this time. Therefore, as noted above, marine habitat areas are not proposed for designation as critical habitat.

Within the occupied range of the Gulf of Maine DPS, Atlantic salmon PCEs include sites for spawning and incubation, sites for juvenile rearing, and sites for migration. The physical and biological features of the PCEs that allow these sites to be used successfully for spawning, incubation, rearing and migration are the features of habitat within the GOM DPS that are essential to the conservation of the species. A detailed review of the physical and biological features required by Atlantic salmon is provided in Kircheis and Liebich (2007). As stated above, Atlantic salmon also use marine sites for growth and migration; however, we did not identify critical habitat within the marine environment because the specific physical and biological features of marine habitat that are essential for the conservation of the GOM DPS (and the specific areas on which these features might be found) cannot be identified. Unlike Pacific salmonids, some of which use nearshore marine environments for juvenile feeding and growth, Atlantic salmon migrate through the nearshore marine areas quickly during the month of May and early June. Though we have some limited knowledge of the physical and biological features that the species uses in the marine environment, we have very little information on the specifics of these physical and biological features and how they may require special management considerations or protection. Therefore, we cannot accurately identify the specific areas where these features exist or what types of management considerations or protections may be necessary to protect these physical and biological features during the migration period.

Detailed habitat surveys have been conducted in some areas within the range of the GOM DPS of Atlantic salmon, providing clear estimates of and distinctions between those sites most suited for spawning and incubation and those sites most used for juvenile rearing. These surveys are most complete for seven coastal watersheds: Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, and Sheepscot watersheds; and portions of the Penobscot Basin, including portions of the East Branch Penobscot, portions of the Piscataquis and Mattawamkeag, Kenduskeag Stream, Marsh Stream and Cove Brook; and portions of the Kennebec Basin, including a portion of the lower mainstem around the site of the old Edwards Dam and portions of the Sandy River. Throughout most of the range of the GOM DPS, however, this level of survey has not been conducted, and, therefore, this level of detail is not available. Therefore, to determine habitat quantity for each HUC 10 we relied on a GIS-based habitat prediction model (See appendix C of the Biological Valuation of Atlantic Salmon Habitat within the Gulf of Maine Distinct Population Segment (2008)). The model was developed using data from existing habitat surveys conducted in the Machias, Sheepscot, Dennys, Sandy, Piscataquis, Mattawamkeag, and Souadabscook Rivers. A combination of reach slope derived from contour and digital elevation model (DEM) datasets, cumulative drainage area, and physiographic province were used to predict the total amount of rearing habitat within a reach. These features help to reveal stream segments with gradients that would likely represent areas of riffles or fast moving water, habitat most frequently used for spawning and rearing of Atlantic salmon. The variables included in the model accurately predict the presence of rearing habitat approximately 73 percent of the time. We relied on the model to generate the habitat quantity present within each HUC 10 to provide consistent data across the entire DPS and on existing habitat surveys to validate the output of the model.

Although we have found the model to be nearly 75 percent accurate in predicting the presence of sites for spawning and rearing within specific areas, and we have an abundance of institutional knowledge on the physical and biological features that distinguish sites for spawning and sites for rearing, the model cannot be used to distinguish between sites for spawning and sites for rearing across the entire geographic range. This is because: (1) Sites used for spawning are also used for rearing; and (2) the model is unable to identify substrate features most frequently used for spawning activity, but rather uses landscape features to identify where stream gradient conducive to both spawning and rearing activity exists. As such, we have chosen to group sites for spawning and sites for rearing into one PCE. Therefore, sites for spawning and sites for rearing are discussed together throughout this analysis as sites for spawning and rearing.

In the section below, we identify the essential physical and biological features of spawning and rearing sites and migration sites found in the occupied areas described in the previous section.

(A). Physical and Biological Features of the Spawning and Rearing PCE

1. *Deep, oxygenated pools and cover (e.g., boulders, woody debris, vegetation, etc.), near freshwater spawning sites, necessary to support adult migrants during the summer while they await spawning in the fall.* Adult salmon can arrive at spawning grounds several months in advance of spawning activity. Adults that arrive early require holding areas in freshwater and estuarine areas that provide shade, protection from predators, and protection from other environmental variables such as high flows, high temperatures, and sedimentation. Early migration is an adaptive trait that ensures adults sufficient time to reach spawning areas despite the occurrence of temporarily unfavorable conditions that occur naturally (Bjornn and Reiser, 1991). Salmon that return in early spring spend nearly 5 months in the river before spawning, often seeking cool water refuge (*e.g.*, deep pools, springs, and mouths of smaller tributaries) during the summer months. Large boulders or rocks, overhanging trees, logs, woody debris, submerged vegetation and undercut banks provide shade, reduce velocities needed for resting, and offer protection from predators (Giger, 1973). These features are essential to the conservation of the species to help ensure the survival and successful spawning of adult salmon.

2. *Freshwater spawning sites that contain clean, permeable gravel and cobble substrate with oxygenated water and cool water temperatures to support spawning activity, egg incubation, and larval development.* Spawning activity in the Gulf of Maine DPS of Atlantic salmon typically occurs between mid-October and mid-November (Baum, 1997) and is believed to be triggered by a combination of water temperature and photoperiod (Bjornn and Reiser, 1991). Water quantity and quality, as well as substrate type, are important for successful Atlantic salmon spawning. Water quantity can determine habitat availability, and water quality may influence spawning success. Substrate often determines where spawning occurs, and cover can influence survival rates of both adults and newly hatched salmon.

Preferred spawning habitat contains gravel substrate with adequate water circulation to keep buried eggs well oxygenated (Peterson, 1978). Eggs in a redd are entirely dependent upon sub-surface movement of water to provide adequate oxygen for survival and growth (Decola, 1970). Water velocity and permeability of substrate allow for adequate transport of well-oxygenated water for egg respiration (Wickett, 1954) and removal of metabolic waste that may accumulate in the redd during egg development (Decola, 1970; Jordan and Beland, 1981). Substrate permeability as deep as the egg pit throughout the incubation period is important because eggs are typically deposited at the bottom of the egg pit.

Dissolved oxygen (DO) content is important for proper embryonic development and hatching. Embryos can survive when DO concentrations are below saturation levels, but their development is often subnormal due to delayed growth and maturation, performance, or delayed hatching (Doudoroff and Warren, 1965). In addition, embryos consume more oxygen (*i.e.*, the metabolism of the embryo increases) when temperature increases (Decola, 1970). An increase in water temperature, however, decreases the amount of oxygen that the water can hold. During the embryonic stage when tissue and organs are developing and the demand for oxygen is quite high, embryos can only tolerate a narrow range of temperatures.

These sites are essential for the conservation of the species because without them embryo development would not be successful.

3. *Freshwater spawning and rearing sites with clean, permeable gravel and cobble substrate with oxygenated water and cool water temperatures to support emergence, territorial development and feeding activities of Atlantic salmon fry.* The period of emergence and the establishment of feeding territories is a critical period in the salmon life cycle since at this time mortality can be very high. When fry leave the redd, they emerge through the interstitial spaces in the gravel to reach the surface. When the interstitial spaces become embedded with fine organic material or fine sand, emergence can be significantly impeded or prevented. Newly emerged fry prefer shallow, low velocity, riffle habitat with a clean gravel substrate. Territories are quickly established by seeking out areas of low velocities that occur in eddies in front of or behind larger particles that are embedded in areas of higher velocities to maximize drift of prey sources (Armstrong *et al.*, 2002). Once a territory has been established, fry use a sit-and-wait strategy, feeding opportunistically on invertebrate drift. This strategy enables the fish to minimize energy expenditure while maximizing energy intake (Bachman, 1984).

These sites are essential for the conservation of the species because without them fry emergence would not be successful.

4. *Freshwater rearing sites with space to accommodate growth and survival of Atlantic salmon parr.* When fry reach approximately 4 cm in length, the young salmon are termed parr (Danie *et al.*, 1984). The habitat in Maine rivers currently supports on average between five and ten large parr (age one or older) per 100 square meters of habitat, or one habitat unit (Elson, 1975; Baum, 1997). The amount of space available for juvenile salmon occupancy is a function of biotic and abiotic habitat features, including stream morphology, substrate, gradient, and cover; the availability and abundance of food; and the makeup of predators and competitors (Bjornn and Reiser, 1991). Further limiting the amount of space available to parr is their strong territorial instinct. Parr actively defend territories against other fish, including other parr, to maximize their opportunity to capture prey items. The size of the territory that a parr will defend is a function of the size and density of parr, food availability, the size and roughness of the substrate, and current velocity (Kalleberg, 1958; Grant *et al.*, 1998). The amount of space needed by an individual increases with age and size (Bjornn and Reiser, 1991). Cover, including undercut banks, overhanging trees and vegetation, diverse substrates and depths, and some types of aquatic vegetation, can make habitat suitable for occupancy (Bjornn and Reiser, 1991). Cover can provide a buffer against extreme temperatures; protection from predators; increased food abundance; and protection from environmental variables such as high flow events and sedimentation.

These features are essential to the conservation of the species because without them, juvenile salmon would have limited areas for foraging and protection from predators.

5. *Freshwater rearing sites with a combination of river, stream, and lake habitats that accommodate parr's ability to occupy many niches and maximize parr production.* Parr prefer, but are not limited to, riffle habitat associated with diverse rough gravel substrate. The preference for these habitats by parr that use river and stream habitats supports a sit-and-wait feeding strategy intended to

minimize energy expenditure while maximizing growth. Overall, large Atlantic salmon parr using river and stream habitats select for diverse substrates that predominately consist of boulder and cobble (Symons and Heland, 1978; Heggenes, 1990; Heggenes *et al.*, 1999).

Parr can also move great distances into or out of tributaries and mainstems to seek out habitat that is more conducive to growth and survival (McCormick *et al.*, 1998). This occurs most frequently as parr grow and they move from their natal spawning grounds to areas that have much rougher substrate, providing more suitable over-wintering habitat and more food organisms (McCormick *et al.*, 1998). In the fall, large parr that are likely to become smolts the following spring have been documented leaving summer rearing areas in some headwater tributaries and migrating downstream, though not necessarily entering the estuary or marine environment (McCormick *et al.*, 1998).

Though parr are typically stream dwellers, they also use pools within rivers and streams, dead-waters (sections of river or stream with very little to no gradient), and lakes within a river system as a secondary nursery area after emergence (Cunjak, 1996; Morantz *et al.*, 1987; Erkinaro *et al.*, 1998). It is known that parr will use pool habitats during periods of low water, most likely as refuge from high temperatures (McCormick *et al.*, 1998) and during the winter months to minimize energy expenditure and avoid areas that are prone to freezing or de-watering (Rimmer *et al.*, 1984). Salmon parr may also spend weeks or months in the estuary during the summer (Cunjak *et al.*, 1989, 1990; Power and Shooner, 1966).

These areas are essential to the conservation of the species to ensure survival and species persistence when particular habitats become less suitable or unsuitable for survival during periods of extreme conditions such as extreme high temperatures, extreme low temperatures, and droughts.

6. *Freshwater rearing sites with cool, oxygenated water to support growth and survival of Atlantic salmon parr.* Atlantic salmon are cold water fish and have a thermal tolerance zone where activity and growth is optimal (Decola, 1970). Small parr and large parr have similar temperature tolerances (Elliott, 1991). Water temperature influences growth, survival, and behavior of juvenile Atlantic salmon. Juvenile salmon can be exposed to very warm temperatures (> 20 °C) in the summer and near-freezing temperatures in the winter, and have evolved with a series of physiological and behavioral strategies that enable them to adapt to the wide range of thermal conditions that they may encounter. Parr's optimal temperature for feeding and growth ranges from 15 to 19 °C (Decola, 1970). When water temperatures surpass 19 °C, feeding and behavioral activities are directed towards maintenance and survival. During the winter when temperatures approach freezing, parr reduce energy expenditures by spending less time defending territories, feeding less, and moving into slower velocity microhabitats (Cunjak, 1996).

Oxygen consumption by parr is a function of temperature. As temperature increases, the demand for oxygen increases (Decola, 1970). Parr require highly oxygenated waters to support their active feeding strategy. Though salmon parr can tolerate oxygen levels below 6mg/l, both swimming activity and growth rates are restricted.

These features are essential to the conservation of the species because high and low water temperatures and low oxygen concentrations can result in the cessation of feeding activities necessary for juvenile growth and survival and can result in direct mortality.

7. *Freshwater rearing sites with diverse food resources to support growth and survival of Atlantic salmon parr.* Atlantic salmon require sufficient energy to meet their basic metabolic needs for growth and reproduction (Spence *et al.*, 1996). Parr largely depend on invertebrate drift for foraging, and actively defend territories to assure adequate food resources needed for growth. Parr feed on larvae of mayflies, stoneflies, chironomids, caddisflies, blackflies, aquatic annelids, and mollusks, as well as numerous terrestrial invertebrates that fall into the river (Scott and Crossman, 1973; Nislow *et al.*, 1999). As parr grow, they will occasionally eat small fishes, such as alewives, dace, or minnows (Baum, 1997).

Atlantic salmon attain energy from food sources that originate from both allochthonous (outside the stream) and autochthonous (within the stream) sources. What food is available to parr and how food is obtained is a function of a river's hydrology, geomorphology, biology, water quality, and connectivity (Annear *et al.*, 2004). The riparian zone is a fundamental component to both watershed and ecosystem function, as it provides critical physical and biological linkages between terrestrial and aquatic environments (Gregory *et al.*, 1991). Flooding of the riparian zone is an important mechanism needed to support the lateral transport of nutrients from the floodplain back to the river (Annear *et al.*, 2004). Lateral transport of nutrients and organic matter from the riparian zone to the river supports the growth of plant, plankton, and invertebrate communities. Stream invertebrates are the principal linkage between the primary producers and higher trophic levels, including salmon parr.

These features are essential to the conservation of the species, as parr require these food items for growth and survival.

(B). Physical and Biological Features of the Migration PCE

1. *Freshwater and estuary migratory sites free from physical and biological barriers that delay or prevent access of adult salmon seeking spawning grounds needed to support recovered populations.* Adult Atlantic salmon returning to their natal rivers or streams require migration sites free from barriers that obstruct or delay passage to reach their spawning grounds at the proper time for effective spawning (Bjornn and Reiser, 1991). Physical and biological barriers within migration sites can prevent adult salmon from effectively spawning either by preventing access to spawning habitat or impairing a fish's ability to spawn effectively by delaying migration or impairing the health of the fish. Migration sites free from physical and biological barriers are essential to the conservation of the species because without them, adult Atlantic salmon would not be able to access spawning grounds needed for egg deposition and embryo development.

2. *Freshwater and estuary migration sites with pool, lake, and instream habitat that provide cool, oxygenated water and cover items (e.g., boulders, woody debris, and vegetation) to serve as temporary holding and resting areas during upstream migration of adult salmon.* Atlantic salmon may travel as far as 965 km upstream to spawn (New England Fisheries Management Council, 1998). During migration, adult salmon require holding and resting areas that provide the necessary cover, temperature, flow, and water quality conditions needed to survive. Holding areas can include areas in rivers and streams, lakes, ponds, and even the ocean (Bjornn and Reiser, 1991). Holding areas are necessary below temporary seasonal migration barriers such as those created by flow, temperature, turbidity, and temporary obstructions such as debris jams and beaver dams, and adjacent to spawning areas. Adult salmon can become fatigued when ascending high velocity riffles or falls and require resting areas

within and around high velocity waters where they can recover until they are able to continue their migration. Holding areas near spawning areas are necessary when upstream migration is not delayed and adults reach spawning areas before they are ready to spawn.

These features are essential to the conservation of the species because without them, adult Atlantic salmon would be subject to fatigue, predation, and mortality from exposure to unfavorable conditions, significantly reducing spawning success.

3. *Freshwater and estuary migration sites with abundant, diverse native fish communities to serve as a protective buffer against predation.* Adult Atlantic salmon and Atlantic salmon smolts interact with other diadromous species indirectly. Adult and smolt migration through the estuary often coincides with the presence of alewives (*Alosa* spp.), American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), and striped bass (*Morone saxatilis*). The abundance of diadromous species present during adult migration may serve as an alternative prey source for seals, porpoises and otters (Saunders *et al.*, 2006). As an example, pre-spawned adults enter rivers and begin their upstream spawning migration at approximately the same time as early migrating adult salmon (Fay *et al.*, 2006). Historically, shad runs were considerably larger than salmon runs (Atkins and Foster, 1869; Stevenson, 1898). Thus, native predators of medium to large size fish in the estuarine and lower river zones could have preyed on these 1.5 to 2.5 kg size fish readily (Fay *et al.*, 2006; Saunders *et al.*, 2006). In the absence or reduced abundance of these diadromous fish communities, it would be expected that Atlantic salmon will likely become increasingly targeted as forage by large predators (Saunders *et al.*, 2006).

As Atlantic salmon smolts pass through the estuary during migration from their freshwater rearing sites to the marine environment, they experience high levels of predation. Predation rates through the estuary often result in up to 50 percent mortality during this transition period between freshwater to the marine environment (Larsson, 1985). There is, however, large annual variation in estuarine mortality, which is believed to be dependent upon the abundance and availability of other prey items including alewives, blueback herring, and American shad, as well as the spatial and temporal distribution and abundance of predators (Anthony, 1994).

The presence and absence of co-evolutionary diadromous species such as alewives, blueback herring, and American shad likely play an important role in mitigating the magnitude of predation on smolts from predators such as striped bass, double-crested cormorants (*Phalacrocorax auritus*), and ospreys (*Pandion haliaetus*). The migration time of pre-spawned adult alewives overlaps in time and space with the migration of Atlantic salmon smolts (Saunders *et al.*, 2006). Given that when alewife populations are robust, alewife numbers not only likely greatly exceed densities of Atlantic salmon smolts, making them more available to predators, but the caloric content per individual alewife is greater than that of an Atlantic salmon smolt (Schulze, 1996), likely making the alewife a more desirable prey species (Saunders *et al.*, 2006).

These features are essential to the conservation of the species because without highly prolific abundant alternate prey species such as alewives and shad, the less prolific Atlantic salmon will likely become a preferred prey species.

4. *Freshwater and estuary migration sites free from physical and biological barriers that delay or prevent emigration of smolts to the marine environment.* Atlantic salmon smolts require an open migration corridor from their juvenile rearing habitat to the marine environment. Seaward migration of smolts is initiated by increases in river flow and temperature in the early spring (McCleave, 1978; Thorpe and Morgan, 1978). Migration through the estuary is believed to be the most challenging period for smolts (Lacroix and McCurdy, 1996). Although it is difficult to generalize migration trends because of the variety of estuaries, Atlantic salmon post-smolts tend to move quickly through the estuary and enter the ocean within a few days or less (Lacroix *et al.*, 2004; Hyvarinen *et al.*, 2006; McCleave, 1978). In the upper estuary, where river flow is strong, Atlantic salmon smolts use passive drift to travel (Moore *et al.*, 1995; Fried *et al.*, 1978; LaBar *et al.*, 1978). In the lower estuary smolts display active swimming, although their movement is influenced by currents and tides (Lacroix and McCurdy 1996; Moore *et al.*, 1995; Holm *et al.*, 1982; Fried *et al.*, 1978). In addition, although some individuals seem to utilize a period of saltwater acclimation, some fish have no apparent period of acclimation (Lacroix *et al.*, 2004). Stefansson *et al.*, (2003) found that post-smolts adapt to seawater without any long-term physiological impairment. Several studies also suggest that there is a ‘‘survival window’’ which is open for several weeks in the spring, and gradually closes through the summer, during which time salmon can migrate more successfully (Larsson, 1977; Hansen and Jonsson, 1989; Hansen and Quinn, 1998).

These features are essential to the conservation of the species because a delay in migration of smolts can result in the loss of the smolts' ability to osmoregulate in the marine environment which is necessary for smolt survival.

5. *Freshwater and estuary migration sites with sufficiently cool water temperatures and water flows that coincide with diurnal cues to stimulate smolt migration.* The process of smoltification is triggered in response to environmental cues. Photoperiod and temperature have the greatest influence on regulating the smolting process. Increase in day length is necessary for smolting to occur (Duston and Saunders, 1990). McCormick *et al.* (1999) noted that in spite of wide temperature variations among rivers throughout New England, almost all smolt migrations begin around the first of May and are nearly complete by the first week in June. However, the time that it takes for the smoltification process to be completed appears to be closely related to water temperature. When water temperatures increase, the smolting process is advanced, evident by increases in Na+, K+-ATPase activity—the rate of exchange of sodium (Na+) and potassium (K+) ions across the gill membrane or the regulation of salts that allow smolts to survive in the marine environment (Johnston and Saunders, 1981; McCormick *et al.*, 1998; McCormick *et al.*, 2002). In addition to playing a role in regulating the smoltification process, high temperatures also are responsible for the cessation of Na+, K+-ATPase activity of smolts limiting their ability to excrete excess salts when they enter the marine environment. McCormick *et al.*, (1999) found significant decreases in Na+, K+-ATPase activity in smolts at the end of the migration period, but also found that smolts in warmer rivers had reductions in Na+, K+-ATPase activity earlier then smolts found in colder rivers. Hence any delay of migration has the potential to reduce survival of out-migrating smolts because as water temperatures rise over the spring migration period, smolts experience a reduction in Na+, K+-ATPase reducing their ability to regulate salts as they enter the marine environment. Though flow does not appear to play a role in the smoltification process, flow does appear to play an important role in stimulating a migration response (Whalen *et al.*, 1999b).

These features are essential to the conservation of the species because elevated water temperatures that occur in advance of a smolts diurnal cues to migrate can result in a decreased migration window in which smolts are capable of transitioning into the marine environment. A decrease in the migration window has the potential to reduce survival of smolts especially for fish with greater migration distances.

6. *Freshwater migration sites with water chemistry needed to support sea water adaptation of smolts.* The effects of acidity on Atlantic salmon have been well documented. The effects of acidity cause ionoregulatory failure in Atlantic salmon smolts while in freshwater (Rosseland and Skogheim, 1984; Farmer *et al.*, 1989; Staurnes *et al.*, 1996; Staurnes *et al.*, 1993). This inhibition of gill Na+, K+-ATPase activity can cause the loss of plasma ions and may result in reduced seawater tolerance (Rosseland and Skogheim, 1984; Farmer *et al.*, 1989; Staurnes *et al.*, 1996; Staurnes *et al.*, 1993) and increased cardiovascular disturbances (Milligan and Wood 1982; Brodeur *et al.*, 1999). Parr undergoing parr/smolt transformation become more sensitive to acidic water, hence water chemistry that is not normally regarded as toxic to other salmonids may be toxic to smolts (Staurnes *et al.*, 1993, 1995). This is true even in rivers that are not chronically acidic and not normally considered as being in danger of acidification (Staurnes *et al.*, 1993, 1995). Atlantic salmon smolts are most vulnerable to low pH in combination with elevated levels of monomeric labile species of aluminum (aluminum capable of being absorbed across the gill membrane) and low calcium (Rosseland and Skogheim, 1984; Rosseland *et al.*, 1990; Kroglund and Staurnes, 1999).

These features are essential to the conservation of the species because Atlantic salmon smolts exposed to acidic waters can lose sea water tolerance, which can result in direct mortality or indirect mortality from altered behavior and fitness.

Special Management Considerations or Protections

Specific areas within the geographic area occupied by a species may be designated as critical habitat only if they contain physical or biological features essential to the conservation of the species that ''may require special management considerations or protection.'' It is the features and not the specific areas that are the focus of the ''may require'' provision. Use of the disjunctive ''or'' also suggests the need to give distinct meaning to the terms ''special management considerations'' and ''protection''. ''Protection'' suggests actions to address a negative impact. ''Management'' seems broader than protection, and could include active manipulation of the feature or aspects of the environment. The ESA regulations at 50 CFR 424.02(j) further define special management considerations as ''any methods or procedures useful in protecting physical and biological features of the environment for the conservation of listed species''. The term ''may'' was the focus of two Federal district courts that ruled that features can meet this provision because of either a present requirement for special management considerations or protection or possible future requirements (see *Center for Biol. Diversity* v. *Norton,* 240 F. Supp. 2d 1090 (D. Ariz. 2003); *Cape Hatteras Access Preservation Alliance* v. *DOI,* 344 F. Supp. 108 (D.D.C. 2004)). The Arizona district court ruled that the provision cannot be interpreted to mean that features already covered by an existing management plan must be determined to require additional special management, because the term additional is not in the statute. Rather, the court ruled that the existence of management plans may be evidence that the features in fact require special management (*Center for Biol. Diversity* v. *Norton,* 1096–1100).

The primary impacts of critical habitat designation result from the consultation requirements of ESA section 7(a)(2). Federal agencies must consult with NMFS to ensure that their actions are not likely to result in the destruction or adverse modification of critical habitat (or jeopardize the species' continued existence). These impacts are attributed only to the designation (i.e., are incremental impacts of the designation) if Federal agencies modify their proposed actions to ensure they are not likely to destroy or adversely modify the critical habitat beyond any modifications they would make because of listing and the requirement to avoid jeopardy. Incremental impacts of designation include state and local protections that may be triggered as a result of designation, and education of the public about to the importance of an area for species conservation. When a modification is required due to impacts both to the species and critical habitat, the impact of the designation is considered to be co-extensive with ESA listing of the species.

The draft ESA 4(b)(2) (NMFS, 2008) Report and Economic Analysis (IEc, 2008a) describe the impacts in detail. These reports identify and describe potential future Federal activities that would trigger section 7 consultation requirements because they may affect the essential physical and biological features.

We identified a number of activities and associated threats that may affect the PCEs and associated physical and biological features essential to the conservation of Atlantic salmon within the occupied range of the GOM DPS. These activities, which include agriculture, forestry, changing land-use and development, hatcheries and stocking, roads and road crossings, mining, dams, dredging, and aquaculture have the potential to reduce the quality and quantity of the PCEs and their associated physical and biological features. There are other threats to Atlantic salmon habitat including acidification of surface waters. However, we are not able to clearly separate out the specific activities responsible for acidification, and therefore are unable to specifically identify a federal nexus.

Specific activities that may affect the PCEs and associated physical and biological features are evaluated below based on whether the spawning and rearing PCE and/or the migration PCE may require special management considerations or protection. Specific areas where these activities occur are represented in a table following the evaluation of activities. Further evaluation of the activities listed below is presented in detail in section 5 of Kircheis and Liebich (2007).

(a). Agriculture

Agricultural practices influence all specific areas proposed for designation and negatively impact PCE sites for spawning and rearing and migration. Physical disturbances caused by livestock and equipment associated with agricultural practices can directly impact the habitat of aquatic species (USEPA, 2003). Traditional agricultural practices require repeated mechanical mixing, aeration, and application of fertilizers and pesticides to soils. These activities alter physical soil characteristics and microorganisms. Tilling aerates the upper soil, but causes compaction of finely textured soils below the surface, which alters water infiltration. Use of heavy farm equipment and construction of roads also compact soils, decrease water infiltration, and increase surface runoff (Spence *et al.*, 1996). Agricultural grazing and clearing of riparian vegetation can expose soils and increase soil erosion and sediment inputs into rivers.

Agricultural practices may also reduce habitat complexity and channel stability through physical stream alterations such as: Channelization, bank armoring, and removal of large woody debris (LWD) and riparian vegetation (Spence *et al.*, 1996). These effects often result in streams with higher width to depth ratios which exhibit more rapid temperature fluctuations and may also be subject to increased embeddedness as a function of decreased water velocity affecting habitat use in sites for spawning, juvenile rearing, and migration (Fay *et al.*, 2006).

Clearing of land for agricultural practices such as livestock grazing and crop cultivation typically loosens and smoothes land surfaces, increasing soil mobility and vulnerability to surface erosion, thereby increasing sedimentation rates in affected streams (Waters, 1995; Spence *et al.*, 1996). Increased sedimentation can have significant effects on Atlantic salmon habitat by embedding substrates and increasing turbidity in spawning and rearing sites. Increased turbidity can reduce light penetration and result in a reduction of aquatic plant communities used for cover and foraging in juvenile rearing sites. Sedimentation from agricultural practices can also increase the inputs of nutrients such as phosphorus and ammonia as well as contaminants such as pesticides and herbicides throughout a watershed. An increase in nutrients can lead to eutrophication and potential oxygen depletion in surface waters. Exposure of contaminated sediments to anaerobic environments (lacking oxygen) often results in the release of organically bound chemicals (EPA, 2003), possibly creating a toxic environment for biotic communities downstream of these agricultural areas.

Agricultural practices can affect stream hydrology through removal of vegetative cover, soil compaction, and irrigation. Removal of vegetation and soil compaction can increase runoff which can increase the frequency and intensity of flooding (Hornbeck *et al.*, 1970). Increases in frequency and intensity of flood events can increase erosion, increase sedimentation and scour affecting sites for spawning and rearing. Direct water withdrawals and ground-water withdrawals for crop irrigation can directly impact Atlantic salmon habitat by depleting stream-flow (MASTF, 1997; Dudley and Stewart 2006; Fay *et al.*, 2006). Currently, the cumulative effects of individual irrigation impacts on Maine rivers is poorly understood; however, it is known that adequate water supply and quality are essential to all life stages of Atlantic salmon and life history behaviors including adult migration, spawning, fry emergence, and smolt emigration (Fay *et al.*, 2006).

Fertilizer runoff can increase nutrient loading in aquatic systems, thereby stimulating the growth of aquatic algae. If nutrient loading due to fertilizer run-off is significant, resulting algal blooms may have numerous detrimental impacts on multiple processes occurring within the affected aquatic ecosystem. Surface algal blooms that block sunlight can kill submerged aquatic vegetation important for juvenile rearing. Loss of submerged vegetation can lead to a loss of habitat for invertebrates and juveniles fishes and the decomposition of dead algae consumes large quantities of oxygen, an impact which, at times, can result in significant oxygen depletion (NMFS and FWS, 2005). A reduction in submerged aquatic vegetation and dissolved oxygen (DO) can cause both direct and indirect harm to salmon by affecting not only the physiological function of salmon (e.g., oxygen deprivation) but by impacting prey species and other necessary ecological functions sites for rearing. We conclude that the spawning and rearing and migration PCEs in each HUC 10 are and will likely continue to be negatively affected by agricultural practices well into the future, and, therefore, may require special management or protections which may include increasing the riparian buffer between agriculture lands and aquatic ecosystems that contain salmon habitat to prevent erosion and the runoff or leaching of contaminants and nutrients.

(b). Forestry

Forestry practices influence all specific areas proposed for designation and negatively impact PCE sites for spawning and rearing and migration. Timber harvest can significantly affect hydrologic processes. In general, timber removal increases the amount of water that infiltrates the soil and reaches the stream by reducing water losses from evapotranspiration (Spence *et al.*, 1996). Soil compaction can decrease infiltration and increase runoff, and roads created for logging can divert and alter water flow. Logging can also influence snow distribution on the ground, and consequently alter the melting rates of the snowpack (Chamberlin *et al.*, 1991). Through a combination of these effects, logging can change annual water yield and the magnitude and timing of peak and low flows (Spence *et al.*, 1996). Alteration of hydrologic regimes may impact sites for spawning, migration and rearing.

The increased erosion and runoff caused by forestry practices and road building can increase sedimentation affecting sites for spawning and rearing and may impact migration. Compared to other forestry activities, roads are the greatest contributor of sediment on a per area basis (Furniss *et al.*, 1991). Contribution of sediments by roads most frequently occurs from mass failure of road beds (Furniss *et al.*, 1991). Other forestry practices generally cause surface erosion, creating chronic sediment inputs. The combined effect of chronic and mass erosion can cause elevated sediment levels even when a small percentage of a watershed is developed by roads (Montgomery and Buffington, 1993), which can embed cobble and gravel substrates used for spawning and juvenile rearing.

The most direct effect of logging on stream temperature is the reduction in shade provided by riparian vegetation. Alterations in water temperature can affect egg development and alter foraging behaviors of juvenile salmon in both spawning and rearing sites. Removal of riparian vegetation also affects evaporation, convection and advection of water by altering wind speed and the temperature of surrounding land areas (Beschta *et al.*, 1987, 1995). In general, greater effects on stream temperatures are more apparent in smaller streams; however, the magnitude of these effects is dependent on stream size and channel morphology in relation to the quantity of riparian vegetation harvested (Beschta *et al.*, 1995). Removal of riparian vegetation can also lead to increased maximum temperatures and increased daily fluctuations in stream temperatures (Beschta *et al.*, 1987, 1995).

Timber harvest and preparation of soil for forestry practices can decrease LWD as well as increase erosion. Removal of LWD and increased erosion can have many harmful effects in sites for rearing, spawning and migration by reducing channel complexity, reducing in-stream cover and riffle/pool frequency, decreasing sediment retention and channel stability and reducing availability of microhabitats (Spence *et al.*, 1996). Loss of riparian vegetation can also reduce the presence of overhanging banks that are frequently used for cover by salmon (Spence *et al.*, 1996). We conclude that the spawning, rearing and migration PCEs in each specific area are and will likely continue to be negatively affected by forestry practices, and, therefore, may require special management considerations or protections which may include the use of best management practices that reduce erosion, support contributions of LWD, and limit thermal impacts.

(c). Changing Land-Use and Development

Changing land-use and development affects all specific areas proposed for designation and negatively impact PCE sites for spawning, rearing and migration. Changing land-use patterns include a shift from forestry and agriculture to construction of housing, commercial shopping and business centers, and industrial facilities. Increased development and population growth can cause declines in water and habitat quality caused by increases in erosion, reduction of riparian vegetation, increases in sediment deposition, homogenizing of habitat features, and an overall reduction in water quality resulting from point and non-point source pollution.

Development can affect sites for spawning, rearing and migration by reducing soil infiltration rates and increasing erosion. Construction of impervious surfaces can indirectly influence habitat by increasing surface water runoff while concurrently reducing groundwater recharge. Surface runoff from developed areas can increase erosion rates, carry pollutants from developed areas, and increase flooding (Morse and Kahl, 2003), whereas a reduction in groundwater recharge can lead to reduced summer baseflows, potentially reducing available aquatic habitat (Morse and Kahl, 2003).

Development practices can redirect, channelize, and/or armor stream banks to accommodate and protect the development. Certain development practices can clear riparian areas, decreasing shade and altering thermal regimes and nutrient inputs. These practices can also remove vegetation that would otherwise intercept rainfall and therefore reduce runoff. As more water is carried downstream during rain events or when stream channels are altered, streambed widening or scouring may increase. Streambed widening or scouring can directly reduce the quality and quantity of habitat available to Atlantic salmon. As a result, development can lead to alterations in physical habitat within sites for spawning, rearing and migration. We conclude that the spawning, rearing and migration PCEs in each HUC 10 are and will likely continue to be negatively affected by contaminants into the future, and, therefore, may require special management considerations or protections which may include improvements in the handling of waste water discharge to limit inputs of contaminants and assuring sufficient riparian buffers between development sites and aquatic ecosystems that support salmon habitats.

(d). Hatcheries and Stocking

Hatcheries and stocking occur in all specific areas proposed for designation and can negatively affect PCE sites for spawning and rearing. Use of hatcheries may be essential for rebuilding Atlantic salmon populations; however, without proper adherence to genetic, evolutionary, and ecological principles, the use of hatcheries could have adverse consequences for naturally reproducing fish that may undermine other rehabilitation efforts. Stocking of juvenile Atlantic salmon that are river specific, non-river specific, or a combination of both, is taking place in many rivers within the range of the GOM DPS. Captive-reared adult brood stock are also being stocked back into their natal rivers in small numbers in most rivers within this range (NRC, 2004). Smallmouth bass (*Micropterus dolomieui*) and chain pickerel (*Esox niger*), important non-native predators of juvenile salmon, have also been introduced throughout a large portion of the range of the GOM DPS (Fay *et al.*, 2006). These species, along with a host of other native and non-native fish, may compete for food and space with Atlantic salmon in freshwater, affecting sites for juvenile rearing and spawning. We conclude that the spawning and rearing PCEs in each specific area are and will likely continue to be negatively affected by hatcheries and stocking, and, therefore, may require special management considerations or protections. Management considerations or protections may include efforts that employ genetic and stock management of Atlantic salmon such that stocked fish do not present a genetic or competitive risk to natural populations, and stocking of other species that do not introduce threats of predation, competition, genetics or disease.

(e). Roads and Road Crossings and Other In-Stream Activities

Roads and road crossings occur in all specific areas proposed for designation and negatively affect sites for spawning and rearing, and sites for migration. Roads, which are typically built in association with logging, agriculture, and development, are often negatively correlated with the ecological health of an area (Trombulak and Frissell, 2000). Road networks modify the hydrologic and sediment transport regimes of watersheds by accelerating erosion and sediment loading, altering channel morphology and accelerating runoff (Furniss *et al.*, 1991), all of which can affect sites for spawning and rearing. The construction of roads near streams can prevent natural channel adjustments, and urban roads may increase runoff of pollutants (Spence *et al.*, 1996).

The use of culverts and bridges can impair habitat connectivity, limiting accessibility of habitat to juvenile and adult salmon, as well as other fish and aquatic organisms (Furniss *et al.*, 1991). Culverts, if not properly installed or maintained, can fragment a watershed and make reaches inaccessible to migratory fish while simultaneously preventing upstream movement of resident fish and invertebrates. Conditions induced by culverts that block fish passage include high water velocities through the culvert over extended distances without adequate resting areas; water depth within the culvert that is too shallow for fish to swim; and culverts that are perched or hanging and exclude fish from entering the culvert (Furniss *et al.*, 1991). Bridges, while preferred to culverts (Furniss *et al.*, 1991), may also induce negative ecological impacts. Poorly designed bridges, like culverts, can alter sediment transport, natural alluvial adjustments, and downstream transport of organic material, particularly large woody debris. This alteration can affect sites for spawning, rearing and migration.

Other in-stream activities, such as alternative energy projects, may also affect the PCEs. Because the two projects analyzed by NMFS (only one of which has received a preliminary permit from FERC) are in the early planning stages, NMFS has yet to make specific recommendations regarding the protection of Atlantic salmon habitat. Until specific plans for the projects are made available, the potential impact on the critical habitat for Atlantic salmon will remain uncertain, as will any modifications that might be requested to mitigate adverse impacts. We seek comment on the potential impact of critical habitat on these activities, and also whether additional alternative energy projects should be considered in our analysis.

We conclude that the migration PCE and the spawning and rearing PCE in each specific area are and will likely continue to be negatively affected by roads and road crossings into the future, and, therefore, may require special management considerations or protection that may include applying best management practices that reduce sedimentation and pollution, and allow for unobstructed passage of juvenile and adult Atlantic salmon at road crossings.

(f). Mining

Sand, gravel, cement, and some varieties of stone (e.g., slate and granite) and clay are mined extensively throughout Maine and this activity can negatively affect PCE sites, predominately those for spawning and rearing. Mining is known to occur within 36 specific areas proposed for designation. Mining of these materials in Maine occurs to the extent that Maine is largely self-sufficient with respect to these commodities (Lepage *et al.*, 1991). Sand and gravel mining can occur in the form of gravel pits and in some cases can involve dredging of streambeds. Sand and gravel mining in or adjacent to streams can affect sites for spawning and rearing by increasing fine and coarse particle deposition and elevating turbidity from suspended sediments (Waters, 1995).

We conclude that the spawning and rearing PCE is and will likely continue to be affected by sand and gravel mining into the future, and, therefore, may require special management or protections through increased riparian buffers that protect streams from sedimentation. Direct mining of gravel from streambeds does not currently occur in any of the specific areas, though such mining has been proposed in the past and may be proposed in the future. Therefore, spawning and rearing sites affected by streambed mining may require special management or protections, which may include relocation of streambed mining operations.

Maine's crystalline rocks are potential hosts to an array of metals including copper, zinc, lead, nickel, molybdenum, tin, tungsten, cobalt, beryllium, uranium, manganese, iron, gold and silver (Lepage *et al.*, 1991) and mining of these metals can negatively affect sites for spawning and rearing and sites for migration. Many metals occur naturally in rivers and streams and in trace concentrations are considered essential for proper physiological development of fish (Nelson *et al.*, 1991). The process of mining for metals can introduce toxic metals into streams as acid stimulation mobilizes metal ions from metalliferous minerals (Nelson *et al.*, 1991) and therefore may alter water chemistry in sites for spawning, rearing and migration. The most frequent metals that are released into streams and may be toxic to salmon depending on their concentration include arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, and zinc (Nelson *et al.*, 1991). Dissolved copper is known to affect a variety of biological endpoints in fish (e.g., survival, growth, behavior, osmoregulation, sensory system, and others (reviewed in Eisler, 1998)). Laboratory exposure of 2.4 micrograms/L dissolved copper in water with hardness 20 mg/L resulted in avoidance behavior by juvenile Atlantic salmon and 20 micrograms/L dissolved copper in water with a hardness of 20 mg/L resulted in interrupted spawning migrations in the wild (Sprague *et al.*, 1965). A combined effect of copper-zinc may result in a complete block of migration at 0.8 toxic units (Sprague *et al.*, 1965). Currently metal mining does not occur within any of the specific areas, though recent mining exploration within the state suggests that metal mining may occur in the future. We conclude that spawning, rearing and migration PCEs in each specific area may, in the future, be negatively affected by metals mining and, therefore, may require special management considerations or protections, possibly through implementation of best management practices (BMPs) that protect rivers and streams from pollutants.

There are only two active, though limited, peat mining operations in Maine, both of which are located in Washington County (USGS, 2006) in the Narraguagus River HUC 10 (HUC code 105000209). Although there is currently no direct evidence that peat mining in other countries (i.e., Ireland, Norway) has affected Atlantic salmon, studies have shown that peat mining can affect water quality, wetlands, aquatic resources and sediment load (MASTF, 1997). One potential effect of peat mining on Atlantic salmon habitat is from runoff that may have historically exacerbated depressed pH in DPS rivers (NMFS and FWS, 1999). Low pH levels are known to impair smolt migrations as they transfer from the freshwater environment to the marine environment (Staurnes *et al.*, 1995; Brodeur *et al.*, 2001). We conclude that peat mining may negatively affect PCE sites in the Narraguagus River HUC 10, particularly for migration, as depressed pH levels are known to adversely affect migration smolts, and, therefore, may require special management considerations or protections through measures that protect rivers and streams from acid discharge of waste water or runoff.

(g). Dams

Dams occur in 40 specific areas proposed for critical habitat designation and negatively affect sites for spawning and rearing and sites for migration PCEs. Dams obstruct migration of Atlantic salmon which can delay or preclude adult salmon access to spawning sites and smolts from access to the marine environment. Dams also preclude or diminish access of co-evolved diadromous fish communities that likely serve as buffers from predators of migrating salmon (Saunders *et al.*, 2006). They can also degrade spawning and rearing sites through alterations of natural hydrologic, geomorphic and thermal regimes (American Rivers *et al.*, 1999; Heinz Center, 2002; NRC, 2004; Fay *et al.*, 2006). Dams are also the most significant contributing factor to the loss of salmon habitat connectivity within the range of the DPS (Fay *et al.*, 2006) and have been identified as the greatest impediment to self-sustaining Atlantic salmon populations in Maine (NRC, 2004).

As discussed in the economic analysis prepared in support of this designation, we recognize that impacts to hydropower operations may occur as a result of this designation. We solicit information on these impacts to inform our final designation.

We conclude that the migration, spawning and rearing PCEs are and will likely continue to be negatively affected by dams into the future, and, therefore, may require special management considerations or protection through dam removal or improved fish passage devices.

(h). Dredging

Dredging frequently occurs within bays and estuaries along the coast of Maine and can negatively affect the migration PCEs. Dredging may occur within 25 specific areas proposed for designation in the GOM DPS and is often a temporary activity depending on the size and duration of the dredging project. Dredging is the practice of removing sediment from an aquatic system and commonly occurs in freshwater, estuarine, and marine environments. Nightingale and Simenstad (2001a) place dredging practices into one of two categories: the creation of new projects and waterway deepening, or maintenance dredging for the purpose of preserving already existing channels. Nightingale and Simenstad (2001a) list some examples of why dredging might be used and include activities such as maintaining water depths, creating or expanding marinas, mining gravel or sand for shoreline armoring, opening channels for passage of flood flows, retrieving cement mixture ingredients, and removing contaminated sediments.

Dredging can cause a range of negative impacts to water quality in the affected area, particularly in sites for migration where dredging is most likely to occur. Of greatest concern is the associated temporary increase in the water's turbidity (the measure of suspended solids in the water column). Increased turbidity can have adverse effects upon the impacted area's fish community that include a range of impacts from difficulty absorbing oxygen from the water, altered feeding behavior, and changes in predator-prey relationships (Nightingale and Simenstad, 2001a). In addition, increased turbidity causes reductions in the light's ability to penetrate the water column. Light penetration plays a central role in the level of productivity of aquatic environments, predator-prey relationships, schooling behavior, and fish migration (Nightingale and Simenstad, 2001a).

Juvenile salmonids migrating through and residing in estuaries are naturally capable of coping with high levels of turbidity; however, suspended solids introduced via dredging can produce material that is of the right size and shape to adversely affect the young salmon by inhibiting their ability to diffuse oxygen through their gills (Nightingale and Simenstad, 2001a). According to Nightingale and Simenstad (2001b), suspended solids in concentrations of $\geq$4,000 mg/L have been shown to cause erosion to the terminal ends of fish gills. In addition to impacting juvenile salmon, suspended solids at levels of 20 mg/L and 10 mg/L have been shown to result in avoidance behaviors from rainbow smelt, and Atlantic herring, respectively (Wildish and Power, 1985). We conclude that the migration PCE is and will likely continue to be negatively affected by dredging into the future, and, therefore, may require special management considerations or protections which may include time of year restrictions and employment of sediment control measures.

(i). Aquaculture

Aquaculture occurs in four specific areas proposed for designation within the range of the GOM DPS and can negatively affect PCE sites for spawning and rearing, and migration. The influence of aquaculture on Atlantic salmon is most frequently related to the interactions between wild fish and fish that have escaped from aquaculture facilities. Most escapes of farm salmon occur in the marine environment and involve smolts, post-smolts and adults. Escaped farmed salmon generally migrate up the nearest rivers. Large escapes of aquaculture fish have occurred in Maine and Canada and escaped farm salmon are known to return to Maine rivers. Escapes have been caused by storms, cage failure, anchor failure, human error, vandalism, and predator attacks (e.g., seals; NMFS/FWS, 2005). Although there is little direct information about the effects of net-pen salmon aquaculture on wild Maine salmon (NRC, 2004), potentially harmful interactions between wild and farmed salmon can be divided into ecological and genetic interactions. Ecological interactions can occur in sites for migration, resulting in alterations in disease transmission and changes to competition and predation pressures, whereas genetic interactions occur in spawning sites, which can modify the timing of important life history events and thereby alter selection pressures and fitness. These interactions are not mutually exclusive, and the effects of each may compound and influence the effects of the other. We conclude that the spawning and rearing PCE and the migration PCE in each affected HUC 10 is, and will likely continue to be, negatively affected by aquaculture into the future, and, therefore, may require special management considerations or protections which may include better containment of aquaculture fish to prevent escapement and enhanced disease and parasite control procedures.

TABLE 1—SPECIFIC AREAS WITHIN THE GEOGRAPHIC AREA OCCUPIED BY A SPECIES AND THE ASSOCIATED SPECIAL MANAGEMENT CONSIDERATIONS OR PROTECTIONS THAT MAY BE REQUIRED

HUC code	Watershed name	Special management considerations*								
105000205	Machias River	A	F	C/L	H/S	R		Da	Dr	
105000204	East Machias River	A	F	C/L	H/S	R	M	Da	Dr	
105000208	Pleasant River	A	F	C/L	H/S	R	M	Da	Dr	
105000201	Dennys River	A	F	C/L	H/S	R	M	Da	Dr	
105000207	Chandler River	A	F	C/L	H/S	R	M	Da	Dr	
105000209	Narraguagus River	A	F	C/L	H/S	R	M	Da	Dr	
105000213	Union River Bay	A	F	C/L	H/S	R	M	Da	Dr	Q
105000203	Grand Manan Channel	A	F	C/L	H/S	R	M	Da	Dr	Q
105000206	Roque Bluffs Coastal	A	F	C/L	H/S	R	M	Da	Dr	
105000210	Tunk Stream	A	F	C/L	H/S	R		Da	Dr	
105000212	Graham Lake	A	F	C/L	H/S	R	M	Da		
102000202	Grand Lake Matagamon	A	F	C/L	H/S	R		Da		
102000203	East Branch Penobscot River	A	F	C/L	H/S	R				
102000204	Seboeis River	A	F	C/L	H/S	R		Da		
102000205	East Branch Penobscot River	A	F	C/L	H/S	R		Da		
102000301	West Branch Mattawamkeag River	A	F	C/L	H/S	R	M	Da		
102000302	East Branch Mattawamkeag River	A	F	C/L	H/S	R	M			
102000303	Mattawamkeag River	A	F	C/L	H/S	R	M			
102000305	Mattawamkeag River	A	F	C/L	H/S	R	M			
102000306	Molunkus Stream	A	F	C/L	H/S	R				
102000307	Mattawamkeag River	A	F	C/L	H/S	R	M	Da		
102000401	Piscataquis River	A	F	C/L	H/S	R		Da		
102000402	Piscataquis River	A	F	C/L	H/S	R	M	Da		
102000404	Pleasant River	A	F	C/L	H/S	R		Da		
102000405	Seboeis Stream	A	F	C/L	H/S	R		Da		
102000406	Piscataquis River	A	F	C/L	H/S	R	M	Da		
102000501	Penobscot River at Mattawamkeag	A	F	C/L	H/S		M	Da		
102000502	Penobscot River at West Enfield	A	F	C/L	H/S	R	M	Da		
102000503	Passadumkeag River	A	F	C/L	H/S	R	M	Da		
102000505	Sunkhaze Stream	A	F	C/L	H/S	R				
102000506	Penobscot River at Orson Island	A	F	C/L	H/S	R	M			

TABLE 1—SPECIFIC AREAS WITHIN THE GEOGRAPHIC AREA OCCUPIED BY A SPECIES AND THE ASSOCIATED SPECIAL MANAGEMENT CONSIDERATIONS OR PROTECTIONS THAT MAY BE REQUIRED—Continued

HUC Code	Watershed Name	Special Management Considerations*								
102000507	Birch Stream	A	F	C/L	H/S	R	M			
102000509	Penobscot River at Veazie Dam	A	F	C/L	H/S	R	M	Da		
102000510	Kenduskeag Stream	A	F	C/L	H/S	R	M	Da	Dr	
102000511	Souadabscook Stream	A	F	C/L	H/S	R	M	Da	Dr	
102000512	Marsh River	A	F	C/L	H/S		M	Da	Dr	
102000513	Penobscot River	A	F	C/L	H/S	R	M	Da	Dr	
105000218	Belfast Bay	A	F	C/L	H/S	R	M	Da	Dr	
105000219	Ducktrap River	A	F	C/L	H/S	R		Da	Dr	Q
105000301	St. George River	A	F	C/L	H/S	R	M	Da	Dr	
105000302	Medomak River	A	F	C/L	H/S	R	M	Da	Dr	
105000305	Sheepscot River	A	F	C/L	H/S	R	M	Da	Dr	
103000306	Kennebec River at Waterville Dam	A	F	C/L	H/S	R	M	Da	Dr	
103000305	Sandy River	A	F	C/L	H/S	R	M	Da	Dr	
103000312	Kennebec at Merrymeeting Bay	A	F	C/L	H/S	R	M	Da	Dr	Q
105000306	Sheepscot Bay	A	F	C/L	H/S	R	M	Da	Dr	
105000307	Kennebec River Estuary	A	F	C/L	H/S	R	M	Da	Dr	
104000210	Little Androscoggin River	A	F	C/L	H/S	R	M	Da	Dr	

* A = Agriculture; F = Forestry, C/L = Changing Land Use; H/S = Hatcheries and Stocking; R = Roads and Road Crossings; M = Mining; Da = Dams; Dr = Dredging; Q = Aquaculture.

*''Specific Areas Outside the Geographical Area Occupied by the Species * * * Essential to the Conservation of the Species''*

The ESA 3(5)(A)(ii) further defines ''critical habitat'' as ''specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of [section 4 of this Act], upon a determination by the Secretary that such areas are essential for the conservation of the species''. For the reasons stated above in the discussion of specific occupied areas, we delineated the specific areas outside the geographic area occupied by the species using HUC 10 (level 5) watersheds. To determine whether these unoccupied areas are essential for the conservation of the species, we: (1) Established recovery criteria to determine when the species no longer warrants the protections of the ESA (See Appendix A of Biological valuation of Atlantic salmon habitat within the range of the GOM DPS) and the amount of habitat needed to support the recovered population; and (2) determined the amount of habitat currently occupied by the species relative to the amount of habitat necessary to achieve recovery.

To establish recovery criteria, we determined the characteristics of a recovered GOM DPS. We first established a geographic framework represented by three Salmon Habitat Recovery Units, or SHRUs, within the DPS (see appendix A of the Biological valuation of Atlantic Salmon Habitat within the range of the GOM DPS, 2008). The SHRU delineations were established to aid in developing criteria for recovery to ensure that Atlantic salmon are widely distributed across the DPS such that recovery of the species is not limited to one river or one geographic location within the GOM DPS. As explained in more detail in the Biological valuation of Atlantic salmon habitat within the range of the GOM DPS, Appendix A, we determined that all three SHRUs must fulfill the criteria described below for the overall species, the GOM DPS, to be considered recovered. The three SHRUs will provide protection from genetic and demographic stochasticity as well as depensatory effects whereby a decrease in the population can lead to reduced survival and production of eggs and offspring. Recovery of the GOM DPS, whereby each of the three SHRUs meet the criteria described below, also assures diversity across the geographic range such that fish from one SHRU may be particularly well adapted to one environment or set of conditions (e.g., long migration corridors, high gradient reaches, warm temperatures, etc.) to which fish from another SHRU may not be well adapted.

Criteria

As explained further in the Biological valuation of Atlantic Salmon Habitat within the range of the GOM DPS, Appendix A, we determined that if the census population (N) of adult spawners within any of the three SHRUs were to fall below 500, the GOM DPS should be evaluated as threatened pursuant to the factors set forth in the ESA. A census population of 500 adult spawners within all three SHRUs also serves as the starting point in which to make a determination of recovery for the entire GOM DPS. Franklin (1980) introduced 500 as the approximate effective population size necessary to retain sufficient genetic variation and long term persistence of a population. Though there has been much debate in the literature regarding the application of assigning a general number to represent when populations are sufficiently large enough to maintain genetic variation (Allendorf and Luikart, 2007), the ''500 rule'' introduced by Franklin (1980) has not been superseded by any other rule and does serve as useful guidance for indicating when a population may be at risk of losing genetic variability (Allendorf and Luikart, 2007).

We have chosen to use 500 adult spawners (1 or 2 sea-winter salmon) in each SHRU as the indicator of when the populations in each of the three SHRUs may be at risk of losing genetic variability. We used the census number rather than an effective population size (Ne) primarily because determining an effective population size for natural populations with highly complex life histories can be extremely difficult and highly variable from one year to the next (Waples and Yokota, 2007; Reiman and Allendorf, 2001). In Atlantic salmon populations, where cross-generational breeding, iteroparity, and precocious parr all contribute to the breeding population, computing an effective population size of the natural population would most likely generate values with substantial error surrounding the data, and therefore not be particularly useful in determining when the population is at risk of becoming endangered.

Additionally, an N of 500 per SHRU provides only a starting point from which to establish criteria for delisting and will not necessarily be the actual number at which the DPS warrants delisting. Geographic distribution, population trends, and the results of Population Viability Analyses (PVAs) are other factors that will be used in determining extinction risks to the GOM DPS (see appendix A of Biological valuation of Atlantic salmon habitat within the GOM DPS (2008)) and the determination of when the GOM DPS warrants delisting. Furthermore, objective, measurable criteria as required under ESA § 4(f)(1)(B)(ii) will further establish thresholds for recovery and will be determined in a final recovery plan for the expanded GOM DPS. As a result, the actual number of fish needed to warrant a delisting decision will likely be greater than 500 for each SHRU based upon the demographics of the population leading up to the point at which a decision is made.

Given a population size of 500 adult spawners in any SHRU as a threshold in which the GOM DPS should be evaluated for listing as a threatened species, we determined that a recovered GOM DPS would be one that is not likely to become threatened, because a recovered GOM DPS should not be a population that teeters on the line between a GOM DPS that is recovered, and a GOM DPS that is threatened.

Therefore, for the GOM DPS to be considered recovered, each SHRU must have a less than 50-percent chance of the adult spawner population falling below 500 over the next 15 years (see Appendix A of Biological valuation of Atlantic salmon habitat within the GOM DPS). Additionally, the entire GOM DPS must reflect sustainable positive population growth for a period of 10 years (or two generations) to ensure that population trends are substantive (see Appendix A of Biological valuation of Atlantic Salmon Habitat within the GOM DPS, 2008). The criteria described above were then applied to aid in determining whether designating any specific unoccupied habitat areas are essential for the conservation of the species by estimating the amount of habitat needed to support a recovered GOM DPS.

Using demographic data for the period between 1991–2006, a period considered to have had exceptionally low survival, we applied the criteria described above in conjunction with a Population Viability Analysis (PVA) to determine how many adults would be required in each SHRU to weather a similar downturn in survival while having a greater than 50-percent chance of remaining above 500 adults (see Appendix B of Biological valuation of Atlantic salmon habitat within the GOM DPS, 2008). This analysis projected that a census population of 2,000 spawners (1000 male and 1000 female) would be needed in each of the three SHRUs for the GOM DPS to weather a downturn in survival such as experienced over the time period from 1991–2006. Based on this analysis, enough habitat is needed in each of the three SHRUs to support the offspring of 2,000 spawners. Using an average fecundity per female of 7,200 eggs (Legault, 2004), and male to female ratio of 1:1, or 1000 females, and a target number of eggs per one unit of habitat (100 m^2) of 240 (Baum, 1997) we determined that 30,000 units of habitat is needed across each SHRU (7,200 eggs × 1000 females/240 eggs = 30,000) to support the offspring of 2,000 spawners, which represents the quantity of habitat in each SHRU essential to the conservation of the species (Appendix B of Biological valuation of Atlantic Salmon Habitat within the GOM DPS, 2008).

To calculate the existing quantity of habitat across the DPS both within the currently occupied range and outside the occupied range, we considered the measured quantity of habitat within each HUC 10 as well as the habitat's quality to generate the habitat's functional equivalent. The functional equivalent values are a measure of the quantity of habitat (expressed in units where 1 unit of habitat is equivalent to 100 m^2 of habitat) within a HUC 10 based on qualitative factors that limit survivorship of juvenile salmon utilizing the habitat for spawning, rearing and migration. The functional equivalent also accounts for dams within or below the HUC 10 that would further reduce survivorship of juvenile salmon within the HUC 10 as they migrate towards the marine environment. In HUC 10s that are not believed to be limited by qualitative factors or dams, the functional equivalent would be identical to the measured quantity of habitat within the HUC 10. In HUCs where quality and dams are believed to be limiting, the functional equivalent would be less than the measured habitat within the HUC 10. The functional equivalent value is used in the critical habitat evaluation process to determine the quantity of functioning habitat within each HUC 10. It also determines the quantity of functioning habitat within the currently occupied range relative to the amount needed to support the offspring of 2000 adult spawners.

The functional equivalent was generated by multiplying the units of habitat within each HUC 10 by the habitat quality score divided by 3 (e.g. 1 = 0.33, 2 = 0.66, and 3 = 1; discussed below under application of ESA section 4(b)(2)). This value was then multiplied by the passage efficiency of FERC dams with turbines raised to the power of the number of dams both within and downstream of the HUC 10. Habitat quality scores were divided by 3 to represent their relative values in terms of percentages such that a ''1'' habitat quality score has a qualitative value roughly 33 percent of habitat that is not limiting, ''2'' habitat quality score is roughly 66 percent, and a ''3'' score equals 100-percent habitat quality. We consider 0.85 to represent a coarse estimate of passage efficiency for FERC dams with turbines based on the findings of several studies (GNP, 1995; GNP, 1997; Holbrook, 2007; Shepard, 1991c; Spicer et al. 1995) and therefore roughly equivalent to a 15 percent reduction in functional equivalent. The number of dams present both within and downstream of the HUC 10 was used as an exponent to account for cumulative effects of dams. A full review of how habitat quantities and habitat qualities were computed is provided in the Biological Valuation of Atlantic Salmon Habitat within the GOM DPS, 2008.

Table 2 represents the total amount of measured habitat within the occupied areas of each SHRU; the habitats functional equivalent for each SHRU; amount of habitat proposed for exclusion; the amount of functional habitat (represented as functional equivalent) after exclusion; and the amount of habitat still needed to support the offspring of 2,000 adult spawners within each SHRU.

TABLE 2—TOTAL HABITAT AND FUNCTIONAL HABITAT FOR OCCUPIED AREAS

Among the Three SHRUs in the GOM DPS

SHRU	Total habitat units	Functional equivalent	Proposed exclusion	Functional habitat after exclusions	Additional habitat needed to support the offspring of 2,000 adult spawners (i.e., 30,000 units)
Merrymeeting Bay	372,639	40,001	0	40,001	0
Penobscot Bay	323,740	66,263	3,205	63,058	0
Downeast Coastal	61,395	29,111	0	29,111	889

In both the Penobscot and Merrymeeting Bay SHRUs there are more than 30,000 units of functional habitat within the currently occupied area to support the offspring of adult spawners. In the Downeast SHRU, the amount of functional habitat available to the species is estimated to be 889 units short of what is needed to support 2000 adult spawners. Nonetheless, we determined that no areas outside the occupied geographical area within the Downeast SHRU are essential to the conservation of the species. This is because of the 61,395 total habitat units in Downeast Maine, the habitat is predicted to be functioning at the equivalent of only 29,111 units because of the presence of dams or because of degraded habitat features that reduce the habitats functional value. Through restoration efforts, including enhanced fish passage and habitat improvement of anthropogenically degraded features, a substantial portion of the approximate 32,000 units of non-functioning habitat may be restored to a functioning state. The Union River, for instance, has over 12,000 units of habitat, though its functional potential is estimated to be equivalent to approximately 4,000 units of habitat. This is largely because of dams without fish passage that preclude Atlantic salmon access to portions of the Union River watershed. Dam removal or improved fish passage has the potential to restore a significant amount of the 8,000 units within the Union River declared to be non-functioning habitat.

Throughout Maine, there has been substantial effort on behalf of state and Federal agencies and non-profit organizations in partnership with landowners and dam owners to restore habitat through a combination of land and riparian protection efforts, and fish passage enhancement projects. Project SHARE, the Downeast Salmon Federation, watershed councils, Trout Unlimited, and the Atlantic Salmon Federation, for example, have conducted a number of projects designed to protect, restore and enhance habitat for Atlantic salmon ranging from the Kennebec River in south central Maine to the Dennys River in Eastern Maine. Projects include (though are not limited to) dam removals along the Kennebec, St. George, Penobscot, and East Machias Rivers, land protection of riparian corridors along the Machias, Narraguagus, Dennys, Pleasant, East Machias, Sheescot, Ducktrap rivers and Cove Brook; surveying and repair of culverts that impair fish passage; and outreach and education efforts on the benefits of such projects. The Penobscot River Restoration Project is another example of cooperative efforts on behalf of Federal and state agencies, non-profit organizations and dam owners. The PRRP goal is to enhance runs of diadromous fish through the planned removal of two mainstem dams and enhanced fish passage around several other dams along the Penobscot River. These cooperative efforts can increase the functional potential of Atlantic salmon habitat by both increasing habitat availability as well as increasing habitat quality. Therefore, we do not believe that it is essential to designate critical habitat outside of the currently occupied range.

Activities That May Be Affected (Section 4(b)(8))

Section 4(b)(8) of the ESA requires that we describe briefly and evaluate in any proposed or final regulation to designate critical habitat, those activities that may destroy or adversely modify such habitat or that may be affected by such designation. A wide variety of activities may affect critical habitat and, when carried out, funded, or authorized by a Federal agency, will require an ESA section 7 consultation. Such activities (detailed in the economic analysis) include, but are not limited to agriculture, transportation, development and hydropower.

We believe this proposed critical habitat designation will provide Federal agencies, private entities, and the public with clear notification of critical habitat for Atlantic salmon and the boundaries of such habitat. This designation will allow Federal agencies and others to evaluate the potential effects of their activities on critical habitat to determine if ESA section 7 consultation with NMFS is needed given the specific definition of physical and biological features.

Application of ESA Section 4(a)(3)(B)(1)

The Sikes Act Improvement Act of 1997 (16 U.S.C. 670a–670f, as amended), enacted on November 18, 1997, required that military installations with significant natural resources prepare and implement an integrated natural resource management plan (INRMP) in cooperation with the USFWS and state fish and wildlife agencies, by November 18, 2001. The purpose of the INRMP is to provide the basis for carrying out programs and implementing management strategies to conserve and protect biological resources on military lands. Because military lands are often protected from public access, they can include some of the nation's most significant tracts of natural resources. INRMPs are to provide for the management of natural resources, including fish, wildlife, and plants; allow multipurpose uses of resources; and provide public access where appropriate for those uses, without any net loss in the capability of an installation to support its military mission.

In 2003, the National Defense Authorization Act (Pub. L. 108–136) amended the ESA to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the ESA (16 U.S.C. 1533(a)(B)(i)) states: ''The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 67a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.''

Within the specific areas identified as critical habitat for the Gulf of Maine DPS, there are three military sites, one of which has been decommissioned and recently transitioned to civilian ownership. The two active military sites within the occupied range of the DPS include: (1) The 3,094 acre Brunswick Naval Air Station in Brunswick, Maine, of which 435 acres are within Little Androscoggin HUC 10 watershed in the Merrymeeting Bay SHRU; and (2) the Brunswick Naval Air Stations cold weather survival, evasion, resistance and escape school which occupies 12,000 acres near Rangeley, Maine and occupies 5,328 acres of the Sandy River HUC 10 watershed in the Merrymeeting Bay SHRU. We have contacted the Department of Defense and requested information on the existence of INRMPs and the benefits any INRMPs would provide to Atlantic salmon. If any INRMPs covering these sites are determined, in writing, to provide a benefit to Atlantic salmon, we would be precluded from designating the Atlantic salmon habitat within these sites, which is comprised of 9.56 km of river and streams containing physical and biological features in the Sandy River HUC, and 0.81 km of river and streams containing physical and biological features in the Lower Androscoggin HUC.

Application of ESA Section 4(b)(2)

The foregoing discussion described the specific areas within U.S. jurisdiction that meet the ESA definition of critical habitat because they contain the physical and biological features essential to the conservation of Atlantic salmon that may require special management considerations or protection. Before including areas in a designation, section 4(b)(2) of the ESA requires the Secretary to consider the economic impact, impact on national security, and any other relevant impacts of designation of any particular area. The Secretary has the discretion to exclude any area from designation if he determines that the benefits of exclusion (that is, avoiding some or all of the impacts that would result from designation) outweigh the benefits of designation based upon the best scientific and commercial data available. The Secretary may not exclude an area from designation if exclusion will result in the extinction of the species. Because the authority to exclude is discretionary, exclusion is not required for any particular area under any circumstances.

The 4(b)(2) exclusion process is conducted for a ''particular area,'' not for the critical habitat as a whole. This analysis is therefore conducted at a geographic scale that divides the area under consideration into smaller sub-areas. The statute does not specify the exact geographic scale of these ''particular areas.'' For the purposes of the analysis of economic impacts, a ''particular area'' is equivalent to a ''specific area'', defined as a HUC 10 (level 5) standard watershed. There are 48 ''specific areas'' (HUC 10s) occupied by the species on which are found those physical and biological features essential to the conservation of the species and which may require special management considerations or protection.

Where we considered impacts on Indian Tribes, we delineated particular areas based on land ownership. Where we consider impacts on national security particular areas will be delineated based on lands identified by the military as areas where critical habitat will have an impact on national security. These areas may only account for a small fraction of a HUC 10 watershed or, in some circumstances, may span across several HUC 10 watersheds. Factors that were considered in determining whether or not the benefits of exclusion outweighed the benefits of designating the particular areas as critical habitat:

(1) The quantity of functional habitat proposed for exclusion relative to the quantity of habitat needed to support a recovered population;

(2) The relative biological value of a particular area to the conservation of the species, measured by the quantity and quality of the physical and biological features with the particular area;

(3) The anticipated conservation loss that would be accrued through not designating a particular area based upon the conservation value of that particular area; and

(4) Whether exclusion of habitat within the particular area, based upon the best scientific and commercial data, would result in the extinction of the species concerned.

Assigning Biological Value

To determine the benefits of including an area as critical habitat, we assigned a Final Biological Value to each HUC 10 watershed based on the quantity and quality of Atlantic salmon spawning and rearing habitat and the migratory needs of the species (see Biological valuation of Atlantic salmon habitat in the GOM DPS (2008)). The Final Biological Value indicates each areas current value to Atlantic salmon spawning, rearing and migration activities and is applied in the 4(b)(2) exclusion analysis, where it is weighed against the economic, national security, and other relevant impacts to consider whether specific areas may be excluded from designation. (The final biological value also aided in determining those areas currently occupied by the species described earlier in the proposed rule under ''Identifying the Geographical Area Occupied by the Species and Specific Areas within the Geographical Area'').

The variables used to develop the Final Biological Value include a combination of habitat units, habitat quantity, habitat quality, and the value of the HUC 10 to migration of smolts and adults.

A habitat unit represents 100 m^2 of spawning and rearing habitat. A ''habitat unit'' is used in North America and Europe to quantify habitat features most frequently used for spawning and juvenile rearing (e.g., riffles and runs). Habitat units for each HUC 10 were calculated using the GIS based habitat prediction model described earlier in the proposed rule under *Physical and Biological Features in Freshwater and Estuary Specific Areas Essential to the Conservation of the Species.*

Habitat quantity is the estimate of habitat units generated by the model and was calculated separately for each HUC 10. The units of habitat were then binned into four categories for each of the three SHRUs. A HUC 10 with no habitat was assigned a score of ''0'' and was considered unoccupied. HUC10's with the lowest 25 percent of total units of habitat across the entire SHRU received a ''1'' score, the middle 50 percent received a ''2'' score, and the upper 25 percent received a ''3'' score. A ''3'' score represents the highest relative habitat quantity score. This method resulted in the majority of the habitat receiving a score of ''2'' representing an average habitat quantity. Habitat scores outside the middle 50 percent were considered to have above average habitat quantity or below average habitat quantity.

Habitat quality scores were assigned to HUC 10s based on information and input from fisheries biologists working with the Maine Department of Inland Fisheries and Wildlife, the MDMR, NMFS, and Kleinschmidt Energy and Water Resource Consultants who possess specific knowledge and expertise about the geographic region. For each of the three SHRUs, a minimum of three biologist with knowledge of and expertise in the geographic area were asked to independently assign habitat scores, using a set of scoring criteria developed by Fisheries Biologists from NMFS, to HUC 10s based on the presence and quality of the physical and biological features essential to the conservation of the species (see Biological valuation of Atlantic salmon habitat within the GOM DPS (2008)). The scoring criteria ranked qualitative features including temperature, biological communities, water quality, and substrate and cover, as being highly suitable (''3''), suitable (''2''), marginally suitable (''1'') or not suitable (''0'') for supporting Atlantic salmon spawning, rearing and migration activities. A habitat value of ''0'' indicates that one or more factors is limiting to the point that Atlantic salmon could not reasonably be expected to survive in those areas; a score of ''1'', ''2'' or ''3'' indicates the extent to which physical and biological features are limiting, with a ''1'' being most limiting and a ''3'' being not limiting. In HUC 10s that are and have always been inaccessible due to natural barriers, the entire HUC 10 was automatically scored as ''0'' and considered not occupied by the species. During the scoring process, biologists were given the option to consider all the HUC 12 sub-watersheds present within each HUC 10 watershed to aid in reaching a final HUC 10 watershed score. Emphasis was placed on identifying whether or not the physical and biological features needed for Atlantic salmon spawning and rearing are present and of what quality the features are. The overall habitat quality score for each HUC 10 was typically an average determined by the compilation of scores and comments provided from the biologists.

Final Habitat Values were generated for each HUC 10 by combining habitat quantity and habitat quality scores within each HUC 10. HUC 10s with zero scores for either habitat quantity or quality received a zero score for Final Habitat Value. Combined scores were then binned on a scale of one to three with the lowest 25 percent receiving a ''1'' score, the middle 50 percent receiving a ''2'' score, and the upper 25 percent receiving a ''3'' score. A ''3'' score represents the highest relative Final Habitat Value.

A final migration score was generated based on the final habitat values and the migratory requirements of adults to reach spawning areas and smolts to reach the marine environment. We determined the final migration score of a HUC 10 to be equal to the highest final habitat value upstream from the HUC 10 as we concluded that access to spawning and rearing habitat was equally as important as the spawning and rearing habitat itself.

The final biological value for each HUC 10, which is the value used in weighing economic cost against the biological value of habitat to salmon, was determined by selecting the higher of the final habitat score and the final migration score of each HUC10. This approach assures the preservation of spawning and rearing habitat as well as migration habitat (see Biological valuation of Atlantic salmon habitat within the range of the GOM DPS, 2008).

Consideration of Economic Impacts, Impacts to National Security and Any Other Relevant Impacts

The impact of specifying any particular area as critical habitat occurs primarily through section 7 of the ESA. Once critical habitat is designated, section 7(a)(2) requires that Federal agencies ensure any action they authorize, fund or carry out (this action is called the ''Federal nexus'') is not likely to result in the destruction or adverse modification of critical habitat (16 U.S.C. 1536(a)(2)). Parties involved in section 7 consultations include NMFS or the USFWS, a Federal action agency, and in some cases, a private entity involved in the project or land use activity. The Federal action agency serves as the liaison with NMFS. Under Section 7(a)(2), when a Federal agency proposes an action that may affect a listed species or its critical habitat, it must initiate formal consultation with NMFS (or the USFWS, as applicable) or seek written concurrence from the Services that the action is not likely to adversely affect listed species or its designated critical habitat. Formal consultation is a process between the Services and a Federal agency designed to determine whether a proposed Federal action is likely to jeopardize the continued existence of a species or destroy or adversely modify critical habitat, an action prohibited by the ESA. If the action is likely to destroy or adversely modify critical habitat, then the Federal agency may be required to implement a reasonable and prudent alternative (RPA) to the proposed action to avoid the destruction or adverse modification of critical habitat. In addition, conservation benefits to the listed species would result when the consultation process avoids destruction or adverse modification of its critical habitat through inclusion of RPAs, or avoids lesser adverse effects to critical habitat that may not rise to the level of adverse modification through inclusion of harm avoidance measures.

Outside of the Federal agencies' obligation to critical habitat and project modifications that may be required to avoid destruction or adverse modification, the ESA imposes no requirements or limitations on entities or individuals as result of a critical habitat designation.

Economic Impacts

As discussed above, economic impacts of the critical habitat designation result from implementation of section 7 of the ESA. Section 7(a)(2) requires Federal agencies to consult with NMFS to ensure their proposed actions are not likely to destroy or adversely modify critical habitat. These economic impacts may include both administrative and project modification costs. Economic impacts may also be associated with the conservation benefits of the designation.

Economic impacts were assessed for each specific HUC 10 area proposed for designation, as well as for unoccupied areas within the range of the GOM DPS. While we are not proposing to designate unoccupied areas, we evaluated the economic impacts in the event that we determined in the biological valuation process, or determine as a result of public comment or subsequently available information, that some or all of the unoccupied areas were found to be to be essential to the conservation of the species. For the entire range of the GOM DPS, the present value of estimated economic impacts ranges from approximately $222 million to $259 million, with most of the economic impact resulting from impacts to hydropower and development (IEc, 2008a). The estimated economic impact of designation of the occupied areas before economic exclusions ranges from approximately $165 million to $190 million. We solicit comment on the economic impacts to activities that may be affected as a result of this designation, particularly hydropower activities and alternative energy projects. Information received will be considered in the development of the final designation.

For the designation of critical habitat for the GOM DPS, economic exclusions within the 48 occupied HUC 10s throughout the DPS were considered by weighing biological value determined in the biological valuation and the economic cost determined in the economic analysis. As described earlier, the Biological Values were assigned a score of 1, 2, or 3, with a ''1'' being of lowest biological value and a ''3'' being of highest biological value. Areas could also be assigned a biological value of ''0'' if the physical and biological features in those areas were so degraded that they were not considered essential to the conservation of salmon. Areas assigned a ''0'' score were not included in the economic exclusion analysis. As stated above, we consider these areas to be unoccupied, and we determined that no unoccupied areas were essential to the conservation of the GOM DPS.

To compare economic cost with biological value, we ranked the range often monetized categories provided in the economic analysis (IEc, 2008a) as being high (''3''), medium (''2'') or low (''1'') economic impact. These categories illustrate economic costs over the range of the GOM DPS. The high, medium and low scores assigned to economic costs were then used to weigh economic cost against the corresponding biological value (also scored as high, medium or low) of each HUC 10. When developing criteria for comparing economic costs the use of a dollar value was chosen. A score of ''1'' (low economic costs) represents a cost ranging from $24,000 to $432,000; a score of ''2'' represents a medium economic cost ranging form $432,001 to $2,810,000; and a score of ''3'' represents a high economic cost ranging from $2,810,001 to $26,300,000. These dollar thresholds do not represent an objective judgment that low-value areas are worth no more than $432,000, medium-value areas are worth no more than $2,810,000, or high value areas are worth no more than $26,300,000. Under the ESA, we are to weigh dissimilar impacts given limited time and information. The statute emphasizes that the decision to exclude is discretionary. Thus, the economic impact level at which the economic benefits of exclusion outweigh the conservation benefits of designation is a matter of discretion and depends on the policy context. For critical habitat, the ESA directs us to consider exclusions to avoid high economic impacts, but also requires that the areas designated as critical habitat are sufficient to support the conservation of the species and to avoid extinction. In this policy context, we selected dollar thresholds representing the levels at which we believe the economic impact associated with a specific area would outweigh the conservation benefits of designating that area.

Given the low abundance and endangered status of Atlantic salmon, we exercise our discretion to consider exclusion of specific areas based on three decision rules: (1) specific areas with a biological value of medium (''2'') or high (''3'') score were not eligible for exclusion regardless of the level of economic impact, because of the endangered status of Atlantic salmon; (2) specific areas with a low biological value (''1'') were excluded if the economic costs were greater than $432,000 (economic score of ''2'' or ''3''); (3) specific areas were not considered for exclusion, including those areas having a low biological value (''1''), if the area had no dams both within it or below it given that these areas are not subject to the deleterious effects that dams have on migration of adults and smolts (GNP 1995; GNP 1997; Holbrook 2007; Shepard 1991c; Spicer et al. 1995). These dollar thresholds and decision rules provided a relatively simple process to identify, in a limited amount of time, specific areas warranting consideration for exclusion.

We propose to exclude three particular areas (HUC 10s) in the Penobscot Bay SHRU due to economic impact, out of a total of 48 occupied HUC 10s within the range of the GOM DPS. Areas proposed for exclusion include 1,243 km of river, stream and estuary habitat and 97 sq. km of lakes in all of Belfast Bay (HUC 105000218), Passadumkeag River (HUC 102000503), and Molunkus Stream (HUC 102000306). The combined economic impact of the designation in those particular areas was estimated to be $8,391,000 to $9,412,000 before they were considered for exclusion. The estimated economic impact for the proposed critical habitat following exclusions ranges from approximately $97 million to $120 million. The estimated economic impact of the proposed critical habitat designation for each SHRU are in Table 3.

TABLE 3—SUMMARY OF ECONOMIC IMPACT FOR OCCUPIED HUC 10 BY SHRU IN THE GOM DPS

SHRU	Low estimate	High estimate
Downeast Coastal	$7,473,000	$10,488,000
Penobscot Bay	17,393,100	22,346,900
Merrymeeting Bay	72,520,000	87,310,000
Total	97,386,100	120,144,900

National Security

As stated above, within the areas identified as critical habitat for the GOM DPS, there are three military sites, one of which has been decommissioned and recently transitioned to civilian ownership. The two active military sites within the occupied range of the DPS include: (1) The 3,094 acre Brunswick Naval Air Station in Brunswick, Maine, of which 435 acres are within Little Androscoggin HUC 10 watershed in the Merrymeeting Bay SHRU; and (2) the Brunswick Naval Air Stations cold weather survival, evasion, resistance and escape school which occupies 12,000 acres near Rangeley, Maine and occupies 5,328 acres of the Sandy River HUC 10 watershed in the Merrymeeting Bay SHRU. We have contacted these installations concerning the national security impacts of designation of these areas as critical habitat. If these areas are eligible for designation (i.e., not covered by INRMPs that provide a benefit to the GOM DPS) and any identified national security impacts are determined to outweigh the benefits of designation, we would exclude from the designation the Atlantic salmon habitat within these military sites, which is comprised of 9.56 km of river and streams containing physical and biological features in the Sandy River HUC, and 0.81 km of river and streams containing physical and biological features in the Lower Androscoggin HUC.

Other Relevant Impacts: Tribal Lands

The Penobscot Indian Nation and the Passamaquoddy Tribe own and conduct activities on lands within the Gulf of Maine DPS. Activities may include agriculture; residential, commercial, or industrial development; in-stream construction projects; silviculture; water quality monitoring; hunting and fishing; and other uses. Some of these activities may be affected by the designation of critical habitat for the Gulf of Maine DPS of Atlantic salmon.

Secretarial Order 3206 recognizes that Tribes have governmental authority and the desire to protect and manage their resources in the manner that is most beneficial to them. Pursuant to the Secretarial Order, and consistent with the Federal government's trust responsibilities, the Services must consult with the affected Indian Tribes when considering the designation of critical habitat in areas that may impact tribal trust resources, tribally-owned fee lands, or the exercise of tribal rights. Critical habitat in such areas, unless determined to be essential to conserve a species, may not be designated.

The Indian lands specifically proposed for exclusion are those defined in Secretarial Order 3206 and include: (1) Lands held in trust by the United States for the benefit of any Indian tribe; (2) lands held in trust by the United States for any Indian Tribe or individual subject to restrictions by the United States against alienation; (3) fee lands, either within or outside the reservation boundaries, owned by the tribal government; and, (4) fee lands within the reservation boundaries owned by individual Indians.

The Penobscot Indian Nation and the Passamaquoddy Tribe own and conduct activities on approximately 182,000 acres of land throughout the entire GOM DPS. Both tribes that own lands within the GOM DPS have actively pursued or participated in activities to further promote the health and continued existence of Atlantic salmon and their habitats. The Penobscot tribe has developed and maintained its own water quality standards that state ''it is the official policy of the Penobscot Nation that all waters of the Tribe shall be of sufficient quality to support the ancient and historical traditional and customary uses of such tribal waters by members of the Penobscot Nation.'' The Tribe is also currently participating in the Penobscot River Restoration Project that has the intended goal of restoring 11 species of diadromous fish, including Atlantic salmon. The Passamaquoddy Tribe has continued to maintain efforts to balance agricultural practices with natural resources. In a tract of Tribal land in Township 19, which accounts for approximately 12 km of the 27.8 km of rivers and streams on Passamaquoddy land that contain physical and biological features essential to salmon, the tribe has established an ordinance to govern its water withdrawals for these lands. This ordinance states ''it is important to the Tribe that its water withdrawals at T. 19 do not adversely affect the Atlantic salmon in any of its life stages, or its habitat,'' and restricts water withdrawals to avoid adverse impact on the Atlantic salmon.

Within the occupied range proposed for designation, the Tribes own approximately 84,058 acres of land within 16 HUC 10 watersheds. NMFS proposes that the rivers, streams, lakes and estuaries of all 84,058 acres of tribal land within the areas occupied by the GOM DPS also be excluded from critical habitat designation based on the principles of the Secretarial Order discussed above. Of the 84,058 acres, 26,401 acres overlap with particular areas being proposed for exclusion based on economic impacts.

Determine Whether Exclusion Will Result in Extinction of the Species

Section 4(b)2 states that particular areas shall not be excluded from critical habitat if the exclusion will result in extinction of the species. Our decision to only propose for exclusion particular areas based on economic impacts that had low biological value, unless dams were absent from the particular area, led to proposed exclusions only in the Penobscot SHRU. No economic exclusions were proposed in the Downeast or Merrymeeting Bay SHRUs. Given that exclusions based on economic impacts within the Penobscot SHRU were only made in areas considered to have little biological value to Atlantic salmon, those exclusions are not considered to jeopardize the species' continued existence because those areas do not diminish the functional equivalent below what is needed to support a recovered GOM DPS.

We do not believe that exclusions of tribal lands will reduce the conservation value or functional equivalent of Atlantic salmon habitat within those particular areas given the ongoing cooperative efforts between the Tribes and the agencies. The combined habitat within the two military installations that contain critical habitat includes a total of 10 km of river and stream habitat out of roughly 4,394 km of river and stream habitat within the Merrymeeting Bay SHRU. These areas do not further reduce the amount of functional habitat within the Merrymeeting Bay SHRU below the amount needed to support the offspring of 2,000 adult spawners, and exclusion of these areas would therefore not likely result in the extinction of the species. Further evaluation of the impacts of excluding these military sites based on national security will be completed upon receipt of information requested from the Department of Defense.

Public Comments Solicited

We solicit comments or suggestions from the public, other concerned governments and agencies, the scientific community, industry, or any other interested party concerning the proposed designation and exclusions, the biological valuation, the economic analysis, and the 4(b)(2) report. You may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES**). Copies of the proposed rule and supporting documentation, including the biological valuation, economic analysis, and 4(b)(2) report, can be found on the NMFS Northeast Region Web site at *http://www.nero.noaa.gov/prot_res/altsalmon/*. We will consider all comments pertaining to this designation received during the comment period in preparing the final rule.

Classification

This proposed rule has been determined to be significant for purposes of Executive Order (E.O.) 12866. We have integrated the regulatory principles of the E.O. into the development of this proposed rule to the extent consistent with the mandatory duty to designate critical habitat, as defined in the ESA.

We have determined that this action is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of the State of Maine. The determination has been submitted for review by the responsible State agency under section 307 of the Coastal Zone Management Act (16 U.S.C. 1451 et seq.).

An environmental analysis as provided for under the National Environmental Policy Act for critical habitat designations made pursuant to the ESA is not required. See *Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. Denied, 116 S.Ct. 698 (1996).

We prepared an initial regulatory flexibility analysis (IRFA) pursuant to section 603 of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601, *et seq.*)(IEc, 2008b). This IRFA only analyzes the impacts to those areas where critical habitat is proposed and is available at the location identified in the **ADDRESSES** section. The IRFA is summarized below, as required by section 603 of the RFA. The IRFA describes the economic impact this proposed rule, if adopted, would have on small entities. A summary of the IRFA follows:

A description of the action, why it is being considered, and the objectives of and legal basis for this action are contained in the preamble of this rule and are not repeated here.

After reviewing the land use activities evaluated in the economic analysis conducted for this action, the types of small entities that may be impacted if this rule were adopted include those entities involved in hydropower, agriculture, and development activities.

The total number of affected small entities includes up to 12 dam owners and 65 farms. There are an unknown number of small entities involved in development projects. Because impacts are calculated on a per acre basis and not for specific projects, it is not possible to identify specific landowners. We seek public comment on this topic.

This action does not contain any new collection-of-information, reporting, recordkeeping, or other compliance requirements beyond the potential economic impacts described below and any reporting requirements associated with reporting on the progress and success of implementing project modifications, which do not require special skills to satisfy. Third party applicants or permittees may also incur costs associated with participating in the administrative process of consultation along with the permitting Federal agency.

No Federal laws or regulations duplicate or conflict with the proposed rule. Existing Federal laws and regulations overlap with the proposed rule only to the extent that they provide protection to marine natural resources generally. However, no existing laws or regulations specifically prohibit destruction or adverse modification of critical habitat for, and focus on the recovery of, Atlantic salmon.

The IRFA estimates that approximately 65 small farms (average annual receipts of less than $750,000), or roughly nine percent of the farms across the DPS, may be affected by critical habitat designation (IEc, 2008b). The average annual revenue of these farms was estimated at $76,000 (USDA 2002 Census of Agriculture). The estimated average losses per small farm are estimated at $6,100 (IEc, 2008b).

Impacts to development are based on impacts to landowners associated with constraints on development within a 30-meter buffer of streams within the study area. The present value of impacts to all development projects is estimated at $94.6 million to $127 million. Section 3 of the Small Business Act defines small business as any firm that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. Size standards are expressed either in number of employees or annual receipts in millions of dollars depending on the specific type of business. Because impacts to development projects are determined on a per acre basis and not by the specific type of development project, we were unable to determine who the specific affected landowners are. In some cases, some portion of these landowners are likely individuals and not business, and therefore not relevant to the small business analysis, while it is also likely that some of these landowners are businesses, including small businesses, that may be impacted by constraints.

Land developers and subdividers are one type of small business that may be affected by constraints stemming from the proposed critical habitat designation (IEc, 2008b). The available data suggests that 188 small land developers operate in counties that overlap the 48 HUCs containing proposed critical habitat, accounting for 97 percent of the subdividers in the region (IEc, 2008b). The information available, however, is insufficient to estimate the impacts on these entities or to identify other potentially affected landowners (IEc, 2008b).

Impacts to hydropower were estimated for small hydropower producers identified by the Small Business Administration as those producing less than four billion kilowatt-hours annually and are likely to experience impacts associated with the critical habitat designation. The IRFA analysis (IEc, 2008b) estimates 12 hydropower producers within the 48 HUCs where critical habitat is proposed may be affected with an estimated costs accrued by these dam owners between $17 annually to $507,000 annually (IEc, 2008b).

We considered and rejected the alternative of not designating critical habitat for any of the specific areas because such an action does not meet the legal requirements of the ESA. We also considered not excluding any specific areas within the occupied range for reasons of economic impact given the critically low abundance of the species. We concluded, however, that the quantity of habitat is less of a factor limiting the abundance of the species than are the accessibility to the habitat through barriers to migration and marine survival issues. Therefore, allowing for exclusion of some specific areas that have low biological value would not likely further reduce recovery efforts. We also considered a more straightforward comparison of economic cost and biological value such that any areas for which the costs of designation were greater than the biological value of the area to the species would qualify for exclusion. We chose, however, to exclude only those areas that have a biological value score of ''1'' (unless the area is without dams) because excluding all of specific areas for which the costs of designation were greater than the biological value of the area to the species would reduce the quantity of habitat below what is needed to achieve conservation of the species.

Critical habitat designation may encourage landowners to develop Habitat Conservation Plans (HCPs). Under section 10 of the ESA, landowners seeking an incidental take permit must develop an HCP to counterbalance the potential harmful effects that an otherwise lawful activity may have on a species. The purpose of the habitat conservation planning process is to ensure that the effects of incidental take are adequately minimized and mitigated. Thus, HCPs are developed to ensure compliance with section 9 of the ESA and to meet the requirements of section 10 of the ESA. Neither the IRFA nor the *Economic Analysis of Critical Habitat Designation for the Gulf of Maine Distinct Population Segment of Atlantic Salmon* forecasts effects associated with the development of HCPs. We solicit comment on such impacts, particularly with respect to the development of HCPs by small entities.

Pursuant to the Executive Order on Federalism, E.O. 13132, the Assistant Secretary for Legislative and Intergovernmental Affairs will provide notice of the proposed action and request comments from the appropriate officials in Maine where Atlantic salmon occur.

The data and analyses supporting this proposed action have undergone a pre-dissemination review and have been determined to be in compliance with applicable information quality guidelines implementing the Information Quality Act (IQA) (Section 515 of Pub. L. 106–554).

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review pursuant to the IQA. The Bulletin established minimum peer review standards, a transparent process for public disclosure of peer review planning, and opportunities for public participation with regard to certain types of information disseminated by the Federal government. The peer review requirements of the OMB Bulletin apply to influential or highly influential scientific information disseminated on or after June 16, 2005. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of the scientific information that supports the proposal to designate critical habitat for the GOM DPS of Atlantic salmon and incorporated the peer review comments prior to dissemination of this proposed rulemaking. A Draft 4(b)(2) Report (NMFS, 2008) that supports the proposal to designate critical habitat for the GOM DPS of Atlantic salmon was also peer reviewed pursuant to the requirements of the Bulletin and is available on our Web site (see **ADDRESSES**).

This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

References Cited

A complete list of all references cited in this rule making can be found on our Web site at *http://www.nero.noaa.gov/prot_res/altsalmon/,* and is available upon request from the NMFS Northeast Regional Office in Gloucester, Massachusetts (see **ADDRESSES**).

List of Subjects in 50 CFR Part 226

Endangered and threatened species.

Dated: August 29, 2008.

John Oliver,

Deputy Assistant Administrator for Operations, National Marine Fisheries Service.

For the reasons set out in the preamble, we propose to amend 50 CFR part 226 as set forth below:

PART 226—DESIGNATED CRITICAL HABITAT

1. The authority citation for part 226 continues to read as follows:

Authority: 16 U.S.C. 1533.

2. Add § 226.217, to read as follows:

§ 226.217 Critical habitat for the Gulf of Maine Distinct Population Segment of Atlantic Salmon (Salmo salar).

Critical habitat is designated to include all perennial rivers, streams, and estuaries and lakes connected to the marine environment within the range of the Gulf of Maine Distinct Population Segment of Atlantic Salmon (GOM DPS) except for those particular areas within the range which are specifically excluded. Within the GOM DPS, the primary constituent elements (PCEs) for Atlantic salmon include sites for spawning and incubation, sites for juvenile rearing, and sites for migration. The physical and biological features of habitat are those features that allow Atlantic salmon to successfully use sites for spawning and rearing and sites for migration. These features include substrate of suitable size and quality; rivers and streams of adequate flow, depth, water temperature and water quality; rivers, streams, lakes and ponds with sufficient space and diverse, abundant food resources to support growth and survival; waterways that allow for free migration of both adult and juvenile Atlantic salmon; and diverse habitat and native fish communities in which salmon interact with while feeding, migrating, spawning, and resting.

(a) The GOM DPS is divided into three salmon habitat recovery units (SHRUs) within the range of the GOM DPS: These are the Downeast Coastal SHRU, the Penobscot Bay SHRU and the Merrymeeting Bay SHRU. Critical habitat is only being considered in specific areas currently occupied by the species. Critical habitat specific areas are identified by hydrological unit codes (HUC) and counties within the States of Maine. Hydrological units are those defined by the Department of Interior (DOI), U.S. Geological Survey (USGS) publication, ''Hydrologic Unit Maps'' Water Supply Paper (Seaber *et al.*, 1994) and the following DOI, USGS 1:500,000 scale hydrologic unit map: State of Maine: these documents are incorporated by reference. The incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the USGS publication and the maps may be obtained from the USGS, Map Sales, Box 25286, Denver, CO 80225. Copies may be inspected at NMFS, Protected Resources Division, Office of Protected Resources, 1315 East-West Highway, Silver Spring, MD 20910, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/Federal_register/code_of_Federal_regulations/ibr_locations.html*.

(b) Critical habitat is designated in the Maine counties and towns for the three SHRUs described in paragraphs (b)(1) through (b)(2) of this section. The textual descriptions of critical habitat for each SHRU are included in paragraphs (b)(3) through (b)(6) of this section, and these descriptions are the definitive source for determining the critical habitat boundaries. General location maps are provided at the end of each SHRU description (paragraph (b)(2) of this section) and are for general guidance purposes only, and not as a definitive source for determining critical habitat boundaries.

(1). *Maine counties and towns affected.* Critical habitat is designated for the following SHRUs in the following counties and towns.

(i) COUNTIES AND TOWNS PARTIALLY OR ENTIRELY WITHIN AREAS CONTAINING CRITICAL HABITAT in the Downeast Coastal SHRU

Sub-basin	County	Town
Coastal Washington Hancock.	Penobscot	Clifton, Eddington, Grand Falls Twp, Greenfield Twp, Summit Twp.
	Hancock	Waltham, Bucksport, Dedham, Eastbrook, Ellsworth, Fletchers Landing Twp, Franklin, Great Pond, Hancock, Lamoine, Mariaville, Oqiton Twp, Orland, Osborn, Trenton Otis, Sullivan, Surry, T10 SD, T16 MD, T22 MD, T28 MD, T32 MD, T34 MD, T35 MD, T39 MD, T40 MD, T41 MD, T7 SD, T9 SD.
	Washington	Addison, Alexander, Baileyville, Baring Plt, Beddington, Centerville Twp, Charlotte, Cherryfield, Columbia, Columbia Falls, Cooper, Crawford, Cutler, Deblois, Dennysville, Devereaux Twp, East Machias, Edmunds Twp, Harrington, Jonesboro, Jonesport, Lubec, Machias, Machiasport, Marion Twp, Marshfield, Meddybemps, Milbridge, No 14 Twp, No 21 Twp, Northfield, Princeton, Roque Bluffs, Sakom Twp, Steuben, Trescott Twp, Whiting, Whitneyville, Wesley T18 ED BPP, T18 MD BPP, T19 ED BPP, T19 MD BPP, T24 MD BPP, T25 MD BPP, T26 ED BPP, T27 ED BPP, T30 MD BPP, T31 MD BPP, T36 MD BPP, T37 MD BPP, T42 MD BPP, T43 MD BPP.

(ii) COUNTIES AND TOWNS PARTIALLY OR ENTIRELY WITHIN AREAS CONTAINING CRITICAL HABITAT IN THE Penobscot Bay SHRU

Sub-basin	County	Town
Piscataquis	Penobscot	T4 Indian Purchase Twp, Long A Twp, Seboeis Plt, Mattamiscontis Twp, Maxfield, Lagrange, Charleston, Howland, T3 R9 NWP, Edinburg, Hopkins Academy Grant Twp, Garland.
	Piscataquis	Shawtown Twp, TA R11 WELS, TA R10 WELS, TB R10 WELS, Greenville, T7 R9 NWP, Bowdoin College Grant West Twp, T4 R9 NWP, Ebeemee Twp, Moosehead Junction Twp, Lake View Plt, Brownville, Milo, Blanchard Twp, Sebec, Dover-Foxcroft, Abbot, Kingsbury Plt, Parkman, Wellington, Frenchtown Twp, Medford, Sangerville, TB R11 WELS, Katahdin Iron Works Twp, Elliottsville Twp, Shirley, Guilford, Atkinson, Beaver Cove, Williamsburg Twp, Bowdoin College Grant East Twp, Barnard Twp, Monson, Orneville Twp.
	Somerset	Squaretown Twp, Mayfield Twp, Brighton Plt, East Moxie Twp, Bald Mountain Twp T2 R3.
East Branch	Aroostook	Moro Plt, T7 R5 WELS.
	Penobscot	Mount Chase, East Millinocket, Grindstone Twp, Herseytown Twp, Medway, Patten, Soldiertown Twp T2 R7 WELS, Stacyville, T1 R6 WELS, T2 R8 WELS, T3 R7 WELS, T3 R8 WELS, T4 R7 WELS, T4 R8 WELS, T5 R7 WELS, T5 R8 WELS, T6 R6 WELS, T6 R7 WELS, T6 R8 WELS, T7 R6 WELS, T7 R7 WELS, T7 R8 WELS, T8 R6 WELS, T8 R7 WELS, T8 R8 WELS.
	Piscataquis	Mount Katahdin Twp, Nesourdnahunk Twp, Trout Brook Twp, T3 R10 WELS, T4 R10 WELS, T4 R9 WELS, T5 R11 WELS, T5 R9 WELS, T6 R10 WELS, T6 R11 WELS, T7 R10 WELS, T7 R11 WELS, T7 R12 WELS, T7 R9 WELS.
Mattawamkeag	Aroostook	Amity, Bancroft, Benedicta Twp, Crystal, Dudley Twp, Dyer Brook, Forkstown Twp, Moro Plt, North Yarmouth Academy Grant Twp, Oakfield, Orient, Reed Plt, Sherman, Silver Ridge Twp, Smyrna, Upper Molunkus Twp, Webbertown Twp, Weston, T1 R5 WELS, T2 R4 WELS, T3 R3 WELS, T3 R4 WELS, T4 R3 WELS, T7 R5 WELS, TA R2 WELS.
	Penobscot	Carroll Plt, Drew Plt, Herseytown Plt, Kingman Twp, Lee, Lincoln, Mattawamkeag, Mount Chase, Patten, Prentiss Twp T7 R3 NBPP, Springfield, Stacyville, Webster Plt, Winn, T1 R6 WELS, T4 R7 WELS, T6 R6 WELS.
	Washington	T8 R3 NBPP, T8 R4 NBPP.
Penobscot	Aroostook	Benedicta TWP, Molunkus Twp, Sherman, T1 R5 WELS.
	Hancock	Amherst, Blue Hill, Bucksport, Castine, Dedham, Great Pond, Oqiton Twp, Orland, Penobscot, Surry, Verona Island, T3 ND, T32 MD, T34 MD, T35 MD, T39 MD, T40 MD, T41 MD.
	Penobscot	Alton, Argyle Twp, Bangor, Brewer, Burlington, Carmel, Charleston, Chester, Clifton, Corinna, Corinth, Dexter, Dixmont, Eddington, Edinburg, Enfield, Etna, Exeter, Garland, Glenburn, Grand Falls Twp, Hampden, Hermon, Herseytown Twp, Holden, Howland, Hudson, Indian Island, Kenduskeag, Lagrange, Lakeville, Lee, Levant, Lincoln, Lowell, Mattamiscontis Twp, Mattawamkeag, Maxfield, Medway, Milford, Newburgh, Newport, Old Town, Orono, Orrington, Passadumkeag, Plymouth, Seboeis Plt, Springfield, Stacyville, Stetson, Summit Twp, Veazie, Winn, Woodville T1 R6 WELS, T2 R8 NWP, T2 R9 NWP, T3 R1 NBPP, T3 R9 NWP, TA R7 WELS.
	Piscataquis	Medford.
	Waldo	Brooks, Frankfort, Jackson, Knox, Monroe, Montville, Prospect, Searsport, Stockton Springs, Swanville, Thorndike, Waldo, Winterport.
Penobscot Bay	Waldo	Belfast, Belmont, Brooks, Frankfort, Knox, Lincolnville, Monroe, Montville, Morrill, Northport, Searsmont, Searsport, Swanville, Waldo.

(iii) COUNTIES AND TOWNS PARTIALLY OR ENTIRELY WITHIN AREAS CONTAINING CRITICAL HABITAT IN THE MERRYMEETING BAY SHRU

Sub-basin	County	Town
Lower Androscoggin	Androscoggin	Auburn, Durham, Greene, Leeds, Lewiston, Lisbon, Sabattus, Wales.
	Cumberland	Brunswick, Freeport.
	Kennebec	Litchfield, Monmouth.
	Sagadahoc	Bath, Bowdoin, Bowdoinham, Richmond, Topsham.
Merrymeeting Bay	Androscoggin	Livermore Falls.
	Franklin	Avon, Carthage, Chesterville, Farmington, Freeman Twp, Industry, Jay, Madrid Twp, Mount Abram Twp, New Sharon, New Vineyard, Perkins TWP, Phillips, Redington Twp, Salem Twp, Sandy River Plt, Strong, Temple, Township 6 North of Weld, Township E, Washington Twp, Weld, Wilton.
	Kennebec	Augusta, Benton, Chelsea, China, Clinton, Farmingdale, Fayette, Gardiner, Hallowell, Manchester, Oakland, Pittston, Randolph, Rome, Sidney, Vassalboro, Vienna, Waterville, West Gardiner, Windsor, Winslow.
	Lincoln	Alna, Dresden, Whitefield, Wiscasset.
	Sagadahoc	Bowdoinham, Perkins Twp Swan Island, Richmond, Woolwich.

(iii) COUNTIES AND TOWNS PARTIALLY OR ENTIRELY WITHIN AREAS CONTAINING CRITICAL HABITAT IN THE MERRYMEETING BAY SHRU—Continued

Sub-basin	County	Town
	Somerset	Anson, Athens, Bingham, Brighton Plt, Canaan, Cornville, Fairfield, Hartland, Madison, Mayfield Twp, Mercer, Norridgewock, Pittsfield, Skowhegan, Smithfield, Solon, Starks.
Coastal Drainages East of Small Point.	Cumberland	Brunswick.
	Kennebec	Albion, Pittston, Windsor.
	Knox	Appleton, Camdem, Cushing, Friendship, Hope, Rockland, Rockport, Saint George, South Thomaston, Thomaston, Union, Warren, Washington.
	Lincoln	Alna, Boothbay, Boothbay Harbor, Bremen, Briston, Dresden, Edgecomb, Hibberts Gore, Jefferson, Newcastle, Nobleboro, Somerville, Southport, Waldoboro, Westport Island, Whitefield, Wiscasset.
	Sagadahoc	Arrowsic, Bath, Bowdoinham, Georgetown, Phippsburg, West Bath, Woolwich.
	Waldo	Belmont, Freedom, Liberty, Lincolnville, Montville, Morrill, Palermo, Searsmont.

(2). *Critical habitat boundaries.* Critical habitat includes the stream channels within the designated stream reaches, and includes a lateral extent as defined by the ordinary high-water line (33 CFR 329.11). In areas where the ordinary high-water line has not been defined, the lateral extent will be defined by the bankfull elevation. Bankfull elevation is the level at which water begins to leave the channel and move into the floodplain and is reached at a discharge which generally has a recurrence interval of 1 to 2 years on an annual flood series. Critical habitat in estuaries is defined by the perimeter of the water body as displayed on standard 1:24,000 scale topographic maps or the elevation of extreme high water, whichever is greater.

(i) *Downeast Coastal SHRU.* The Downeast Coastal SHRU encompasses fourteen HUC 10 watersheds covering approximately 1,847,698 acres within Washington and Hancock Counties in Eastern Maine that contain approximately 6,039 km of perennial rivers, streams, and estuary and approximately 365 square km of lakes connected to the marine environment. Within this basin 11 HUC 10s are considered to be currently occupied (Figure 1) and contain critical habitat (Figure 2).

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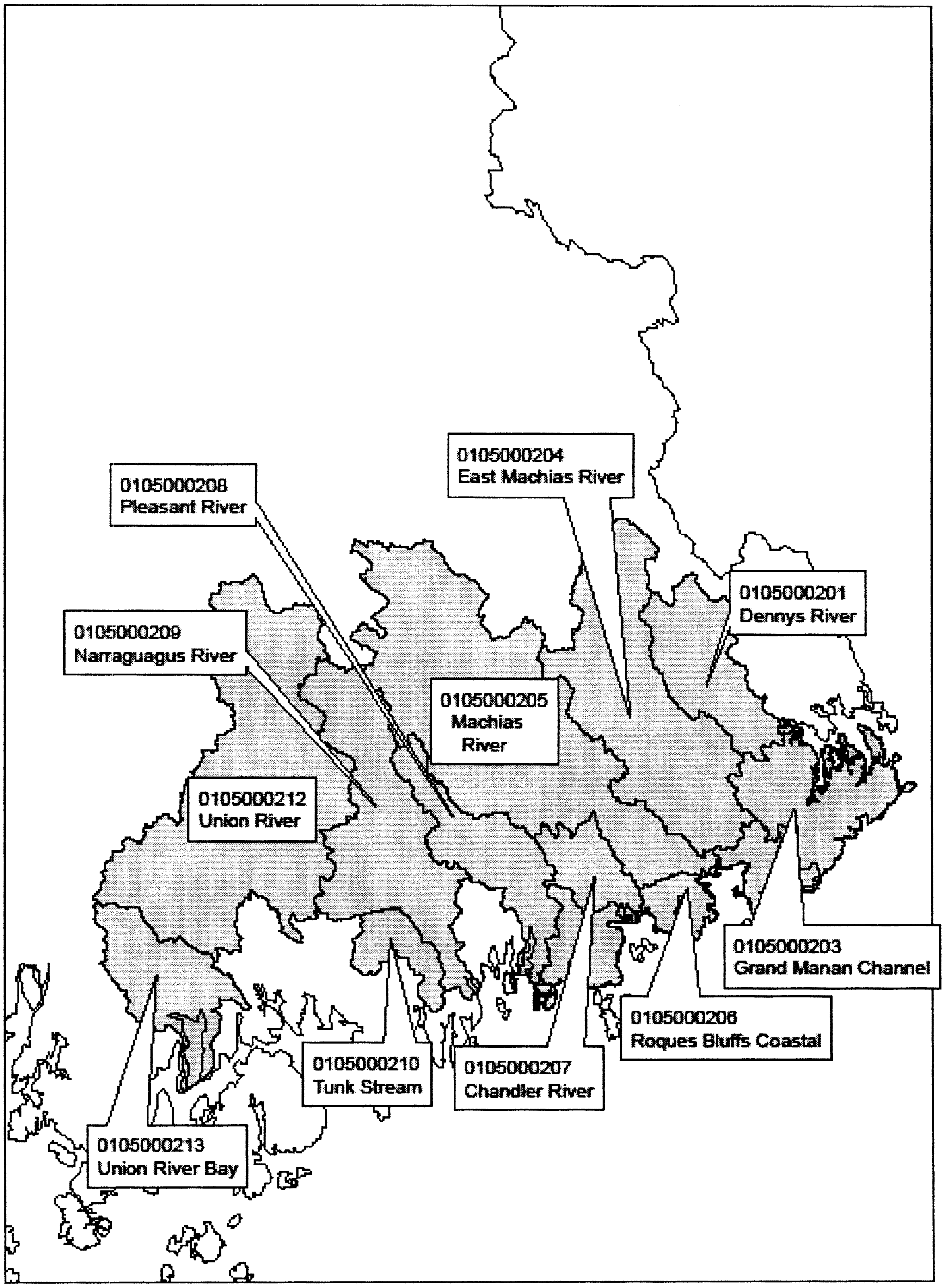

Figure 1. Specific areas that meet the definition of critical habitat in the Downeast Coastal SHRU

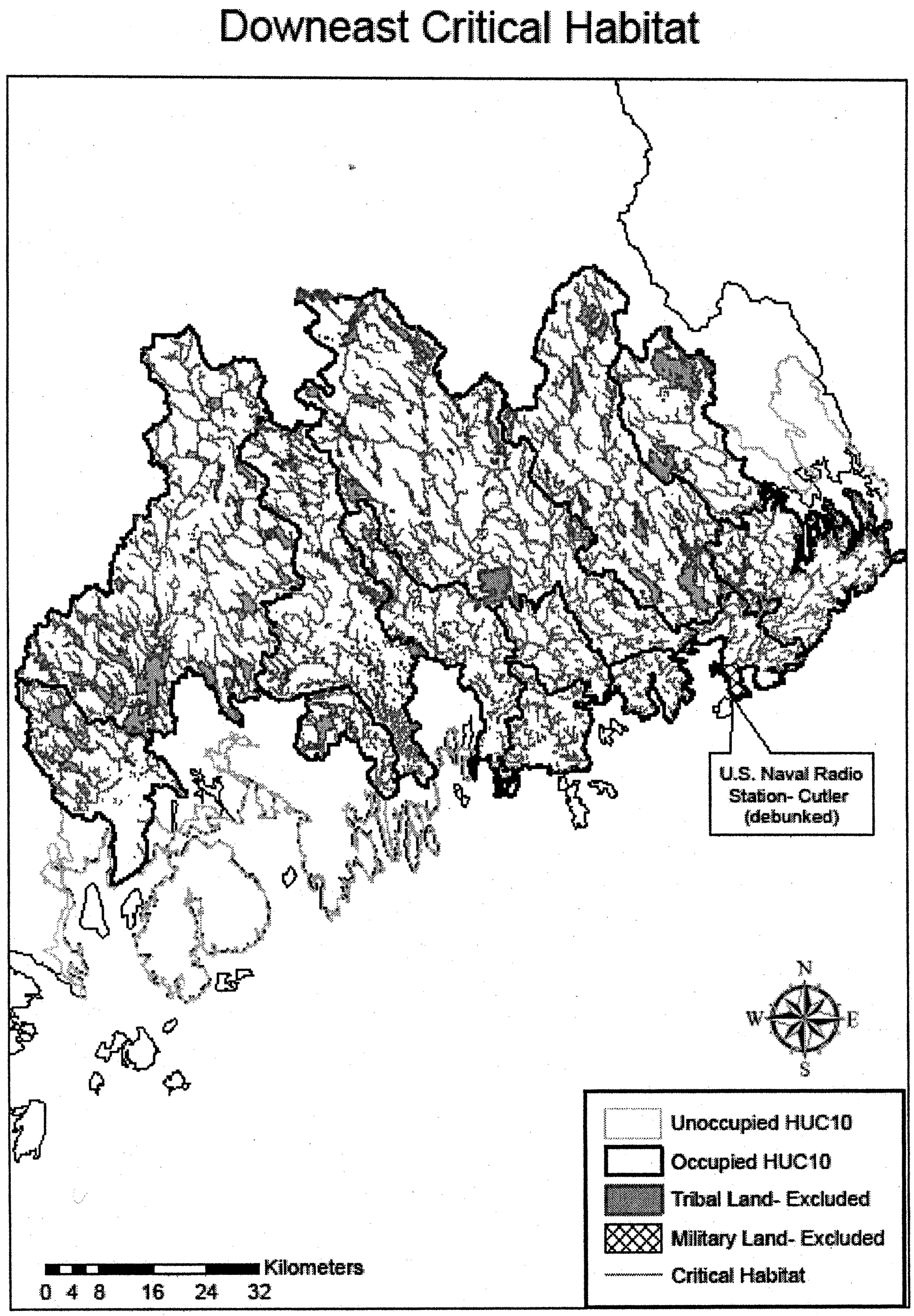

Figure 2. Critical habitat in the Downeast Coastal SHRU, showing particular areas excluded

(ii) *Penobscot Bay SHRU*. The Penobscot Bay Salmon Habitat Recovery Unit (SHRU) includes the entire Penobscot Basin and extends west as far as, and including the Ducktrap watershed, and east as far as, and including the Bagaduce watershed. The Penobscot Bay SHRU drains 54,942,705 acres containing approximately 17,443 km of perennial rivers, streams, and estuary and 1,115 sq. km of lakes connected to the marine environment and occupies sections of Aroostook, Hancock, Penobscot, Piscataquis, Somerset, Waldo, and Washington counties (Baum, 1983). The Penobscot SHRU encompasses forty-six HUC 10 watersheds embedded within six major sub-basins; the West Branch, East Branch, Piscataquis, Mattawamkeag, Penobscot River and Penobscot Bay. Within the Penobscot SHRU, there are twenty-nine HUC 10 watersheds containing a combination of perennial rivers, lakes, streams and/or estuaries connected to the marine environment that have been identified as critical habitat (Figure 3 and Figure 4). The waters in the remaining fifteen HUC 10 watersheds are currently unoccupied habitat and therefore not designated as critical habitat.

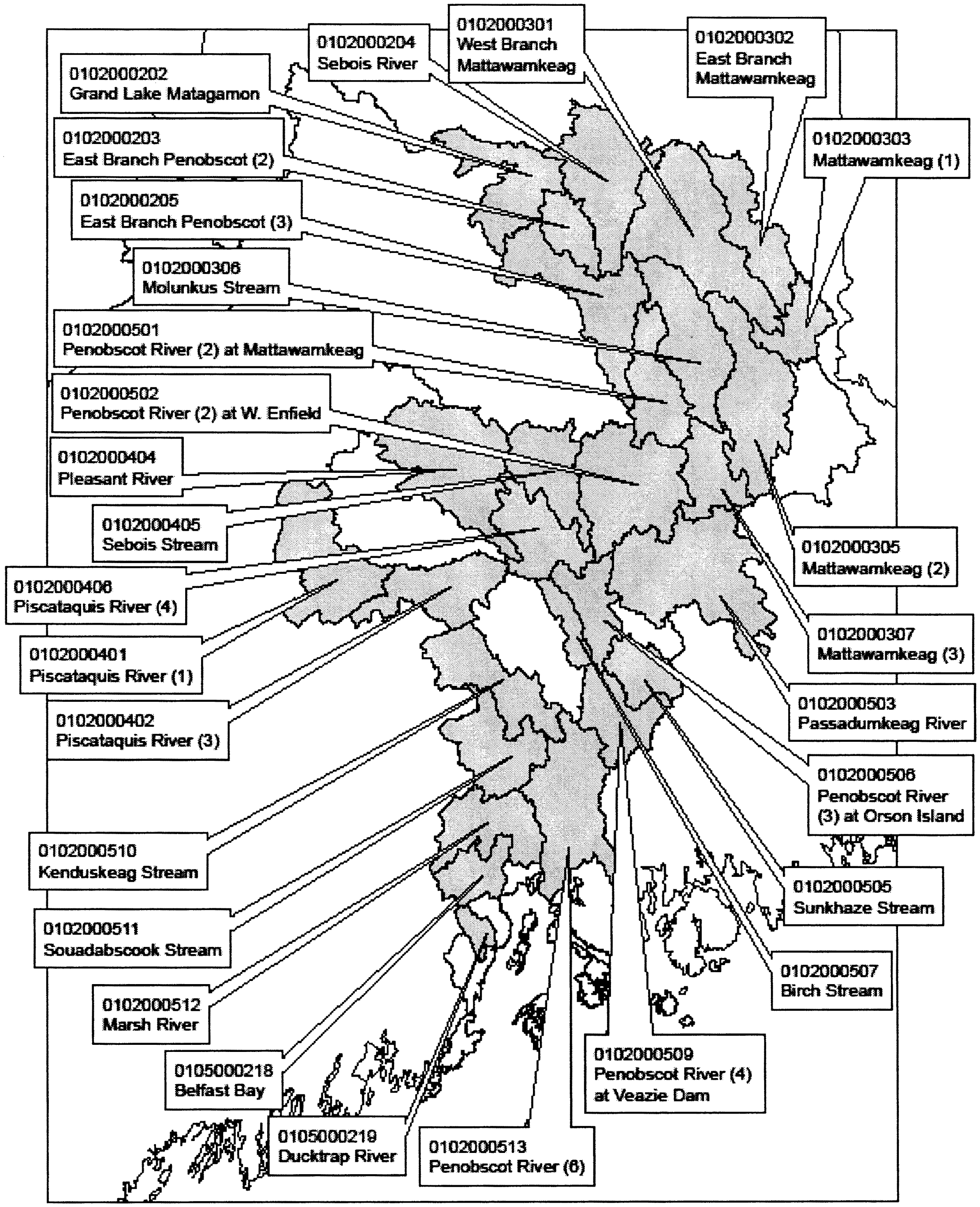

Figure 3. Specific Areas that meet the definition of critical habitat in the Penobscot SHRU

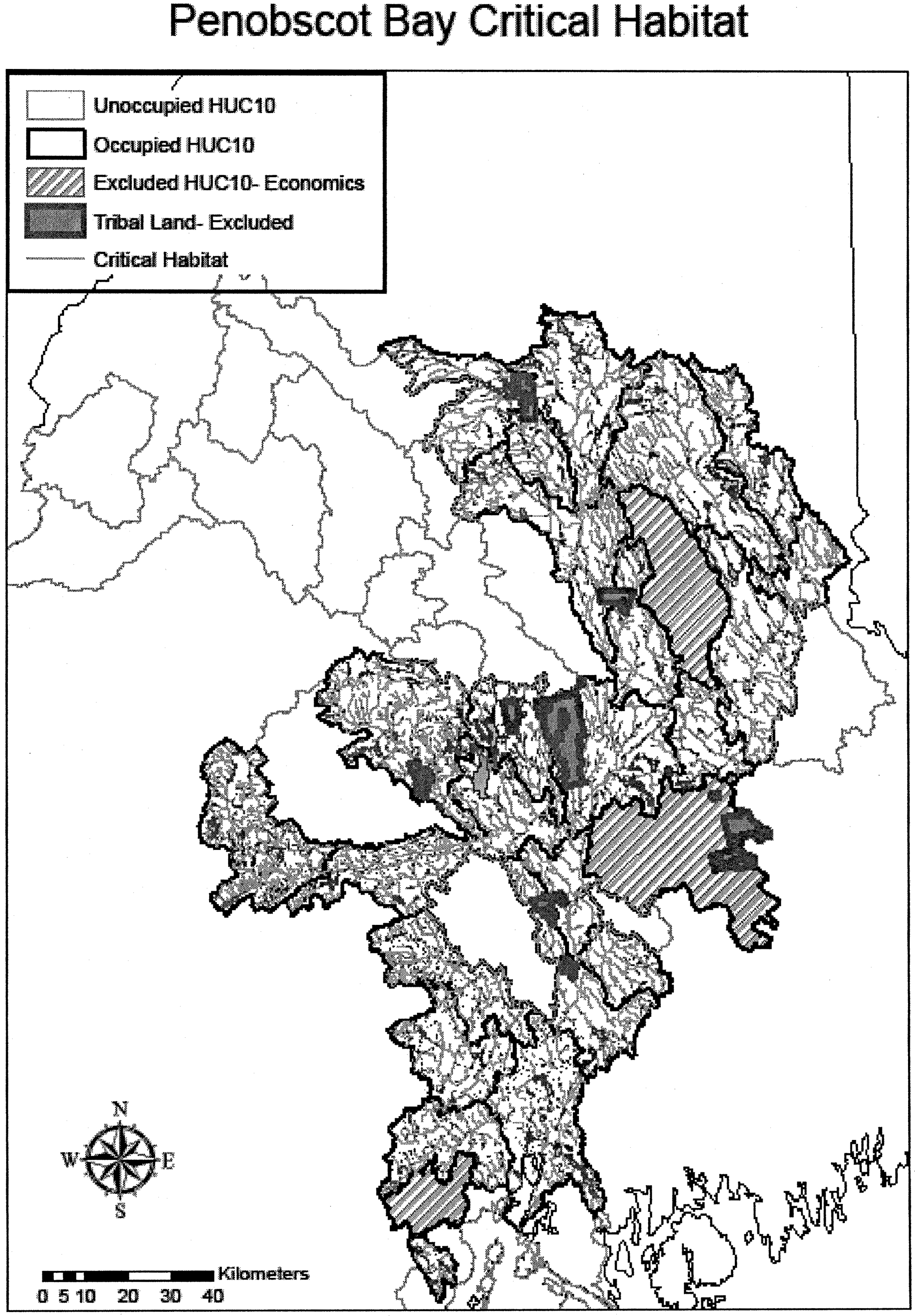

Figure 4. Critical habitat within the Penobscot SHRU, showing particular areas excluded

(iii) *Merrymeeting Bay SHRU.* The Merrymeeting Bay SHRU extends west as far as, and including the Androscoggin and east as far as, and including the St. George watershed. The Merrymeeting Bay SHRU contains approximately 21,002 km of perennial rivers, streams and estuary and 1,372 sq. km of lakes that drain a land area of 6,651,620 acres. The Merrymeeting Bay SHRU contains forty-five HUC 10 watersheds embedded within six major sub-basin which include the Upper Androscoggin, Lower Androscoggin, Kennebec River above Forks, Dead River, Kennebec at Merrymeeting Bay, and coastal drainages east of small point. Of the forty-five HUC 10 watersheds, nine are considered occupied and contain rivers, lakes, streams and estuary considered to be critical habitat (Figure 5 and Figure 6). The remaining thirty-six HUC 10's are not occupied and do not contain critical habitat.

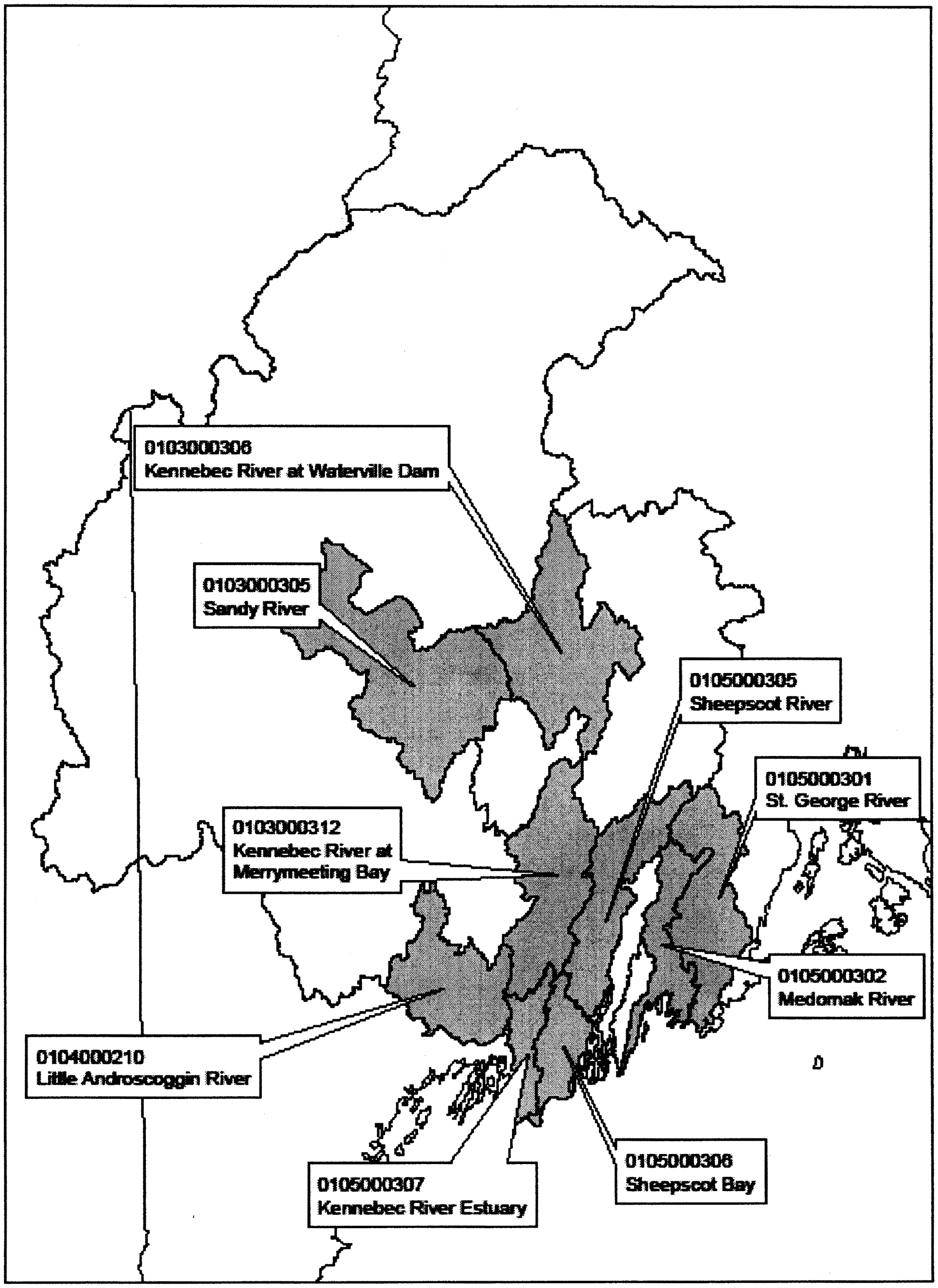

Figure 5. Specific areas that meet the definition of critical habitat in the Merrymeeting Bay SHRU

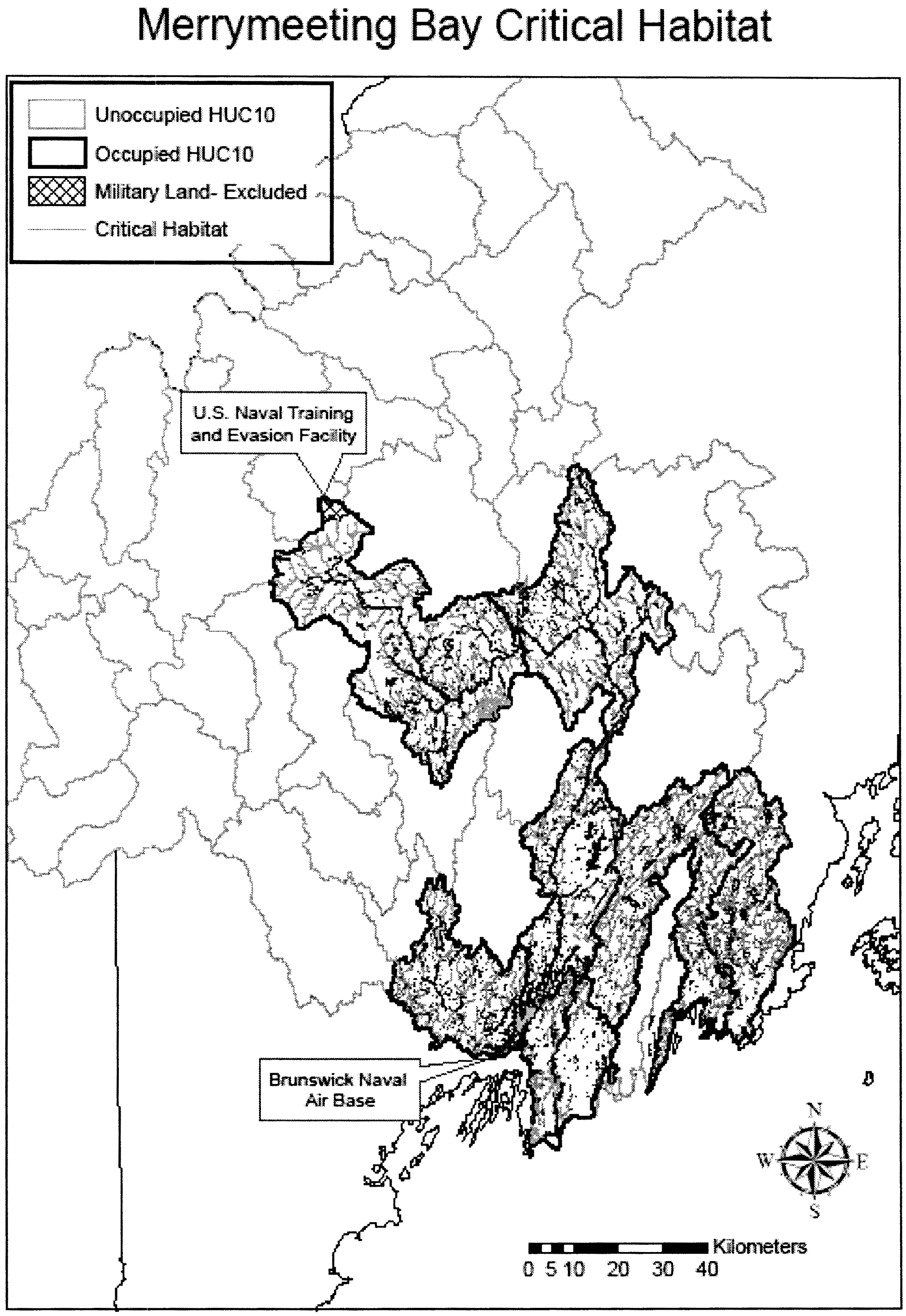

Figure 6. Critical habitat in the Merrymeeting Bay SHRU, showing particular areas excluded

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(3) *Primary constituent elements.* Within the GOM DPS, the primary constituent elements (PCEs) for the conservation of Atlantic salmon include sites for spawning and incubation, sites for juvenile rearing, and sites for migration. The physical and biological features of the habitat that are essential to the conservation of Atlantic salmon are those features that allow Atlantic salmon to successfully use sites for spawning and rearing and sites for migration. These features include:

(i) Deep, oxygenated pools and cover (*e.g.* boulders, woody debris, vegetation, etc.), near freshwater spawning sites, necessary to support adult migrants during the summer while they await spawning in the fall;

(ii) Freshwater spawning sites that contain clean, permeable gravel and cobble substrate with oxygenated water and cool water temperatures to support spawning activity, egg incubation and larval development;

(iii) Freshwater spawning and rearing sites with clean gravel in the presence of cool, oxygenated water and diverse substrate to support emergence, territorial development and feeding activities of Atlantic salmon fry;

(iv) Freshwater rearing sites with space to accommodate growth and survival of Atlantic salmon parr, and population densities needed to support sustainable populations;

(v) Freshwater rearing sites with a combination of river, stream, and lake habitats, that accommodate parr's ability to occupy many niches and to maximize parr production;

(vi) Freshwater rearing sites with cool, oxygenated water to support growth and survival of Atlantic salmon parr;

(vii) Freshwater rearing sites with diverse food resources to support growth and survival of Atlantic salmon parr;

(viii) Freshwater and estuary migratory sites free from physical and biological barriers that delay or prevent access to spawning grounds needed to support a recovered population;

(ix) Freshwater and estuary migration sites with abundant, diverse native fish communities to serve as a protective buffer against predation;

(x) Freshwater and estuary migration sites free from physical and biological barriers that delay or prevent emigration of smolts to the marine environment;

(xi) Freshwater and estuary migration sites with sufficiently cool water temperatures and water flows that coincide with diurnal cues to stimulate smolt migration;

(xii) Freshwater migration sites with water chemistry needed to support sea water adaptation of smolts; and

(xiii) Freshwater and marine sites with diverse, abundant assemblages of native fish communities to enhance survivorship as Atlantic salmon smolts emigrating through the estuary.

(4) *Exclusion of Indian lands.* Critical habitat does not include occupied habitat areas on Indian lands. The Indian lands specifically excluded from critical habitat are those defined in the Secretarial Order 3206, including:

(i) Lands held in trust by the United States for the benefit of any Indian Tribe;

(ii) Lands held in trust by the United States for the benefit of any Indian Tribe or individual subject to restrictions by the United States against alienation;

(iii) Fee lands, either within or outside the reservation boundaries, owned by the tribal government; and

(iv) Fee lands within the reservation boundaries owned by individual Indians. Within the GOM DPS, approximately 79,000 acres of tribal lands in the Penobscot SHRU and 5,000 acres in the Downeast Coastal SHRU have been identified as particular areas that contain sites for spawning and rearing and sites for migration and are proposed for exclusion from critical habitat.

(5) *Lands owned or controlled by the Department of Defense.* Additionally, critical habitat does not include the following areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a). Excluded from designation are:

(i) The 435 acres of the Brunswick Naval Air Station in Brunswick, Maine within the Little Androscoggin HUC 10 watershed in the Merrymeeting Bay SHRU.

(ii) The 5,328 acres of the Brunswick Naval Air Station's cold weather survival, evasion, resistance and escape school within the Sandy River HUC 10 watershed in the Merrymeeting Bay SHRU.

(6). *Description of critical habitat.* Critical habitat is designated to include the areas defined in the following hydrological units in the three SHRUs with the exception of those particular areas specifically identified:

(i) DOWNEAST COASTAL SHRU. CRITICAL HABITAT, EXCLUSIONS AND EXCLUSION TYPE BY HUC 10 WATERSHEDS

	HUC 10 code	HUC 10 watershed name	Critical habitat		Excluded areas [type] [1]	
			River, stream and estuary (km)	Lake (sq. km)	River, stream and estuary (km)	Lake (sq. km)
Coastal Washington Hancock sub-basin.	0105000201	Dennys River	218	45		
	0105000203	Grand Manan Channel	641	15.5		
	0105000204	East Machias River	575	70	16 [T]	0.1 [T]
	0105000205	Machias River	991	58		
	0105000206	Roque Bluffs Coastal	321	1		
	0105000207	Chandler River	154	0.1		
	0105000208	Pleasant River	325	6.5		
	0105000209	Narraguagus River	573	15.5		
	0105000210	Tunk Stream	117	14		
	0105000212	Graham Lake	976	121		
	0105000213	Union River Bay	303	18		
	0105000211	Bois Bubert Coastal	—	—		
	0105000214	Lamoine Coastal	—	—		
	0105000215	Mt. Desert Coastal	—	—		

[1] Exclusion types: [E] = Economic, [M] = Military, and [T] = Tribal.
— considered unoccupied at the time of listing.

(ii) PENOBSCOT BAY SHRU. CRITICAL HABITAT, EXCLUSIONS AND EXCLUSION TYPE BY HUC 10 WATERSHEDS

Sub-basin	HUC 10 code	HUC 10 watershed name	Critical habitat		Excluded areas [type] [1]	
			River, stream and estuary (km)	Lake (sq. km)	River, stream and estuary (km)	Lake (sq. km)
East Branch Penobscot sub-basin.	0102000202	Grand Lake Matagamon	320	25.5	6 [T]	0.5 [T]
	0102000203	East Branch Penobscot River (2).	178	3	1 [T]	
	0102000204	Seboeis River	418	31		
	0102000205	East Branch Penobscot River (3).	585	5	3 [T]	
	0102000201	Webster Brook	—	—		
West Branch Penobscot sub-basin.	0102000101	North Branch Penobscot River.	—	—		
	0102000102	Seeboomook Lake	—	—		
	0102000103	W. Br. Penobscot R. at Chesuncook.	—	—		
	0102000104	Caucomgomok Lake	—	—		
	0102000105	Chesuncook Lake	—	—		
	0102000106	Nesowadnehunk Stream	—	—		
	0102000107	Nahamakanta Stream	—	—		
	0102000108	Jo-Mary Lake	—	—		
	0102000109	West Branch Penobscot River (3).	—	—		
	0102000110	West Branch Penobscot River (4).	—	—		
Mattawamkeag River sub-basin.	0102000301	West Branch Mattawamkeag River.	657	22		
	0102000302	East Branch Mattawamkeag River.	315	12		
	0102000303	Mattawamkeag River (1)	192	0.5		
	0102000305	Mattawamkeag River (2)	451	8		
	0102000307	Mattawamkeag River (3)	226	3		
	0102000306	Molunkus Stream	0	0	438 [E]	11 [E]
	0102000304	Baskahegan Stream	—	—		
Piscataquis River sub-basin	0102000401	Piscataquis River (1)	762	15		
	0102000402	Piscataquis River (3)	382	6		
	0102000404	Pleasant River	812	17	16 [T]	
	0102000405	Seboeis Stream	308	31	12.2 [T]	5 [T]
	0102000406	Piscataquis River (4)	328	30		
	0102000403	Sebec River	—	—		
Penobscot River sub-basin	0102000501	Penobscot River (1) at Mattawamkeag.	287	4.5	5 [T]	2.5 [T]
	0102000502	Penobscot River (2) at West Enfield.	474	23.5	80 [T]	5.5 [T]
	0102000503	Passadumkeag River	0	0	583 [E]	79 [E]
	0102000505	Sunkhaze Stream	117	0.5		
	0102000506	Penobscot River (3) at Orson Island.	205	0.5	6 [T]	
	0102000507	Birch Stream	105	1	15 [T]	
	0102000509	Penobscot River (4) at Veazie Dam.	225	10		
	0102000510	Kenduskeag Stream	420	1.5		
	0102000511	Souadabscook Stream	341	5.5		
	0102000512	Marsh River	319	3		
	0102000513	Penobscot River (6)	514	29		
	0102000504	Olamon Stream	—	—		
	0102000508	Pushaw Stream	—	—		
Penobscot Bay sub-basin	0105000218	Belfast Bay	177	9		
	0105000219	Ducktrap River	76	4		
	0105000216	Bagaduce River	—	—		
	0105000217	Stonington Coastal	—	—		
	0105000220	West Penobscot Bay Coastal.	—	—		

[1] Exclusion types: [E] = Economic, [M] = Military, and [T] = Tribal—considered unoccupied at the time of listing.

(iii) MERRYMEETING BAY SHRU. CRITICAL HABITAT, EXCLUSIONS, AND EXCLUSION TYPE BY HUC 10 WATERSHED

Sub-basin	HUC 10 code	HUC 10 watershed name	Critical habitat		Excluded areas [type] [1]	
			River, stream and estuary (km)	Lake (sq. km)	River, stream and estuary (km)	Lake (sq. km)
Kennebec River above the Forks sub-basin.	0103000101	South Branch Moose River	—	—		
	0103000102	Moose River (2) above Attean Pond.	—	—		
	0103000103	Moose River (3) at Long Pond.	—	—		
	0103000104	Brassua Lake	—	—		
	0103000105	Moosehead Lake	—	—		
	0103000106	Kennebec River (2) above The Forks.	—	—		
Dead River sub-basin	0103000201	North Branch Dead River	—	—		
	0103000202	South Branch Dead River	—	—		
	0103000203	Flagstaff Lake	—	—		
	0103000204	Dead River	—	—		
Merrymeeting Bay sub-basin.	0103000305	Sandy River	1215	15.8	12 [M]	0.2 [M]
	0103000306	Kennebec River at Waterville Dam.	794	14		
	0103000312	Kennebec River at Merrymeeting Bay.	621	22		
	0103000310	Messalonskee Stream	—	—		
	0103000301	Kennebec River (4) at Wyman Dam.	—	—		
	0103000302	Austin Stream	—	—		
	0103000303	Kennebec River (6)	—	—		
	0103000304	Carrabassett River	—	—		
	0103000307	Sebasticook River at Pittsfield.	—	—		
	0103000308	Sebasticook River (3) at Burnham.	—	—		
	0103000309	Sebasticook River (4) at Winslow.	—	—		
	0103000311	Cobbosseecontee Stream	—	—		
Upper Androscoggin sub-basin.	0104000101	Mooselookmeguntic Lake	—	—		
	0104000102	Umbagog Lake Drainage	—	—		
	0104000103	Aziscohos Lake Drainage	—	—		
	0104000104	Magalloway River	—	—		
	0104000105	Clear Stream	—	—		
	0104000106	Middle Androscoggin River	—	—		
Lower Androscoggin sub-basin.	0104000210	Little Androscoggin River	549	10.5	1 [M]	
	0104000201	Gorham-Shelburne Tributaries.	—	—		
	0104000202	Androscoggin River at Rumford Point.	—	—		
	0104000203	Ellis River	—	—		
	0104000204	Ellis River	—	—		
	0104000205	Androscoggin River above Webb River.	—	—		
	0104000206	Androscoggin River at Riley Dam.	—	—		
	0104000207	Androscoggin River at Nezinscot River.	—	—		
	0104000208	Nezinscot River	—	—		
	0104000209	Androscoggin R. above L. Andro. R.	—	—		
Coastal Drainages East of Small Point sub-basin.	0105000301	St. George River	624	32		
	0105000302	Medomak River	318	6		
	0105000305	Sheepscot River	553	19		
	0105000306	Sheepscot Bay	220	2		
	0105000307	Kennebec River Estuary	276	3.5		
	0105000303	Johns Bay	—	—		
	0105000304	Damariscotta River	—	—		

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