

July 17, 1997

Mr. William Lawless, Chief
Regulatory Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Dear Mr. Lawless:

The U.S. Fish and Wildlife Service has completed its review of the proposal for Atlantic Salmon of Maine LTD to install and maintain floating fish pens off Stone Island, Machiasport, Maine. This represents the Service's final Biological Opinion on the effects of that action on threatened bald eagles (*Haliaeetus leucocephalus*), in accordance with Section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531, et seq.).

Stone Island is owned by The Nature Conservancy and has been managed since 1975 as a nature preserve, focusing on the protection of nesting habitat for a variety of birds. TNC has indicated that maintaining the presence of nesting bald eagles on Stone Island is a high priority (Tom Rumpf, pers. comm., August 1, 1996). The federally- and state-threatened bald eagle historically nested on Stone Island, and the current nesting pair has been present since 1988. The current nest site is designated as bald eagle Essential Habitat, under Maine's Endangered Species Act.

Stone Island also has an active great blue heron (*Ardea herodias*) rookery of approximately 40-50 nests on the northern end of the Island. This great blue heron rookery is the largest nesting colony in coastal Washington County. Although numbers have recently declined, the Island has also supported as many as 13 nesting pairs of osprey (*Pandion haliaetus*) and several pairs of black guillemot (*Cephus grylle*). There are few coastal islands in the state which rival this assemblage of fish-eating birds. The Fish and Wildlife Service has ranked Stone Island fifteenth on a priority list of approximately 600 islands and ledges that provide important wildlife habitat in Maine.

Consultation History:

Information on the proposed aquaculture development at Stone Island and the potential effect on the threatened bald eagle was exchanged during informal and formal consultation between our agencies, and

is summarized here:

July 2, 1996 - ACOE Public Notice regarding the proposal to install aquaculture pens at Bare Island and Stone Island in Machiasport, and Cross Island in Cutler.

August 22, 1996 - Letter from M. Bartlett, USFWS, to W. Lawless, ACOE, providing USFWS comments on the proposal to install aquaculture pens at Bare Island and Stone Island in Machiasport, and Cross Island in Cutler.

November 27, 1996 - Meeting in Manchester, Maine between L. Welch, W. Mahaney, USFWS, J. Clement, ACOE, M. Scott, MDIFW, F. Gjerset, ASM, and T. Doyle, Pierce Atwood to discuss Section 7 consultation for the Stone Island aquaculture project.

December 10, 1996 - Letter from W. Lawless, ACOE, to M. Bartlett, USFWS, requesting formal consultation.

January 9, 1997 - Letter from W. Neidermyer, USFWS, to W. Lawless, ACOE, acknowledging receipt of request to initiate formal consultation.

January 27, 1997 - Site visit to Stone Island to collect GPS data points and determine visibility of the lease area from the nest tree. Attendees included L. Welch, W. Mahaney, USFWS, C. Todd, T. Schaeffer, MDIFW, T. Rumpf, TNC, F. Gjerset, ASM, and B. Thompson.

February 24, 1997 - Letter from L. Welch and W. Mahaney, USFWS, to F. Gjerset, ASM, requesting additional information on proposed development and operation of the Stone Island aquaculture site.

February 26, 1997 - Letter from F. Gjerset, ASM, to L. Welch, USFWS, providing information on proposed development and operation of the Stone Island aquaculture site.

April 3, 1997 - Letter from F. Gjerset, ASM, to L. Welch, USFWS, providing information on potential feeding barges that could be used at the Stone Island aquaculture site.

May 6, 1997 - Meeting in Waltham, Massachusetts between M. Bartlett, W. Mahaney, L. Welch, USFWS, J. Clement, D. Killooy, and W. Lawless, ACOE, regarding Stone Island consultation. USFWS provided draft Biological Opinion to ACOE.

May 21, 1997 - Meeting in Manchester, Maine between W. Mahaney, L. Welch, USFWS, J. Clement, D. Killooy, ACOE, Frank Gjerset, ASM, Kate Geoffroy, Tom Doyle, Pierce Atwood, to discuss draft biological opinion.

June 5, 1997 - Pierce Atwood provided comments on the draft Biological Opinion to the USFWS.

July 1, 1997 - Letter from M. Bartlett, USFWS, to W. Lawless, ACOE, responding to Pierce Atwood's comment document.

Biological Opinion:

The Service has geographically separated the bald eagle in the lower 48 states into recovery populations termed recovery regions. Maine is part of the 24-state, Northern States Recovery Region for bald eagles. In developing biological opinions pursuant to Section 7 of the Endangered Species Act (ESA), Service policy provides for the evaluation of jeopardy to a species such as the bald eagle, within its specific recovery region, rather than across the species' entire range within the coterminous 48 states.

It is the Service's biological opinion that construction and operation of Atlantic Salmon of Maine's floating fish pens adjacent to Stone Island in Machias Bay, Maine will not jeopardize the continued existence of the bald eagle. The action will not jeopardize the bald eagle because the scope of the permit action, which is limited to Stone Island and the waters directly adjacent to the Island, will not preclude recovery and appreciably reduce the survival of the northern states' population of bald eagles. Critical habitat has not been designated for the bald eagle pursuant to Section 4 of the ESA; therefore, none will be destroyed or adversely modified by the proposed action.

Stone Island:

Stone Island is a 60-acre island at the entrance to Machias Bay in Washington County, Maine (Figure 1). In addition to nesting bald eagles, the Island supports the northeasternmost colony of great blue herons in the United States, and as many as 13 pairs of osprey have nested there in a single year. The heron colony is also one of the largest colonies in Maine. The Island's topography provides protection from human disturbance, as the rugged shoreline has rock ledges ranging from 5 feet - 89 feet, making landing on the Island very difficult. The Island is forested predominantly by spruce and fir; however, at the northern end, many of the spruce trees are dying.

The nest tree currently used by the eagles is located on the northeast corner of Stone Island, approximately 750 feet from the easternmost edge of the proposed lease area (Figure 2). Due to the current location of the nest and the topography of the Island, the lease area is not visible from the nest.

A significant feature of Stone Island is that, in the event the current eagle nest tree becomes unsuitable, the Island contains alternate nest trees which provide for the long-term nesting needs of the eagles. The pair of eagles that currently occupies Stone Island initially nested on the western shore of the Island. However, when their nest fell in 1991 they were able to construct an alternate nest on the northeastern section of the Island. We anticipate that due to the current condition of the existing nest tree (dead with broken top), that site will no longer be available to eagles in approximately three years (C. Todd, pers. comm.); however, available alternate nest sites will ensure that the eagles continue to have the opportunity to nest on Stone Island.

Opportunities for the pair to renest off Stone Island are believed to be extremely limited due to increased shoreline development and human presence, to the lack of suitable nest trees, and to the presence of other aquaculture facilities (C. Todd pers. comm). In coastal areas such as this, eagles will generally limit their search for new nest sites to less than one mile from the original nest location. Unfortunately, many of the other coastal islands in Maine that enjoy some degree of conservation protection cannot, due to their small size, provide eagles with habitat for alternate nests.

Figure 1 here

Figure 2 here

Description of the Proposed Action:

The proposed action is the issuance of a Corps of Engineers permit under Section 10 of the Rivers and Harbors Act for Atlantic Salmon of Maine LTD (ASM) to install and maintain floating fish pens off Stone Island in Machiasport, Maine. The permit application to the Corps requested a permit for a 15-acre lease area off the west shore of the Island, for the purpose of raising Atlantic salmon for market.

Based on negotiations with the Maine Department of Inland Fisheries and Wildlife, ASM agreed to reduce the project area to 10 acres. ASM also agreed to implement 13 conditions that were developed by MDIFW to minimize and monitor the effects of development and operation of the aquaculture facility on the wildlife species present on the Island (Appendix A). The Service has evaluated these 13 conditions, and has found that they are not sufficient to avoid adversely affecting the bald eagle.

Species Account/Environmental Baseline:

In 1978, the bald eagle was listed as an endangered species in Maine and in 42 of the other contiguous states, and threatened in the remaining five states (USFWS 1979). At that time, environmental contaminants, human disturbance at nest sites, habitat loss, and shooting contributed to the eagles' decline (Palmer 1988, Wiemeyer et al. 1972). In 1988, the State of Maine passed legislation that allows eagle nests to be designated as Essential Habitat. Essential Wildlife Habitats are "areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine and which may require special management considerations" (MDIFW 1995). The Northern States Recovery Region Recovery Team and MDIFW have identified the long-term protection of bald eagle nesting habitat as a high priority in the effort to recover the species (C. Todd, pers. comm.). Due to the significant increase in the number of bald eagles breeding in the United States, the USFWS reclassified the bald eagle from an endangered to a threatened species on August 11, 1995 (USFWS 1995^A).

Ecology of Maine Bald Eagles:

Eagles generally form breeding pairs and establish nesting territories when they sexually mature at about five years of age. Throughout their reproductive life of 20-30 years (Stalmaster 1987), bald eagles demonstrate extreme loyalty to a nesting territory, continuing to use the same territory each year. Over the years of territory occupancy, several alternate nests may be constructed. Eagles nesting along the coast of Maine generally remain on their territories year round, and nesting is generally initiated from mid-March to April. On average, nesting females will lay between one and three eggs, which require a 35-day incubation period. Eaglets fledge from the nest at approximately 12 weeks of age, although they may remain in the nesting territory for an indefinite period of time. Eagles initiated nesting on the western shore of Stone Island in 1988. When this structure fell in 1991, the pair moved to the site currently occupied on the northeast portion of the Island.

Bald Eagle Interactions with Salmon Farms:

Charles Todd, eagle biologist for the State of Maine, outlined several examples of aquaculture projects near bald eagle nests in a March 15, 1995 Memorandum to Commissioner Ray Owen. Among the examples cited in that Memorandum are the following:

Salt Pond, Blue Hill: Bald eagles successfully nested on Salt Pond between 1978-1985, producing 0.87 young/nesting attempt. However, during the years 1986-1989, when a mussel aquaculture site was operated only 800 feet (line-of-sight) from the nest, the pair experienced nesting failure. After the project was abandoned in 1989, the pair produced at a level of 1.0 young/nesting attempt. Shellfish culture has much less disturbance potential compared to fish farms, as these sites require only periodic human visitation and no supporting facilities on the surface.

Treat Island, Eastport: Between 1987-1988, three leases for finfish aquaculture were granted for waters near Treat Island. Subsequent to granting of the leases (but prior to full development of the facility), a pair of bald eagles established a nesting territory on the Island and constructed two nests that were used between 1988 and 1992. Part of the lease area was located as close as 800' (line-of-sight) to the eagle nests. In 1991, the leases were transferred to another party for further development. Subsequent to this transfer, the two original nests were abandoned. The eagles have since constructed another nest on the Island, approximately 2,200' away and visually screened from the fish farms.

Eastern Bay, Jonesport: A finfish aquaculture lease was sought in 1988 for two tracts located 600 feet and 1650 feet from an active bald eagle nest. MDIFW opposed the closer tract, but found that the farther tract was a sufficient distance from the nest and partially buffered from view. Productivity by the pair of eagles appears to be unaffected by the relatively small (5-acre) lease which is only partially developed, 1650 feet away and visually screened from the nest.

Hardwood Island, Tremont: In 1995, a pair of bald eagles established a nesting territory on Hardwood Island, adjacent to an existing aquaculture facility. The nest site is approximately 300 yards from the pens. Although the operations at the aquaculture facility do not appear to have affected the residency of the pair, they have only produced one eaglet in three years of nesting attempts. This productivity level (0.33) is 60% lower than the statewide average (0.81).

In 1989, a finfish aquaculture lease was granted for Cross Island in Cutler, 2,800' away and visually screened from an eagle nest. Eagle residency and productivity at Cross Island were apparently unaffected by the presence of the aquaculture facility at that distance. In 1995, the Cross Island pair established a new nest on nearby Mink Island.

The above information indicates that with sufficient visual screening and adequate distance between nest sites and fish pens, eagles and aquaculture can co-exist. However, experience within Maine also demonstrates that nesting eagles and aquaculture are not compatible under circumstances similar to

those proposed for Stone Island.

General Wildlife Interaction with Salmon Farms:

In addition to the aforementioned accounts of interactions between eagles and aquaculture projects in Maine, several reports have been issued by the Canadian Wildlife Service (CWS) regarding interactions between wildlife and salmon farms in British Columbia (Booth and Rueggeberg 1989^A, Booth and Rueggeberg 1989^B). Significant observations and recommendations are listed below:

- To minimize adverse interactions between wildlife and aquaculture, the presence of colonies or concentrations of birds should be an important consideration in the planning and establishment of salmon farms.
- Increasing numbers of aquaculture sites in areas of importance to breeding birds can have deleterious effects on these populations in the long term. This is particularly true if sites are established in proximity to species that have few, large colonies that make intensive use of the surrounding area, and for which there are few alternate breeding areas. The location of bird colonies, and the intensity of use of the surrounding areas, should be a major consideration in the management of aquaculture development.
- The highest rate of predation at the salmon pens was attributed to great blue herons (51%). Heron predation was generally limited to smolts that were less than 300 grams.
- Predation by herons was higher at facilities utilizing polar circle pens. It was thought that the position of the floats and rails on the polar circle pens may provide better vantage points for the herons. There are also reports of herons standing in the middle of the pens, on the top nets, causing the nets to sink to the water surface and allowing the herons to feed on the fish below.
- Of the types of aquaculture facilities, salmon farms have the greatest potential to attract birds from habitat areas due to higher levels of human activity.
- Top nets were the most important method for preventing predation by birds.
- Approximately 13% of the facilities reported that herons had been entangled in predator netting. Mesh size and color were reported as major factors influencing the rate of entanglement. To reduce entanglement, a mesh size of 3" or smaller was recommended, with the net kept taut and greater than 3' above the water. Brightly-colored nets are more visible to the birds and reduce entanglement problems.
- Although they did not consider it serious, 21% of the operators had experienced eagle predation at their facilities.
- An important factor in the success of many of the predator exclusion methods studied was having the measures in place from the start of the facility operations.

The researchers also expressed general concern that rapidly expanding aquaculture development may displace wildlife from prime habitat. In addition, they also noted that many of the environmental characteristics that are favorable for salmon farming are also those that provide food and shelter to mammals and birds that inhabit coastal areas.

Direct and Indirect Effects of the Action

The facility currently proposed for Stone Island calls for fish pens to be located within the state's essential habitat zone (Figure 1). In fact, information gathered during a site visit to Stone Island on January 27, 1997 indicates that the nest tree is approximately 750 feet from the eastern border of the proposed lease area (Figure 2). The Service believes that the long-term suitability of the Island as a nesting territory for eagles (particularly the western shore) will be greatly reduced by the development of the aquaculture pens.

Although the eagles nesting on Stone Island have demonstrated a tolerance to local fishing boats, this intermittent boat traffic does not mimic the daily level of activity (generator, increased boat activity, human activity around the pens, and transfer of fish and supplies) associated with operating an aquaculture facility.

The Service is also concerned that the project has the potential to negatively affect non-endangered wildlife species utilizing Stone Island, including osprey and great blue herons. Information gathered during the January 1997 site visit indicates that the center of the heron colony is approximately 520 feet from the eastern border of the proposed lease area (Figure 2). MDIFW biologists have observed the herons from Stone Island travelling to ASM's Libby Island aquaculture site, approximately 1.5 miles to the southeast, in an effort to forage on the penned fish. In view of the above, we anticipate that the Stone Island herons will attempt to forage on ASM's fish. Booth and Rueggeberg (1989^A) have documented instances of great blue herons becoming entangled in predator netting. We are concerned that the Stone Island herons will become entangled in ASM's predator nets, and may become an attractive prey for eagles, who in turn could also become entangled.

Although the aquaculture industry is relatively new to Maine, the industry has grown rapidly, and there are currently over 50 permitted finfish lease areas in Maine (Maine Department of Marine Resources 1996). Within the general area of Machias Bay, ASM has acquired permits for 125 acres of aquaculture development, although only 50% of the permitted acreage is currently developed (F. Gjerset, pers. comm., April 7, 1997). Although we acknowledge that certain wildlife species may be attracted to the pens without being adversely affected (e.g., gulls), other species may not tolerate the presence of the pens. We are concerned that continued development of aquaculture facilities within the Machias Bay ecosystem, including the proposed facility, may indirectly affect bald eagles by limiting the traditional abundance and diversity of eagle prey species (Booth and Rueggeberg 1989^B).

Cumulative Effects:

Cumulative effects include the effects of future state, local or private actions that are reasonably certain to occur in the action area considered in this Biological Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate review pursuant to Section 7 of the ESA. No cumulative effects are identified for this project because all future aquaculture permits in the vicinity will require federal authorization.

Incidental Take Statement:

Sections 4(d) and 9 of the ESA as amended, prohibit taking of listed species of fish or wildlife without a special exemption. The ESA defines taking as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempting to engage in any such activity. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the federal agency or the applicant. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

During the November 11, 1997 meeting between the Service, ACOE, MDIFW, and the applicant, Matt Scott (Deputy Commissioner, MDIFW), indicated that failure of the Stone Island eagles to produce any young during the initial two-year period of site development and operation would be considered a significant impact on the long-term suitability of the Island for nesting birds (Appendix A, condition 12). As a result, MDIFW indicated that they would recommend the pens at Stone Island be removed. For purposes of evaluating the effects of the proposed action on bald eagles, the Service will assume that the condition calling for removal of the pens if the eagles fail to produce young for two years will be strictly enforced by MDIFW and Maine Department of Marine Resources.

The project modifications which ASM has agreed to implement will help minimize impacts to the nesting bald eagles. However, in view of the fact that the proposed aquaculture facility will be sited within 750 feet of the active nest on Stone Island, the Service believes that the disturbance associated with the development and operation of the facility, even with implementation of the terms and conditions listed below, is likely to result in:

- 1) the bald eagle pair abandoning the nest site and possibly the Island,
- 2) the pair continuing to nest at the site but exhibiting reduced productivity, or
- 3) entanglement of adult or juvenile bald eagles in the predator netting.

Eagles have been nesting on Stone Island for the past ten years, during which time they have produced an average of 1.0 young/nesting attempt. This level of production is 19% higher than the statewide average production rate. In the Service's opinion, project-related disturbance during the initial two-year period of site development and operation will result in up to two fewer eaglets being produced, either through breeding failure or nest abandonment.

Reasonable and Prudent Measures:

The Service finds that the following reasonable and prudent measure is necessary and appropriate to minimize take of bald eagles on Stone Island:

Minimize and monitor the effects of development and operation of the aquaculture facility on the wildlife species present on the Island (see project description).

Terms and Conditions:

The terms and conditions described below are non-discretionary, and must be implemented by the ACOE so that they become binding conditions of any permit issued to ASM, as appropriate, in order for the exemption in Section 7(o)(2) to apply. The ACOE has a continuing duty to regulate the activity covered by this incidental take statement. If the ACOE (1) fails to require ASM to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse.

This opinion concludes that there will be a take of bald eagles as a result of issuance of an ACOE permit to ASM to install and maintain floating fish pens off Stone Island, Machiasport, Maine. The Service will not refer the incidental take of any such eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions specified herein. The Service reminds the ACOE and the applicant that this does not permit other migratory birds (e.g., herons and osprey) or any marine mammals to be taken as a result of the operation of this facility.

1. To minimize disturbance to nesting eagles, installation of the aquaculture facilities including all related equipment, such as mooring structures, would occur only during the non-nesting season (September 1st - March 1st). Subsequent development of additional pens would also occur outside the nesting season.
2. ASM will limit initial development of the site to five acres at the southern portion of the lease area. The five acre area would contain one steel cage system, consisting of no more than 14 (80'x80') cages. ASM will not initiate any further development of the site until the fall of 1999 (or a minimum of two years subsequent to the initial 5-acre development). Development of the remaining five acre tract would be contingent on USFWS and MDIFW's conclusion that the facility has not adversely affected the long-term suitability of the Island to support nesting eagles and the number and variety of birds that have historically used the Island for nesting. Development of the remaining five acre tract will not be delayed if the agencies determine no significant affects on the nesting birds have occurred. In compliance with the agreement between ASM and MDIFW, should significant affects be observed during the initial two-year development, ASM will remove the pens from the site.
3. A centralized feed storage barge and automatic feeding system will be used to distribute feed to each of the pens to minimize human disturbance to the nesting birds.
4. Only large fish (over 2 lbs.) will be kept at the site and grown to harvest. This will allow the use of a mechanized feeding system and reduce predation by piscivorous birds.
5. ASM will limit transfer and harvesting of fish from the site to the non-nesting season (September 1st - March 1st).
6. The only predator deterrents allowed at the site will be underwater acoustic devices and predator netting.
7. ASM will place predator netting on top of the pens prior to the onset of operations. The netting should be a fluorescent color (i.e., orange) and have a mesh size less than 3". ASM will make every effort to maintain at least 3' between the predator netting and the water surface.
8. ASM employees or equipment will not be allowed on Stone Island without prior approval of TNC.

Reporting and Monitoring Requirements:

ASM must report any bird entanglements or kills within 48 hours of detection to the U.S. Fish and Wildlife Service Special Agent Richard Stott, P.O. Box 7342, Portland, ME 047112, 207-780-3235, and the Maine Field Office, 1033 South Main St., Old Town, ME 04468, 207-827-5938. Notification must include the date, time, location of the injured bird or carcass, and any other pertinent information. Care should be taken in handling sick or injured specimens to preserve biological materials in the best

possible state for later analysis of cause of death. ASM has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. Any bald eagle found dead or injured must be reported to the Service or MDIFW (68 Water St., Machias, ME 04654, 207-255-4715) immediately.

ASM has agreed to provide MDIFW \$5,000 (over a two-year period) to support an assessment of the effects of the project on the nesting birds. The Service anticipates that surveys would provide information regarding the abundance, diversity, and productivity of wildlife species nesting on the Island. This information could be utilized in the agencies' determination as to whether the wildlife residing on Stone Island have been significantly affected by the project.

Conservation Recommendations:

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service proposes the following conservation measures as a means to minimize the effects of the development and operation of floating fish pens adjacent to the limited number of islands supporting nesting bald eagles, or areas of high nesting densities of other wildlife species (e.g., herons, terns, or eider). There are over 4,000 islands and ledges along the coast of Maine, and only 6% of these are considered as being subject to high use by seabirds. The Service recommends that development of aquaculture facilities not occur adjacent to this limited number of islands. Although many wildlife species have demonstrated a significant level of tolerance to periodic human intrusion into their breeding and feeding areas, eagles and many of the colonial nesting seabirds are intolerant of repeated human disturbance such as that associated with normal operations at an aquaculture facility.

The Service is willing to work with ACOE to identify those islands with significant wildlife resources and to develop a protocol to be used by ACOE when reviewing applications for proposed aquaculture facilities. Such protocol should include consideration of areas providing important breeding and feeding habitat for threatened, endangered, and other wildlife species during early stages of aquaculture site selection and project design. The reports issued by CWS (Booth and Rueggeberg 1989^A, Booth and Rueggeberg 1989^B) indicate that such consideration is of major importance in the management of aquaculture development.

Reinitiation:

This concludes formal consultation on the actions outlined in the description of the proposed action section of this Biological Opinion. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. If a final listing is published for the Atlantic salmon without the necessary safeguards provided by an acceptable conservation plan, the Service will recommend further consultation (see below for further discussion).

Proposed Listing of Native Atlantic Salmon:

On September 29, 1995 the National Marine Fisheries Service and the U.S. Fish and Wildlife Service (Services) published a proposed rule to list the Atlantic salmon (*Salmo salar*) in seven Maine rivers as a threatened species under the ESA. The proposed Stone Island aquaculture project is in Machias Bay near the mouth of the Machias and East Machias Rivers, two of the seven rivers proposed for listing. In the proposed rule, farmed Atlantic salmon are identified as a potential threat to native salmon populations. Interactions between wild and farmed salmon may adversely affect wild populations through the transfer of disease, exchange of genetic material, redd superimposition, competition, or habitat destruction.

The Services' goal is to prevent pen-reared salmon from interacting with and adversely affecting native salmon populations. The most direct methods of avoiding these interactions are to prevent fish from escaping the pens, and to locate pens sufficient distance from rivers utilized by native stocks to minimize the likelihood of escaped fish ascending these streams. In the proposed rule, the Services request that the State of Maine prepare a conservation plan that would allow the State to maintain the lead role in management of activities that could affect salmon. As a result, Governor King convened an Atlantic Salmon Task Force, whose primary responsibility was to prepare the State's Atlantic salmon conservation plan. The conservation plan was submitted to the Services in March 1997. An objective of the salmon conservation plan is to address ongoing activities that may result in the taking (see definition above) of native salmon. The aquaculture industry has been working with state and federal agencies to identify potential impacts to native salmon related to current aquaculture practices and to develop measures to avoid or minimize these impacts. The plan has recommended specific measures to avoid or minimize the taking of native salmon (e.g., installing weirs on rivers to prevent aquaculture escapees from entering the river). The Services are currently reviewing the plan to determine whether to list the salmon as a threatened species under the ESA.

Pursuant to Section 7(a)(4) of the ESA, the ACOE is required to confer with the Services on actions that are likely to jeopardize the continued existence of a proposed species. While the aquaculture facility ASM proposes for Stone Island is not likely to jeopardize the continued existence of (native) Atlantic salmon, it may result in adverse effects to wild salmon spawning in the Machias and East Machias Rivers. If a final rule is published listing the Atlantic salmon without the necessary safeguards provided by an acceptable conservation plan, the Fish and Wildlife Service will recommend that the Corps reinitiate consultation pursuant to Section 7(a)(2) of the ESA.

Conclusion:

Despite the efforts of the State to minimize impacts to nesting birds, and in spite of the terms and conditions outlined in this Biological Opinion, the Service believes that development of this facility will adversely affect the long-term use of this Island by eagles, and non-endangered wildlife such as osprey, guillemot, and herons (see August 22, 1996 Fish and Wildlife Coordination Act letter). Permanent protection of bald eagle nesting habitat, identified as a high priority for recovery of this threatened species by MDIFW, would not be achieved should this project be permitted. Furthermore, the siting of fish pens adjacent to Stone Island would represent a substantial threat to one of the Maine's largest great blue heron rookeries and degrade some of the most valuable coastal wildlife habitat in Maine. Based on this information the Service continues to recommend under authority of the Fish and Wildlife Coordination Act that the permit for the Stone Island project be denied.

The Service is willing to meet with ACOE, ASM, and other parties as appropriate, to discuss alternatives to the proposed action which would allow ASM to meet their economic objective and, at the same time, protect Maine's important coastal wildlife resources.

If you have any questions regarding this opinion, please contact me at 603-225-1411, or Linda Welch or Wende Mahaney at 207-827-5938,

Sincerely yours,

Michael J. Bartlett
Supervisor
New England Field Office

Attachment

CC: Reading File
Ken Elowe, MDIFW Augusta
Charlie Todd, MDIFW Bangor
Tom Schaeffer, MDIFW Machias
Tom Rumpf, TNC
ES: LWelch:7-17-97:207-827-5938

LITERATURE CITED:

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