

ENVIRONMENTAL ASSESSMENT

Colonial Seabird Management on Seal Island  
National Wildlife Refuge and Matinicus Rock

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U. S. Department of the Interior

Fish and Wildlife Service

FINDING OF NO SIGNIFICANT IMPACT

Based on a review and evaluation of the Environmental Assessment prepared for the Colonial Seabird Management on Seal Island National Wildlife Refuge and Matinicus Rock, I have determined that the Proposed Action discussed in the Environmental Assessment dated May 12, 1986, and its implementation, does not constitute a major Federal action which would significantly affect the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969. Accordingly, the preparation of an Environmental Impact Statement is not required. A copy of the Proposed Action is attached to this finding.

  
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ACTING  
Regional Director

  
\_\_\_\_\_  
Date

## SUMMARY OF THE PROPOSED MANAGEMENT ACTION

Restoration of the former puffin and tern colonies on Seal Island National Wildlife Refuge, in Knox County, Maine, will be attempted by puffin chick transplants, puffin and tern decoys, and tern vocalization broadcasts, preceded by gull removal using 1339 Gull Toxicant, a registered avicide.

The Matinicus Rock puffin, tern, and razorbill colonies will be protected from predation and habitat encroachment from nesting gulls through gull removal using 1339 Gull Toxicant.

All gull nests on both islands will be censused and prebaited with plain bread cubes during May, 1986. Treated bread cubes will then be placed in each nest a maximum of three times during May and June, 1986. Unconsumed bait will be collected and buried; however, past experience has shown that virtually all of the bait is eaten by the target birds. Most of the birds become lethargic and return to their nest within 12 hours. They become comatose and die within 24-48 hours. The gull removal will continue at least through the 1990 nesting season.

The National Audubon Society will continue the puffin chick transplants, puffin and tern decoys, and tern vocalization broadcasts as in previous years.

There are no significant negative environmental effects associated with the use of 1339 Gull Toxicant or with the removal of the gulls from either island. This is not a plan to reduce gull populations in general; only specific gulls at two specific sites will be removed. The avicide is highly toxic to gulls, yet much less toxic to most other species; is relatively non-toxic to mammals; causes a calm death from uremia; and, when applied to the nest, results in virtually no accidental poisoning of non-target species.

The positive environmental consequences include opening an historical puffin and tern nesting site (Seal Island) to recolonization and protecting a current puffin, tern and razorbill nesting site (Matinicus Rock) from nesting gull predation and habitat encroachment. This is a positive step towards reversing the downward trend of tern populations. It represents a commitment by both the Fish and Wildlife Service and the National Audubon Society to longterm management of colonial seabird populations.

ENVIRONMENTAL ASSESSMENT  
COLONIAL SEABIRD MANAGEMENT  
SEAL ISLAND NATIONAL WILDLIFE REFUGE  
AND MATINICUS ROCK

ENVIRONMENTAL ASSESSMENT

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National Wildlife Refuge and Matinicus Rock

May 12, 1986

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## I. Purpose and Need for Action

### A. Purpose and Need

The Seal Island puffin colony, once the largest in Maine, was completely destroyed by meat, egg, and feather market and subsistence hunters in the late 1800's. Although numbers at the two remaining colonies in the Gulf of Maine have slowly increased over the past century, no natural recolonization of former colonies has occurred. Overall, the western Atlantic population has been in a serious decline since the 1920's. Seal Island was also once the site of an important tern colony which was eventually taken over by gulls in the 1950's. The purpose of this action is to restore the former puffin colony through chick rearing and release, to protect it through gull removal and to encourage terns to nest there once again.

The Matinicus Rock puffin colony, 9 miles southwest of the Seal Island colony, suffered the same severe pressure of market and subsistence hunting in the 19th century. However, the colony was never completely eliminated and has grown from 1-2 pairs in 1902 to over 100 pairs in 1985. The tern colony, once the largest in Maine, has declined from 6000 pairs in 1936 to 777 pairs in 1985. Gull removal in 1971 almost eliminated gulls from the island; since then, however, gull numbers have gradually increased again, as have incidents of gull predation on terns and puffins. The purpose of this action is to again reduce the gull population to lessen the negative effects of the gulls on the tern and puffin colonies.

### B. Authority and Policy

Seal Island National Wildlife Refuge (NWR) was acquired in 1972 from the United States Navy for its value as a colonial seabird nesting island.

Matinicus Rock is owned by the United States Coast Guard. Since 1966, the island has been posted as a wildlife sanctuary by the Fish and Wildlife Service (FWS), under a cooperative agreement with the Coast Guard.

The National Wildlife Refuge System Administration Act of 1966 (PL 89-669) defined the National Wildlife Refuge system as including refuges or other areas established for restoration, preservation, development, and management of wildlife and wildlife habitat. The Lacey Act of 1900 gave the Department of the Interior the authority to preserve and restore game birds and other wild birds. The Fish and Wildlife Act of 1956 authorized the Secretary of the Interior to take such steps as may be required for the development, advancement, management, conservation and protection of fish and wildlife resources.

The National Wildlife Refuge System has broad goals that are used as guidelines for managing individual refuges. These goals are primarily to protect and preserve the migratory bird resource and the natural diversity and abundance of animals and plants on refuge lands.

Within the Northeast Region of the Fish and Wildlife Service, Regional Resource Plans have been developed which define specific objectives and strategies for the management of colonial seabirds. Objectives include reversing the downward trends among nesting populations of terns; slowing the increasing population trend of gulls and eliminating them from specific tern colonies by 1987; and maintaining or increasing nesting populations of alcids, eiders and Leach's storm-petrels on coastal islands in Maine. Strategies include controlling competition for nesting space and predation, and managing habitat to encourage nesting by colonial seabirds.

### C. Background

Most seabird colonies in the Gulf of Maine were overexploited during the 19th century by market and subsistence hunters in search of eggs, feathers, and meat. Entire colonies of terns, puffins, gulls and eiders were destroyed, and, in some cases, have not been re-established.

The birds were generally shot or netted. Atlantic puffins, which nest out of sight in crevices between and under large rocks and boulders, were captured by spreading fishing nets at night over the rocks in the colonies. The birds were caught as they left the nests in the morning to feed. They were skinned, salted and barrelled for local use or for shipment to cities such as Boston or New York.

Of the six known puffin colonies in the Gulf of Maine, four were completely destroyed by 1900. The largest colony, Seal Island (Matinicus Seal Island), approximately 12 miles south of Vinalhaven and 7 miles east of Matinicus Island, was destroyed by 1887 (Norton 1923). Small relict breeding populations survived at two locations: Machias Seal Island, off Cutler (30 pairs in 1883-Palmer 1949) and Matinicus Rock, 6 miles south of Matinicus Island (1-2 pairs in 1902-Norton 1923).

The Seal Island colony has not been re-established, whereas the other two have grown very slowly. The Machias Seal Island puffin population now stands at approximately 900 pairs (CWS pers. comm.), and the Matinicus Rock population is over 100 pairs (NAS pers. comm.).

A major reason for the lack of recolonization is competition from herring and great black-backed gulls. Although gull colonies were overexploited along with the puffins and terns in the 19th century, their numbers have quickly rebounded and increased beyond historic levels. Scavengers, the gulls have had a virtually unlimited food supply from improper garbage, sewage, fishing and agricultural waste disposal. The gulls have not only recolonized former nesting island sites but have also colonized suitable nesting sites that were once occupied by other seabirds, including puffins and terns.

Survival of the puffin and tern colonies on Machias Seal Island and Matinicus Rock is probably due to a long history of gull control, initiated by the lighthouse keepers who preferred the terns and puffins over the aggressive gulls. The mere presence of humans also probably discouraged the gulls from nesting on light station islands.

In 1939 the National Audubon Society (NAS), under the direction of Dr. Carl Bucheister, established a field station on Matinicus Rock for the purpose of protecting the tern and puffin colonies. The Canadian Wildlife Service (CWS) has since 1973 stationed a biologist on Machias Seal Island for the same purpose. Gulls have therefore been controlled on both islands periodically for many years.

Although puffin numbers in the Gulf of Maine have slowly increased during this century, there has been a serious overall decline in the western Atlantic puffin population since the early 1920's. Possible reasons for this include overhunting and gillnetting, toxic chemical poisoning, and overexploitation of capelin stocks, the major food source for the Newfoundland and Labrador puffin colonies (Nettleship and Locke 1973, Nettleship 1977). One colony in Witless Bay, Newfoundland, has declined 20-30% since 1975 alone (Brown and Nettleship 1984).

In 1973 the NAS began a project under the direction of Dr. Stephen W. Kress, in cooperation with CWS, on Eastern Egg Rock in Muscongus Bay, to restore one of the former Maine puffin colonies that was eliminated in the 1800's. The restoration project was begun not only to bring the species back to its historical habitat, but also to increase puffin numbers in the southern extent of their range, and to provide a field station for colonial seabird research and protection.

The project has consisted of gathering puffin chicks in Newfoundland and fledging them in artificial burrows on the island. Puffins generally spend their first 3-5 years at sea before returning to their natal island to nest. The transplanted puffins were observed prospecting on Eastern Egg Rock first in 1977, with the first confirmed nesting of a transplant in 1981. Puffins have nested there each year since, making Eastern Egg Rock the first successful site for an Atlantic puffin colony restoration.



The success of the project however was dependent on first removing the gull colony that had taken over the island. In 1974 and 1975 the avicide 1339 Gull Toxicant and nest destruction were used; in 1975, 1976 and 1977, shooting and nest destruction were used. Since then, only nest destruction has been necessary. The population went from approximately 95 pairs of gulls in 1974, to 15 pairs of gulls in 1977. Since 1977, it has varied between 6 and 13 birds (Kress 1983).

Gull removal was necessary because puffins are vulnerable to gull predation in all phases of their life cycle. Not only are the large gulls capable of taking eggs and chicks, but they also frequently attempt to take adult puffins (Nettleship 1972). The smaller puffins rarely fight back; they usually fly off or are quickly overpowered and devoured by the much larger gulls. The mere presence of gulls on suitable puffin nesting habitat is enough to inhibit puffins from landing and prospecting for nest sites (Kress pers. comm.). Terns also suffer loss of eggs and chicks.

In 1984 the NAS, with the cooperation of the CWS and the FWS began a similar puffin colony restoration project on Seal Island NWR. This 65 acre island is potentially one of the most important colonial seabird nesting islands in the Gulf of Maine, with prime nesting habitat for not only puffins, but arctic, common and roseate terns, black guillemots, razorbills, common eiders, laughing gulls and leach's storm-petrels.

Besides being an important puffin nesting island, it was also once an important tern nesting island (Norton 1923), with terns present there as recently as the 1950's (Kress pers. comm.). Like many other islands on the coast, it has since been taken over by nesting herring and great black-backed gulls. The nesting population may be as high as 2000 pairs (Kress pers. comm.).

Attempts to restore the tern colony by using tern decoys and vocalization recordings were also included in the project. This is not only important to help restore tern numbers in the Gulf of Maine, which have decreased as much as 40% from 1972 to 1983 in the case of the arctic tern (Drury pers. comm.), but also because the more aggressive terns are often the puffins' first line of defense against the marauding gulls.

In 1984 the first 100 puffin chicks were transplanted to the northern end of Seal Island. The nests and eggs of 167 pairs of herring gulls and 87 pairs of great black-backed gulls were destroyed that year. However, in 1985, 152 pairs of herring gulls and 94 pairs of great black-backed gulls returned to nest in the same area.

Four different gull control techniques were tried in 1985: shooting, scarecrows, propane exploders (noisemakers), and nest destruction. Shooting was somewhat effective; however, once the shooting stopped, gull numbers quickly rebounded. The propane exploders were also somewhat effective, but the scarecrows were of little value. The gulls quickly recognized that they were no threat. All of these methods involve continual harassment and disturbance of the colony site which obviously discourages any terns or puffins that may also be attempting to nest. This has demonstrated that more effective gull control is needed to ensure the success of this project.

On Matinicus Rock nesting gulls were removed with the use of 1339 Gull Toxicant by the FWS at the request of NAS in 1971. At that time 350 pairs of herring gulls nested on the island; one application reduced the population to 10 pairs. This number has since grown to 46 pairs (Kress 1983). A Rutgers University researcher, Gregg Transue, has found that the population of arctic terns has declined from 963 pairs in 1982 to 777 pairs in 1985, with productivity at approximately .34 chicks/nest. Transue believes that the principle cause of this low reproductive rate is heavy predation from herring gulls, which he observed to be taking at least seven chicks per day during the chick rearing period. A minimum of 200 tern chicks were lost to the gulls, decreasing the reproduction rate by nearly 50% (Kress 1985).

Any island occupied by gulls has two separate populations, the nesting gulls and the loafing gulls. Gull control is always aimed at the nesting gulls because it is believed that they are the ones that prey most heavily upon the other seabirds, and in the case of management for terns, because they compete directly with the terns for nesting space. Raising and protecting chicks places a high energy demand on the adult gulls which need large quantities of food and cannot leave their chicks exposed for long periods of time. Terns and puffins are the most readily available food source, and are therefore heavily preyed upon, especially during periods of several days of fog.

The loafing gulls, although preying somewhat on the other seabirds, do not have the same energy demand, are not attached to one island, are very mobile, and will fly to the easiest source of food, and to where no harassment from humans occurs. They can be more easily displaced by intermittent harassment, such as shooting.

The concept of reducing local gull populations is not new. Gulls have been commonly controlled at landfills, airports, reservoirs, and seabird colonies for over 40 years. As gull numbers have increased, many biologists and public officials have recognized the need for additional control. Tyler (1975) of the Maine Critical Areas Program recommended site-specific gull removal as a tern management strategy. Nettleship (1977) recommended gull removal at "major colonies of species threatened by disturbance

from gulls". Thomas (1972) recognized the need for gull removal when damage to other bird populations is occurring. The Massachusetts Audubon Society (1972) recommended gull removal for tern protection at Matinicus Rock, Green Island (Milbridge), and certain islands in Massachusetts.

In December 1985 the Board of Directors of the National Audubon Society approved a resolution passed by the Scientific Advisory Committee supporting "the conservative use of gull control techniques, including tested avicides, shooting and nest destruction as part of management plans designated to restore and protect seabirds on former nesting islands within historic ranges" (NAS 1985--see appendix).

A program recently begun on Petit Manan NWR in Milbridge successfully restored a former tern colony by gull removal alone. In this project, herring and great black-backed gulls were removed using 1339 Gull Toxicant and shooting beginning with the 1984 nesting season. Six hundred seventy-nine gulls were removed the first year; 667 by the avicide and 12 by shooting. Within two days of the last application of the avicide, terns and laughing gulls had recolonized the island. During the 1985 nesting season, only 97 gulls were removed through the use of the avicide, and 15 were shot, a very significant decrease in the nesting gull population. In 1985, 1350 common, arctic, and roseate tern nests were counted, along with approximately 250 laughing gull nests. Tern productivity was approximately one chick/nest, with little gull predation recorded.

In addition to the tern and laughing gull colony restoration, Atlantic puffins have frequented Petit Manan Island since the nesting gulls were removed. In 1984, a maximum of 12 puffins were seen at one time; this number increased to 56 in 1985. Some were observed billing, courting and prospecting for nest sites. This was a genuine surprise because Petit Manan is not an historical puffin colony site and contains very little puffin nesting habitat. It appears that there are a number of puffins that are available to colonize other areas, but the fact that they have chosen inferior nesting habitat strongly suggests that the gull competition problem is greater than previously believed. It appears that they attempted to nest on Petit Manan for one reason-- because it was free from gulls.

## II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

### A. Alternative Summary

Restoration of the puffin and tern colonies on Seal Island will consist of several steps: gull removal, continuing the puffin chick transplant program, and social stimulation. Continued protection of the Matinicus Rock puffin and tern colony will consist of gull removal. The following discussion examines as alternatives several combinations of the steps, including the no action alternative, as well as various methods of gull removal.

During the planning process, a proposed action alternative and four alternative actions were identified as follows:

#### 1. Proposed Action

Restoration of the Seal Island puffin and tern colonies by gull removal using 1339 Gull Toxicant on the entire island; and continuing the puffin chick transplant and social stimulation programs.

Continued protection of the Matinicus Rock puffin and tern colonies by gull removal using 1339 Gull Toxicant.

#### 2. Alternative 1

Restoration and protection of the colonies as in the proposed action, but with other forms of gull removal.

#### 3. Alternative 2

Restoration and protection of the colonies as in the proposed action but with gull removal on the north end of Seal Island only.

#### 4. Alternative 3

Restoration and protection of the colonies as in the proposed action but with no gull removal.

#### 5. Alternative 4

Restoration and protection of the colonies by gull removal alone.

#### 6. No Action

No gull removal, no chick transplants, no social stimulation.



## B. Description of Each Alternative

### Proposed Action

Under this alternative 1339 Gull Toxicant will be used to remove all herring and great black-backed gulls nesting on Seal Island and Matinicus Rock. The puffin chick transplants and puffin and tern social stimulation will continue as in 1984 and 1985.

Thomas (1972) recognized the advantages of using toxicants in reducing gull populations that are competing with other nesting species in Europe. It is often advantageous to use a toxicant because the target birds are removed quickly, efficiently, and permanently, with little disturbance to neighboring species. However, to be safely used the toxicant must also be highly toxic to the target species; have low toxicity to non-target species, including mammals; and decompose rapidly to avoid secondary poisoning or environmental contamination.

A compound known as 1339 Gull Toxicant (3 chloro-4-methyl benzenamine hydrochloride) was formulated in the early 1960's and originally tested at the U.S. Fish and Wildlife Service's Denver Wildlife Research Center for starling control. It was also found to be highly toxic to gulls, and was subsequently tested by the Fish and Wildlife Service and the Massachusetts Audubon Society at specific gull colonies in Maine and Massachusetts, and laboratory and field tested by other Fish and Wildlife Service offices, State offices, and private industry throughout the United States.

1339 Gull Toxicant meets the requirements for use of toxicants because it is highly toxic to gulls, yet much less toxic to most other species; is relatively non-toxic to mammals; decomposes rapidly to harmless products; causes a calm death from uremia; and, when applied properly, results in virtually no accidental poisoning of non-target species.

It is registered for use on gulls with the U.S. Environmental Protection Agency, and has precise application instructions (see appendix for label). It may only be applied by U.S. Fish and Wildlife Service personnel certified by the state in which it is applied.

Application is preceded by prebaiting the nest site with plain bread cubes to increase bait acceptance. Since gulls are scavengers and commonly feed at landfills and off fishing boats they readily accept the bait. The bait is formulated by mixing the toxicant with oleomargarine and spreading on bread. The bread is then cut into cubes and placed in the gull nest. Past experience has shown that the gulls readily ingest the bait within minutes after it is applied. Their territorial defense and aggressiveness assures that non-target species do not get a chance to even get close to the bait. Unconsumed bait must be collected and buried within 12 hours; however, past experience

has shown that virtually 100% of the bait is eaten by the target birds.

1339 Gull Toxicant acts as a kidney suppressant. The kidneys gradually fail to function properly; toxic waste products such as uric acid gradually accumulate in the bloodstream causing uremic poisoning. Usually within 12 hours the gulls become lethargic and return to the nest site; they become comatose and die within 24-48 hours. Generally the gulls are found dead with wings folded. They appear to be sleeping when approached.

Once ingested, 80% of the 1339 Gull Toxicant is metabolized into two non-toxic chemicals, CPT-C (4-acetylamino-2-chlorobenzoic acid) and CPT-D (4-amino-2-chlorobenzoic acid) within 2-4 hours. Approximately 10% is excreted unchanged and 10% remains in the body after death (Schafer 1979 and pers. comm.).

Using the required dosages, the amount that is excreted unchanged or left in the body is about 11 mg/bird. If deposited on the water, it is quickly diluted; if deposited on soil, it is degraded within 48 hours (Schafer 1979). The amount left in the bird is much too little to cause secondary poisoning of most scavengers if accidentally consumed; the risk of accidental consumption by a scavenger is extremely small because virtually all the birds die at or near the nest.

Toxicity tests have shown that 1339 Gull Toxicant is highly toxic to gulls and birds in the blackbird and starling families but much less toxic to most other bird species. The lethal dose (LD 50) for herring gulls is 2.9 mg/kg; starlings 1.0-4.2 mg/kg; waterfowl (blue-winged teal, mallard, pintail) 10-128 mg/kg; golden eagle >100 mg/kg; American kestrel 320-730 mg/kg; house sparrow 320-450 mg/kg; northern harrier 100-320 mg/kg; (Schafer 1979). As previously stated, placement of the bait in the nest virtually eliminates any risk of poisoning of any non-target species.

To test the possibility of chronic toxicity and secondary poisoning, a northern harrier, a Cooper's hawk, and a kestrel were fed a diet of starlings killed by an estimated 1 to 3 times lethal dose of 1339 Gull Toxicant. The northern harrier was fed 222 starlings over 104 days, the Cooper's hawk was fed 191 starlings over 135 days, and the kestrel was fed 60 starlings over 141 days. None of these raptors showed any ill effects; all actually gained weight (DeCino et al. 1966). To reiterate, this will not happen in actual use because there are no scavengers other than gulls on the two islands.

1339 Gull Toxicant is registered with both the U.S. Environmental Protection Agency and the Maine Board of Pesticide Control. It is also registered under the tradename "Starlicide", and is commonly used to control blackbirds and starlings, particularly at feedlots. It is manufactured by the Ralston Purina Company.

Under the proposed action all gull nests on Seal Island and Matinicus Rock will be censused and prebaited with plain bread cubes during the first two weeks of May 1986. Treated bread cubes will be placed in each nest soon after (exact dates will depend on weather and nesting chronology variations). The bait will be applied twice more to any remaining nests, at two-week intervals.

Gull carcasses will be collected for donation to scientific or educational institutions if requested.

Two-hundred puffin chicks will be transplanted to Seal Island in July, by the NAS. Social stimulation consisting of tern and puffin decoys and tern vocalization recordings will be used throughout the nesting season.

Any remaining gulls nesting on either island after the the three applications will be shot at and their nests will be destroyed.

Both islands will be monitored throughout the nesting season by NAS personnel as in previous years to appraise the success of the program.

This program will continue through the 1990 nesting season. At that time, the 1339 Gull Toxicant portion of the program will be evaluated and a decision will be reached to continue or discontinue the program based on the effectiveness of the gull removal and the response of the puffins and terns.

This alternative results in efficient removal of the gulls that are either occupying the former tern and puffin colonies or which could be expected to seriously affect tern and puffin production through predation. Although a chemical is used, very small amounts are actually applied which rapidly degrade into harmless products or are diluted to the point where they do not present an environmental hazard.

The puffin and tern colony sites will be quickly opened for tern recolonization. The nesting gulls that are removed will not return in later years.

Disturbance to other species or prospecting puffins and terns is minimal. Any impacts due to the social stimulation will only be temporary and minor and will not have any negative effects.

#### Alternative 1

Under this alternative, the social stimulation and chick transplants would be identical to the proposed action, but the gulls would be removed by methods other than 1339 Gull Toxicant.

Other gull removal techniques that have been tried in the past or suggested include removal by harassment, shooting, cage traps, introduction of predators, loss of production, and other toxicants.

Constant harassment of a gull colony eventually leads to temporary abandonment of the colony site. Harassment can be accomplished by several means, including firearms, propane exploders, trained dogs, or Avitrol 200, a compound which causes discomfort when ingested and causes the gull to emit alarm vocalizations.

All of these methods must be repeated continuously throughout the nesting season and so are very labor intensive. All are very non-selective; any other nesting birds, such as common eiders and black guillemots, or any prospecting terns or puffins would be disrupted as much as the target species. The abandonment of the colony would be only temporary; the gulls would return to nest the following year and the process would have to be repeated again. Avitrol 200 is unacceptable because the gulls quickly learn to recognize treated bait and will not ingest it after the first one or two applications.

Removal by shooting not only removes specific adult gulls, but if repeated continuously, also may cause nest desertion by disturbance. It is commonly used at airports and landfills. Shooting, like harassment, is labor intensive, disruptive to other species, and only produces a temporary abandonment. Shooting can be used successfully for specific individuals, but it is not efficient or effective when used for an entire colony because the birds quickly learn to stay out of range.

On Monomoy NWR, in Chatham, Massachusetts, a five year gull control program using shooting, hazing devices and nest destruction did not result in an overall decrease in the gull population and may have had a negative impact on other species using the island (Lortie et. al., unpublished MS).

Cage traps, like shooting, are effective in removing only very limited numbers of gulls. Gulls at first readily enter the traps when placed over nests and can be humanely destroyed. Other gulls quickly learn to avoid the traps and simply re-nest elsewhere. Cage traps have been used successfully by the Massachusetts Audubon Society to remove a few individual gulls nesting within tern and laughing gull colonies, but are not successful on a large scale.

The introduction of predators, such as foxes or raccoons, causes gull removal not only from predation but also colony desertion due to harassment. Predators cannot be used where other colonial seabirds nest because they are not selective and will prey upon all species of birds. Predators have also required fresh water and vitamin supplements in past experiments on other islands



(Drury pers. comm.), and would either have to be retrapped and removed after the nesting season or artificially fed through the remainder of the year. There are no mammalian predators on either Seal Island or Matinicus Rock.

Gulls can gradually be removed from the islands if their annual production is stopped. With no reproduction natural mortality will gradually reduce the nesting gull population over a period of 10-15 years, the lifespan of a gull. Colony desertion prior to this may occur after several years of no reproduction (Drury 1973).

Simply breaking eggs is not an effective means of stopping reproduction because the gulls reneest several times. A technique developed by Dr. Alfred O. Gross of Bowdoin college was used by the FWS in cooperation with the States of Maine, New Hampshire, Massachusetts, Rhode Island, and New York in the 1940's and 50's. It partially solved this problem by killing the embryo and preserving it by spraying the eggs with a mixture miscible (water soluble) oil, formaldehyde and water. The oil suffocates the embryo, the formaldehyde preserves it, and the water acts as a carrier. The gulls often continue to incubate the eggs until it is too late to successfully reneest. This method is very specific and does not harm other wildlife or plants. Since only one application per nest is necessary the cost per year is relatively low and disturbance to other nesting species is minimal. Overall cost is high, however, because it must be repeated for many years to be effective and is very labor intensive.

Another way to reduce reproduction is through chemosterilents. The only chemical tested on gulls is a dye known as Sudan Black B, tested in 1963 on Milk Island, Massachusetts (Weatherbee et al. 1964). This chemical is only marginally effective, extremely costly to apply, and is not registered for this use. With both methods gull competition for nesting space continues until the gulls leave the island, which could be many years.

In the past other toxicants have been tested for gull removal. Alpha chloralose, a narcotic, was tested by the Massachusetts Audubon Society in the late 1960's in Massachusetts. This chemical is not always effective because it is hard to regulate the proper dosage and because death can occur away from the nest site. It therefore was not considered for use. Strychnine also has been used in the past for gull removal at airports and dumps. As the dangers of secondary poisoning are much greater with strychnine because the birds do not necessarily die at the nest and because strychnine does not decompose rapidly, it was not considered safe for this application. Neither toxicant is registered for use on gulls.

With Alternative 1 removal by harassment, shooting, and predator reintroduction would result in disruption of other nesting birds, especially the common eiders and black guillemots; discouragement of any prospecting terns or puffins; probable return of the gulls the following year; and a higher cost to the FWS. Cage traps are less effective and more costly. Stopping reproduction is costly and will not achieve the desired result of gull removal for many years. Other toxicants are not recommended or approved.

#### Alternative 2

Under this alternative, gull control on Seal Island would be confined to the northern end of the island, which is the puffin chick transplant area.

This alternative would essentially result in a similar situation to that which existed on Petit Manan and Green Islands in the late 1960's as described by Hatch (1970). At this time terns nested on Petit Manan and gulls nested on adjacent Green Island only, kept off Petit Manan by the lightkeepers. The tern colony appeared to be successful, but Hatch's studies clearly showed that tern productivity was very low due to gull predation from the Green Island gulls.

If the puffin and tern colonies become re-established on the northern end of Seal Island, it is reasonable to assume that they would suffer from high gull predation from the gulls nesting elsewhere on the Island. As the long-term objective of this management plan is to increase puffin and tern productivity, this is an unacceptable alternative, although it is less costly than the proposed action.

#### Alternative 3

Under this alternative the puffin chick transplants and social stimulation will continue as in the proposed action, but no gulls will be removed.

Past history has shown that nesting gulls must be removed permanently for any such programs to be successful. For example, in the 1984 nesting season on Seal Island, gull eggs and nests were destroyed but no adult gulls were killed. As soon as harassment stopped, the gulls returned. When NAS biologists returned to the island in the 1985 nesting season, almost as many gull nests were found on the northern end of the island as in 1984.

If the gulls are not removed, the transplanted puffins attempting to return to Seal in future years will be scared away from the island by the gulls. The harassment that is necessary to keep the gulls from nesting will also discourage prospecting terns and puffins. Therefore, this alternative is unacceptable.

On Matinicus Rock, the tern colony will probably continue to decline due to increasing gull numbers and high predation by gulls, eventually leading to the demise of the tern colony and possibly of the puffin colony too.

#### Alternative 4

Under this alternative, only gull removal would be used; neither chick transplants nor social stimulation would be used on Seal Island.

Establishment of puffin and tern colonies with gull removal alone may be possible. However, chick transplants ensure that there are birds with an innate attachment to that island, which greatly increases the chances of future nesting. The social stimulation simply encourages birds to nest by making it appear to prospecting birds that others have accepted the island and that it is safe to land. Social stimulation has no negative effects on the birds or the habitat.

Therefore, this alternative is unacceptable because it greatly decreases the chances of success of the project.

#### No Action

Under this alternative, there would be no gull removal, no chick transplants and no social stimulation.

There are no records of puffins or terns reclaiming nesting sites from gulls without human intervention and management. Therefore, Seal Island would continue to support a large gull colony for many years. Puffin populations may continue to increase slowly as they have for the past 80 years, but their status in the Gulf of Maine would be essentially unchanged. The terns will be denied access to one of their historical principal breeding spots in the Gulf of Maine. Terns will probably continue to decrease in numbers in Maine unless protected from gulls and human disturbance at other sites.

On Matinicus Rock, gull numbers will probably continue to increase, along with predation on terns and puffins. Tern and eventually puffin numbers will decrease.

As the major purpose of this project is to increase puffin and tern numbers and colony sites in the Gulf of Maine, this alternative is unacceptable.

### C. Comparison of Alternatives

This section summarizes and compares the impacts for all alternatives, including the No Action and Proposed Action.

The Proposed Action and Alternative 4 provide the most selective, safe, efficient, and cost-effective means of restoring the tern colony. Virtually no non-target species or non-target gulls will be affected. Disturbance to other nesting species or prospecting terns will be minimal. The former puffin and tern colony sites will be quickly opened up for recolonization. The Proposed Action increases the chances for recolonization by providing chick transplants and social stimulation without any negative effects. If this colony restoration is successful, ultimately an increase in tern and puffin numbers may result.

Alternative 1 may eventually result in gull removal, but would seriously disrupt the other nesting seabirds as well as discouraging any prospecting terns and puffins during those years in which the gull removal is in effect. Gull removal would take longer, be much more costly, be less efficient, and be much less effective because most of the gulls would return each year.

Alternative 2 may result in tern and puffin colony restoration on Seal Island, but the colonies would probably experience low productivity. The long-term objective of increasing tern and puffin numbers would not be achieved.

Alternative 3 probably would not result in puffin or tern colony restoration on Seal Island. The transplanted puffins would probably nest elsewhere. Tern productivity on Matinicus Rock would probably continue to decrease.

Alternative 4 may result in tern and puffin colony restoration on Seal Island, but only after a longer period of time, if at all.

Under the No Action alternative, Seal Island would probably continue to support a gull colony. Puffin populations in the Gulf of Maine may continue to slowly increase. Tern populations on Matinicus Rock will probably continue to decrease, and eventually the puffin populations as well.

## III. AFFECTED ENVIRONMENT

### A. Physical Resources

Seal Island and Matinicus Rock are both located in Knox County, Maine, approximately 20-25 miles southeast of Rockland. Both are treeless, rocky islands composed of igneous rocks, chiefly granite and gabbro. Seal Island has a maximum elevation of approximately 65 feet. Matinicus Rock has a maximum elevation of 35 feet.

The 65 acre Seal Island NWR was transferred to the USFWS from the U.S. Navy in 1972. While owned by the Navy, it was used as a bombing and shelling target for many years. Because of the possible presence of unexploded ordnance on the island, it is closed to all public access. It is administered out of the Petit Manan NWR headquarters in Milbridge.

The 27 acre Matinicus Rock has been owned by the U.S. Coast Guard for over 150 years. It is the site of the historical Matinicus Rock Light Station which was staffed by the Coast Guard until automation in 1984. It has been a field station for the NAS since 1939. Since 1966, it has been posted as a wildlife sanctuary by the FWS under a cooperative agreement with the US Coast Guard.

#### B. Biological Resources

Seal Island and Matinicus Rock are two of the most important colonial seabird nesting islands in the Gulf of Maine. Recently nesting on Matinicus Rock are over 770 pairs of arctic terns, 50 pairs of common terns, over 100 pairs of Atlantic puffins, 15 pairs of razorbill auks, 40 pairs of laughing gulls, 550 pairs of leach's storm petrels, 40 pairs of common eiders, 175 pairs of black guillemots, 43 pairs of herring gulls and 3 pairs of great black-backed gulls (Korschgen 1979, Kress pers. comm.).

Recorded on Seal Island in Korschgen's 1977 census were 335 pairs of leach's storm petrels, 27 pairs of double-crested cormorants, 200 pairs of common eiders and 200 pairs of black guillemots. Approximately 2000 pairs of herring and great black-backed gulls are believed to nest there (Kress, pers. comm.).

One reason for the presence of the Matinicus Rock and Seal Island seabird colonies is the abundance of food resources in the waters adjacent to the islands.

In addition to the nesting seabirds, both islands are important stopovers for migrating songbirds, shorebirds and raptors during the spring, summer and fall.

Both islands are treeless, vegetated with a variety of native and exotic grasses and sedges, and herbaceous species such as aster, yarrow, beach pea, chickweed and raspberry. The uncommon plant roseroot stonecrop (Sedum rosea) is exceptionally abundant on Seal Island (Rappaport and Wesley 1985), making it one of the most significant southern stations of this species in the eastern United States, along with scotch lovage (Ligusticum scoticum) and seaside angelica (Coelopleurum lucidum), (Folger, pers. comm.). Other rare plants on Seal Island are oyster leaf (Mertensia maritime) and seabeach sandwort (Arenaria peploides).



### C. Social and Economic Resources

The waters off both islands are important to the local economy because of the lobster, herring, scallop and groundfish fisheries. Charter boats out of Rockland often take birdwatchers to Matinicus Rock to observe the puffins, razorbills, terns and guillemots.

## IV. ENVIRONMENTAL CONSEQUENCES

### A. Proposed Action

There are no significant negative environmental effects associated with the use of 1339 Gull Toxicant, or with the removal of gulls from the two islands. The 2000 pairs of gulls that may be removed represent only 6% of the gulls nesting at Maine at the time of the last thorough census in 1977 (Korschgen 1979). This number, which has probably increased since, only included nesting gulls. The total number of gulls is considerably higher, perhaps by 40%, when non-nesters are included (Kadlec & Drury 1968). Therefore, if 2000 pairs were removed, it would be impossible to detect their absence from the overall population, either statistically or visually. This is not a plan to reduce gull populations in general as only specific gulls at two specific sites will be removed.

In the similar project on Eastern Egg Rock in Muscongus Bay, black guillemot, common eider, and Leach's storm-petrel populations did not change significantly following gull removal or tern and puffin colony reestablishment (Kress 1983). In the gull removal project on Petit Manan and Green Islands, eider and guillemot numbers significantly increased.

The positive environmental consequences include giving the common, arctic, and roseate terns and Atlantic puffins the opportunity to recolonize a former major colony. If the recolonization is successful, tern productivity will probably be increased and ultimately, tern numbers may increase. This is a positive step towards reversing the downward trend of tern populations and re-establishing a former puffin colony and represents a commitment by the USFWS and the NAS to long-term management of tern populations on the two islands. By increasing the number of colony sites, the impact on the population of an environmental disaster, such as an oil spill, is reduced. Ultimately, the human environment and the coastal ecosystem will be enriched by the continuance of avian diversity.

Although Seal Island and Matinicus Rock are by no means the only possible sites for tern colony management and protection we believe that they are two of the best in Maine because of their low level of human disturbance, the absence of mammalian

predators, their history of tern and puffin occupation, and because they are protected under federal ownership.

No currently listed threatened or endangered species or their critical habitats will be affected.

There are no significant negative effects associated with the social stimulation program. This program will affect the recolonization positively by encouraging the terns to nest.

Although some people will object to gull removal under any circumstances, it is hoped that our commitment to the long-term survival of the terns and puffins, and ultimately to species diversity, will be a mitigating factor.

This action is consistent with the policies and regulations of the USFWS, the Maine Department of Inland Fisheries and Wildlife and the NAS.

#### B. Alternative 1

The major negative environmental effect associated with this alternative is the possible desertion of the islands by the nesting common eiders, black guillemots, and, on Matinicus Rock, puffins, razorbills and terns, due to gull harassment or removal methods.

The increased amount of time per year needed for the alternate methods of gull removal is a negative effect because it represents less efficient utilization of time and money resources by FWS and NAS personnel.

The increased time, measured in nesting seasons, required to remove the nesting gulls is another negative effect because as each year passes, more of the returning puffins will be repelled by the techniques and by the remaining gulls, and will probably nest elsewhere. Also, if tern populations continue to decrease, fewer terns will be available to colonize the island.

#### C. Alternative 2

Essential to the long-term survival of the terns and puffins in the Gulf of Maine is an increase in their productivity. If the gull colony is not removed from the entire island, tern productivity will probably remain low even if the colonies are established on the northern end of Seal Island. Although this alternative has many of the same positive effects as the proposed action, and will require less time, it has the negative effect of not increasing tern productivity.

#### D. Alternative 3

If no gulls are removed on Seal Island the puffins that may return in future years will not accept the island as a nest site and will nest elsewhere. No terns will adopt the island if it is occupied by nesting gulls.

If no gulls are removed on Matinicus Rock, the tern colony will continue to grow smaller from increased gull density and predation. Ultimately the puffin colony may be in jeopardy.

#### E. Alternative 4

Although establishment of tern and puffin colonies may be possible without chick transplants or social stimulation, it would be less likely and would take a much longer period of time. Although less costly, it is less likely to have positive results in a reasonable period of time if at all.

#### F. No Action

Unless some gull removal is undertaken, the tern colony will continue to decrease on Matinicus Rock. Eventually the puffin colony will be adversely affected as gulls will undoubtedly take over the entire island. Tern colony takeovers by gulls have happened frequently in the past.

Seal Island will remain a gull colony if no action is taken. Reclamation of the former tern and puffin colonies without gull control is impossible. As the broad goals of the National Wildlife Refuge System are to protect and preserve the migratory bird resource and natural diversity and abundance of animals and plants on refuges, the No Action alternative is not acceptable.

### V CONSULTATION AND COORDINATION WITH OTHERS

Following a formal request in November 1984 by Stephen Kress of NAS to initiate gull control on Seal Island and Matinicus Rock, the subject was discussed at a general tern management meeting at the Maine Department of Inland Fisheries and Wildlife headquarters in Bangor, Maine on January 21, 1985. Attending were personnel from FWS, MDIFW, NAS, College of the Atlantic, Island Institute, and the Maine Audubon Society. At that time it was decided to address the gull problem in the 1986 nesting season.

On April 7, 1986 a news release announcing the completion of the draft environmental assessment was sent to local newspapers. Copies for public inspection were made available at the Knox County Clerks office in Rockland Maine. Additional copies were sent to over 30 individuals and organizations throughout Maine. Five telephone calls and eight letters were received in reply.



All but one were supportive of the program; one was from a local reporter simply desiring more information.

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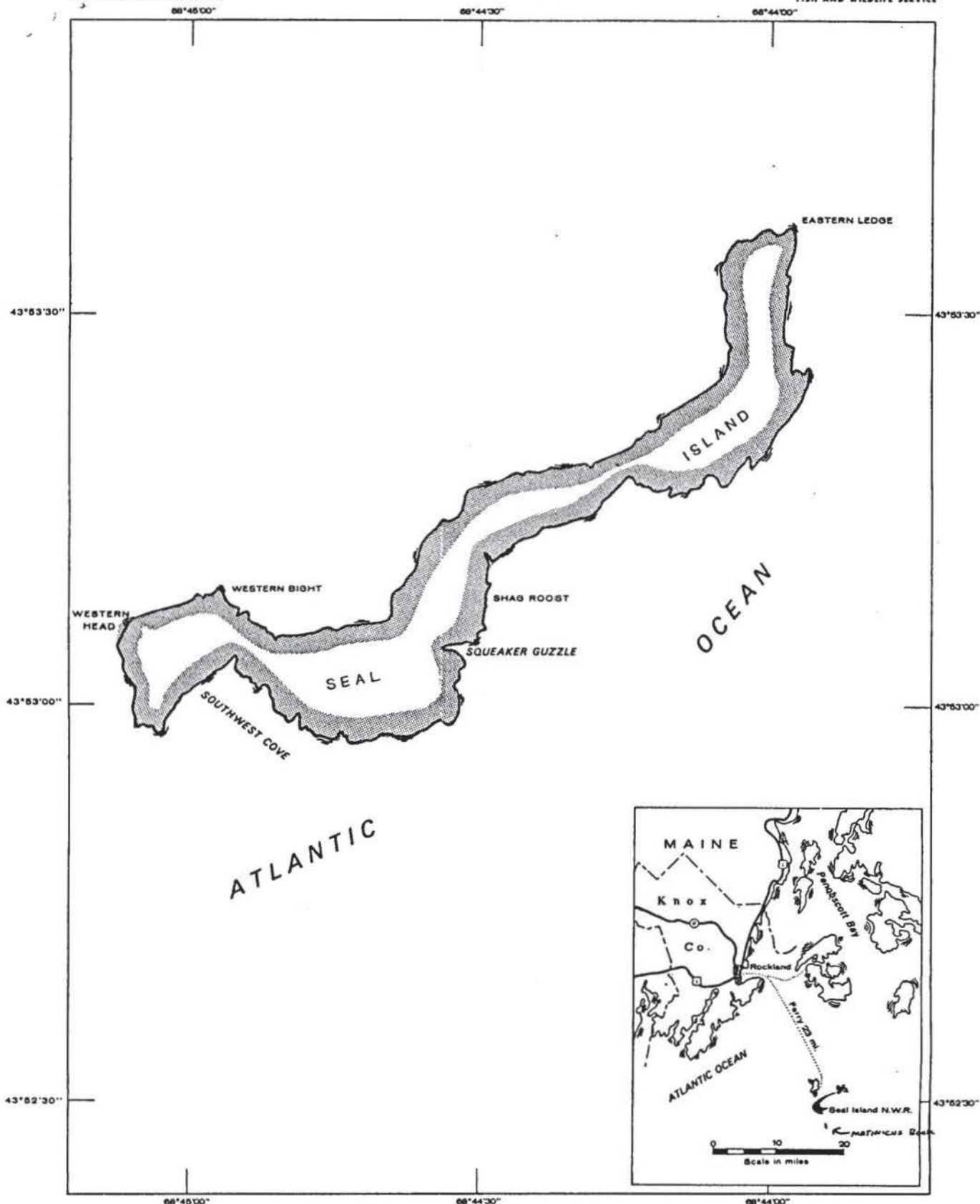
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# SEAL ISLAND NATIONAL WILDLIFE REFUGE

UNITED STATES  
DEPARTMENT OF THE INTERIOR

KNOX COUNTY, MAINE

UNITED STATES  
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF REALTY  
FROM SURVEYS BY U.S.G.S. AND U.S.F.A.W.S.

BOSTON, MASSACHUSETTS AUGUST 1972

5R MA 848 402

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS  
(& DOMESTIC ANIMALS)  
DANGER**

Harmful if swallowed, inhaled, or absorbed through the skin. Avoid contact with eyes, skin, or clothing. Handle only with protective gloves, clothing, and face mask, or respirator. Wash hands with soap and water after handling.

**ENVIRONMENTAL HAZARDS**

This pesticide is toxic to birds. Do not expose in areas accessible to waterfowl, poultry, and other non-target birds. Keep out of lakes, ponds, streams, tidal marshes, and estuaries. Do not apply where runoff is likely to occur. Do not contaminate water by the cleaning of equipment or disposal of waste.

**DIRECTIONS FOR USE**

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

**STORAGE AND DISPOSAL**

**STORAGE**—Keep dry. Store in an isolated, well ventilated room. Do not contaminate water, food, or feed by storage or disposal.

**DISPOSAL**—Open burning and dumping of this product is prohibited. Do not re-use empty container. Consult local, state, and federal disposal authorities for approved procedure for disposing of excess or unused concentrate and container.

**GENERAL:** Use 1339 Gull Toxicant 98% Concentrate for preparing bread baits to control herring gulls (*Larus argentatus*) and great black-backed gulls (*Larus marinus*) only. Apply only within the coastal area of Northeastern United States (Delaware, New York,

SEE RIGHT PANEL FOR ADDITIONAL  
GENERAL, PREPARATION,  
AND APPLICATION

**RESTRICTED USE  
PESTICIDE**

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification.

For use only by U.S. Fish and Wildlife Personnel trained in Bird Control or persons under their Direct Supervision.

**1339 GULL TOXICANT 98%  
CONCENTRATE**

Active Ingredient: 3-Chloro-4-Methyl Benzenamine Hydrochloride	98%
Inert Ingredients:	2%
Total	100%
Net Weight 16 ozs. (1 lb.)	

**KEEP OUT OF REACH OF CHILDREN  
DANGER—POISON**



**Statement of Practical Treatment**

**IF SWALLOWED:** Induce vomiting and immediately call a physician.  
**IF INHALED:** Move patient from contaminated area and immediately call a physician.  
**IF ON SKIN OR IN EYES:** Immediately flush eyes or skin with water. Call a physician if irritation develops and persists.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

MANUFACTURED FOR:  
U.S. DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
WASHINGTON, D.C. 20240

ESTABLISHMENT NO. 6704-IN-1  
EPA REGISTRATION NO. 6704-77

New Jersey, Connecticut, Rhode Island, Massachusetts, New Hampshire, and Maine) in breeding areas or colonies within predation radius of important nesting colonies of terns, puffins, laughing gulls, and other colonial nesting seabirds from March 1 to June 30 each year.

**BAIT PREPARATION:** Blend 0.2 oz. (6 gms.) 1339 Gull Toxicant 98% Concentrate into 1 lb. (454 gms.) melted, stick oleomargarine. Spread 1/2 oz. (15 gms.) of blended mixture (1 tablespoon) on a slice of standard sandwich bread and cover with another slice. Immediately cut each sandwich into 9 equally-sized cubes. Prepared baits must be placed in a plastic bag for transportation or distribution and must be used within 12 hours.

**BAIT APPLICATION**

**Pre-Treatment**—Each site destined to be treated will be prebaited with untreated bread cubes to insure rapid bait acceptance.

**Treatment**—Treatments will be made by hand only in or near nesting colonies of the target species. Treated bread cubes will be broadcast or placed only in the same areas where bread cubes were accepted during prebaiting. Initial applications will be broadcast; however, no broadcast application will be made after April 20. Application after April 20 will be made at or in gull nests. The number of bait applications will be determined by the degree of control provided by previous applications; however, no more than 10 bait applications should be made in or near individual colonies. The number of baits exposed at an individual site must not exceed 5 times the total number of gulls to be controlled at that location.

**Post-Treatment**—Baits regurgitated or not accepted must be retrieved within 12 hours after each application and disposed of by burial or other adequate means. A search must be conducted within 48-72 hours after application to remove and dispose of bird carcasses, except for those areas where disturbances of eiders may adversely affect their breeding efforts.

**DO NOT USE TREATED BREAD AS  
FOOD OR FEED**

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National Audubon Society Policy Statement  
Concerning Control of Herring and Great Black-backed Gulls  
in Coastal New England

Dr. Stephen W. Kress  
Research Biologist  
National Audubon Society

Background

Following the feather hunting years of the late 19th Century, the New England population of Herring Gulls increased from approximately 11,000 pairs on 17 islands in 1901 to approximately 89,500 pairs nesting on 205 islands in 1972 (Drury 1973-1974). The New England population of Great Black-backed Gulls has shown a similar rapid increase. Although Great Black-backed Gulls were eliminated from New England in the late 1800s, they recolonized the region by 1928 and increased from only 30 pairs on 12 islands in 1930 to about 12,400 pairs on 177 islands by 1972 (Drury *ibid.*). The most recent New England gull census (Korschgen & Erwin 1979) showed that by 1977, the Herring Gull population in New England (Long Island through Maine) was 88,502 breeding pairs on 379 islands and the Great Black-backed Gull population had increased to 20,464 pairs with colonies on 297 islands. These increases are due largely to expanded gull food supplies from garbage dumps and inshore fishing activities.

This spectacular increase in gull colonies and numbers is probably the principal reason for the 40 year decline in Maine populations of Common and Arctic Terns (Drury 1965, Nisbet 1973). During this period, Arctic Terns declined from approximately 8,000 pairs in 1940 to 2,143 pairs in 1984. Herring and Great Black-backed Gulls begin breeding earlier than Common and Arctic Terns and exclude terns by preempting nesting space and by preying on tern eggs, chicks, and adults. For example, at Matinicus Rock in 1985, resident Herring Gulls took at least seven Arctic Tern chicks per day. This resulted in a minimum loss of over 200 tern chicks.

The expanded population of Herring and Great Black-backed Gulls has also inhibited natural range expansion by Atlantic Puffins to former nesting islands in Maine, as prospecting puffins looking for a nest site will usually avoid nesting habitat dominated by Herring and Great Black-backed Gulls.

Three recent programs to control gulls at important historical tern nesting islands indicate that intensive, local gull control programs can be quite effective. At Eastern Egg Rock in Muscongus Bay, Maine, an integrated gull control program began in 1974 using the toxicant DRC 1339, shooting, and nest destruction. This resulted in the abandonment by approximately 200 pairs of Great Black-backed gulls after three years of control (Kress 1983). This island was subsequently recolonized by a maximum of 1000 pairs of Common, Arctic, and Roseate Terns and 20 pairs of Atlantic Puffins.

Petit Manan Island off Milbridge, Maine, was the largest mixed colony of Common, Arctic, and Roseate Terns in Maine until increasing gull populations caused all of the terns to abandon the island by 1980. In 1984 and 1985, a gull control program at Petit Manan Island carried out by the U.S. Fish and Wildlife Service resulted in the poisoning of 583 Herring Gulls and 182 Great Black-backed Gulls with the avicide DRC 1339. By 1985, approximately 1300 pairs of Common and Arctic Terns were nesting at Petit Manan Island and as many as 54 Atlantic Puffins were prospecting for nest sites at the island.

Avicides have also been used at the Farne Islands in England by the R.S.P.B. to control Herring and Great Black-backed Gulls. This effort is part of a long-term program to manage Common, Arctic, and Roseate Terns. The effectiveness of gull control programs at Eastern Egg Rock, Petit Manan and the Farne Islands points to the responsiveness of terns and puffins to active gull management on former nesting habitats.

The appropriate choice of gull control techniques depends on the size of the gull population, the size and terrain of the island, presence of other seabird nesting populations, proximity to nearby human population centers, and the availability of intensive human presence on the island.

Where large gull populations are well-established, removal of most of the breeding population through use of avicides is the most direct and cost-effective way to open seabird nesting habitat to other species. The avicide DRC 1339 (3-Chloro-4-Methyl Benzenamine Hydrochloride) is approved by the EPA as a gull toxicant. This avicide is mixed with margarine and then spread onto bread. Small pieces of baited bread are then placed into gull nests in the area to be cleared. The poison works by interfering with proper functioning of the kidneys and gulls die from a build-up of uric acid and other waste products within 24-48 hours. The birds die quietly, without convulsions with death usually occurring at or near the nest. The avicide degrades in sunlight within 48 hours and secondary poisoning is highly unlikely as 80% of the poison is broken down by metabolic processes within 3-5 hours.

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## RESOLUTION

WHEREAS, New England populations of Herring and Great Black-backed Gulls have increased rapidly in this century and this increase is due primarily to man-caused expansion of the food base.

WHEREAS, concurrently with the increase in gulls, populations of terns and alcids have decreased, due principally to predation and preemption of nesting islands and sites by gulls.

WHEREAS, The National Audubon Society is committed to maintaining and restoring the natural diversity of nesting seabird populations.

NOW THEREFORE, BE IT RESOLVED that where necessary to protect vulnerable species and to maintain such diversity, the Society supports the conservative use of gull control techniques including tested avicides, shooting, and nest destruction as part of management plans designated to restore and protect seabirds on former nesting islands within historic ranges.