

# **Are Herring and Great Black-backed Gulls *Pests*?**

**Thesis**

**by**

**Rebecca Taylor**

**December 1997**

**Submitted in Partial Fulfillment of the requirements for the Degree of Bachelor of  
Arts from the Center for Environmental Studies at Brown University**

## TABLE OF CONTENTS

<b>FIGURES</b>	2
<b>TABLES</b>	2
<b>ACKNOWLEDGEMENTS</b>	3
<b>ABSTRACT</b>	4
<b>CHAPTER 1. INTRODUCTION</b>	5
<b>CHAPTER 2. THE HUMAN-GULL RELATIONSHIP</b>	7
<i>Introduction</i>	7
<i>Phase I. Human Exploitation of Gulls</i>	
<b>9</b>	
<i>Phase II. Protection</i>	11
<i>Phase III. Population Changes</i>	13
<i>Phase IV. Conflicts and Management</i>	19
<i>Case Study: The Monomoy Program</i>	22
<i>Summary</i>	23
<b>CHAPTER 3. PERCEPTIONS AND PORTRAYALS OF GULLS</b>	24
<i>Introduction</i>	24
<i>Methods</i>	25
<i>Results (Lay Public)</i>	28
<i>Results (Professionals)</i>	33
<i>Other Results</i>	37
<b>CHAPTER 4. DISCUSSION</b>	41
<b>CHAPTER 5. SUMMARY AND RECOMMENDATIONS</b>	48
<b>REFERENCES CITED</b>	52
<b>ADDITIONAL SOURCES</b>	55
<b>APPENDIX 1. EARLY NATURALIST ANECDOTES</b>	56
<b>APPENDIX 2. GULL PERCEPTIONS SURVEY</b>	57
<b>APPENDIX 3A. SURVEY FINDINGS (PUBLIC)</b>	60
<b>APPENDIX 3B. SURVEY FINDINGS (PROFESSIONAL)</b>	65
<b>APPENDIX 4. LIST OF MONOMOY ARTICLES ANALYZED</b>	71



## FIGURES

Figure 1. Massachusetts Gull Populations and Human Interactions Timeline	
8	
Figure 2. Massachusetts Herring Gull (HGG) and Great Black-backed Gull (GBBG) Populations, 1888-1995	16
Figure 3. Number of Gulls Per Resident (MA Coastal Counties)	25
Figure 4. Respondent Experience Levels (Lay Public)	29
Figure 5. Circumstances When Lay Public Feels Gulls Are Pests	31
Figure 6. Situations in Which Lay Public Would Support Gull Reduction	32
Figure 7. Public Support of Gull Control Methods	32
Figure 8. Circumstances When Professionals Feel Animals Are Pests	35
Figure 9. Professional Support of Gull Control Methods	36
Figure 10. Occurrence of Words in Monomoy Article Headlines	39
Figure 11. Monetary Values of Gulls	40

## TABLES

Table 1. Summary of Bird Protection	13
Table 2. Lay Public Opinions of Gulls	29
Table 3. Which of the following do you consider pests, if any?	30
Table 4. Wildlife managers consider many aspects of a problem before implementing a program. When it comes to gulls, what do you think should be their most important consideration? (Public)	
33	
Table 5. Professional Opinions of Gulls	34
Table 6. Wildlife managers consider many aspects of a problem before implementing a program. When it comes to gulls, what do you think should be their most important consideration? (Professionals)	37

## **ACKNOWLEDGEMENTS**

Thanks to all who have supported me through this effort. Special thanks to Caroline Karp for your support and encouragement and to Chris Zarcadoolas for all of your help and for introducing me to the world of qualitative research. Special thanks to Steve Young and the Center for Northern Studies for introducing me to birding. Mom, Dad and Beth, thanks for listening to me ramble about gulls and plovers. Thanks to Jon, for reminding me to work when the beach called.

## ABSTRACT

Humans and wildlife often come into conflict as a consequence of increasing human and wildlife populations. In some cases, wildlife are considered “pests.” In light of recent conflicts between gulls and the human goal of endangered species protection on Monomoy National Wildlife Refuge, this thesis asks the question “Are Herring and Great Black-backed Gulls *Pests*?” Interactions between humans and gulls have undergone four major shifts during the past two centuries. The change from human exploitation of gulls to the protection of gulls, followed by an increase in gull populations and conflicts and management of gulls characterize a shift from anthropocentric to biocentric values of wildlife. The methods for my research into modern perceptions of gulls included perception surveys, a news analysis and an analysis of economic values of wildlife. The dollar value of gulls decreases as they become more abundant, but my survey results show that the public still feels that their existence value should be protected. The lay public did not feel that gulls are pests while professional scientists felt that they can be in certain situations. The public was open to the control of gull populations, but did not support the use of lethal control methods such as poisoning and shooting, while the professionals supported the use of all methods depending on the goal. There was a large difference between public and professional responses to the survey. The news analysis showed that the words “gull” and “poison” were used to describe the Monomoy gull control program more frequently than management goals and terms. An explosion of public outrage halted the Monomoy program. I recommend that in the future, gull managers include the public in the development of gull control plans and attempt to develop successful communications programs that go beyond explanation of an issue.

## CHAPTER 1. INTRODUCTION

---

American society often thinks of insects as pests, but other wildlife species may also be considered pests. In recent months, the news media has covered stories involving animals such as geese, coyotes, gulls, bears and deer. Large numbers of gulls and geese have become a nuisance and a safety problem for airplanes at the Quonset State Airport in Rhode Island (Poon, 1997). Exploding populations of snow geese are denuding the vegetation of their Canadian breeding grounds (Brody, 1997). Black bears and Massachusetts suburbs are encroaching upon each other (MacQuarrie, 1996). White-tailed deer populations are increasing throughout North America, causing car accidents, and destroying vegetation. They also contribute to a rise in the tick that carries Lyme disease (McGrory, 1997 and Paquette, 1995).

In Massachusetts, Herring Gulls (*Larus argentatus*) and Great Black-backed Gulls (*Larus marinus*) have come into conflict with humans at airports, drinking water reservoirs, and other places. Media attention has recently focused on a gull control program at the Monomoy National Wildlife Refuge. The goal of this program has been to open nesting habitat for Piping Plovers and Roseate Terns, two species protected under the Endangered Species Act (USFWS, 1996).

In many cases, human actions have caused wildlife populations to increase by providing a food source. As human populations increase, and in some cases encroach upon nature, humans and wildlife experience conflicts. It is sometimes unclear in human-wildlife conflicts whether or not a wildlife species is a “pest.” In light of current

and historical human interactions with gulls in Massachusetts, this thesis asks the question “Are Herring and Great Black-backed Gulls *Pests*?” The following definitions of “pest” are intended to provide a framework for examining this question.

Birds can be “considered pests when they interfere with the way in which we utilize our environment, for example by competing with us for resources, damaging our constructions or spreading disease.” -Furness and Monaghan, 1987

“... some species tend to be harmful, and others become pests when present in excessive numbers or in the wrong places.” -Murton and Wright, 1968

A “pest” is “an insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacterium, or other microorganism...which is declared to be a pest by the administrator or by the department with the approval of the board.” -Mass. General Laws Annotated C. 132B.2

Chapter 2, *The Human-Gull Relationship*, chronicles human and gull population changes over time in New England. Chapter 3, *Perceptions and Portrayals of Gulls*, reports the findings of public perception surveys, discussions with professionals, an economic analysis of gull values, and a news analysis of the Monomoy gull control program. Chapter 4, *Discussion*, analyzes the research findings. Chapter 5, *Summary and Recommendations*, summarizes my research results and provides suggestions for how wildlife managers can use my findings.

It is important to mention the scope and limitations of this thesis. This thesis concentrates on Massachusetts, but hopefully provides concepts and findings that relate to other states, regions and wildlife species. The specific focus of this thesis is on Herring and Great Black-backed gulls, not on small gull species such as Ring-billed or

Laughing Gulls. The public perception surveys are not meant as a representative sample of a population, but rather to provide insight into the range of opinions and perceptions that exist on this subject. Nevertheless, the survey produced usable, important results.

## CHAPTER 2. THE HUMAN-GULL RELATIONSHIP

*This chapter examines historical and modern factors that have shaped the human-gull relationship. Such factors include the commercial exploitation of gulls, protection of gulls, gull population changes, current conflicts between humans and gulls, and gull management.*

---

### Introduction

Many factors can affect a person's attitudes towards a wildlife species. For example, a person's basic values towards all wildlife may influence her attitude about one species (Kellert, 1996). Kellert identifies three other significant factors that influence attitudes toward wildlife:

- 1) A person's biological and ecological knowledge and "awareness of issues."
- 2) The perception of an animal's "physical and behavioral characteristics" such as size, morphology, and aesthetic appeal.
- 3) The correlation between past and present human-animal relationships.

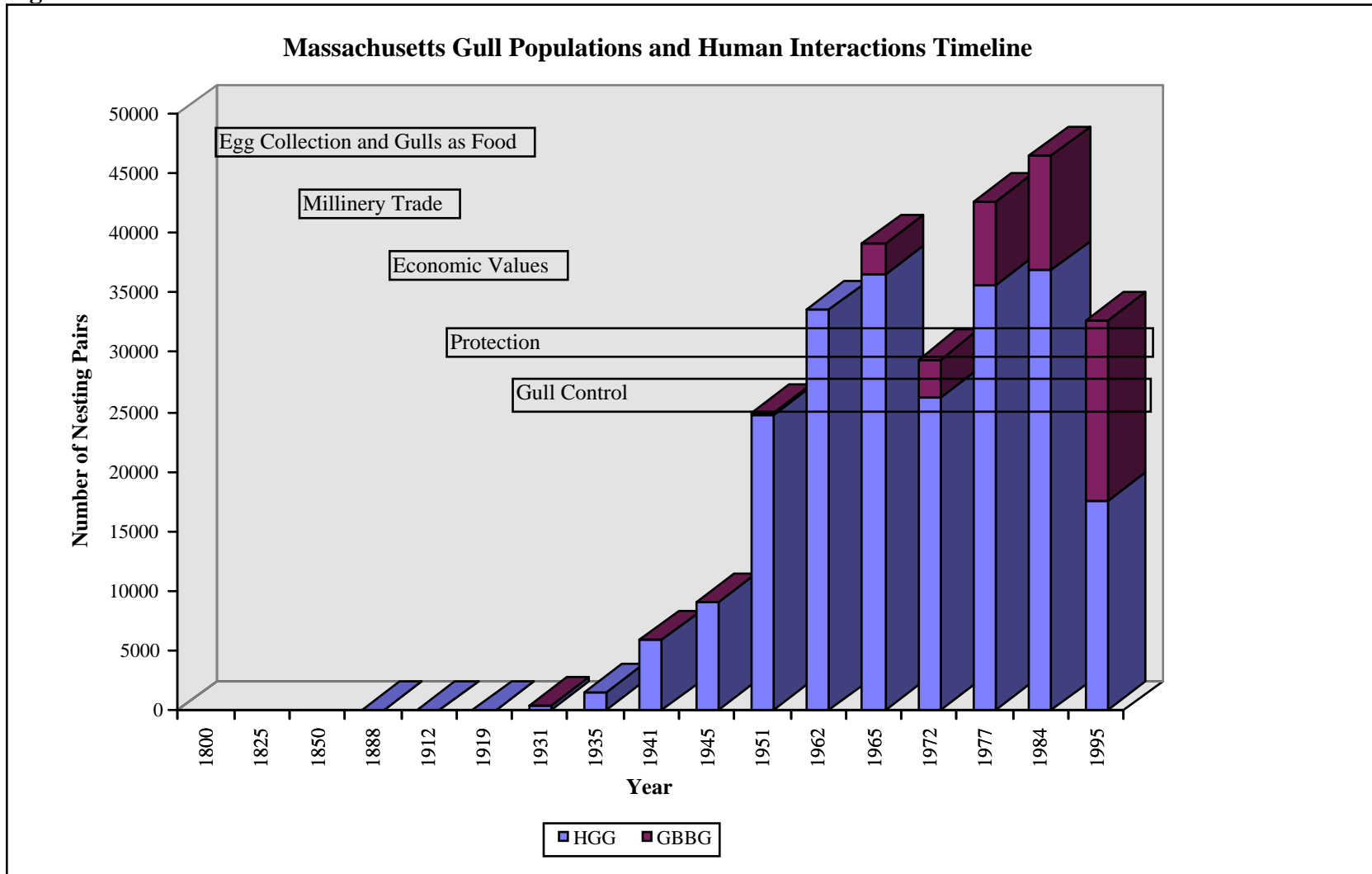
These factors can affect people's attitudes towards gulls. In order to better understand people's current attitudes towards gulls, this chapter explores the history of the human-gull relationship.

Four discernible attitude shifts characterize the human-gull relationship over the past two centuries. In early American history, humans harvested gulls for scientific collections and market purposes. From the destruction caused by human use, a movement to protect gulls arose. Human activity aided an increase in the Massachusetts Herring Gull and Great Black-backed Gull populations. As a result of the population rise, gulls come into conflict with human interests such as safety, sanitation and the

protection of rare species; from these conflicts arose a trend towards gull management.

Each period is described below. Figure 1 shows the approximate dates of human activities and associated changes in gull populations.

**Figure 1.**



Sources: See Appendix 1. 1888: Mackay (1892); 1912-1972: Drury (1973); 1972-1995: Blodget (1988) and Blodget and Livingston (1996).

## **Phase I. Human Exploitation of Gulls**

During the eighteenth and nineteenth centuries, humans exploited gulls as a subsistence and commercial resource. Between the 1790s and 1930s in Massachusetts, people killed gulls for sport, food and the millinery trade. They also collected gull eggs. Using early naturalist accounts and modern sources, this section describes historical methods of capturing gulls, chronicles the history of gull egg collection, and explores the role of gulls in the millinery trade.

Several naturalists have offered “how to” descriptions for catching or killing gulls. These methods ranged from hunting gulls to raising them in domestic situations. H.D. Thoreau described how Wellfleet, MA residents used “Gull Houses” in 1794 to catch between 40 and 50 gulls at a time (1864). He did not specify how the residents used the gulls. Mackay later described methods for baiting and decoying Herring Gulls (Mackay, 1892). As late as 1934, Great Black-backed Gulls were being raised like chickens in Newfoundland for food (Morris, 1934).

The eggs of gulls and other colonial nesting birds were taken by market hunters, subsistence hunters and naturalists during the 1800s and early 1900s. William Drury stated that seabirds were “almost entirely ‘eaten off’ the outer islands [of New England] during the 18th and 19th centuries” (Drury, 1973). The earliest account of harvesting gull eggs as a food source comes from John James Audubon who said in 1833 that gull eggs “afford good eating” (Ford, 1957). Audubon called for an end to the destruction wrought by the “Eggers of Labrador,” but took a more lenient stance towards locals who collected eggs for subsistence food needs. Audubon observed that a “considerable egg trade” in Labrador was driven by egg collectors for the purpose of scientific study, which

became a popular hobby (Doughty, 1975). A retail trade in eggs and other natural items such as stuffed birds developed (Personal communication, Marilyn Massaro, October 1997). An advertisement from 1892 offered Herring Gull eggs for \$0.20 each for scientific data collection (*The Price of Eggs*@<<http://www.im.nbs.gov/birds/eggs.html>>).

This type of commercial gull egg trade developed in Massachusetts, but its commencement date is not clear. “Wholesale egging was carried on along the coast of Massachusetts and other New England States, until the Gulls and Terns were in most cases driven away from their breeding places” (Forbush, 1913). Even after state and federal legislation was passed to protect gulls, thousands of Herring Gull eggs were still being sold in markets (Henderson, 1927). In 1905, Lake Michigan ports were still receiving eggs. In other areas of the country, illegal egging also continued. “It was reported that egg poachers sometimes carried away from the breeding colonies of the Herring Gull in Delta County, from 2,000 to 3,000 eggs on a single trip” (Henderson, 1927). By the turn of the century, the Audubon movement had placed wardens on most Massachusetts breeding islands. Consequently, illegal egg collection did not continue to be as problematic as elsewhere. Forbush called for the termination of the egg trade in 1913 and by 1932, the United States bird egg market had ended (Pearson, 1932).

Egg collection was an important historical use of gulls, but the millinery trade had a greater impact on the human-gull relationship. Feather hunters killed seabirds and sold the wings, bodies and feathers to milliners for decorative use on women’s hats (Doughty, 1975). Gull and tern wings were commonly used in the United States millinery trade. Millinery trade hunting had detrimental effects on the Massachusetts gull population. Forbush stated that in “Massachusetts, this trade bore most heavily upon the Gulls and

Terns, which were driven out from many breeding places along the coast” (Forbush, 1913). Herring Gulls “had been shot in great numbers because their feathers were in great demand for trimming on women’s hats” (Pearson, 1932). Adult Herring Gull wings sold for 40 cents a pair and immature Herring Gull wings sold for 20 cents a pair (Drury and Kadlec, 1968). After almost a century of hunting activity, the height of the millinery trade came between 1870 and the mid-1890s (Doughty, 1975 and Forbush, 1913). The wearing of bird feathers, a common and pervasive trend, resisted regulation until the 1910s (Gibbons and Strom, 1988).

## **Phase II. Protection**

The way in which people perceived and treated gulls shifted dramatically near the turn of the nineteenth century. Before then, people’s energies were focused mainly on extractive uses of gulls. Market hunters and naturalists alike killed gulls and collected their eggs. The millinery trade decimated New England seabird populations. Efforts to protect birds, including gulls, arose in the 1880s. This section describes the attitude shifts that led to bird protection and then chronicles important dates in gull protection.

In response to the wide-scale destruction of gull and tern populations by millinery trade hunters, the Audubon Society was formed in 1886. Ornithologists advocated both economic and aesthetic values of gulls as reasons for their protection. Society began to recognize that gulls were more valuable as scavengers and natural ornaments than as feathers on women’s hats (Editors, Harper’s Bazaar, 1900). Common arguments for this stance included the fact that gulls eat human refuse and so contributed to “the healthfulness of our coasts” (Forbush, 1913). Forbush promoted their value to farmers as

insectivorous pest controllers, to seafarers as navigational aids, to fishermen as fish finders, and as fertilizing agents and seed sowers on barren coastal islands (Forbush, 1913). The shift in naturalists' attitudes from collection to conservation was an important factor that stimulated action towards bird protection (Personal communication, Marilyn Massaro, October 1997).

By 1900, several states, including Massachusetts, enacted legislation to protect bird populations. Table 1 summarizes important dates in American bird protection. As early as 1817, Massachusetts enacted a closed hunting season for some species, including larks and robins. In 1855, Massachusetts provided year-round protection to woodpeckers, warblers and a few other species. This law forbade the sale or possession of these birds (Ossa, 1973). In 1869, Massachusetts passed a law against the "collection of birds and their eggs for scientific purposes" (Ossa, 1973). In 1886, the State passed the Audubon Ornithologists Union (AOU) Model Law for non-game bird protection. The AOU Model Law made it illegal for any person to kill, purchase, possess, or sell any non-game bird. In 1897, Massachusetts prohibited "the wearing of any bird feathers" (Ossa, 1973). While all of these laws symbolized progress, they were inadequately enforced.

Massachusetts laws were also problematic in that they did not protect Herring and Great Black-backed Gulls between November and May. At this time in history, Herring and Great Black-backed Gulls were only present in Massachusetts during these months (Auk, 1903).

The Massachusetts Audubon Society, the first lasting Audubon Society, worked to place wardens on the outer islands of New England. The wardens were paid to ensure

the protection of gulls, terns and other seabirds (Ossa, 1973). In 1900, the Thayer fund was established to pay the salaries of wardens on the Atlantic Coast, including Massachusetts. Most wardens only remained on the islands during the breeding season. A 1902 report by the Audubon Ornithologists' Union Committee for the Protection of North American Birds stated that "plume hunters resumed their work in the fall and winter and thousands of gulls and terns were killed" (Ossa, 1973).

The protection of gulls from millinery pursuits was not specifically provided for until 1902. In 1900, Massachusetts forbade the sale of birds for ornamental purposes and two years later, the AOU Model Law was expanded to include "no part of the plumage, skin, or body of any bird protected by this section will be sold or had in possession for sale." Massachusetts adopted the 1902 Provision, which protected grebes, gulls, terns, pelicans and egrets from slaughter by the millinery trade (Doughty, 1975).

State bird protection laws were insufficiently enforced due to a lack of funding and pressure from the millinery industry. In 1900, the United States Congress passed the Lacey Act, prohibiting the interstate trafficking of birds killed in violation of State laws. The Lacey Act essentially gave states an impetus to enforce their own laws. It also required traders to obey the laws of the recipient state. The Lacey Act was first enforced in 1901, when officials confiscated 2,600 gulls from a Baltimore millinery firm (Doughty, 1975). It was not until bird protection reached an international scale that Herring Gulls and Great Black-backed Gulls received year-round protection. In 1918, the United States and Canada signed the Migratory Bird Treaty Act, which afforded year-round protection to non-game species, including gulls (Ossa, 1973).

**Table 1. Summary of Bird Protection**

Date	Legislation
------	-------------

1817	Massachusetts enacts closed season for larks and robins. (Ossa, 1973)
1855	Massachusetts protects woodpeckers and warblers. (Doughty, 1975)
1869	Massachusetts prohibits collection of birds and eggs for scientific purposes. (Ossa, 1973)
1883	Formation of American Ornithologists' Union. (Ossa, 1973)
1884	The AOU appoints a Committee for the Protection of North American Birds. (Ossa, 1973)
1886	George Bird Grinnell announces formation of an Audubon Society, which lapses within three years. (Ossa, 1973)
	Massachusetts passes AOU Model Law. (Doughty, 1975)
1896	Harriett Hemenway and Minna Hall form Massachusetts Audubon Society, reviving the defunct Audubon Society. (Ossa, 1973)
1897	Massachusetts prohibits the "wearing of any bird feathers" (Ossa, 1973).
1900	Lacey Act passes. (Doughty, 1975)
	Thayer Fund provides money to protect plume bird colonies by hiring wardens. (Doughty, 1975)
	Massachusetts prohibits the sale of birds for ornamental purposes. (Doughty, 1975)
1902	Massachusetts adopts AOU Model Law Provision. (Doughty, 1975)
1905	National Association of Audubon Societies forms. (Doughty, 1975)
1913	Underwood-Simmons Tariff Act with plumage import prohibitions signed into law. (Ossa, 1973)
1918	Migratory Bird Treaty Act becomes law between United States and the United Kingdom for Canada, gulls are afforded year-round protection for first time. (Ossa, 1973)

### Phase III. Population Changes

Herring and Great Black-backed Gull populations increased dramatically in Massachusetts starting in the 1930s. This increase has been attributed to the availability of a food source in the forms of human refuse and fisheries waste. This section explores the gull population trends of the last century and the roles of food and nest site availability in regulating gull populations.

The Northeastern United States Herring Gull population was reduced to only 10,000 pairs in 1896 due to hunting and egg collection.<sup>1</sup> In the two decades before 1900,

---

<sup>1</sup> The following section focuses on gull population changes since 1888. All data presented in

there is only one report of Herring Gulls nesting in Massachusetts (Mackay, 1892). At the turn of the century, no Herring Gull colonies existed in Massachusetts. Herring Gulls first began to re-establish themselves as a nesting species in Massachusetts in 1912, when a pair nested at Edgartown Great Pond. By 1919, 20 pairs were nesting at nearby Skiff's Island and by 1925, 300 chicks were found at Muskeget Island. In 1924, a few pairs nested on Monomoy Island.

From 1931 to 1962, the Massachusetts Herring Gull population grew from 300 nesting pairs to 36,600 nesting pairs. From 1962 to 1984, the population remained fairly stable, increasing by only 300 nesting pairs. Since 1984, the population has decreased to 17,583 pairs. (See Figure 2. Trends in Massachusetts Herring Gull and Great Black-backed Gull Populations<sup>2</sup>) A trend estimation of the Breeding Bird Survey data, assembled by various federal agencies,<sup>3</sup> confirms that the Region 5 (New England) Herring Gull population increased from 1966 to 1979 and then decreased from 1980 to 1994 (Sauer, et al., 1997).

Great Black-backed Gull populations have increased even more dramatically than the Herring Gull population and continue to do so. Before the early 1900s, Great Black-backed Gulls did not nest as far South as Massachusetts. In 1930, only 2 pairs nested in

---

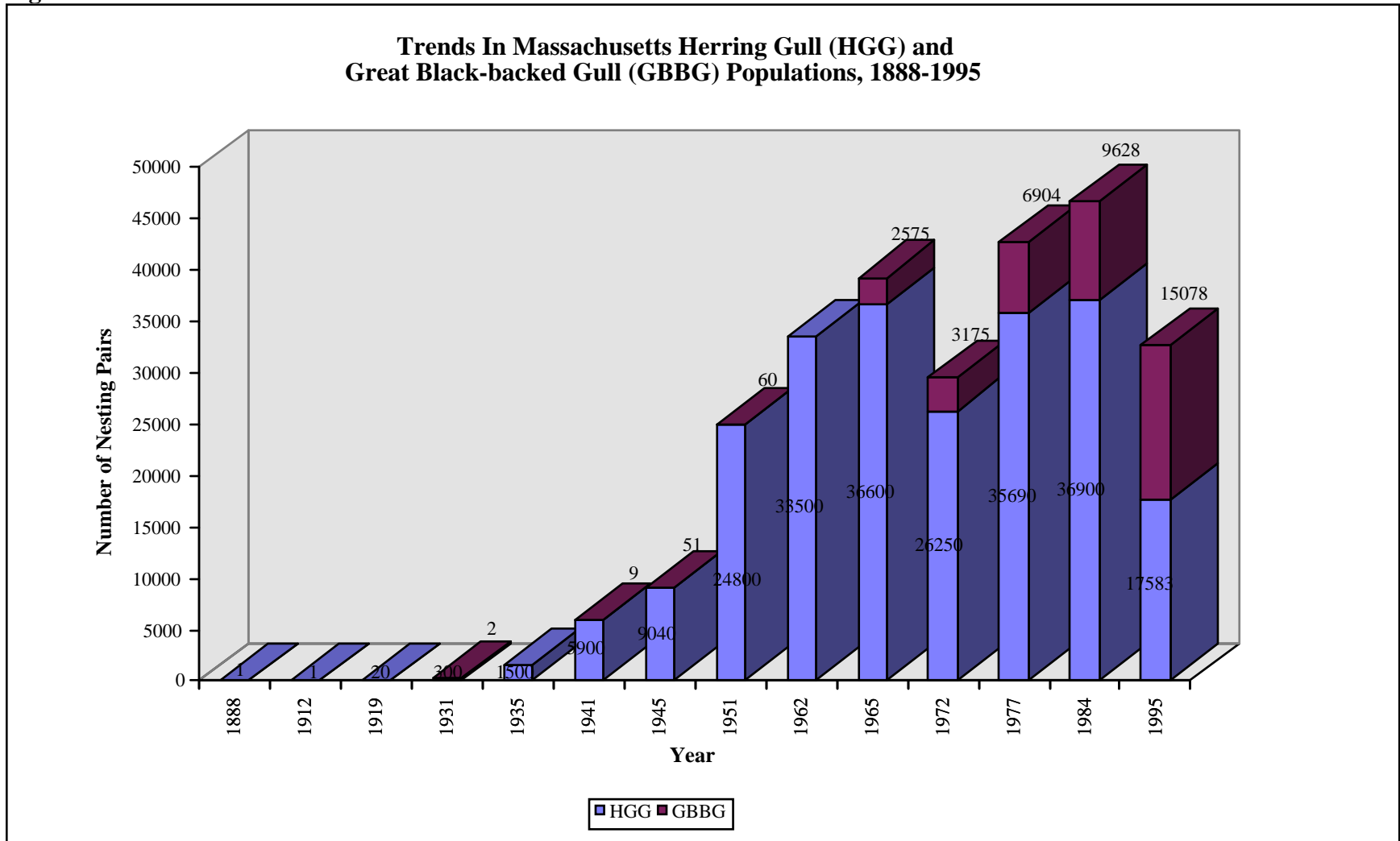
this section previous to 1972 is from Drury (1973) while all data from 1977-1995 is from Blodgett (1988a) and Blodgett and Livingston (1996) unless otherwise noted. Because bird census techniques have changed throughout the last century and a certain amount of error is always present, this compilation of data should be viewed as a rough population trend estimate. For the same reasons, the early population data should be viewed with caution.

<sup>2</sup> Figure 2 includes data from the Coastal Waterbird Survey (assembled by the Massachusetts Audubon Society and the Massachusetts Natural Heritage and Endangered Species Program), as reported by Blodgett and Livingston (1996) and Blodgett (1988a). Data from Drury (1973) and Mackay (1892) is also included.

<sup>3</sup> This data was collected by the USFWS until 1993, when data collection was turned over to the National Biological Survey, and is now under the jurisdiction of the United States

Massachusetts. However, by 1995, 15,078 nesting pairs were reported. (See Figure 2)

Figure 2.



Sources: 1888: Mackay (1892); 1912-1972: Drury (1973); 1972-1995: Blodget (1988) and Blodget and Livingston (1996).

The Breeding Bird Survey data shows that the New England Great Black-backed Gull population increased from 1966 to 1977 and then decreased from 1980 to 1994 (Sauer, et al., 1997). Due to small sampling sizes, these data may not be accurate, nor are they truly indicative of trends in Massachusetts.

The Colonial Waterbird Survey data show a 51% decline in the Herring Gull population since 1984 and a 41% increase in the Great Black-backed Gull population since 1984. The total of the two species shows an upward trend until 1984, followed by a more recent decrease. The exception to this trend was 1972, which showed a drop in the total population. (See Figure 2) This drop could have been the result of either a decrease in DDT (Rosenbaum, 1991) use or of gull control programs. It could also have been a natural low, with a subsequent increase as a result of New England's expanding fishing fleet. However, there is no accepted explanation for the low population level in 1972.

Currently, the distribution of gull colonies is not uniform throughout the State. For example, 12,666 of the State's 32,661 (39%) Herring and Great Black-backed Gulls nest on South and North Monomoy Islands, making these islands the largest gull colonies in the State (Blodgett and Livingston, 1996). These islands comprise the Monomoy National Wildlife Refuge, where both the Herring Gull and Great Black-backed Gull populations are declining (USFWS, April 1996).

Regionally, the Herring Gull population shows a decreasing trend, while Great Black-backed Gulls are displacing them and growing in numbers (Blodgett and Livingston, 1996). This trend difference may be explained by competition between the two species. Great Black-backed Gulls arrive at nesting sites earliest in the season, consequently reducing Herring Gull nesting success. Great Black-backed Gulls have also

been seen eating Herring gull eggs and killing “nestling and fledgling Herring Gulls as a food source for themselves and their young” (Cavanaugh, et al. 1997).

Both Herring Gulls and Great Black-backed Gulls have successfully exploited food sources created by humans. Increasing human populations caused a rise in waste production and the number of facilities to treat waste. The waste from the increasing human population originally went to open-air dumps, where gulls could find an extravaganza of food items. Starting with the passage of the Resource Conservation and Recovery Act in 1976 (Rosenbaum, 1991), many of these dumps either closed or were converted into sanitary landfills, which cover the trash with a layer of dirt daily. Although landfills are covered at the end of each day, there is still a considerable time period during which gulls can forage on exposed trash. On the surface, transfer stations solve the gull problem, but a United States Department of Agriculture (USDA) study showed that gulls and other birds enter and roost in transfer stations. This study surveyed transfer stations in Massachusetts and found as many as 1300 gulls foraging at one station (Henze and Forbes, 1997). “The primary factors that attracted birds were surrounding habitat type, distance from the ocean and tons per day of refuse. Other factors that affected bird presence were bird exclusion devices and clean management.” The shift to transfer stations could reduce or eliminate the gulls’ food source, provided they are cleanly managed and have bird exclusion devices (Henze and Forbes, 1997).

Another factor affecting gulls populations is changes in New England’s fishing industry. Gulls are attracted to fishing boats and fish processing plants, which discard food in the form of fish remains. Commercial fishing activity increased following the turn of the century. A number of fishing ports like Gloucester, MA have been shown to

attract gulls. Drury mentions that on an average day in 1965, Gloucester Harbor attracted as many as 4,000 to 5,000 gulls (Drury, 1973). In 1975, the Magnuson Fisheries Conservation Act was passed and the domestic fishing fleet expanded. However, commercial fishermen are finding ways to market fish waste, decreasing this source of gull sustenance (Blodgett, 1988b). More recently, New England's commercial fishing fleet has become smaller due to overfishing and subsequent government regulations.

The availability of food is the main regulator of bird populations. Lack hypothesized that "starvation in winter due to density-dependent competition for food was the key factor regulating bird numbers." He found that "the effect that high numbers following breeding" had on a seabird population was the most important factor regulating population sizes. Ashmole also argued that seabird populations are regulated by food availability. He felt that the breeding season is the most crucial time, as parents are confined to a relatively small foraging area and therefore come into greater competition with other colony members (Furness and Monaghan, 1987).

The dramatic increase in the gull population has commonly been attributed to the availability of food found at landfills, fish processing plants and sewage treatment plants (Blodgett, 1988b). However, food availability is not the definitive factor regulating gull populations. Furness and Monaghan mentioned that nest site availability also affects population sizes (Furness and Monaghan, 1987). Blodgett noted that the number of nesting islands occupied by gulls in Massachusetts has remained stable at 60-63, but that some are beginning to expand their nesting habitat to buildings in urban areas (Blodgett, 1988a and Blodgett and Livingston, 1996).

#### **Phase IV. Conflicts and Management**

Gull populations grew so rapidly after receiving protection that by 1921, concerns arose that gulls were having a detrimental effect on tern populations in Maine (Drury, 1973). In 1925, Forbush recognized that Herring Gulls were causing problems in Massachusetts. Herring Gulls were allegedly carrying bacteria from sewage dumped in Boston Harbor to Boston's drinking water reservoirs. Forbush stated that "men with guns have been employed to drive the gulls from the reservoirs" (Forbush, 1925). In 1935, U.S. Fish and Wildlife Service biologists implemented a control program on Muskeget Island, MA (Blodgett, 1988b). Farmers throughout New England began to complain that gulls were destroying their blueberry patches, eating their fertilizers and preying on domestic ducklings (Pearson, 1932). In 1934, a gull control program started on islands in Maine in response to "complaints about gulls" from farmers and coastal residents (Drury and Kadlec, 1968 and Pearson, 1932). This control program was meant to slow the rate of gull population growth (Blodgett, 1988b). Alfred Gross, who conducted this control program, experimented with control methods such as egg spraying, which destroys the embryo and prevents the egg from rotting. From 1945 to 1952, the egg spraying program was expanded to include Massachusetts and New York. Despite control in these states, the Herring Gull population continued to increase. However, the Maine gull population did decline slightly. The gull control program of this time, in addition to a readily available food source, caused the gull population to shift southwest from Maine to Massachusetts (Drury and Kadlec, 1968).

Increases in gull populations have led to increasing conflicts between gulls and humans. According to a USDA fact sheet, gulls have been known to cause problems

when humans and gulls come into contact with each other. Examples include “droppings and feathers which are drawn into air conditioning systems in restaurants and other buildings, a nuisance to boat owners at marinas, pollution of reservoirs, destruction of polyurethane roofs, predation on domestic duck farms and fingerlings at fish hatcheries, and competition with other sea and shorebird colonies” (USDA, no date). Gulls were seen as problems by fish farmers in Ohio as early as 1955 (Chapman, 1955). In 1992, wildlife managers were still concerned that New Bedford’s fish processing plants attracted a large number of gulls (Blodgett and Henze, 1992).

Throughout New England, gulls pose a hazard at airports. Since 1978, the Federal Aviation Administration (FAA) has reported roughly 32 bird strike incidents at airports in Massachusetts. Of these, eight have been specifically described as seagull strikes (Federal Aviation Administration@<<http://nasdac.faa.gov/internet/>). A USDA fact sheet states that “more than half of all bird/aircraft strikes worldwide involve gulls” (USDA, no date). Gull strikes can cause serious damage to aircraft and humans. In some cases, seagulls have been ingested into engines, causing airplanes to land and undergo expensive repairs. One incident report described a seagull breaking the windshield, falling into the cockpit of the plane, the door opening and the gull being ejected out of the aircraft (Federal Aviation Administration@<<http://nasdac.faa.gov/internet/>). At Rhode Island’s Quonset State Airport, a C-130 ingested a flock of gulls and consequently lost one engine, forcing the plane to land safely (Poon, 1997). More seriously, in 1960 a flock of starlings caused an airliner at Boston’s Logan International Airport to crash, killing 62 people (Murton and Wright, 1968).

Birds tend to flock to certain airports, specifically those located near landfills, transfer stations, sewage treatment plants and fish processing plants. The FAA closed the Fall River airport because the city did not accept its recommendations to halt the expansion of a nearby landfill (Personal communication, L. Henze, April, 1997). The FAA argued that the expansion of the landfill would attract gulls and increase the risk of bird strikes at the airport. For the same reasons, the FAA has delayed the construction of a solid waste transfer station near the Martha's Vineyard airport (Pfluger, 1997).

In addition to gull-related airplane accidents, gull droppings can pose a threat to drinking water quality (USDA, no date). At the Quabbin Reservoir, which supplies most of Massachusetts with drinking water, wintering gulls have caused bacterial problems. The gulls tend to roost near the widest point of the 25,000 acre reservoir, which happens to be near a main intake point. The Metropolitan District Commission (MDC) has undertaken control programs for the past 4 years, using scare techniques and in some cases, shooting as control methods (Personal communication, P. Lyons, April, 1997). Gulls can also pose a threat to human health by carrying diseases such as salmonella that they acquire from feeding on human waste. A proposed Massachusetts regulation would require landfills to control "vectors" of disease, which applies to gulls, starlings and crows (Personal communication, P. Lyons, April, 1997).

### ***Case Study: The Monomoy Program***

During the past year, the impact that gulls can have on endangered bird populations has been a prominent news issue. At the Monomoy National Wildlife Refuge, the United States Fish and Wildlife Service (USFWS) has undertaken a program to maintain a diversity of avian species. As required by the Endangered Species Act of 1973, the USFWS is responsible for the recovery of endangered and threatened species. Because part of the Monomoy National Wildlife Refuge is a designated Wilderness Area, the USFWS is also legally required by the Wilderness Act of 1964 to “protect the natural processes and the ecosystem from degradation or interference and to preserve attributes of naturalness and solitude” (USFWS, April 1996). In order to open nesting habitat for threatened Piping Plovers and endangered Roseate Terns, the USFWS has been controlling Herring and Great Black-backed Gull populations. Although Herring Gull and Great Black-backed Gull populations are declining on Monomoy, they “continue to dominate the suitable nesting habitat on the refuge and displace other nesting species indefinitely” (USFWS, April 1996).

Because Herring and Great Black-backed Gulls arrive at nesting sites earlier in the breeding season, they may exclude other shorebirds from optimal nesting habitat (Cavanaugh, et al. 1997). The direct impact of gulls on plovers and terns is currently an issue of debate. The USFWS cites evidence that gulls prey on plovers and terns (USFWS, April 1996), while a panel of expert scientists stated that gull predation on these birds is the “behavior of a few gulls that have learned to specialize on this food source” (Cavanaugh, et al. 1997).

In the winter of 1996, the USFWS announced a four-year gull control plan that included the use of the avicide “DRC-1339.” That spring, the USFWS used DRC-1339

to remove gulls from part of South Monomoy Island. The use of this poison triggered outrage from wildlife and animal rights groups. In response to this public outrage, the USFWS decided to use selective shooting for the 1997 season. In August, 1997, Secretary of the Interior Bruce Babbitt halted any further killing of gulls on Monomoy until the program has been reviewed (Howe, 1997). Babbitt was encouraged to do so by Massachusetts Senators John Kerry, Edward Kennedy, and Representative William Delahunt (Personal communication, J. Miller, October 1997).

The USFWS has been controlling gulls using various methods on Monomoy intermittently since 1979. In other parts of Massachusetts, gull control to benefit protected birds has also occurred. Two gull control programs occurred in 1960 and 1966 on Muskeget Island, MA to limit the rate of gull population growth (Cavanaugh, et al., 1997).

Ram Island has recently been the site of a gull control program to ensure the success of endangered roseate terns (Blodgett and Henze, 1992).

## **Summary**

Historic interactions between humans and gulls have shaped the modern human-gull relationship. These interactions include the human exploitation of gulls for egg collection and millinery interests, the protection of gulls, an increase in gull populations. The fourth stage of interactions, caused by human-gull conflicts, is gull management. These factors are important influences on people's current perceptions of gulls and their management. The historical human-gull relationship reflects changes in basic values towards wildlife, as well as changes in public and expert knowledge and awareness of

ecological and biological issues (See Kellert, 1996).

## CHAPTER 3. PERCEPTIONS AND PORTRAYALS OF GULLS

*This chapter summarizes my research methods and the findings of lay public and professional opinion surveys, discussions with professionals, an economic analysis of gull values, and a media analysis of the Monomoy gull control program.*

---

### Introduction

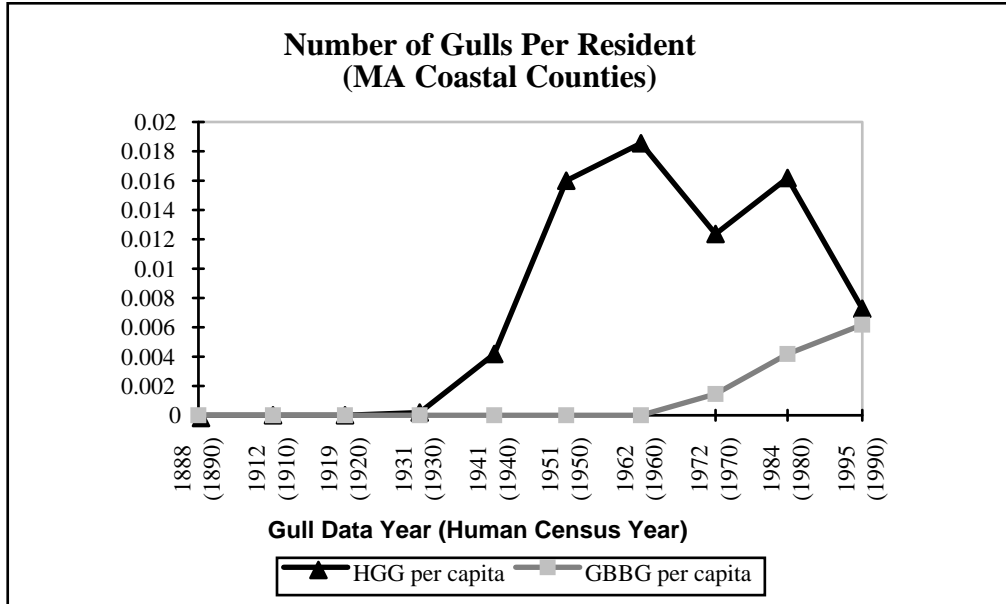
Historical human-gull interactions have shaped the modern human-gull relationship. The modern relationship can be examined through Kellert's framework, which contains four factors affecting people's attitudes toward a wildlife species:

- 1) A person's basic values towards all wildlife.
- 2) A person's biological and ecological knowledge and "awareness of issues."
- 3) The perception of an animal's "physical and behavioral characteristics" such as size, morphology, and aesthetic appeal.
- 4) The correlation between past and present human-animal relationships.

My research into people's perceptions of gulls explores three of these factors: people's basic values toward wildlife, knowledge of gulls and their control, and the present human-gull relationship as it is characterized by gull conservation status and human-gull conflict.

Chapter 2 showed that Herring Gull and Great Black-backed Gull populations have risen during the past century. Human populations have also increased during this period. Figure 3 shows that the number of gulls per Massachusetts coastal resident has increased. Due to the increases in human and gull populations, conflicts between humans and gulls have increased. Examples of such conflicts include gulls as a threat to drinking water quality, airplane safety, and protected bird populations. As a species reaches a certain level of abundance, society tends to value its existence less. In many cases, this assumption applies to gulls (Kellert, personal communication, 1997).

**Figure 3.**



Sources:

Gull Data: Mackay, 1892; Drury, 1973; Blodget, 1988a; Blodgett and Livingston, 1996.  
Human Data: See References Cited.

## Methods

I used three methods to assess contemporary attitudes towards gulls: a comparison of lay public and professional opinion, a news analysis of the Monomoy gull control program, and an analysis of the current monetary value of gulls. These three methods produced a qualitative examination of the question: “Are Herring and Great Black-backed Gulls *Pests?*”

In order to learn about a spectrum of lay public and professional opinions, I designed a semiformal survey that could be taken in writing or administered in person. Between April and October, 1997, I administered surveys to twenty-two members of the lay public and fourteen wildlife professionals. For the public sample, I targeted Cape Cod, MA residents. I chose this population for two reasons. First, people who live near the coast might have more contact with gulls. Second, the issue of gull management

would be more salient to people living close to the Monomoy National Wildlife Refuge, where the USFWS gull control program was implemented. I conducted five intercept surveys in front of a group of Chatham, MA shops and left surveys at the Chatham Nature Shoppe. Five customers filled out surveys, which the store owner mailed to me. I conducted twelve written surveys on the Martha's Vineyard-Woods Hole ferry.

As a comparison to the lay public, I surveyed a group of professionals who had attended a forum on the Monomoy program. For the purposes of this thesis, "professionals" is defined as "informed people involved with the Monomoy program." "Expert" is used to describe respondents who have training and background in wildlife management, such as U.S. Fish and Wildlife Service scientists and managers. I sent out thirty-three surveys and received thirteen surveys and one letter in response. During the past year, I have spoken informally with various wildlife professionals involved with the Monomoy program and other gull control efforts.

The main survey questions are excerpted below. (See Appendix 2 for the full survey text.) The main questions address three issues that, according to Kellert, affect a person's attitude toward a wildlife species (Kellert, 1996). With respect to gulls, these issues are: people's basic values toward wildlife, knowledge of gulls and their control, and the present human-gull relationship as it is characterized by gull conservation status and human-gull conflict. The following questions were designed to explore respondents' basic values towards wildlife and gulls: Opinions of Gulls, What Makes A Species A Pest? Are Gulls Pests?, and What Should Gull Managers' #1 Consideration Be? Eleven survey questions asked respondents about their knowledge and experience with gulls and their management. Four survey questions asked respondents about issues regarding gull conservation and management status. These questions referred to respondents' knowledge of the Monomoy program, their support for gull reduction and a range of gull control methods. Situations of human-gull conflict were used as a framework for most of the survey questions.

### **Main Survey Questions**

- \*Experience/Familiarity with Gulls
- \*Opinions of Gulls
- \*What Makes A Species A Pest ? Are gulls pests?
- \*When Would You Support A Gull Reduction Program?
- \*Which Control Methods Would You Support?
- \*What Should Gull Managers' #1 Consideration Be?

In addition to surveying public opinion, I analyzed the news media's portrayal of the USFWS gull control program on Monomoy. I studied the headlines of twenty-eight *Cape Cod Times* articles, ten *Boston Globe* articles, and eight *Cape Cod Chronicle* articles within the time period from February, 1996 to August, 1997. These dates are the earliest and latest dates for which articles on the Monomoy program were found.

Considering the fact that the *Cape Cod Times* and the *Cape Cod Chronicle* are not indexed or easily searchable, the group of articles chosen is as comprehensive as possible. (Appendix 4 contains a list of articles included in the analysis.) I coded the headlines of these articles, noting the frequency that words or phrases appeared. These words were grouped into categories that expressed the general sentiment of the headline.

In order to examine the current non-consumptive use value of gulls, I analyzed the CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAMCME). The NRDAMCME contains an economic database that assigns a dollar value to most wildlife species within seventy-seven United States biological provinces of the United States (French, et al., 1996). These numbers are

designed to assess economic damages from oil spills. The economic database groups all gull species into one category.

### **Results (Lay Public)**

The survey was designed in part to learn about the respondents' knowledge, contact and familiarity with gulls and their management. The responses to each survey question are tabulated in Appendices 3a and 3b. The survey contained a combination of eleven questions and statements that asked respondents about their activities, the area where they live, their contact with gulls, their knowledge of gull control, and their knowledge of gull and shorebird species.

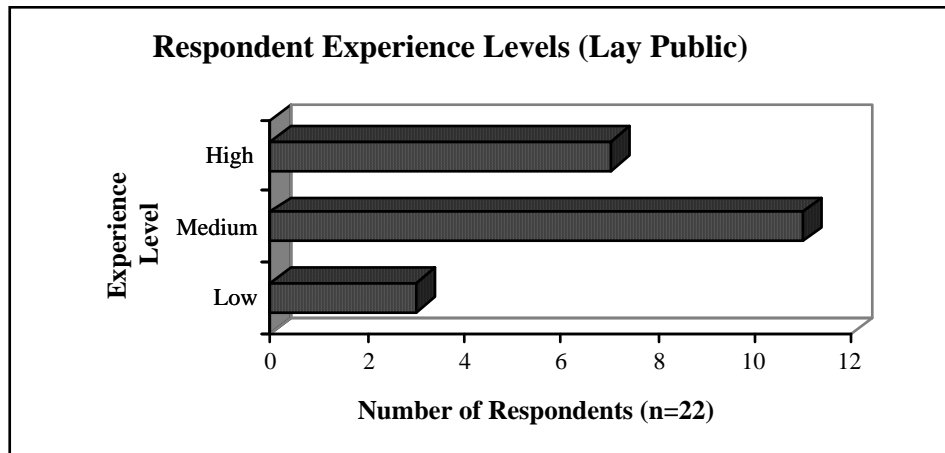
Using the answers to the following eleven questions, I developed high, medium and low "experience" categories. These categories were developed as objectively as possible and are designed to provide a rough outline of respondents' experience and contact with gulls.

- Would you say that you visit the beach? Often Sometimes Never
- I or my children feed seagulls. Often Sometimes Never
- I watch seagulls. Often Sometimes Never
- Seagulls feed on my trash/waste at my house or elsewhere. Often Sometimes Never
- Seagulls live/nest within a mile of my house. Often Sometimes Never
- Seagulls leave droppings on my boat/car/property. Often Sometimes Never
- If respondents described the area where they live as "coastal", it was considered an affirmative response.
- What (or who) do you think most affects gull populations?
- Have you heard of any programs to reduce gull populations?
- If so, where are they taking place?.
- Are you familiar with these birds? If so, please write the name of each bird next to its picture. (Very few people were able to identify any birds, so I considered any correct response an affirmative answer.)

High experience respondents answered eight or more questions affirmatively, medium experience respondents answered between four and seven questions affirmatively, and low experience respondents answered between zero and three questions affirmatively.

Figure 4 shows that seven respondents had a high knowledge level, eleven had a medium knowledge level, and three had a low knowledge level.

**Figure 4.**



The following six statements asked respondents their opinion of gulls and how they fit into the human and natural environments. This question was designed to gain a perspective on people’s basic values of gulls. Table 2 shows that the majority of the lay public had a positive opinion towards gulls. Considering that respondents’ general opinions of gulls shape their answers to other questions, their responses to these six statements are especially important.

**Table 2. Lay Public Opinions of Gulls**

Total Respondents (n=22)	Agree	Disagree	No Opinion
Seagulls are dirty and a nuisance to people	2	18	1
Seagulls are a necessary part of the ecosystem	19		2
Seagulls are harmful to other birds and animals	1	14	6
I love seagulls-a day at the beach wouldn’t be the same without them	14	2	4
Seagulls are a threat to human health and safety	1	17	3

Seagulls are poetic and beautiful creatures of nature	18	1	2
---	----	---	---

In order to know why people consider some animals pests, the survey asked respondents which animals they consider pests. The majority of respondents felt that ants are pests. Table 3 shows that thirteen out of twenty-two respondents answered that ants are pests and that crows, raccoons, skunks, rats, deer, groundhogs, mice, termites, ticks and people are also pests. One respondent felt that seagulls, along with crows, are pests.

**Table 3. Which of the following do you consider pests, if any?**

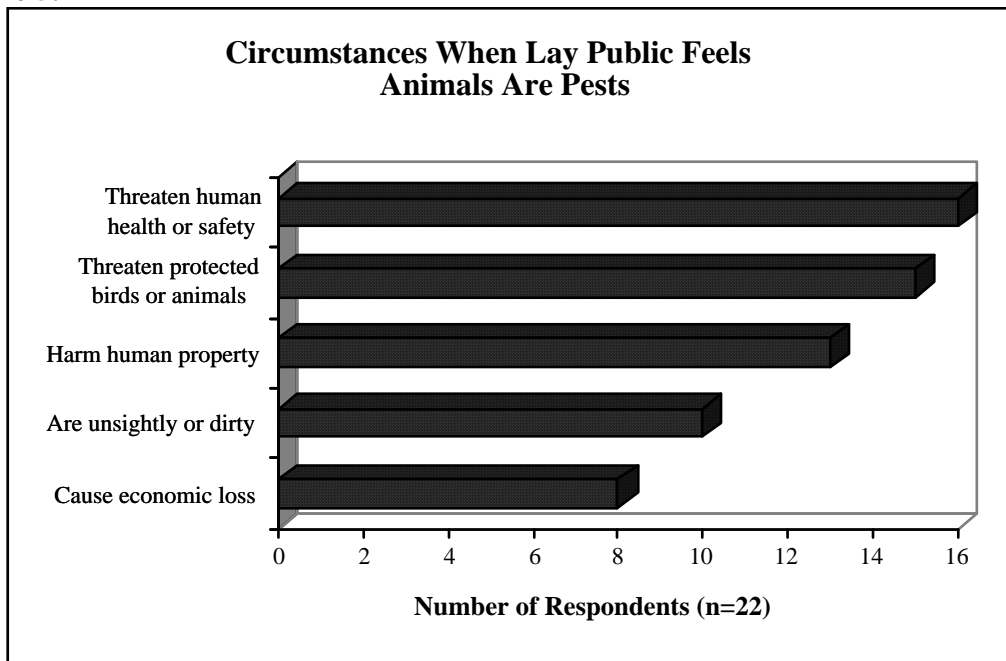
<b>Animal</b>	<b>Number of Respondents (n=22)</b>
Ants	13
Crows	3
Raccoons	3
Rats	2
Skunks	2
Seagulls	1
Deer	1
Groundhogs	1
Mice	1
Termites	1
Ticks	1
None	3
People	1

Respondents cited a number of reasons why each of these animals were pests. The responses to this question can be grouped into four categories. The most frequent responses to this question were related to people’s property. Respondents noted that animals are pests if they come into the house, contaminate food, harm the garden or get into the trash. Nine out of thirteen respondents considered ants pests because they “come in my house” or “contaminate my food.” Raccoons and deer also fell into this category. The second response category was related to people’s perception of animals’ “physical and behavioral” characteristics and focused on aesthetics. For example, one respondent noted that gulls and crows are pests because they are “noisy, dirty, bold and eat trash.”

The third response category focused on disease. Only one person felt that the capability to spread disease to humans made an animal a pest. Finally, three people felt that animals are not pests and one person felt that people are pests.

The lay public's responses to the question of what makes animals pests were connected to the specific species they chose. The survey question that followed asked "When is an animal a pest?" and asked the respondent to answer "yes, no or don't know" to five more generalized situations. Figure 5 shows that most respondents felt animals are pests if they threaten human health or safety. Fifteen people felt an animal was a pest if it threatens populations of protected birds or animals. One person did not feel that animals are pests in any of the situations listed.

**Figure 5.**

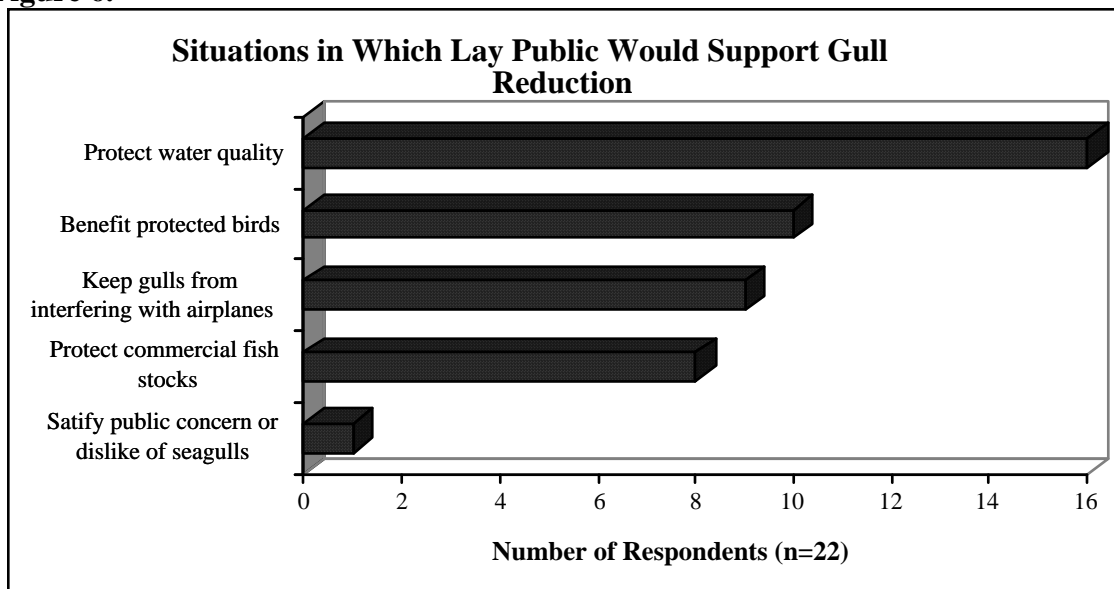


The following questions asked respondents' their opinions of gull management situations, which reflect one current type of human-gull interactions. Because animals that are "pests" are usually subject to some sort of control measures, the survey asked respondents if they had heard of any programs to reduce gull populations. Ten out of twenty-two people had heard of such a program, nine had not, and three did not answer.

Of those who had heard of a program, nine mentioned the Monomoy program and one said “Boston.”

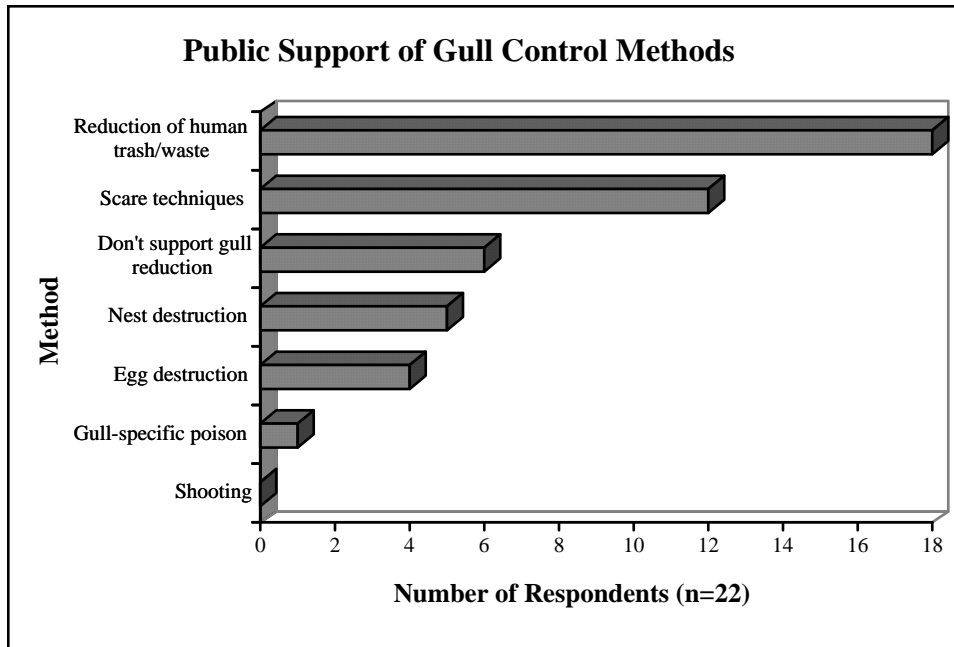
The level of support for gull reduction varied with the situation. Figure 6 shows that most respondents would support gull reduction to “protect water quality.” Only one person would support reduction to “satisfy public concern or dislike of seagulls.” Three people answered that they would not support gull reduction under any circumstances, and one person commented that they would support reduction if gulls were “spreading disease.”

**Figure 6.**



Most of the lay public supported gull reduction, but they did not support the available control methods. Figure 7 shows that no one supported shooting and only one person supported the use of a gull-specific poison. A few people supported egg destruction (4) and nest destruction (5). Respondents were more likely to support scare techniques and the reduction of human trash and waste as control methods. Six respondents said they did not support the reduction of gull populations.

**Figure 7.**



The second to last question of the survey asked respondents what they thought wildlife managers' first consideration should be when it comes to gulls. The choices were science, public opinion, humane treatment of animals, economics, and other. Table 4 shows that the majority of respondents felt that the humane treatment of animals should be gull managers' first priority.

**Table 4. Wildlife managers consider many aspects of a problem before implementing a program. When it comes to gulls, what do you think should be their most important consideration?**

Choice	Number of Respondents (n=22)
Humane treatment of animals	16
Science	3
Public opinion	2
Economics	1
Other Comments	Satisfactory disposal of garbage (1); Natural cycles (1)

### Results (Professionals)

The professional respondents had a much higher level of experience with gulls and their management. Within the professional category, respondents fell into three

groups that were developed according to their professions and affiliations. One group, with six respondents, consisted of scientists who worked for government and non-profit organizations. Another group of respondents were wildlife advocates who were either private citizens or affiliated with a non-profit organization. A third category consisted of private citizens and local elected officials. These three respondent groups are considered part of the “professional” category because of their involvement with the Monomoy program and their inclusion in this survey sample.

Professional respondents in all three categories had a positive perception of gulls. One private citizen and three of the scientists felt that gulls can have negative impacts, for example to other birds and animals or to human health and safety. All but two respondents felt that gulls are “poetic and beautiful creatures of nature.” One respondent felt that gulls are “beautiful”, but not “poetic.” Table 5 summarizes professional opinions of gulls.

**Table 5. Professional Opinions of Gulls**

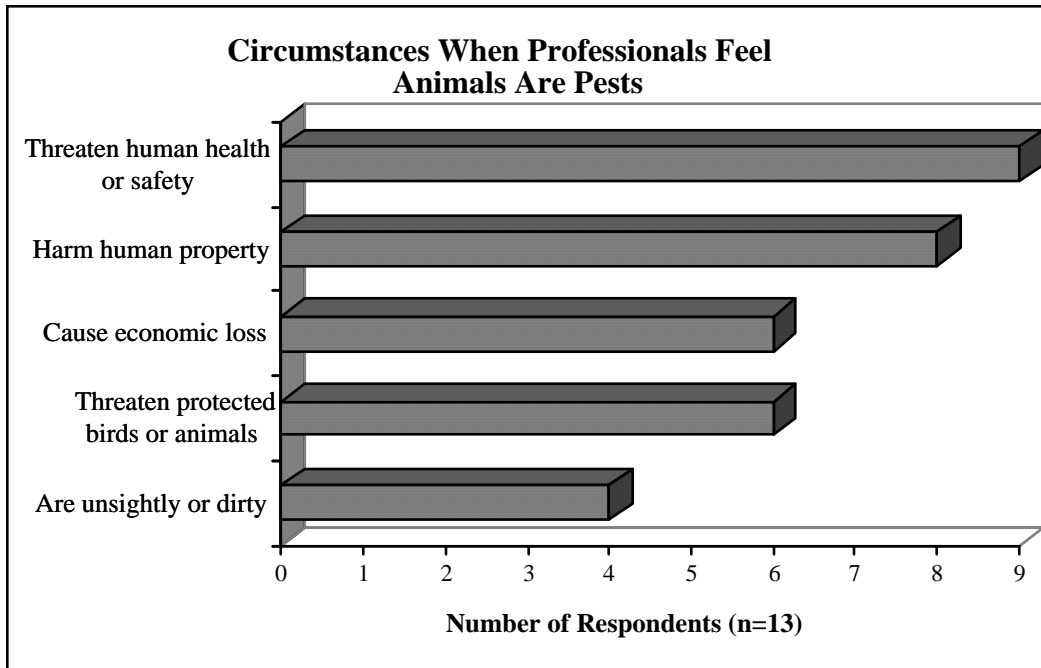
	<b>Agree</b>	<b>Disagree</b>	<b>No Opinion</b>	<b>Other</b>
Seagulls are dirty and a nuisance to people		11	1	st
Seagulls are a necessary part of the ecosystem	13			
Seagulls are harmful to other birds and animals	4	6	2	st
I love seagulls-a day at the beach wouldn't be the same without them	11	1	1	
Seagulls are a threat to human health and safety	2	10		st
Seagulls are poetic and beautiful creatures of nature	11		2	

None of the professional respondents noted specifically that gulls are pests. Three types of answers surfaced in response to the questions of which animals are pests and what makes them pests. The first type of answer was similar to the lay public’s response. These respondents felt that ants, raccoons, and deer are pests because they

come in the house, get into the trash, eat the garden, or have an economic impact, respectively. The second type of answer was that no animals are pests, and perhaps people are the real pest. The last type of answer was that any animal, including gulls, can be a pest in “certain circumstances.” The private citizens and wildlife advocates tended to give the first two types of answers, while scientists tended to give the last two types of answers.

Figure 8 shows that the majority of professional respondents felt that animals are pests when they threaten human health or safety, and some felt that animals are pests when they harm human property, cause economic losses, or threaten populations of protected birds and animals. Again, some respondents noted that an animal “can be” a pest in any of the situations.

**Figure 8.**



Question thirteen of the survey asked respondents “under what circumstances would you support a gull reduction program?” The choices included: to protect water quality, to satisfy public concern or dislike of seagulls, to protect populations of endangered or threatened birds, to keep gulls from interfering with airplanes, to protect commercial fish stocks, or not under any circumstances. Approximately one quarter of respondents supported gull reduction under all circumstances, while the same amount opposed gull reduction for all reasons. The wildlife advocates all opposed gull reduction for the reasons offered, but two of them noted situations where they would support gull reduction. They would support gull reduction “to keep gulls out of dumps” and “if it were part of an overall management plan, it was the last resort and it was done humanely.” One wildlife advocate felt that “it can be done without lethal means-we are supposed to be smarter.” Two of the scientists said they would support gull reduction for “all or none” of the reasons, depending on the “context.” The remainder of the scientists and private citizens gave a variety of responses to situations where they would support gull reduction.

The level of support for different gull control methods varied within this group. None of the private citizens or wildlife advocates supported the use of an avicide and only two of the seven supported shooting. Four of the scientists supported shooting and the use of an avicide as control methods. The majority of the support for the use of lethal methods came from the scientists, not from private citizens or wildlife advocates. Figure 9 shows that approximately half of the respondents supported egg and nest destruction. Three people, one from each response category, did not support the reduction of gull populations. One scientist commented that he would support all methods “depending on the goal.”

**Figure 9.**

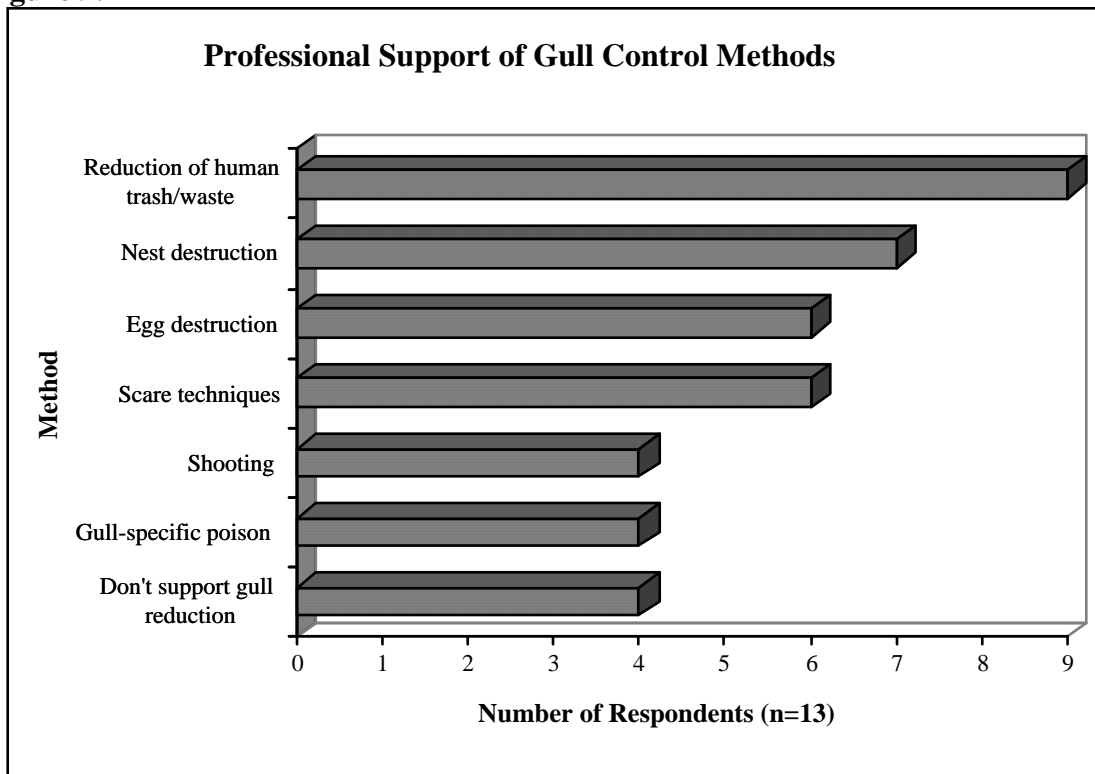


Table 6 summarizes professional responses to the last question of what should be gull managers’ most important consideration. Respondents commented that “an overall management plan,” “protection and growth of endangered species,” or “balance of the entire local ecosystem” should be gull managers’ first priority. The USFWS scientists

were more likely to feel that science was most important, while responses to the other choices varied.

**Table 6. Wildlife managers consider many aspects of a problem before implementing a program. When it comes to gulls, what do you think should be their most important consideration?**

<b>Choice</b>	<b>Number of Respondents (n=13)</b>
Humane treatment of animals	5
Science	7
Public opinion	3
Economics	2
Other	Overall management plan, protection and growth of endangered species, balance of the entire local ecosystem.

### **Other Results**

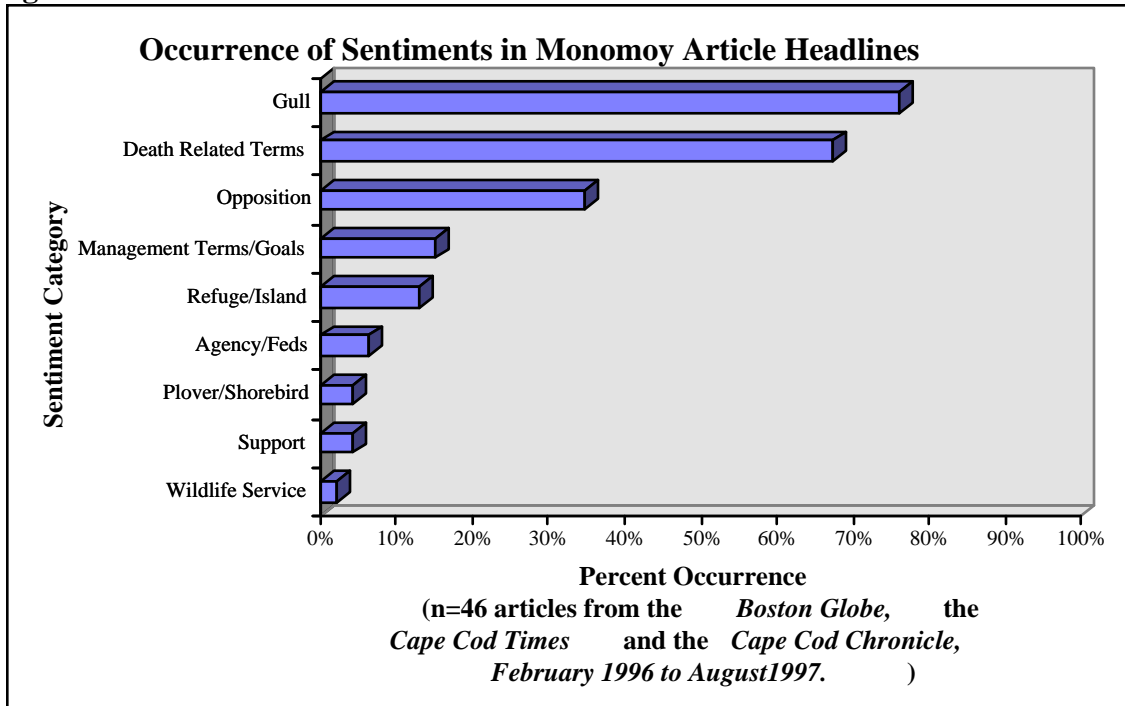
In addition to surveying a sample of professionals, I spoke with individuals involved with gull management. Two of these people referred to the public’s outrage surrounding the Monomoy program. A USFWS biologist mentioned that it is “hard to see other things killed” and that she could see why people are opposed to it from an ethical standpoint (Personal communication, J. Megyesi, May 1997). A Massachusetts Audubon Society refuge manager mentioned the Ram Island gull control program, and speculated that this program may not have drawn as much public “outcry and furor” because it is farther from the coast and the number of gulls killed has been smaller (Personal communication, R. Prescott, September 1997).

Gulls were not felt to be “pests” in the Monomoy situation. Laura Henze noted that the management of gulls to protect endangered species “is not because they are pests, but rather because the USFWS is obligated by law to bring them (plovers and terns) back.” She mentioned that there are places where gulls can be considered pests, such as at the Quabbin reservoir, where their droppings pose a threat to drinking water quality (Personal communication, L. Henze, April 1997).

News of the Monomoy program reached the public through the printed media. An analysis of article headlines produced interesting results about how the Monomoy gull control program was communicated to the lay public. Figure 10 shows that the most frequently used words in article headlines associated with the word “gull” were death-related terms like “poison”, “kill”, “shoot” and “death.” Death-related terms appeared in 67.4% of the forty-six headlines analyzed. The Monomoy program was commonly referred to in the press as the “gull-kill” or the “gull-poisoning.” The *Cape Cod Times* ran graphic pictures of dead or dying gulls on the front page during the 1996 control effort. Headlines contained relatively few wildlife management terms or goals such as “cull,” “control” or “protect.” Management goals and terms appeared in 15.2% of the headlines. The opposition to the program included terms related to “protest,” “furor,” “questioning,” or “ending” the program. Opposition to the Monomoy program was expressed in 34.8% of the headlines. The U.S. Fish and Wildlife Service was more often referred to as the “Agency” or the “Feds” (6.5%) than as the “Wildlife Service” (2.2%). The majority of the headlines emphasized the death of gulls, the activism of the program’s opponents, and the image of the USFWS as a heavy-handed federal entity. The results of the news analysis show that society values the existence of gulls, and therefore, does not want to see them killed. This finding is relevant because it demonstrates the public’s basic values toward wildlife and specifically, toward gulls.

However, the “public” has more than one attitude toward gulls. The Monomoy program did garner some support from the public. An informal *Cape Cod Times* poll showed that approximately one sixth of the 150 respondents supported the program (Leaning, 5/10/97). The news analysis found that 4.3% of the headlines analyzed showed support for the Monomoy program.

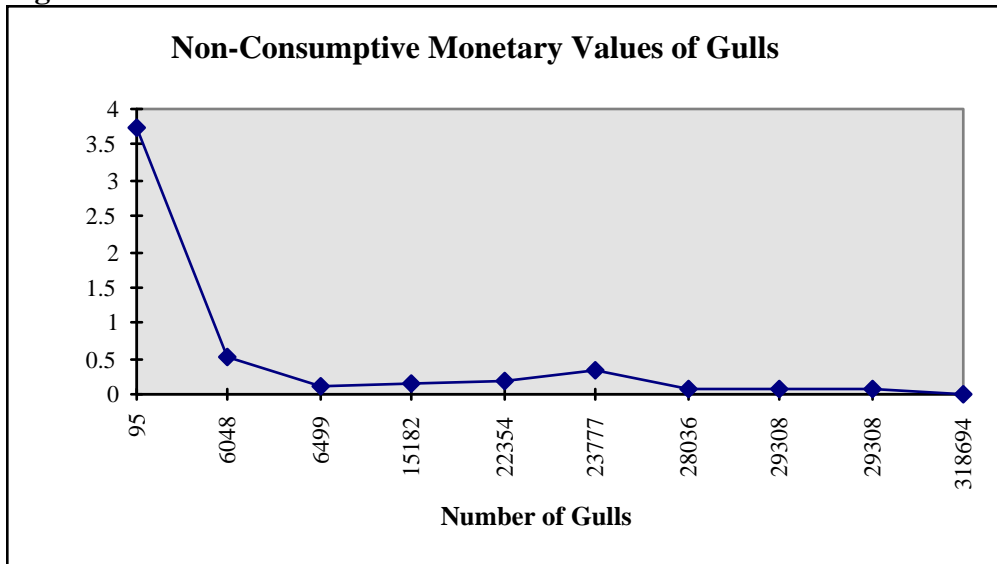
Figure 10.



While the news analysis showed that people place a high value on the existence of gulls, the analysis of the NRDAMCME economic database showed that the non-consumptive dollar value of a wildlife species decreases as the number of animals increases. The model assigns a lower dollar value to gulls as they become more abundant. Figure 11 demonstrates this trend. The estimates of gull numbers in this model do not agree with the gull population data in Chapter 2 of this paper. Nevertheless, the data show that gull values decrease as populations increase. The consumptive value of gulls was “zero” for all U.S. biological provinces. At the turn of the nineteenth century, the consumptive value of gulls was higher than currently. Herring Gull eggs sold for 20 cents each and Herring Gull wings sold for 40 cents a pair

(*The Price of Eggs*@<<http://www.im.nbs.gov/birds/eggs.html>>; Drury and Kadlec, 1968). Currently in New England, the non-consumptive value of gulls is approximately 5 cents a bird. This difference shows that overall attitudes towards gulls have shifted, and that society places a lower economic value on non-consumptive uses than consumptive uses of wildlife.

**Figure 11.**



#### CHAPTER 4. DISCUSSION

A variety of factors influence lay public and professional responses to the surveys. These factors include knowledge, risk perception, public outrage, communications strategies, and changes in natural resource economics values over time. According to Kellert's framework that was discussed in Chapters 2 and 3, these factors all affect people's attitudes towards a species. They reflect people's knowledge of biological, ecological and conservation issues, as well as positive and negative human-gull contacts that shape the human-gull relationship. With respect to gull management, my research findings showed that support, opposition and a range of policy options

existed. This chapter explores the support, opposition and policy choices surrounding the Monomoy program and gull management in general.

My research results showed some support for the Monomoy program. Although the majority of the headlines studied in the news analysis focused on opposition to the program, 4.3% expressed support. Furthermore, the *Cape Cod Times* public opinion poll showed that one sixth of 150 respondents supported the program (Leaning, 5/10/97). My survey findings showed some support for gull control. Fifteen of the twenty-two lay public respondents felt that an animal is a pest if it threatens the success of protected species. Furthermore, ten of these twenty-two people said that they would support gull reduction in order to benefit protected birds.

The level of support for gull reduction to protect endangered and threatened birds varied with respondents' previous knowledge of a gull control program. Eight of the nine people who had not heard of a program to reduce gull populations said that they would support gull reduction to protect endangered or threatened birds. However, only two of the ten people who had heard of the Monomoy program supported gull reduction for this purpose. The more knowledge the lay public had of a gull control program, the less likely they were to support gull reduction to protect endangered or threatened birds. This finding confirms one aspect of Kellert's framework, which hypothesizes that a person's knowledge of biological, ecological, and management issues affects their perception of a wildlife species.

Contradictions between answers to two other survey questions also raised issues about the importance of knowledge. For example, few of the respondents from all groups felt that gulls are pests, but many felt that animals are pests when they threaten human health and safety, harm human property, and threaten populations of protected birds and animals. Gulls can do all of these things in certain circumstances (USDA, no date), so why did more people not feel gulls are "pests"? This contradiction may stem from a lack of knowledge about human-gull conflicts at places like airports and drinking water

reservoirs. Furthermore, respondents who are aware of these situations may not perceive them as risky. However, knowing that gulls can be a risk to humans and some wildlife would not necessarily mean that people feel they are pests. The discrepancy between responses to both questions could also be a reflection of the survey design.<sup>4</sup>

Although there was some support for the Monomoy program, its opponents were more visible. The opposition to the program is best described as “public outrage.” My research results show that four factors contributed to the public outrage: distance between lay public and professional perceptions, expert disagreement over scientific uncertainties, the use of a poison as a control method, and the news media.

There was a sharp contrast between the lay public’s and the scientists’ responses to the survey. Most of the lay public felt that the “humane treatment of animals” should be gull managers’ primary consideration. In contrast to the lay public response, most of the scientists felt that “science” should be gull managers’ first priority. The scientists also supported gull control and the use of all methods in the appropriate situations. In contrast, the lay public and some of the private citizens and wildlife advocates from the professional group did not widely support gull control or the available control methods.

Three types of answers also surfaced in response to the question of what makes an animal a pest. The first group, comprised mainly of private citizens and local elected officials, responded similarly to the public. Another group, mainly comprised of wildlife rights advocates, felt that no animals are pests and did not support gull control or lethal

---

<sup>4</sup> I pilot-tested the survey on twenty people from various backgrounds. The survey underwent a total of twelve revisions, with guidance from Christina Zarcadoolas and Caroline Karp, environmental studies professors at Brown University. Some aspects of the survey may have influenced respondents’ answers. These factors are: people’s affinities for certain phylogenetic groups, the linguistic connotations of the words “pest” and “seagull,” the order of survey questions, and the length and position of word choices. The position and wording of each component of the final survey were considered and rationalized during the survey design process. These factors do not diminish the significance of the survey results.

control methods. A third group consisted of scientists who felt that any animal can be a pest under certain circumstances and that gull control and the use of all methods could be justified, depending on the situation. These findings suggest that there was a distance between the lay public and the professional response to the survey. This difference was especially noticeable between the lay public and the scientists. Differences in opinion between the lay public and professionals often lead to public outrage (Sandman, 1993). The distance between the public and the scientists, with respect to the need for gull control, methods of gull control, and perceptions of animals as pests, contributed to public outrage.

The three definitions of “pest” that provide a framework for this thesis help explain this distance. A legal definition of “pest” might drive the scientists’ feeling that any animal can be a pest in certain situations. State and federal agencies have more specific definitions of “pest” than the general definition offered here. However, this definition provides an example of the legal framework within which agencies work. Gulls have not been legally deemed pests in Massachusetts, but the various gull control programs in the State show that an animal does not have to be labeled a pest to be controlled or killed.

A “pest” is “an insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacterium, or other microorganism...which is declared to be a pest by the administrator or by the department with the approval of the board.”  
-M.G.L.A. C. 132B.2

According to the two following definitions, gulls would be considered pests.

Birds can be “considered pests when they interfere with the way in which we utilize our environment, for example by competing with us for resources, damaging our constructions or spreading disease.”  
-Furness and Monaghan, 1987

“... some species tend to be harmful, and others become pests when present in excessive numbers or in the wrong places.”  
-Murton and Wright, 1968

However, the lay public either was not aware of situations where gulls and humans come into conflict or they did not perceive the risks in these situations to be large.

Expert disagreement over scientific aspects of the program may also have contributed to public outrage. The Massachusetts Audubon Society (MAS), along with other organizations, voiced opposition to the program in its early stages. They disagreed with the need for the program and with the proposed benefits of the program. Although the USFWS has a non-discretionary duty to protect endangered and threatened birds as required by the Endangered Species Act, several organizations questioned the scientific basis of the program. First, MAS argued that the program was unnecessary because both Herring Gull and Great Black-backed Gull populations are declining on Monomoy. The direct impact of gulls on plovers and terns was also debated (Cavanaugh, et al., 1997). Scientific uncertainty and public outrage led MA Representative Delahunt to request a biological critique of the Monomoy program (Cavanaugh, et al., 1997).

The humane treatment of animals was a visibly important issue in the media and the survey findings. The lay public respondents expressed strong opposition to lethal control methods, specifically shooting and poisoning. The USFWS maintained that the avicide, DRC-1339, causes a quick and peaceful death and that birds are usually found dead at their nests (USFWS, 1996; Megyesi, 1996). However, gulls died on the mainland near residential and business areas and were found as far north as Truro, MA (USFWS, 1996). The USFWS promised that the avicide would cause death within 48 hours after application, but some birds took longer to die (USFWS, April 1996; Letter from Barbara Birdsey, September 1997). The USFWS decided to help euthanize dying gulls and acknowledged that they had not anticipated so many deaths on the mainland (Leaning, 5/24/96). Regardless of the USFWS's remedial actions, there was a factual difference between the situation the USFWS predicted and the actual effects of the avicide. The

existence of this discrepancy caused some public mistrust of the USFWS. An example of this mistrust could be seen in the Boston Globe, which pictured a picket sign that read “The U.S. Fish and Wildlife Are Lying! It Is Not Humane” (Slattery, 1996). One survey respondent did not believe the UFSWS claim that DRC-1339 was “gull-specific.” The news media highlighted these issues of expert disagreement, scientific uncertainty and the inhumane treatment of animals.

The media also played a role in creating public outrage. The results of the news analysis demonstrated that headlines highlighted the opposition and protest to the “gull-poisoning” (as the media commonly referred to the program) more than the program goals and wildlife management terms. Public outrage may have driven the media’s portrayal of the program, or the reverse could have occurred. According to Sandman, the former is most likely (1993). He argues that the media respond to outrage more often than they create outrage. However, speaking of risk communication, he also mentions that media attention “does amplify the outrage, attracting more people, contributions, fervor, and other resources” (Sandman, 1993). The news analysis demonstrated that the media frequently used inflammatory words in headlines. In this case, the subjective nature of the headlines probably amplified public outrage.

My research into gull management in Massachusetts has shown that a spectrum of policy options exist. These options include control methods that address both the causes and consequences of gull population growth. A value shift has occurred over the past century that policy decisions should consider. Policy options for gull management include human behavior changes, a variety of gull control methods and the diffusion of public outrage.

Shifts in natural resource economics values drive the general attitudes of the lay public, the wildlife advocates, the private citizens/local elected officials and the expert scientists. I predicted that people would value a wildlife species less as it becomes more abundant. My survey findings show, however, that the lay public did not want to see

gulls killed. The public placed a higher existence value on gulls than the NRDAMCME model did. The fact that society currently views gulls, and in the Monomoy case, plovers and terns, as having existence value represents an important value shift. Chapter 1 of this thesis described four attitude shifts that have occurred throughout the past two centuries. These attitudes (commercial exploitation, protection, population changes and management) represent a shift from anthropocentric to biocentric values. Anthropocentric values tend to be focused on the economic and subsistence uses of animals. The NRDAMCME database showed that gulls no longer have a consumptive value. The argument for protection of a species now includes ecological and existence values. A few survey respondents felt that gulls have existence or biocentric value. However, gull management is not solely based on biocentric values. Gulls are currently managed to protect human interests such as airport safety and drinking water quality. One such human goal is the protection of rare species for ecological and existence values. In this case, wildlife management represents a value somewhere between anthropocentric values such as “uses” and biocentric values such as protection for “existence” reasons. The management of one species to protect another represents a conflict of existence values. Survey respondents from all categories, as well as the media, had difficulty resolving this conflict (Editors, *Christian Science Monitor*, 6/10/96).

Despite the fact that individuals had difficulty resolving the conflict between the existence values of gulls and federally protected shorebirds, the presence of this conflict is important and must be considered in management decisions. Survey respondents across all categories were willing to address this conflict by reducing the gull food source, which would essentially address the cause of gull population growth. Eighteen of the twenty-two public respondents and nine of the thirteen professional respondents supported the reduction of human trash as a control method. However, survey respondents will often say that they are “willing” to help the environment, but the reality of changing human behaviors is often difficult (Personal communication, Christina

Zarcadoolas, Fall 1997). Furthermore, the “reduction of human trash” would not necessarily eliminate the human contribution to the gull food source.

Various gull control methods exist that address the consequences of human-gull conflicts by reducing gull populations. These methods include scare techniques, shooting, egg destruction, nest destruction, and the use of avicides. My survey results showed that the public, wildlife advocates and private citizens/local elected officials were more likely to support scare techniques, egg destruction and nest destruction than they were to support shooting or the use of an avicide. However, not all control methods are equally effective. All of the methods, with the exception of avicides, require consistent, long-term application (USFWS, April 1996).

Another policy option, which addresses the consequences of gull management, is the diffusion of public outrage. Sandman offers methods for diffusing public outrage (1993). He argues that explanation and education alone are not sufficient strategies for communicating with the public. According to Sandman, “acknowledgement” of past mistakes, scientific uncertainty, and personal opinions is the key to successfully communicating with the public (Sandman, 1993).

According to Kellert’s framework, people’s attitude toward a species can be influenced by their biological and ecological knowledge and their awareness of issues. The fact that people who had heard of the Monomoy program were less likely to support gull reduction to protect other species shows that personal knowledge and experience can affect people’s attitudes towards gulls. The modern human-gull relationship, which is characterized by conflicting anthropocentric and biocentric values of gulls, also affects the way people perceive gulls and their management.

## **CHAPTER 5. SUMMARY AND RECOMMENDATIONS**

---

The survey findings showed that the lay public, wildlife advocates and private citizens did not feel that Herring and Great Black-backed Gulls are *pests*, while the expert scientists felt that they can be in certain situations. This thesis began by exploring the historical human-gull relationship. Gulls have been persecuted by egg collectors and millinery trade hunters. The Audubon movement and the field of economic ornithology recognized that wide-scale destruction of bird populations was jeopardizing the existence of other values of gulls and that these values should be protected. They advocated the aesthetic and economic values of gulls as insectivores, scavengers, navigational aids, fish finders, and natural ornaments as reasons for protection (Forbush, 1913). These efforts led to the federal and state protection of gulls. Changes in the human social environment caused an increase in gull populations, which have led to human-gull conflicts and gull management. These attitude shifts represent a change from anthropocentric to biocentric values over two centuries.

My research results showed that people's attitudes towards gulls are influenced by factors that Kellert described (1996). With respect to my findings about gulls, these factors were knowledge, perceptions of gulls' physical and behavioral characteristics, values of gulls, and current population and management status. The following bulleted points summarize my survey, news analysis and economic analysis findings:

- The difference between lay public and expert scientist opinions was large.
- The lay public, wildlife advocates and private citizens did not consider gulls "pests."
- Scientists felt all species, including gulls, can be "pests" in certain situations.
- Members of the lay public who had not heard of the Monomoy program were more open to gull control than those who had.

- The lay public felt humane treatment was important and did not support the use of lethal control methods.
- The media portrayed the Monomoy program as the “gull-poisoning” and used terms reflecting activist opposition more often than the goals and support of the program.
- There has been a shift during the last two centuries from consumptive to non-consumptive uses of gulls and consequently, from anthropocentric values to biocentric values of gulls.
- Survey respondents and the media struggled with the conflicting existence values of gulls and protected shorebird species.

Hopefully, the USFWS and other gull managers can use these findings to construct well-designed programs that achieve public acceptance. My findings have implications both for the future of the Monomoy program and on a broader scale.

The Monomoy program has been halted due to public and political opposition (Howe, 1997). The original plan called for two more years of gull control on Monomoy. If they hope to continue the program, the USFWS must first surmount political opposition from state representatives, senators, and Secretary Babbitt. Then, if sufficient funding exists, they should consider implementing a new communications strategy to bridge the distance between the public and the professionals. This strategy should include the public in decision making as much as possible.

A scientific critique of the Monomoy program, published by the Center for Coastal Studies, recommended that the “USFWS and others should develop public educational programs that explain the direct and indirect impacts of human development and activities on wildlife habitats and populations. In particular, the USFWS should

explain the conditions which justify direct control of alien, nuisance, and predatory species, including, when necessary, the use of lethal methods, in the interests of biodiversity, human health and safety, and aesthetics” (Cavanaugh, et al., 1997). I agree with this recommendation, but my results show that communication with the public must go beyond explanation.

My recommendations for the Monomoy program include the following:

1. A committee of residents should be formed to act as a liaison between the public and the USFWS professionals.
2. Educational programs should include outreach and dialogue with community groups, students and others.
3. In order to regain the public’s trust, the USFWS should acknowledge past mistakes, including the existence of scientific uncertainty and expert disagreement.
4. After acknowledging its existence, the USFWS should attempt to clarify the scientific uncertainty regarding the effects of large gulls on plovers and terns.
5. The USFWS could improve its communications strategy by focusing on the management goals of the program.
6. Dialogue with the public should focus on dealing with dying animals and give strategies for coping with the emotional strain of animal death.

The results of my research can be used in situations other than Monomoy.

Massachusetts is currently considering a law that would require all landfills and solid waste management facilities to control nuisance gull populations (DEP, 1996). This law

would decrease the gull food source, and by doing so, address the cause of human-gull conflicts. If this law passes, landfill managers should consider the role of public opinion in their gull control plans. One way to increase the likelihood of a successful program would be to include the public in the decision making process.

Other bird species threaten the success of rare nesting birds and in some cases, destroy the ecological integrity of their habitats. An example is the mute swan, a non-native species whose numbers have increased over the past century. The public has expressed opposition to mute swan control efforts in Vermont and Maryland (Burge, 1997 and Willis, 1997). My research findings could apply to this and other similar situations where beautiful wildlife species become nuisances.

This thesis has prompted a series of questions that further research could answer. For example, people said they would be willing to reduce trash in order to decrease gull populations. Research into the specific behavior changes that people would be willing to make to reduce the gull food source could provide gull managers with additional control strategies. Further work on this thesis would require changes in the survey format and responses from a larger audience. From informal discussions with various people, I sense that some people do consider gulls *pests*. Responses from a larger audience might reflect this opinion and also find additional support for the Monomoy program. An expanded news analysis could also produce interesting results. Given more time, I would analyze the full text of news articles. Additionally, I would conduct a analysis of historical coverage of gulls to see if it has changed with gull populations. An in-depth examination of the USFWS communications strategy would also be an interesting continuation of this thesis.

