

Introduction

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None of God's creatures more inspires patriotic pride, communion with the natural world and majesty than does the eagle. May their tribe increase, along with the ennoblement their presence brings to humankind.

Jay S. Hammond (1922-2006)

What is it about Bald Eagles (*Haliaeetus leucocephalus*) that catches the eye of people?



Is it simply their size or striking appearance? Is it the power they display or the majesty they symbolize (King 1998)? Ever since man first entered the kingdom of the Bald Eagle more than 10,000 years ago, eagles have attracted the attention of humans. Bald Eagles continue to command our respect, challenge our understanding of the natural world and allow our hearts to soar as if lifted by their strong wings.

The editors, Bruce Wright (left) and Phil Schempf (right) admire a male Bald Eagle. Photo by Scott Foster.

Editor's note: Bruce Wright's new affiliations are Aleutian Pribilof Islands Association and the Conservation Science Institute.

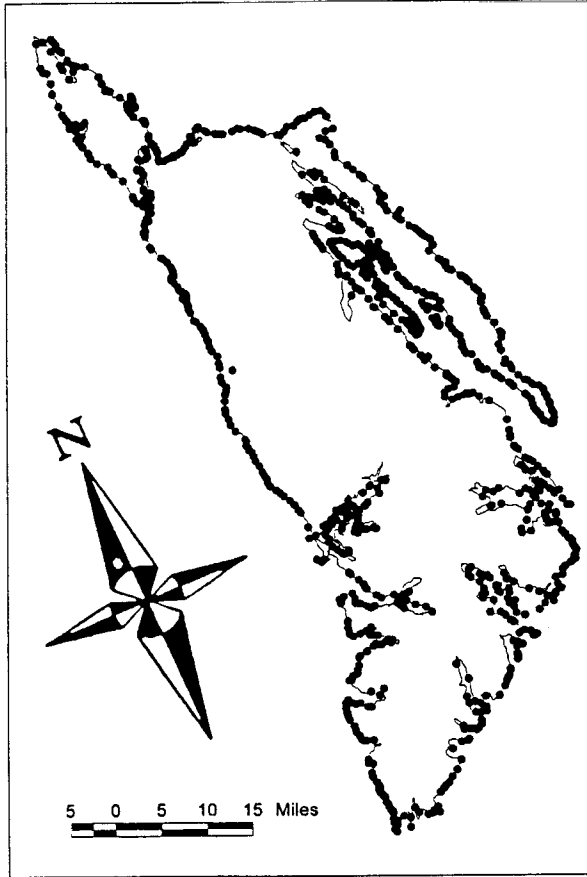


Figure 1. Bald Eagle nests outline the shores of Admiralty Island, a center of abundance for nesting Bald Eagles. USFWS unpublished data.

To many, the sight of a Bald Eagle in the wild adds a spiritual dimension to an outdoor adventure. When a visitor to Alaska stops to watch an eagle glide by or pass high overhead, one can picture that same person, months later, pausing in their busy life in a busy city, staring out a window into the smog and they again see the Bald Eagle, feel the Bald Eagle, know the Bald Eagle is the keeper of their wilderness spirit. People need to know that eagles fly free, wolves howl in the moonlight, Sandhill Cranes cover the Earth with their majestic yet forlorn calls as they migrate to their wilderness nesting grounds. These symbols hold our spirituality and allow people to understand we still belong to the wilderness.

In 1990, the University of Alaska Southeast hosted a two day symposium to discuss our understanding and share our enthusiasm for the Bald Eagles of Alaska. Appropriately, we met in Southeast Alaska, "the center of the universe for Bald Eagles" said Mike Jacobson, biologist for U.S. Fish and Wildlife Service. There may be more than 100,000 Bald Eagles across the continent from nesting areas in Florida and northern Mexico to their northern extent in the boreal forests of Canada and Alaska. The comparatively small area encompassed in Southeast Alaska is home to roughly one-fifth of the world's Bald Eagle population. The densest known breeding population occurs on Admiralty Island with nearly 1,029 catalogued nests along 860 shoreline miles (Figure 1). It's no wonder the symposium took place in the Bald Eagle's stronghold.

Scientific books tend to reduce their subject to a recitation of technical observations and statistical results. This book brings together writings from scientists and others in a diversity of disciplines, who provide key information on the ecology and management of Bald Eagles and who approach them with different perspectives. Within these pages are the facts and figures of Bald Eagle ecology (Boeker 2008, Cain 2008, Hansen et al. 2008, Suring 2008 and Thomas 2008) and current management issues (Canterbury 2008, Fraser and Anthony 2008, Reiser and Ward 2008, Johnson 2008, Menaker 2008, Samson 2008) to topics as disparate as the meaning of the eagle to the Tlingit people who lived with them for thousands of years (Marks 2008).

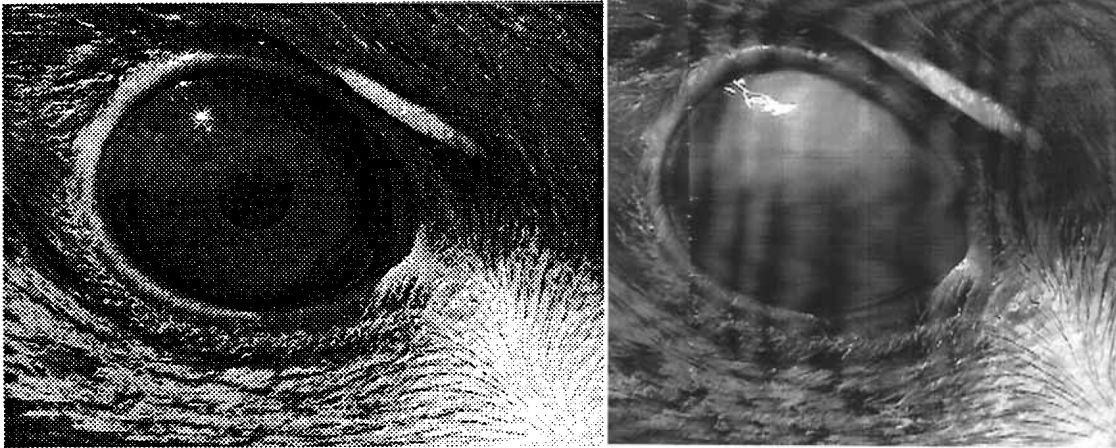


Bald Eagle nest on cliff. Note the two eaglets and the bright orange lichen along side the nest. This is a species of lichen usually associated with cliff nests. Photo by Cary Anderson.



Bald Eagle skeleton assembled by Barbara Morgan and John Maniscalco, University of Alaska Southeast. Photos by Rita O'Clair.

Some of the papers reflect on the movements of eagles from nesting areas to wintering areas perhaps hundreds of miles away. These migrations are possible due to the Bald Eagle's strong flight, feasible by adaptations shared with most other birds: strong lightweight hollow bones (Figure 2), a lightweight beak instead of heavy teeth, keen eyesight and, of course, feathers. Central to the success of birds of prey is their keen eyesight. The eyes of an average 10 to 14 pound Bald Eagle are larger than that of a full grown person. The eye is held into place by bony plates called the sclerotic ring (Figure 2) and they are protected by a nictitating membrane (Figure 3). Bald Eagles have many other adaptations, including a variety of behaviors, that allow them to survive in a wide variety of habitats, varying from human communities to the remotest wilderness.



These photographs are close-ups of a Bald Eagles eye, one photo shows the nictitating membrane and the other does not. Photos by Daniel Zatz.

Bald Eagles in Alaska presents a great deal of technical information on Bald Eagle biology summarizing years of research and study. Notably, this is the first compendium discussing the status of eagles throughout Alaska (Bailey et al. 2008, Bernatowicz et al. 2008, Byrd and Williams 2008, Dewhurst 2008, Jacobson 2008b, Ritchie and Ambrose 2008, Wright 2008 and Zwiefelhofer 2008). Much of the data that are presented has been very difficult to collect because of the Bald Eagle's protected status in this region of vast wilderness. Alaska represents a unique natural laboratory for the study of abundant Bald Eagle populations living under essentially pristine conditions, controlled by conditions that have seen little influence by man.

Although much of the information presented in this book was collected in Alaska, its utility extends far beyond the borders of the state (Fluehler 2008, Titus and Fuller 2008). Managers in other parts of the eagle's range can benefit from the lessons we've learned. This is demonstrated by the translocation of eagles from Alaska to supplement populations where their numbers were severely reduced (Jacobson 2008a, Nye 2008). We cannot only share information about eagles, but actually share eagles as well. Although Bald Eagles have been extensively studied in many places, we are still ignorant of basic life history facts (Gende 2008).

Much of the research on Bald Eagles concentrates on their spring and summer nesting

period. Over-winter survival plays a critical role in the Bald Eagle population's health. Bald Eagles' energy needs are accentuated during the late fall and winter when salmon are scarce. During this period some Bald Eagles take to stealing ducks from hunters, some find food in garbage dumps and others switch prey to whatever is available, often large gulls and waterfowl.

One fall a plastic duck decoy washed up on the beach. Its lead anchor was missing, but otherwise the plastic hen mallard was unscathed. A rock was tied to the anchor string and it was placed in several feet of water. For weeks not much happened. The decoy didn't even attract another ducks, as the plastic hen mallard weathered the fall storms. Later that winter the decoy went missing, but it was thought the ice or a log had carried it off. On a nice sunny, although cold, February day an adult Bald Eagle was cruising the beach. As it passed where the decoy once floated the eagle made a quick maneuver, side-slipped, dove and with extended talons, scraped the water creating a flash of spray then regained its elevation and continued down the beach. What had the eagle attacked as no prey was obvious? Perhaps a small fish had caught its eye. The next week a juvenile Bald Eagle struck the water twice in the same place before continuing on. Upon investigation it was discovered that just below the surface was the plastic mallard, only now it was scraped, torn and punctured with multiple holes. The eagles could see the nearly sunken decoy from their lofty search for food and, as food became more scarce in winter, the attacks ensued.

During late winter and early spring Bald Eagles must contend with scarce food resources, but lower temperatures and inclement weather increase energy demands and the days are short, decreasing important hunting time. During the summer and fall Bald Eagles use and depend upon their 'wait and see' strategy to efficiently obtain food. But during the winter their hunting strategies may shift to more active searching and their prey switches from mostly fish to over 50% ducks and geese (Isleib 2008). During this lean period their white heads may help cue other eagles that food has been found, come and get it. The white head and tail of adult Bald Eagles also functions to denote an eagle's status and is used to communicate to other eagles. Adults maintaining a nesting territory only need to position themselves in a prominent location such as a tree top to signal to other eagles this place is taken. They often add a screaming call to accent their determination to exclude other eagles, but sometimes more aggressive behavior is necessary. The intensities of these displays often change throughout the nesting season. The all white Bald Eagle seen in northern Southeast Alaska (Figure 4) in the early 1980s consummated as a super releaser of this territorial behavior. The subtleties of these and other Bald Eagle behaviors are another chapter of eagle biology needing further investigations.

In addition to this book, the University of Alaska Southeast has developed a series of distance delivery wildlife courses, the most popular of which is the Bald Eagle course, Bald Eagles of Alaska's Coastal Rain Forest. This book was to become part of the course curriculum. Also, the University of Alaska Southeast, American Bald Eagle Foundation and Bald Eagle (Jay Hammond) Research Institute, in cooperation with the National Wildlife Federation and the U.S. Fish and Wildlife Service have produced a comprehensive Bald Eagle bibliography which has already attracted researchers world-wide

(Nelson-Wright 2008). The author of *Alaska's Magnificent Eagles* (Anderson 1997) used the bibliography and several raptor researchers continue to depend on this unique resource. The bibliography is updated with the most current Bald Eagle literature.

The 1990 symposium, this book and updating of the Bald Eagle bibliography are activities made possible by the American Bald Eagle Foundation and Bald Eagle (Jay Hammond) Research Institute. The American Bald Eagle Foundation was established in 1982, soon after establishment of the Alaska Chilkat Bald Eagle Preserve. The Foundation is headquartered in Haines, Alaska, close to the Bald Eagle Preserve. In 1989, the Foundation established the Bald Eagle (Jay Hammond) Research Institute which is headquartered in Juneau, Alaska. The Institute's principle objectives are to promote research, education and rehabilitation programs designed to enhance the survival and preservation of the Bald Eagle.

In the years since the symposium, work on eagles has continued in Alaska and other parts of its range. The effects of the *Exxon Valdez* oil spill have faded and eagle numbers in the Prince William Sound region have rebounded and continue to expand (Bowman, et al. 1995). Eagle numbers in Southeast Alaska appear to have stabilized. The recently signed land management plan for the Tongass National Forest establishes a beach buffer that will protect thousands of miles of prime nesting and foraging habitat. In the contiguous United States, where there are approximately 4,500 nesting pairs, the Bald Eagle was down-listed in 1995 from endangered to threatened.

However, development and industrialism are not allies to Bald Eagles, other wildlife or wilderness (Lee 1993) and climate change will certainly have an effect on Bald Eagles. In the past the damage has been dramatic. One of the most abundant bird species on the planet, Passenger Pigeons, are now extinct. What appeared to be an endless resource is forever gone. Countless other examples exist today in which exploitation rates are not supported by good scientific knowledge. For example, Harlequin Ducks and some other sea ducks have a low reproductive rate, but they are managed as if they reproduced like mallards. Sea duck populations are declining and in some regions are in danger of extinction, requiring restrictive management measures. "Management by extinction" need not be a standard technique for controlling resource exploitation if our society is willing to require conservative use and knowledge-based resource management. If sound science and not resource experimentation, was the standard for resource management, the list of threatened and endangered species would not be so extensive. With extinctions and subsequent loss of biodiversity, ecosystems change, possibly without a chance to ever recover (Kricher 1997). The editors hope *Bald Eagles in Alaska* will serve as a springboard for continuing work on Alaska's Bald Eagles to meet the needs of land managers and educators. Perhaps more importantly, we hope this book shares the enthusiasm we feel for this conspicuous resident of our lands.



This all-white Bald Eagle was seen for several weeks in Juneau, Alaska. Photos by Bruce Wright.

The last chapter of this book looks to the future, how eagles benefit people in the state today and what our information needs will be for tomorrow. In the early days of Alaska, eagles were viewed as vermin and a competitor for resources of importance to people (Cegelska 2008, DeArmond 2008). As such, eagles were often shot on sight. Today people recognize that eagles are a resource in their own right and can be of local economic significance (Shuler 2008).

A final note on the future of the Bald Eagle: How can we insure their prosperity? What does it take to maintain healthy eagle populations and the continued prosperity of people? Bald Eagles were once on the brink of extinction in the contiguous United States and their dwindling population was an indicator of their pending demise and quite possibly the demise of humankind. Indicators of an unhealthy environment were recognized and DDT was banned, eagle protection laws were passed and enforced, habitat was protected and Bald Eagles now appear to be thriving. In a sense, humankind is repaying the Bald Eagle for alerting us to the dangers of misusing chlorinated hydrocarbons (Sindermann 1996) and wrecking havoc on the environment. This is, after all, what an indicator species is supposed to do. Look around and what are the indicator species telling us now? Killer whales in the Gulf of Alaska have alarmingly high loads of DDT, DDE and PCBs. Sea otters and Bald Eagles from the Aleutian Archipelago have high levels of organochlorines (Estes, et al. 1997); some salmon populations are declining in Washington, Oregon and California; there are increasing numbers of species' extinctions; the list is almost endless. Watch for what happens in the future, for the indicators of effects from global warming (Gore 1992), global climate change, increased habitat destruction, pollution and increased human population.

Our way out of this quagmire of self-destruction is knowledge, education and conservation. Knowledge of what is wrong, knowledge of what humankind can

accomplish as the dominant species and education for the decision makers who must put aside their self-interests and do what is right to make the world a better place.

Conservation might be obtained by establishing reserves for fish, wildlife and habitats, some of which would be off-limits to human disturbance thus allowing natural evolution. Conservation means giving back to the Bald Eagle and their kin what they have given to humankind, a source of spirituality only found in wilderness.

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