Avian Haven Bart Maine State Eagle 30th Birthday 2012

Avian Haven

Follow this and additional works at: https://digitalcommons.library.umaine.edu/maine_env_organizations

Repository Citation
https://digitalcommons.library.umaine.edu/maine_env_organizations/73

This Other is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Documents from Environmental Organizations by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.
AVIAN HAVEN
Wild Bird Rehabilitation Center
Presents the Story of Bart
The Maine State Eagle
In Honor of his 30th Birthday
Spring 2012

Epilogue Added
Spring 2014
Background

Maine’s eagle population likely once numbered in the thousands, but the species was nearly extirpated in the Northeast due to use of environmental contaminants, particularly DDT, which impaired reproductive success by eggshell thinning.

DDT was banned in 1972, but by then, only 29 pairs of nesting eagles were known in the state. Boosting the population was a top priority.
The Maine Bald Eagle Project was begun in the mid 1970s at the University of Maine Orono, under the direction of wildlife biologist Prof. Ray (“Bucky”) Owen and two of his graduate students, Charlie Todd and Mark McCollough. Every known eagle nest was monitored and the youngsters banded in the nest.

To enhance the survival of young birds over the winter, part of the project involved the establishment of winter feeding stations. Another part was educational – at the time, shooting was one of the leading causes of death among Maine’s eagles.
One of the active nests of the early 1980s was on Bartlett Island, which is just to the west of Mt. Desert Island.

On June 15, 1982, Charlie Todd banded a 6-week old bird in that nest. The bird most likely dispersed from his home range in October of that year.
On December 7, 1982, a hunter shot a juvenile eagle near Rehrersburg, Pennsylvania. The bird was not killed, but the shot went through the left wing, eventually necessitating removal of the wing tip. The youngster was cared for by a local veterinarian, assisted by staff at Hawk Mountain Sanctuary. Eventually, the hunter was identified, arrested and fined.

The bird’s band number was traced and reported to Charlie. It was the Bartlett Island bird.
The bird would never fly again, but Prof. Owen and his two graduate students discussed the benefits of having a juvenile eagle trained to serve as an “ambassador” to help educate young people about the harm done by eagle shootings. They arranged through the U. S. Fish & Wildlife Service and the PA Game Commission to retrieve the bird from PA and return him to his home state.

Mark McCollough drove to PA, and returned with the eagle in a specially-built crate. The bird was named “Bart” after his birthplace on Bartlett Island. A home was made for him at the University, and the first order of business was the continuing treatment of his wing injury. A clipping from January of 1983 shows Charlie Todd with Bart; the bird had to be given an oral antibiotic and have a topical antibiotic applied to the amputation site.
BART, AN INJURED BALD EAGLE shows that it still has plenty of power in its wings. The young eagle, hatched and banded last spring in Maine, was wounded last month by a rifle shot in eastern Pennsylvania. Charles Todd of the University of Maine is helping nurse the bird back to health. The bird lost part of its left wing. (NEWS Photo by Carroll Hall)
Giving an eagle his medicine calls for a fence and blankets

By David Platt
NEWS Environment Writer

ORONO — Twice a day, Joanne Knight and Charles Todd have to get an antibiotic pill down the throat of a nine-month-old bald eagle. They also must apply ointment to the bird’s wing, which was wounded last month by a rifle shot in eastern Pennsylvania.

Bart, the eagle, doesn’t like the process a bit. He (or maybe she) jumps off a perch when anyone approaches, flapping off into a corner of the 10-foot-square cage at the University of Maine, where Bart has lived since New Year’s Day.

Todd and other researchers with the UMO Bald Eagle Project banded Bart on an island in Blue Hill Bay last June 15. At that time the bird was about six weeks old.

By the time he was shot near Rehrburg, Pa., on Dec. 7, Bart had grown to full size. Still dark and mottled, he won’t have the distinctive white “bald” head for several years.

The bird was the first of Maine’s 1982 crop of eaglets known to have been injured. He’s one of four birds shot in Pennsylvania this year, a fact which has outraged environmental groups and state officials there. National Audubon Society chapters have offered a reward for information leading to a conviction for the shooting, which is a federal offense.

The best way to subdue an eagle is to restrict its space, says Todd. He and Knight (a work-study student) start by fencing off parts of the cage with blankets or sheets, shutting the eagle into a corner. Then they give Bart the twice-daily pill, hiding it in a piece of raw meat. Knight applies the ointment while Todd holds the bird.

Bart found himself in even more confining quarters last week, when he was packed into a crate for the long car trip from Pennsylvania back to Maine. The specially-built crate was just big enough for him, with as little room as possible for him to move around. Mark McCullough, a graduate student working with the Eagle Project, drove the crated bird to Maine without further damage.

The rifle shot went through Bart’s left wing, necessitating the removal of the tip, including the four outermost primary feathers. The bird may fly again, Todd says, but without the primaries he may never have enough control to live in the wild. The feathers won’t grow back.

A Pennsylvania veterinarian cared for the eagle immediately after it was found Dec. 7. Since coming to Orono, Bart has been under the care of Dr. Ron Lott, a veterinarian who has helped the Eagle Project with other injured birds.

Even if Bart never returns to the wild, Todd says, “he’s obviously a very valuable bird” because he may breed in captivity. Like another eagle cared for at Orono two years ago, Bart could be sent to the U.S. Fish and Wildlife Service’s Captive Breeding Center in Maryland. He won’t even be fertile for four more years, and after that he presumably has many years left to produce young for eagle restocking programs.

Figures released this week by the National Wildlife Federation indicate that nearly 14,000 bald eagles were spotted in the lower 48 states during the federation’s winter eagle survey last January. The number — an increase over the previous year’s figure — probably means more people took part in the survey, Todd suggests. Of 13,804 birds spotted last January, 107 were in Maine.

The federation, with the UMO eagle project’s cooperation, is repeating the winter count this month. Sightings — the number of birds, whether they’re adult or young, the time, location and any behavior noted — should be reported to Todd at the College of Forest Resources, University of Maine, Orono 04469, or by calling (207) 581-2907.
Bart’s training took time – a period of many weeks over which he progressed from getting used to captivity, to eating from the hand, to perching on a fist, wearing jesses, being handled comfortably, and finally to riding in a vehicle. Falconer Scott Keniston helped with training as well as advice on husbandry. At that time, only one or two other eagles in the country were being used in school programs. When Bart was ready for public appearances, Charlie and Mark were his primary “handlers.”

One of Bart’s early champions was Sid Bahrt, at that time President of the Schoodic Chapter of the Maine Audubon Society. Sid was well-known for conservation work in Washington County; he was to arrange for many of Bart’s appearances, and frequently accompanied him on programs.
In 1985-86, Bart was very popular – he is described as an “undisputed star.” Accompanied by Sid Bahrt and other members of the Schoodic Chapter of Maine Audubon, his programs had been attended by more than 6,600 students from 50 different schools in Washington County.

Some of Bart’s programs were arranged by the Arthur Howell Wildlife Educational Foundation.
Students appreciated Bart’s visits!

May 16, 1985

Dear Mark and Bart,
I’m glad you came to our school. I like Bart the bald eagle. He is neat. Thank you for coming to our school.

Your friend,
Alburt Ritan
Hodgdon Elea.

Dear Mark and Bart,
It was very nice of you letting our class see Bart. Bart is very pretty. It is really amazing that Bart can see that far. I would love to see you again. He doesn’t have a very long beak. His claws are very sharp. He is probably going to get away from you sometimes. It’s too bad that Bart can’t fly anymore.

Sincerely,
Colleen Pangburn

Bald Eagle!!!
BART VISITS — Bart, an injured American bald eagle now living at the University of Maine at Orono, visited last week with his friend Mark McCollough, also from UMO, at various schools in the area. Bart was shot in the wing which rendered him unable to fly. This injury would not allow Bart to survive in the wilderness, so he is taken care of at UMO and is used for breeding purposes. Slides were shown to the students on the eagles and their natural habits. Lambert School students observing Bart are, left to right: Peter Lenentine, Terry Beaton and Tina Prosser. Bart also visited with the Fish and Game Club meeting in the evening. The uplifted wing is the injured one and his keeper says he still tries to fly.

(Pioneer Times Photo)
Mark and Bart, 1985
The Eagle Project appears to be helping! In 1985, 74 eagles hatched in Maine. Over the last three winters, over 125,000 pounds of food have been provided for wintering birds.

SARVER — Mark A. McCollough’s dedication soars on the wings of eagles.

He was 16 when he first saw a bald eagle while camping with his father, Curtis, at Pymatuning Reservoir. “It was a very rare sight as it winged majestically down a ridge,” recalls the Freeport Area High School graduate. The eagle’s flight path became a blueprint for McCollough’s future; he was determined to become a wildlife biologist.

He earned a degree in wildlife management at Pennsylvania State University in 1975 and then entered the University of Maine at Orono where he earned a master’s degree in wildlife management. This spring he will complete his Doctor of Philosophy studies based on eagle research. His ambition is to work with a non-game wildlife program, such as the one financed in Pennsylvania through contributions which may be shown on state income tax returns. Non-game wildlife isn’t hunted.

McCollough has conducted the university’s Bald Eagle Project for four years, receiving $6,000 annually. His lifestyle - which includes spending incaulcable hours observing bald eagles from a solitary blind, often in sub-zero weather - contrasts starkly with that of most other young men. It’s all a matter of values, he says.

“I could be pushing a broom in a steel mill,” he says, noting the job would pay more than his present one. “But then I wouldn’t get to see an eagle.”

McCollough’s role is dedicated to increasing the survival rate of young eagles. It is an awesome one, shared by 18 other graduate students at the university.

“The eagle’s only enemy is man,” says McCollough. Land development has destroyed the bald eagle’s natural habitat, causing changes in the bird’s migratory habits. The use of the pesticide DDT brought the bald eagle’s population perilously close to extinction. It resulted in weak egg shells which broke too soon. In 1972, the last year that DDT was used in Maine, only six young eagles were born in the state. In 1985, there were 74.

Feeding ‘Bart’

Mark A. McCollough, son of Curtis and Roseanne McCollough of Sarver, feeds ‘Bart,’ an injured, immature eagle he uses for school programs in Maine to educate youngsters about rarity of the birds. McCollough’s Bald Eagle Project work, a winter feeding program designed to increase the eagles’ survival rate, is outlined in the Winter 1984-85 and February 1986 editions of “Yankee Magazine.”

Though its population is increasing, the bald eagle - America’s national symbol - has a long way to go in the fight for survival.

“In the lower 48 states,” says McCollough, “there is a total of 2,000 pairs of eagles.” Maine, where the university’s Bald Eagle Project is centered, can boast 110 pairs. Other states come up short. Pennsylvania has five pairs, New York State, only two.

The nucleus of the Bald Eagle Project is a feeding program aimed at helping young eagles survive their first five years, until they can produce more young eagles.

For approximately 50 hours every winter
Annual 4-H Animal Science Fair
Offers Events For Entire Family

This Saturday, at the Aroostook Veterinary Services on the Access Road, Houlton, starting at 10 a.m. and ending until 3 p.m. will be the second annual 4-H Animal Science Fair. This event is being put together by the Hodgdon 4-H Trail Blazers, Dr. Patrick Coville, and the Cooperative Extension Office of Houlton. Rain date is set for the following day, June 15. Admission is free.

Last year's fair was very successful, drawing a crowd of over 300 people. This year is sure to be even bigger, with a special guest appearing for the day. This is the most popular eagle in the State of Maine. Bart the Bald Eagle from the University of Maine at Orono will be visiting with his handler, Mark McCollough, of the Endangered Species and Non-Game Wildlife Program of the Maine Inland Fisheries and Wildlife of Bangor.

Bart's arrival is in conjunction with the Arthur Howell Wildlife Educational Foundation of North Amity, who will also be supplying the fair with many demonstrations throughout the day, with Arthur Howell being present for on-hand information.

The foundation will also be represented by Don Collins of the Soil and Water Conservation of Houlton, with a demonstration on Soil and Land Erosion, and Richard Meister, a teacher with St. Mary's School with demonstrations and displays on snakes and turtles.

Other demonstrations include a video on the Bald Eagle with Mark McCollough and Arthur Howell, blacksmithing with Craig Corbett of Houlton who attended the Oklahoma Horseshoeing School, dressage demonstration with students from the Northern Riding Center of Houlton, State Police K-9 demonstration with Trooper Carroll Cran dall, dog grooming with Karen Folsom of Karen's K-9 Klip of Houlton, and a slide show on the Peregrine Falcon of Maine, also with Mark McCollough.

There will be tours every hour through the veterinarian hospital given by the 4-H members under supervision of Dr. Coville.

Many animals will be present for viewing and feeding, including a ferret, rabbits, guinea pigs, chicks, goats, calves, birds, horses, snakes and turtles. There is always something for everyone going on, pony rides and concessions. Door prizes, donated by many community businesses will be drawn every 15 minutes.

There is also a contest for the largest frog, fattest cat and the most unusual dog. For those who wish to enter their pet in the contest there is a $1 fee and to find out the hours your favorite contest will be held and to register call the Cooperative Extension Office at 532-6548.

WILL VISIT — Bart the Bald Eagle from the Department of Inland Fisheries and Wildlife, and handler Dr. Mark McCollough of Bangor will be a guest at the second annual 4-H Animal Science Fair June 14 from 10 a.m. to 3 p.m. in the yard adjacent to the Aroostook Veterinary Service. The event will be free to all visitors. Many animals will be on display, pony rides available and exhibits of products for pets. Hosting the event will be the 4-H of the Houlton Extension Service, and Dr. Pat Coville of the Aroostook Veterinary Service.
Art Howell, Bart, and Mark.
Bart was occasionally housed with other eagles recovering from injuries at UMO. One roommate was a juvenile that had been shot on Mt. Desert. This bird recovered and was released by Charlie.
Bart’s appearances were not limited to school classrooms. He was the highlight of many kinds of events, including sportsmen’s shows, Maine Public Broadcasting Network funding campaigns, legal milestones (like the signing of the Operation Game Thief bill), promotions of the Endangered and Nongame Wildlife Fund (such as the Chickadee Checkoff and the Loon License Plate), and endangered species meetings and conferences.

Bart was extremely well trained and was never aggressive toward his handlers. Mark McCollough recalls: “The worst thing he ever did to me was at the Eastern Maine Sportsmen’s Show. In the middle of the presentation, he reached over with his beak, plucked the glasses off my face, and dropped them to the ground. Of course there wasn’t much I could do because my hands were quite full! “
Bart and Charlie Todd, likely mid 1980s
In the mid 1980s, Mark and Charlie both finished their graduate work and left UMO for other pursuits. For several years after joining Maine’s Department of Inland Fisheries and Wildlife, Charlie occasionally took Bart out on programs, and he maintained a remote supervisory authority while other students were trained to handle the bird and meet the demand for school appearances. But as Charlie’s responsibilities at MDIFW grew, it seemed that a new home base might better suit Bart.
In 1985, Bart’s headquarters became Petit Manan National Wildlife Refuge in Milbridge, ME, under the supervision of Tom Goettel. Scott Keniston helped Tom design and build housing. Over the previous several years, while Bart was still at UMO, Tom had already handled Bart occasionally, and he continued to do so at Petit Manan on a regular basis for the remainder of the decade. Sid Bahrt served as the program manager. Bart remained based at Petit Manan until 1991, when Tom transferred to Eastern Neck Refuge in MD.

A volunteer at Petit Manan, Bill Vasquez, took an interest in Bart, and stepped in as handler on a few programs. Later, Vasquez hired a ghost writer for a book about Bart; it was published in 1990. The book contains countless factual errors about Bart’s history and other matters. People who know the real story describe the book as 99% fiction.
Tom Goettel with Bart, 1983
Bart with Tom during a school program, 1987
Bart with John Turner, then Director of U. S. Fish & Wildlife Service, 1989
When Tom left Petit Manan in 1991, Bart was transferred to Moosehorn National Wildlife Refuge (Baring, ME), where his primary handler was Maurice (“Maurry”) Mills. Again often accompanied by Sid Bahrt, Maurry and Bart visited all the elementary schools in Washington County. They traveled as far north as Presque Isle and Limestone in Aroostook County, and as far south as Maine Audubon headquarters in Falmouth and L.L. Bean in Freeport.
Bart remained with Maurry at Moosehorn for about 15 years.
But during those years at Moosehorn, as eagles became more common, the demand for Bart’s appearances waned. Further, Bart was getting on in years, and no longer seemed to enjoy public programs as much as he once had.

In 2006, with likely upcoming changes in budget and staffing at Moosehorn, a group of individuals involved with Bart over the years began to explore ways to create, essentially, a retirement package for the bird known in his prime as the Maine State Eagle. While various ideas were explored, Bart came to Avian Haven on a guest basis in May.

Late in the summer of 2006, with construction on our new eagle habitat about to begin, we were honored to be approached with the possibility of Bart making his home with us on a more permanent basis. We modified the habitat design at the last minute to include a special “condo” for him. Permits to allow placement at Avian Haven were crafted and approved.
The new eagle habitat was not completely finished in Dec. 2006, when winter weather halted construction; another section would be added the following spring. But the main habitat and “Bart’s Place” (circled sections in the photos below) were ready for occupancy.
Bart moved into his new home on Dec. 7, a date that was, ironically, the 24th anniversary of the end of his life in the wild. Charlie is on hand to greet his old friend.
The “aerie” of the eagle habitat, where orphaned nestlings would be initially housed, was finished in 2007. Bart’s Place offered both visual and auditory contact with eagles in the other habitat areas. A large slatted door allowed access to the main habitat, but Bart preferred to remain in his own quarters.
Bart has aged remarkably well, and is quite photogenic in his later years. He shows many different expressions, some of which have been captured by camera, and which we share with you in the slides that follow.
March 2010
Series taken Dec. 30 2011
Bart has been served a muskrat luncheon.
March 30, 2012
April 6, 2012
April 13, 2012

In the series that follows, Bart is eating trout.
When local TV celebrity Bill Green learned of Bart’s upcoming milestone, he arranged to pay a visit to film a short segment about the occasion for his *Green Outdoors* show on April 26.

The actual date on which Bart hatched is unknown, but would have been in late April or early May, as he was judged to be about six weeks old when banded on June 15.

If you missed this episode of the *Green Outdoors*, you can watch it here:

July 2012
Having been in captivity for most of his long life, Bart remains quite comfortable with people in close proximity. Though he no longer goes out on programs, he seems to enjoy human company, and still plays varied and valuable community roles. For example, he has been visited by Native American children learning about eagles as part of their cultural heritage. On another recent occasion, Bart was filmed by a cinematographer who needed a close-up of an eagle for an upcoming documentary.

We are often asked whether 30 is “old” for a Bald Eagle. The answer is YES! Eagles in the wild rarely live longer than 30 years (the current record for a Maine eagle is 33), but there are occasional reports of captive birds surviving into their late 30’s. So elderly though he is, Bart is in good health, and we look forward to having him with us for a very long while yet to come.
Dozens of people were involved with Bart over the years, but several among them had especially important roles in his career. Where are they now?

After Prof. Ray ("Bucky") Owen retired from the University of Maine, he was Commissioner of the Department of Inland Fisheries and Wildlife, and later involved with the Penobscot River Restoration Project. Among his many honors was a Conservation Award from the Atlantic Salmon Federation in 2009.

Sid Bahrt, who was well known as a wildlife photographer as well as a conservationist, died in February 2007 at the age of 91. An excerpt from a memorial reads "Sid spearheaded efforts to save the bald eagle, a five-year initiative that involved accompanying Bart the Eagle to fifty-five schools in Washington County."
Maurry Mills is still a wildlife biologist at Moosehorn NWR. His current activities include the Woodcock Singing Survey and projects involving vernal pools, invasive plant species, and salt marsh integrity. He also supervises interns at the refuge.

After Tom Goettel left Petit Manan, he became the refuge manager at Eastern Neck NWR in MD, then worked at the Office of Refuge Law Enforcement in Hadley, MA. After his retirement in 2008, he returned to ME, where, among other pursuits, he has been active with Friends of Maine’s Seabird Islands (currently as Treasurer of that group).
After graduating from the University of Maine, Mark McCollough worked with the Maine Caribou Reintroduction Program, then for Maine’s Department of Inland Fisheries and Wildlife, eventually leading the state’s endangered species program. He left MDIFW in 2002 to work as an endangered species biologist with USFWS, where he continues to be involved with Bald Eagles as well as other species such as Canada Lynx and Piping Plover.

In this 2003 photo, Mark is banding a fledgling eagle that recuperated from a wing fracture at Avian Haven (Charlie Todd is holding the bird).
In 2009, he received a “Recovery Champion” award from the USFWS, acknowledging the success of his efforts. Charlie Todd is still with MDIFW. The Peregrine Falcon recovery program takes some of his time currently, but he is best known for his remarkable work to restore Maine’s Bald Eagle population.
Thanks to dedicated efforts that began with the UMO Eagle Project and Bart’s ambassadorship, and continued thereafter on many fronts, Bald Eagles were delisted in Maine in 2008. At that time, Maine had at least 477 nesting pairs.

As of 2011, there were more than 600 nesting pairs.
Some of Bart’s Caretakers at Avian Haven

Terry Heitz designed and built the eagle habitat (including Bart’s Place);

Marc Payne and Shelley Spanswick oversee Bart’s health care;

Glori Berry takes pictures of Bart.

Jerry Stefanski and Selkie O’Mira keep Bart’s Place shipshape;
Acknowledgments and Credits

All Bart photos are by Glori Berry unless otherwise indicated.

Slide(s)
1 Bart drawing provided by Charlie Todd, artist not known
3 Nestling eagle photo by Bill Hanson; hunter photo provided by Mark McCollough
5-17 Clippings, photos, student letters provided by Mark McCollough
9 Sid Bahrt sketch from Quoddy Tides, Feb. 23, 2007
http://news.google.com/newspapers?nid=2126&dat=20070223&id=3sMkAAAAIBAJ&sjid=uA4GAAAAIBAJ&pg=2323,2026629
18 Images and information re. Endangered and Nongame Wildlife Fund
19 Photo by MPBN/Keary Nichols, provided by Charlie Todd
20 Photo provided by Charlie Todd
22-24 Photos provided by Tom Goettel
25-26 Photos provided by Maury Mills
28 Photos by Terry Heitz
29 Photos by Bill Hanson
30 Photos by Terry Heitz
31 2007 Bart photo by Karen Symmes
50 Sid Bahrt photo and quote
http://www.maysfuneralhome.com/sitemaker/sites/MaysFu1/obit.cgi?user=1018_SBahrt187
Bucky Owen photo courtesy of MDIFW
51 Tom Goettel photo provided by T.G. Maurry Mills photo provided by M.M.
52 Mark McCollough photo to left courtesy of MDIFW; banding photo by Marc Payne
53 Charlie Todd photo with nestling courtesy of MDIFW; C.T. photo with adult by Marc Payne
54 2008 Eagle nest and population figures:
Donations to Avian Haven in honor of Bart, his champions and handlers may be made through our website (www.avianhaven.org) or through the mail (418 North Palermo Road., Freedom, ME 04941).

Requests for a high-resolution version of any of Glori’s photographs of Bart may be sent to glori.berry@gmail.com (type “BART PHOTO” in subject line).
Epilogue (Spring, 2014)

April 21, 2014 began like any other day over the eight years that Avian Haven was Bart’s home. One of his regular caretakers, Jane, was tidying up his habitat. She had just changed the mat on his feeding platform, and Bart was “dancing” in anticipation, as he always did when fresh food was about to be delivered.
Suddenly Bart stopped dancing and slumped to the ground. Jane ran up to the infirmary to get help; we all ran back down to Bart’s Place. No more than five minutes had passed since his collapse, but he was already gone, and may well have died within a few seconds. Our best guess was that he had a massive brain or cardiac event.

He would have just been turning 32. As mentioned earlier in this presentation, though elderly for an eagle in 2012, we’d hoped that he would live well into his 30’s . . . but it was not to be.

We spent the rest of the day grieving and making sometimes tearful phone calls to the folks mentioned on these slides. He had been so much a part of our daily lives that it was hard to believe he was no longer with us. It would be several weeks before we could even consider making Bart’s Place available for another bird.
Various slides in this tribute have already illustrated Bart’s enthusiasm for eating – he was not the least bit shy about having an observer present at mealtime! Glori photographed this sequence in the early spring of 2013.
Bart was particularly fond of muskrat. In November of 2013, remains of a recent meal on his beak gave his face the appearance of wearing lipstick!
But although many of our memories are of Bart eating, Bart dancing will always be our favorite way to remember him. And well before the end of that sad day in April, we knew that to die dancing was the best possible way for his life to have ended.
Bart
1982 - 2014
In Loving Memory