

The background of the entire cover is a detailed sepia-toned illustration of a mammoth. The mammoth is shown from the side, standing in a shallow body of water or a marshy area with tall grasses. Its long, curved tusks are prominent, and its trunk is visible. In the background, there are rolling hills or mountains under a cloudy sky.

**The Manis Mastodon Site:**

**An Adventure  
In Prehistory**

*Carl E. Gustafson, Ph.D.*  
*with Clare Manis*

**REGISTERED NATIONAL  
HISTORIC PLACE**

**WASHINGTON STATE ADVISORY COUNCIL  
ON HISTORIC PRESERVATION**

**MANIS MASTODON SITE**

**UNDER THE PROVISIONS OF THE  
NATIONAL HISTORIC PRESERVATION  
ACT OF 1966, THIS PROPERTY POSSESSES  
EXCEPTIONAL VALUE IN ILLUSTRATING  
AMERICAN HISTORY AND CULTURE**

**ENTERED IN THE  
NATIONAL REGISTER OF HISTORIC PLACES  
MARCH 21, 1978  
BY THE  
U. S. DEPARTMENT OF THE INTERIOR**

**WASHINGTON STATE  
OFFICE OF ARCHAEOLOGY AND  
HISTORIC PRESERVATION**

**1**

Mastadon Mural:  
*Cory & Catska Ench*

Photo:  
*Bob Cooper*



This story is as much about people as it is about archaeology. From 1977 to 1985, Clare Manis and Emanuel Manis devoted their lives to an old mastodon in their front yard. With support from their neighbors, they allowed archaeologists to overrun their farm and disrupt the leisurely lifestyle so typical of the people living on Washington's Northern Olympic Peninsula. More importantly, they opened their property to the public so visitors could enjoy and appreciate the fruits of their labor. They became a part of their land, which they willingly shared with us. We talked of ducks and geese and blueberries, and a pond that someday will be; and of ghosts that still lurk around a pond that once was.

- Carl E. Gustafson

### **ADDENDUM**

In April 2000, Emanuel Manis lost a five-year battle with cancer. In August 2002, 25 years after his discovery, Clare Manis donated the site to the Archaeological Conservancy in Emanuel's memory, to preserve and protect the Manis Mastodon Site.

- C.E.G., March 2003

## PREFACE

The field work involved in gathering archaeological information is exciting and rewarding, but all too often, scientific reporting seems stuffy and uninteresting; written primarily to convey information to our scientific colleagues. The pages are sprinkled with terms taken from the Greek or Latin. Such terms, along with the precise manner in which we are expected to form them into sentences, paragraphs and publishable articles may detract from the significance of the research to anyone outside the restricted area of specialization. If there were some way to transfer the excitement of discovery to the printed page, how much more enjoyable it would be!

I hope this pamphlet will, in some small way, help bridge the gap between the excitement of research and the methodical, and the sometimes-dull way in which it is often reported. I include myself in this latter category, for it is necessary that our scientific reports are precise in the same way that a medical doctor writes prescriptions or a lawyer states his case. The title for this pamphlet might have been: 454 CA 218: Archaeological Manifestations of an Early Cultural Complex on the Olympic Peninsula of Washington. Despite the fact that the title is dull and not very informative, an archaeologist working with early stages of human development in North America would be compelled to read such a publication. I suspect it would never make the "Best Seller" list!

This pamphlet is for you - the people who lend their financial support to research through tax dollars and their moral support through visiting archaeological sites and museums and expressing their concerns for our rich cultural heritage. I thank you all.

During the fall of 1977 and the summers of 1978 and 1979, financial support was provided by the National Science Foundation, the Washington State Office of Archaeology and Historic Preservation and the Heritage Conservation and Recreation Service (formerly the National Park Service). In the summers of 1979 and 1980, partial funding was obtained from the National Geographic Society with matching funds from the Heritage Conservation and Recreation Service through the Office of Archaeology and Historic Preservation. My son Bradley and I, along with an occasional volunteer, continued excavations at the site from 1980 through 1983. Excavations were halted in 1984, but resumed again for the summer of 1985. That year we were fortunate to receive a private donation that allowed us to field a small crew to open all areas of the site simultaneously for the first time.

Somehow my wife, Charlene, managed to keep our budget balanced and our heads above water throughout the entire excavation period. Without her support and that of the Manises, none of this would have been possible.

-Carl E. Gustafson

It was hot! The Pacific Northwest was suffering through a prolonged summer drought. It had not rained in days, and farmers in the Columbia Basin of Eastern Washington feared for their crops, including the apples for which Washington is famous. Reservoirs holding water for irrigation were critically low, and rationing was seriously considered as the only way to conserve water needed to save the crops.

Amidst these threats of disaster, a few locals optimistically took advantage of the dry summer to undertake tasks that could not be accomplished when the land was wet. For the first time in many years, the marsh in the 16-acre front yard of Clare and Emanuel Manis was dry. Emanuel – better known to his friends as “Manny” – had purchased an old backhoe with which he intended to create a pond in the marshy field.

The Manises moved to Sequim, Washington on the North Olympic Peninsula in 1975. They built their house brick by brick and hoped someday to be self-sufficient by living off their land. Manny envisioned a large garden, a few cattle and blueberries on the black peat soil of the marsh. He wanted to drain the marsh but still retain enough water for his cattle and crops. A pond would provide the water he needed and would attract ducks and geese and other interesting creatures that frequent the Olympic Peninsula. Little did he know that 14,000 years before, a pond had already existed where he was about to dig.

The Sequim region is unique on the Olympic Peninsula for it receives less than 20 inches of annual precipitation. Indeed, the first formal irrigation project in the state was established here in 1896. I passed through Sequim in 1966 while working at the Ozette Village archaeological site on the west coast just south of Neah Bay, Washington, and I recall my amazement at seeing wheat fields. I had not expected an area this dry, so near a rain forest, receiving more than 100 inches of rainfall annually. I did not know it then, but Sequim lies on the border of a protected nook in the rainshadow of Mt. Olympus and the northern Olympic Mountains. This dry oasis with its clean air and moderate climate is known throughout North America as an ideal place to retire. Congenial people from all walks of life have gathered here to share their good fortune.

This was the setting that drew the Manises away from the hustle and bustle of life in California. They now called the small farm



at the base of the Olympic Mountains home, and they intended to make the best of it. With this in mind, Manny rebuilt the old backhoe and began excavating for his pond on August 8, 1977.

Even though the marsh seemed dry, Manny soon discovered that the water table lay less than two feet below the surface. When he dug below this depth, the hole filled rapidly with water. He wanted to save the rich peat because it was valuable for lawns and gardens when mixed with poorer soil, but he was faced with a dilemma. How could he remove the peat and excavate for his pond under water? His answer was to dig a deep trench around the future pond, which he hoped would intercept ground water and allow him to build a bridge across the moat onto the island he would form. Then he could excavate the muck from the inside out. We may never know if this idea would have worked, for he found parts of two tusks from an ancient elephant less than half way around the perimeter. The Manis' world would never be the same!

Near what was to be the north edge of his pond, Manny brought up a large object that looked like part of an old log about six inches in diameter and four feet long. He laid this aside and went back for another bucketful. This time he brought up a curved piece over six feet long and seven inches in diameter. The tapered, broken end



*Emanuel Manis with the two tusks he dug up in his front yard.*

gleamed a chalky white, but the rest of the object was covered with mud. He placed it on the ground, jumped down from the backhoe and cleaned it off for a better look. *These were tusks – not logs!* He called Clare down to the site to see his find. It was late on a hot afternoon, and she went reluctantly; after all, what was so important that it couldn't wait until after dinnertime? Impatiently she asked: "Why did you drag me down here?" Manny explained that he had just dug up two elephant tusks. Clare grumbled something about "too much sun" and told him, "they are probably just two old cow horns!" Manny took her to where they lay on the ground. She could hardly believe her eyes, but there they were – *elephant tusks in the front yard!*

Manny wanted to continue digging around his pond, but it was late and curiosity got the best of him. Clare insisted that they contact someone who knew about fossils. Through her persistence, she eventually located Dr. Richard Daugherty, Professor of Anthropology at Washington State University and director of the Ozette Village archaeological site on the Olympic Coast. I was contacted in Pullman, and Delbert Gilbow and I made arrangements to meet Dr. Daugherty at the Manis farm in a few days. We rented a two-ton truck from the Washington State University motor pool and stopped along the way to obtain equipment from another archaeological site that was closing down for the season. We met Dr. Daugherty and Jeanne Welch, deputy director of the Washington Office of Archaeology and Historic Preservation, at the Manis property on August 17, 1977, about a week after the discovery. We all agreed that the prospect of recovering a complete skeleton was good if the marsh had been continuously wet since the animal died.

Both mammoths and mastodons are known to have roamed Washington – and all of North America – during the last ice age, but finding complete skeletons is rare since bones usually decay quickly. However, marshes and bogs often are excellent sites for preservation of fossils, because the water is still, the bones seldom are moved about, and they may be buried quickly. It seemed that the Manis discovery could give us an excellent opportunity to learn more about the elephants that once roamed the Olympic Peninsula.

The site was covered with a peat-like muck nearly four feet thick. Manny was selling "peat" to a nearby retirement community

where it was used in landscaping. For this reason, he wanted to strip off no more than the peat layer, but it was necessary to dig into the silt and gravel beneath in order to drain the ground water that kept accumulating in the ditch. To keep the peat clean and free from gravel, he piled the two layers separately as he dug. The peat was placed to the outside of the future pond where it could be hauled off in trucks. The gravel was piled to the inside where it could later be used to line the pond. Unknowingly, in sorting the silt and gravel from the peat, Manny had also separated the bones. This situation was ideal for the archaeologists, because we could simply pick through the gravel and silt to find additional bones that might have been present in the excavated area.



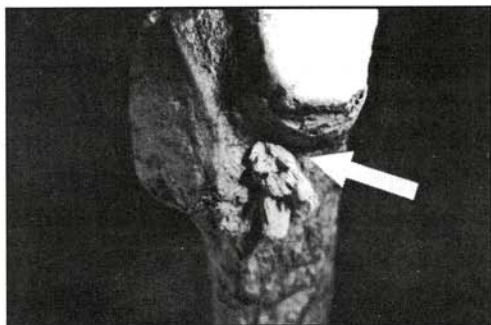
*Washing bones free from the gravelly backdirt*

Within the first two hours of work, I chanced upon a fragment of rib with another piece of broken bone protruding from it. Examination under a microscope, borrowed from Sequim High School, showed the intrusive piece to be a denser type of bone than the rib itself. Signs of healing suggested that the intrusive fragment might have been thrust into the rib while the animal was alive. *Could this be the remnant of a spear point wielded by a hunter who lived in this area thousands of years ago?* If this were so, the site represented the oldest evi-



dence of human activity in the Pacific Northwest! Because the sediments surrounding the bones seemed to have been deposited soon after the disappearance of the last ice-age glaciers, we assumed that the site must have been occupied between 13,000 and 14,000 years ago.

To be certain that the piece of bone was healed in place in the rib, Dr. Donald Grayson of the Department of Anthropology, University of Washington, made arrangements for me to have the bone X-rayed at the Wallace Harms Radiology Group Laboratory near Seattle. The X-rays showed that the bone object tapered to a point within the rib and had penetrated about three-fourths of an inch. Considerable healing was apparent. Dr. Marvin Wallace viewed the X-rays and commented that the wound clearly was a *penetration*



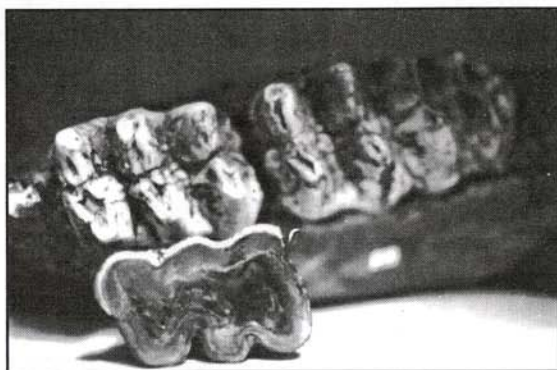
*Bone spear point broken off in rib*

*fracture* that had healed for at least three or four months. This confirmed our conclusion that the animal was alive at the time of the injury. It also led us to conclude that people and elephants coexisted in Washington State and that man had pursued the great beasts on the Olympic Peninsula.

This information shed new light on the Manis' discovery. We had planned to spend a long weekend assessing the situation, but now it appeared that we were standing on an archaeological site far older than any other on the Olympic Peninsula. Our "long weekend" extended into weeks and finally months. I obtained a leave of absence from Washington State University. Delbert Gilbow stayed on and two volunteers, Robert Wilkenson and Nancy Wilhite, worked with us through the long autumn and cold, damp winter.

For the first three days at the site, we were not sure whether the bones and tusks were from a mammoth or a mastodon, both of which belong to the order Proboscidea – the elephants. Various species of each lived at the same time and both became extinct about 11,000 years ago. Despite a superficial resemblance, the two were only distant cousins. Mammoths tended to be larger and are more closely related to modern elephants. They stood 10 to 12 feet at the shoulder and had teeth that were well adapted to feeding on harsh vegetation such as grasses. Mastodons, standing eight or nine feet at the shoulder, with teeth better adapted to eating brush and tree branches were a more primitive animal.

Archaeologists have known for many years that people preyed on mammoths in North America more than 11,000 years ago. Stone spear-points and other tools have been found intermixed with mammoth bones particularly in the Southwestern United States. Yet until the Manis' discovery, no one had found direct evidence of man hunting mastodons anywhere in North America. That evidence came on the third day when Delbert Gilbow washed free a molar tooth, and recognized it immediately as belonging to a mastodon. The tooth was fist-sized and was worn so close to the gum-line that its grinding cusps were gone. Only the softer dentine remained, and even it was worn through in one place leaving a cavity. In contrast, mammoth teeth are larger than those of mastodons, and instead of having cusps mammoth teeth are corrugated with hard ridges of enamel that reduced wear from their grass diet.



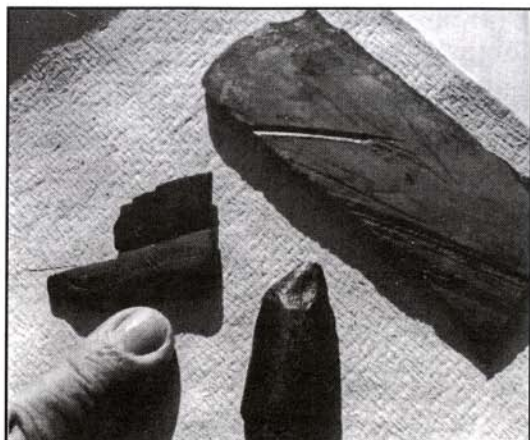
*Mastodon tooth showing "wear"*

By the time the mastodon molar was found, several hundred pieces of bone had been recovered from the gravel pile. Some of the bones were knobby with arthritis, which, along with the worn tooth, indicated old age. We have found no evidence to indicate that human hunters killed the mastodon. It apparently survived at least one attack by man, which left a broken bone "spear point" stuck in its rib. The animal may simply have died of disease or old age. We may never be certain, but it seems that human opportunists partially butchered the carcass and removed some of the meat.

The mastodon discovery was sufficiently significant that the National Science Foundation granted emergency funds that supported us until additional funding could be arranged through the Washington State Office of Archaeology and Historic Preservation. The Manises donated a small trailer as temporary laboratory and office, and allowed us to use their telephone and other facilities. Dr. Daugherty, who has had many experiences with archaeological sites open to the public, explained what the Manises should expect if we remained. "Visitors and reporters from newspapers and TV would flock to the discovery. Bathrooms and parking facilities would be needed; their insurance rates would skyrocket; someone would have to be there 24 hours a day, 365 days a year." Despite this grim forecast, Clare and Manny wanted us to stay and learn as much as we could about this mastodon that had died in their front yard.

As visitors arrived, the Manises showed them the site and answered their questions. By then we had discovered that no university could have asked for two more willing and able students. They soaked up information like sponges and released it freely to their visitors. Clare and Manny seemed both overwhelmed and overjoyed with this new endeavor. They built a fence, arranged parking, brought in chemical toilets, took out special liability insurance, and allowed us to build a laboratory and storage shed onto their barn. People from the Sequim vicinity and Port Angeles gave moral support and volunteered labor, equipment and building materials. The news media made frequent reports of our progress and visitors came in increasing numbers. By late October, more than two thousand people came and went and spread the story of the Manis' mastodon.





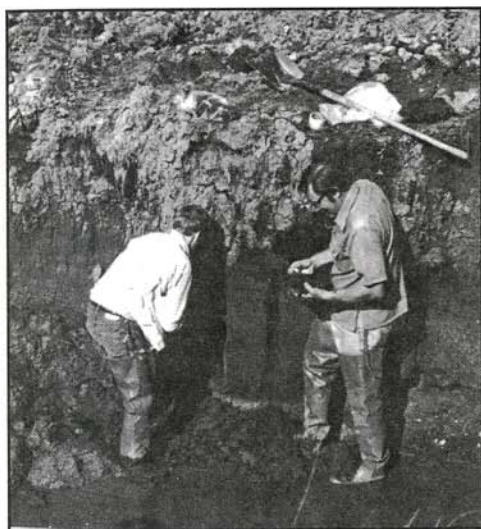
*Bone and tusk artifacts*

Meanwhile, we were occupied with the task of sorting through the gravel pile. Additional artifacts were found while excavating bones from the backdirt. They included a piece of bone sharpened to a crude point on each end, and pieces of a rectangle cut from tusk and smoothed and polished on three sides. Many of the bones had cuts and scratches, probably the result of man having butchered the mastodon for food.

Work continued through January's ice and was then halted because of cold weather. This gave us a chance to review what we had found at the site and to plan our next steps. We went back to Washington State University in time for spring semester and returned to the site in June of 1978 with a crew of student archaeologists from various universities. Delbert Gilbow was crew chief, which freed me to attend to the more mundane matters of logistics and finances.

Dr. Peter J. Mehringer, Jr. and Kenneth L. Petersen came to the site to collect pollen and seeds from the deposits for identification of plants that grew in the vicinity at the time the mastodon died. During that time, grasses and shrubs, with patches of willows, apparently dominated the landscape. Even cactus grew here then, its pollen found in the same sediments as the mastodon bones. Pine, spruce, fir, hemlock and other coniferous trees had not yet become established on this part of the Olympic Peninsula.

Pollen from cactus, along with abundant fruits of a fresh water pond plant (*Ceratophyllum* or "coontail") which only produces flowers and seeds when the water is warm, suggests that the climate was drier and at least as warm as today. Invasion of coniferous trees probably was delayed by the drier conditions. Cattails were so abundant about the pond that their pollen overshadowed all others. Small bits of twigs and stems of willow, cattail and other plants found in a large concentration at the site may actually be the remains of the stomach contents of the mastodon; an indication of its diet on the day it died.



*Dr. Peter Mehringer and  
Kenneth Petersen  
collecting pollen and seeds  
from the site*

The plant remains give us a good - though sketchy - idea of what the environment was like around the fringe of the pond 14,000 years ago. The pond was choked with weeds growing in the clean, fresh water with many attached to the gravel-lined bottom. A dense tangle of cattails extended for 100 yards or more following the gentle slope of the surface to the east, south and west. To the north, the cattails made this a good place to wait in ambush. High ground within 25 yards of the pond was suitable for a campsite and charcoal and bones found there suggest the people made use of that area on several occasions between 14,000 and 8,000 years ago.

Outward from the cattail fringe, rolling terrain blanketed by deposits left by glaciers apparently supported shrubs, grasses and

sedges. The gravely glacial till would not hold moisture like productive, loamy soils. Even though the climate may not have been much drier than today, water would flush through the gravel rapidly and be lost to plants growing there. Thus, the well-drained glacial deposits may be partly responsible for the presence of plants such as cactus that normally live in still drier climates.

The hummocks and swales of the rolling topography provided habitats for other plant species. The warmer south-facing slopes and tops of knolls may have supported rose bushes, blackberries and Canadian soapberry, along with other plants that prefer warmer environments. Other plants, such as willows and sedges, probably occupied the cooler, north facing slopes and moist swales. Thus, we picture a mosaic of plant communities mottling the landscape surrounding the 14,000-year-old pond.

The pond probably was fed with water from nearby buried blocks of ice left as the glaciers wasted. After 14,000 years ago, the ice seems to have disappeared completely and the pond was supplied by the local water table just as it is today. Along with the rising water table came forest trees – pine, spruce, hemlock, alder, and probably Douglas fir and western red cedar. At the same time, cattails and willows became less abundant and bog bean and other plants arrived and flourished. Forests persisted in the Sequim area until logging began in the late 1800's.

The pond, 14,000 years ago, must have attracted many animals that came to drink and feed on the dense growth near the water. In addition to mastodon, sediments deposited in the pond yielded bones and teeth from several bison and two fragments of caribou antler. Fresh water snails lived in the pond, as did snakes, frogs, and ducks. Bones of small land mammals have not been found.

The mastodon was lying on its left side at the time of death - its head to the east and its tail to the west. The skull had been rotated 180 degrees facing back toward the tail. More than 7,000 skull fragments were removed, but much of the skull is still in place in the site, as are many of the bones from the right side of the mastodon. The lower jaws were found in their proper position, lined up with the back-



bone and facing east. We think people butchered the animal and separated the skull from the jaws, twisting it backward in the process. Possibly they crushed the skull to remove the brain for food or for tanning hides. Alternate freezing and thawing of water trapped in the broken skull may have caused further breakage.

Except for the hind limb that was broken by the backhoe, virtually all the bones of the left side were found. They were intact in exactly the position in which they should rest after normal decay. No evidence of butchering was apparent on these bones.

At this point in our excavations we discovered that the mastodon had fallen on its left side. We had proceeded through the ribs, down to the left shoulder and front leg but had not found any bones from the right side, which should have been uppermost! We asked ourselves questions. Was the carcass lying in water, so that the lower left side was not accessible? Did the people need only the meat from the right side, which was easier to obtain? Was it too difficult to move the heavy carcass to reach the lower, left side? *Whatever the reason, the bones of the right side were missing!*

We surmised that if the mastodon were indeed butchered, the people probably would have removed the meat from the bones somewhere upslope, nearer to the edge of the pond. The gravelly pond bottom was exposed, and we could see that it sloped upward to the north. Presumably this indicated that the shoreline also was to the north. We began excavating in that direction and soon came across more bones. These were the bones of the right side, along with a few broken ribs. Unlike the bones of the left side, which were complete and aligned as they would have been in the living animal, the bones of the right side were scattered about the former pond bottom in no recognized pattern. The pelvis and some of the leg bones and ribs were broken, and most had numerous cuts and scratches to indicate butchering. Except where bones had been piled one on another, these bones were deposited less than an inch above the glacial gravel. The mastodon apparently had died and was butchered very shortly after the last glacier retreated.

The Manis mastodon was a large and old individual, with massive, curving tusks nearly eight feet long. All teeth found exhibited

extreme wear. Perhaps this reflected a diet of grasses and herbs instead of forest plants associated elsewhere in deposits with the mastodon bones. The roots of the second molar in each jaw were being absorbed, and the teeth would have fallen out if the animal had lived a short time longer. In modern African elephants these teeth are lost when the animal is about 45 years old, which gives us some idea of the age of the Manis mastodon when it died.

Bison remains found in the site are from animals that also appear to have been butchered. Although no concentrations of bones were found, several individual bison are indicated by the differing ages of the deposits in which they were buried and by different-aged individuals, as shown by the bones and teeth. Bison remains were found scattered among the mastodon bones in the same geologic deposits, and successively in at least three higher levels representing other time periods.

Cuts and scratches appear on many of the bones of both the bison and the mastodon, and most were broken in ways that caused fractures to spiral around them. Except under very unusual circumstances, such spiral fractures only develop on bones that are fresh. Commonly such fractures are associated with human butchering, but they can result from any process that breaks bone while it is fresh – carnivores, tumbling along stream bottoms, rolling down rocky slopes, and I suppose, trampling by mastodons. However, only human activities seem to explain the manner in which the bones are broken, the cuts and scratches on them and the way the bones of the right side were scattered about, upslope from the rest of the carcass.

Excavations were expanded to the higher ground about 25 yards northwest of the main site. Sixteen inches below the surface a basalt projectile point was found on top of a layer of volcanic ash which fell here about 7,700 years ago, when Mt. Mazama erupted, forming Crater Lake in Oregon. Volcanic ash from Mt. Mazama gives us a very important time marker wherever it is found. Anything beneath the volcanic ash must be older than about 8,000 years and anything above must be younger. Thus, the basalt point must be less than 7,700 years old. Previously this type of artifact – called an Olcott point – was thought to represent the oldest cultural material on the Olympic Peninsula; perhaps going back as far as 8,500 years.



*Dr. Carl Gustafson examining stone flake found below Mazama ash*



*Bradley Gustafson working in area of second extinct elephant*



Some charcoal occurred with the Olcott point just above the volcanic ash, and two larger concentrations lay beneath the ash. The bottom-most layer contained broken and charred bones suggesting an ancient campfire. The top of this well-drained knoll, above the level of the pond in which the mastodon died has remained above the average level of standing water throughout all of the last 14,000 years. The knoll, it seems, was favored by the ancient hunters as evidenced by the basalt projectile point and several concentrations of charcoal and broken bones in sediments younger than those containing the mastodon bones.

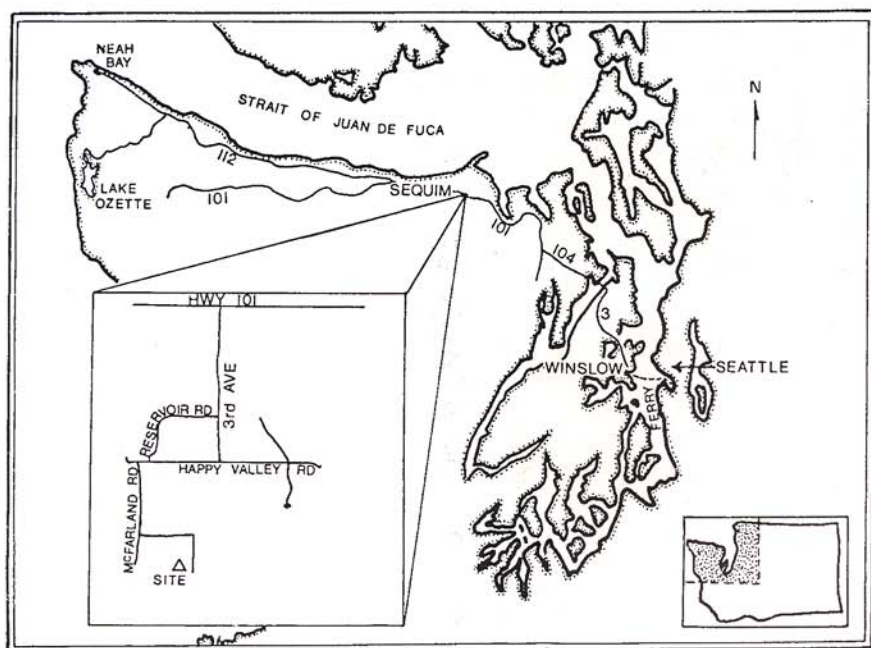
A few shattered remains, showing signs of butchering, of another extinct elephant were found some 60 feet southwest of the main dig site, where my son Bradley and I had been working. These bones belong to at least two other mastodons and some are in deposits older than those where the first mastodon was found. More bison bones and teeth were found here in three separate layers above the elephant bones. This portion of the site is very near the west shore of the 14,000 year-old pond. As we excavated toward that shoreline, bone fragments became more numerous, but excavations were halted before we actually reached the former shoreline.

Because Manny was selling his peat, it had been removed from the main dig site, but here near the west shore of the pond the peat was mostly intact. We had originally assumed that the peat was sterile because no bones or artifacts had been found in it. Besides, peat forms in standing water and people seldom frequented such environments. Of course, most of the peat had been removed from the areas we had excavated and I elected to proceed slowly and carefully through the peaty muck to discover what, if anything, was there. After troweling slowly through nearly three feet of sterile deposits, we found a single stone flake that appeared to have been modified by man. That was in the summer of 1981. By the summer of 1983 we had found 14 more stone flakes in the peaty muck.

The bog seemingly dried up for short periods and preserved tree trunks, limbs, and roots, confirming that trees had encroached on the bog from time to time. People apparently stopped at the bog occasionally between 7,000 and 14,000 years ago, and when it was dry

they walked across its surface and left behind a few broken stones, which tell us they were there.

The Manis Mastodon site revealed evidence of at least 12 levels of human occupation ranging from nearly 14,000 to 7,000 years ago. What began in 1977 as a weekend excursion to identify and collect bones of a fossil elephant resulted in the discovery of a major archaeological site suggesting that people lived on the Olympic Peninsula at least 4,000 years earlier than previously anticipated. Most significantly, the Manis site was visited at least intermittently for 6,000 years, and it has opened new doors to our understanding of the earliest human inhabitants of the Olympic Peninsula.



*Site location map*