FOSSIL CYCAD NATIONAL MONUMENT: A CASE OF PALEONTOLOGICAL RESOURCE MISMANAGEMENT

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ABSTRACT—Through the power provided in the Antiquities Act (1906), on October 21, 1922, President Warren G. Harding created Fossil Cycad National Monument. Scientists recognized that the fossil locality preserved a significant exposure of a Cretaceous cycadeoid forest. Hundreds of fossilized cycad specimens, one of the world's greatest concentrations, were exposed at the surface of the 320 acre site during the early 1920s.

Years of negligent management at the monument resulted in adverse impacts on the fossil resource. The fossils on the surface disappeared faster than erosion could expose other specimens from beneath. The loss of the exposed petrified plant remains eventually left the site devoid of fossils and ultimately without a purpose to justify its existence as a unit of the National Park Service. On September 1, 1957, the United States Congress voted to deauthorize Fossil Cycad National Monument.

INTRODUCTION

AT THE turn of the century there was a growing awareness towards the country's hidden treasures. In 1906, Congress passed the Antiquities Act as a means to protect some of America's cultural and scientific resources. The Antiquities Act provides the President of the United States with the direct authority to set aside areas of significant scientific or scenic values as national monuments.

In 1916, the National Park Service was established under the Organic Act with the mission, "…to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Originally the National Park Service was established to administer areas designated as national parks, monuments, and reservations. Today, the National Park System also administers historical/cultural parks, seashores, scenic riverways, recreation areas, and a variety of other federal land designations.

In 1922, Fossil Cycad National Monument was established as a unit of the National Park Service through the authority provided in the Antiquities Act. Hence, the monument and its resources were entitled to the same levels of protection and management provided through the National Park Service Organic Act.

By the 1930s, most of the fossilized plants called cycads were depleted from the surface at Fossil Cycad National Monument. Years of neglect, unauthorized fossil collecting, unchallenged research collecting and a general misunderstanding of paleontological resources, lead to the near complete loss of the resource in which the monument was named and designated. In the early 1950s, it had become apparent that the National Park Service failed to uphold the mission addressed in the Organic Act at Fossil Cycad National Monument. Therefore, in 1957, under the request of the National Park Service, one of America's important paleontological localities lost its status as a unit of the National Park System.



Figure 1 - Paleobotanist George Reber Wieland (used with permission from Yale University)

PRE-MONUMENT HISTORY

In 1892, F. H. Cole of Hot Springs, South Dakota discovered the fossilized cycad beds in the southern Black Hills, near Minnekahta. After the discovery, Cole sent photographs of the fossils he had found to Professor Henry Newton, a geologist at the Smithsonian Institution. The first description of the locality was published in 1893 by Professor Thomas MacBride of the University of Iowa.

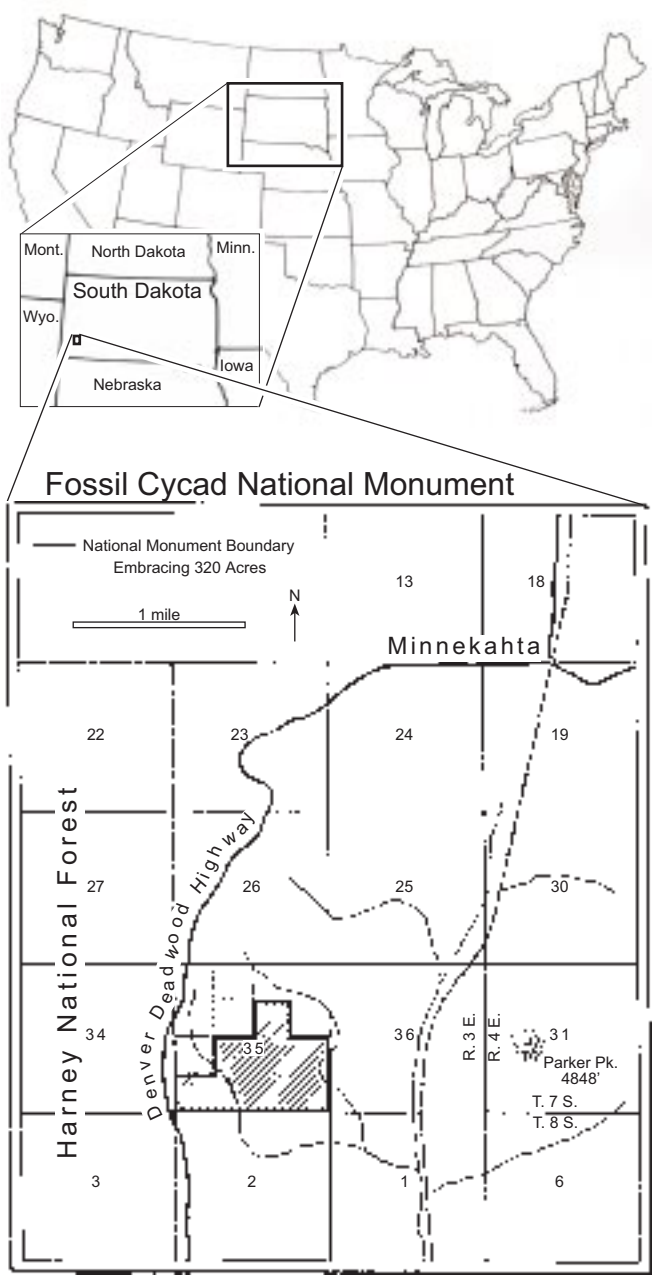


FIGURE 2—Location of Fossil Cycad National Monument (adapted from a 1922 Departmentt of Interior map).

Also in 1893, Lester Ward of the United States Geological Survey started collecting the fossilized cycadeoids in the Black Hills. In 1897, an extreme interest in the cycad sites of South Dakota took hold in George Reber Wieland (Figure 1). While assisting O. C. Marsh, Professor of Paleontology at Yale University, Wieland traveled to South Dakota and met Ward. Through the encouragement of Ward and Marsh, Wieland's scientific interest in the cycads of South Dakota grew and he changed his focus from vertebrate paleontology to that of paleobotany. Wieland returned to Yale University and the Peabody Museum and continued to study the cycadeoids. He later had two volumes titled *American Fossil Cycads* published by the Carnegie Institution of Washington (Wieland, 1916).

In 1920, Wieland obtained the fossil cycad-rich land under the Homestead Act "in order that the cycads might not fall into unworthy hands" (Hot Springs Star, 1938). Two years later, he offered to return the land to the federal government, so that a national monument could be established to further protect the petrified plants.

The 320-acre site, located in the Dakota Sandstone Formation (120 million years old), contained immense quantities of the fossilized cycadeoids. "The area is probably one of the most interesting fossil plant localities and is known amongst scientific men the world over," wrote E. C. Finney to President Warren G. Harding before the establishment of the monument (Finney, 18 October 1922). Many of the fossil cycad specimens exhibited branching features that were not previously observed. The fossil cycads held the promise of helping to explain the origin of flowering plants.

ESTABLISHMENT OF FOSSIL CYCAD NATIONAL MONUMENT

With Wieland's offer to give the homesteaded land back to the government for the creation of a monument, the government sought insight from scientists. Charles D. Walcott of the U. S. Geological Survey and the Smithsonian Institution was asked to visit the site and assess its value. Without visiting the locality, Walcott concluded that although there were reports that all surficial cycads had been removed, "in the future, more specimens will be exposed by erosion, and at that time it would be well for the area to be under the jurisdiction of the Government" (Walcott, 15 April 1922). After reviewing the scientific reports, President Harding signed a proclamation on October 21, 1922, establishing the site as Fossil Cycad National Monument (Figure 2):

> "Whereas, there are located in section thirty-five, township seven south, range three east of Black Hills Meridian, South Dakota, rich Mesozoic deposits of fossil cycads and other characteristic examples of paleobotany, which are of great scientific interest and value " (Presidential Proclamation 1641).

ADMINISTRATION OF FOSSIL CYCAD

The day to day surveillance of Fossil Cycad National Monument was entrusted to local ranchers. Although the superintendent of Wind Cave National Park was asked to look after the monument at the time of its establishment in 1922, there were only sporadic and brief visits to the site. Fossil Cycad does not appear in any of the superintendent's reports until 1933.

Regional Geologist Carrol Wegemann mapped the stratigraphy of the monument (Wegemann, 1936). He concluded that the cycad sand, which was six to eight feet thick, was either of the Dakota or possibly Morrison Formation. He commented that the lack of good exposures around the monument limited the view of the stratigraphic section. He also reported that the cycads occurred in stream deposits.

Research on the land resumed in October 1935, when Wieland and a crew of thirteen Civilian Conservation Corps workers opened six to eight excavation pits, according to the



FIGURE 3—Professor Wieland supervising a CCC crew during the 1935 fossil cycad test excavation (used with permission from Yale University).

superintendent of Wind Cave National Park Edward D. Freeland (Figure 3). Wieland reported that the excavation was a brilliant success with over a ton of uneroded specimens collected. Freeland stated that the excavation had "unquestionably proven that numerous cycads still remain on the monument and excellent specimens have been found."

Development of the monument was not seriously discussed until around 1936, when Wieland started pressing the issue. The value of the monument, though, was already being questioned. In 1929, Acting Director of the National Park Service, Arno B. Cammerer, wrote to Dr. J. Volney Lewis and discussed the validity of the monument:

> "It was considered worth conserving at the time, and the situation surely cannot have changed . It is similar to Dinosaur [National Monument], where there is nothing on the surface to show its scientific importance, but nevertheless it is there." (Cammerer, 11 December 1929)

Similar discussions continued throughout the existence of the monument. Development of the monument proceeded slowly for two major reasons: the lack of surficial *in situ* specimens at the site and a dispute between Wieland and Wegemann.

The Wieland-Wegemann dispute started in 1935, when Wegemann accused Wieland of stealing fossils collected during the November 1935 excavation. Wegemann stated that Wieland had removed all of the original surficial specimens and taken them to Yale University before donating the land to the government. This feud escalated when Wegemann shut down the 1935 excavation at Fossil Cycad. The issue culminated when Superintendent Freeland defended Wieland and at the same time criticized Wegemann. Freeland stated, "Wegemann has an unfortunate manner with other people, and he has been tactless enough to offend Dr. Wieland, by continual rudeness." (Freeland, 18 November 35). At that point Wegemann engaged in direct communication with the Assistant Director of the National Park Service, Harold C. Bryant, regarding Fossil Cycad without the permission of Superintendent Freeland. In a letter to Wegemann, Bryant wrote that "Doctor Wilson has resigned and Doctor Wieland feels that your treatment of him was discourteous." Bryant also mentioned that Wegemann "should first have communicated with Mr. Freeland so that orders for stopping the work of excavation could have been given by him." (Bryant, 22 November 1935)

The lack of surficial *in situ* specimens emerged as an obstacle when Wieland insisted on the construction of a visitor center at the monument site, so that the uniqueness of the fossil resource could be explained to visitors at Fossil Cycad. Wieland's persistence resulted in the Director of the Park Ser-



FIGURE 4—One of seveeral architectural drawings of a proposed visitor center at Fossil Cycad National Monument prepared by a student at Yale University.

vice recommending the development of a display about fossil cycads at the Wind Cave visitor center. Wieland's response to this idea was negative. He wrote repeatedly on the value of an *in situ* display:

> "Fossil Cycad Monument more than all others of its series is as we now see dependent on an absolutely *in situ* development and display. Without this it can mean but little, as a mere blurred shadow, all but lost again in the shuffle of time." (Wieland, 1937)

In order to expedite the creation of a visitor center, Wieland asked architecture students at Yale to submit proposals for a building design. These draft plans were sent to the Department of the Interior for review (Figure 4). The response from Washington was that the cost for construction of a building at the Minnekahta site was too expensive. In addition to the construction of the visitor center and the building maintenance, there would be a need to build roads into the monument. There was also the fact that the distinct value of Fossil Cycad National Monument eluded many people in the government:

> "Developments of additional areas cannot be undertaken unless their justification is unimpeachable and their future maintenance is assured. The Fossil Cycad National Monument does not satisfy either of these requirements. It is realized that the area is of outstanding paleobotanical interest . But it is also realized that the subject of fossil cycads does not have a broad appeal and, therefore, extensive development of the monument would benefit only a limited group of people. This is particularly true since the area does not possess other outstanding attractions. The scenery is neither impressive nor is it unusual; the geological interest, other than its paleobotanic relations, is not phenomenal; the area is too small for wildlife preservation; the terrain does not lend itself well to recreational development, and there is little historic interest." (Slattery, 23 July 1937)

Wieland's insistence continued. His next step was to urge senators and congressmen to contact the Secretary of the Interior regarding the developmental plans for Fossil Cycad National Monument. When these supplications failed, Wieland asked the senators and congressmen from South Dakota and Connecticut to introduce an appropriations bill that would provide funding for a visitor center at Fossil Cycad. The Department of the Interior contended that they did not have the funds to develop the monument, nor did they have a strong enough reason to seek funds:

> "Naturally, the development of any exhibit of this type is dependent upon an allotment of funds and these funds can be obtained only if the proposal justified the expense and those making the allotment are convinced that the exhibit is equal to, or better than, many others now waiting development in the various national parks and monuments." (Slattery, 28 May 1937)

THE LOST SPECIMEN

In 1933, just before the opening of the "Century of Progress" Exposition at the World's Fair in Chicago, the National Park Service Director's Office wrote to Wind Cave requesting a specimen of fossil cycad to be used in a display at the Fair.

Wind Cave did not have a specimen and contacted Mr. W.E. Parks of Lincoln, Nebraska. Parks agreed to loan his cycad specimen to be placed on display at the Chicago World's Fair. The National Park Service later lost the fossilized cycad specimen loaned by Parks. Mr. Parks requested that the National Park Service either replace the specimen or provide some compensation for the lost specimen.

The National Park Service effectively avoided the issue for years. Since a receipt of property was never produced at the time the specimen was received on loan, Parks' persistent claims regarding the lost specimen did not receive appropriate attention. Parks' requests for $75 as compensation for the lost specimen were challenged by the Regional Naturalist who recommended that only $50 compensation be paid instead of the $75 requested.

In a letter dated October 5, 1945, Mr. Trager, Regional Chief Naturalist described the lost specimen as, "a crushed cycad stump about 6 or 7 inches wide by 10 or 12 inches long. It was a very poor specimen and consequently was not exhibited at Chicago." (Trager, 5 October 1945). Because of a misunderstanding, this specimen was thought to be worthless and discarded.

Dr. Weiland suggested to Parks and the National Park Service that a specimen could be made available to replace the lost specimen. In June 1946, National Park Service staff traveled to Fossil Cycad National Monument to see if they could find a cycad to replace Parks' lost specimen. A replacement specimen could not be located.

The Interior Solicitor presented his opinion in a memo dated July 16, 1946, "Unless settlement can be made under the act of December 28, 1922 (42 Stat 1066, 31 US Code Sec 215) the only financial relief for Mr. Parks would be by Act of Congress on a Bill for his relief." (Interior Solicitor, 16 July 1946)

On January 27, 1947, the Solicitor wrote, "We realize that the settlement of Mr. Park's claim has been unduly drawn out. As yet, however, no logical solution has presented itself. A monetary settlement is not possible now since the statutory limitation of one year from presenting the claim has passed

long since." (Interior Solicitor, 27 January 1947)

Parks responded to the National Park Service in a letter dated April 5, 1947, "From the past it looks as if I am a victim of government red tape." (Parks, 5 April 1947) By the fall of 1947, Parks decided that his only option was to write to his congressman. (Parks, 28 October 1947)

On July 6, 1949, H.R. 3010 "A Bill for the Relief of Walter E. Parks" was passed by the House of Representatives. The Bill awarded Parks a settlement of $125.

DEAUTHORIZATION OF THE MONUMENT

By the early 1950s, the principal advocates for Fossil Cycad National Monument, George Wieland and South Dakota Senator Peter Norbeck, had died. "The National Park Service thinks Fossil Cycad National Monument is a white elephant and wants to get it off its paper", according to Secretary Will G. Robinson of the South Dakota Historical Society (Robinson, 18 January 55). Representative E.Y. Berry from South Dakota introduced legislation in January 1955 to abolish Fossil Cycad National Monument. The bill was introduced at the request of the National Park Service.

Robinson suggested that the site be transferred to the South Dakota Historical Society with the intent to preserve the fossil locality from any exploitation by private individuals. Robinson traveled to Fossil Cycad National Monument on May 28, 1956 with the Superintendent of Wind Cave. There was no evidence of fossil cycad material on the surface during their visit.

According to Dr. Bump, a professor at the South Dakota School of Mines, there are other cycads found in the Black Hills. Bump indicated, though, that other than a few specimens in the collections at his institution, Wieland apparently took all the cycads from the monument and set them up in a museum at Yale.

During the 84th Congress, Senate Bill 1161 was introduced to abolish Fossil Cycad National Monument as a unit of the National Park Service. The bill was supported by the Department of Interior and by the National Parks Association. The bill was signed into law on August 1, 1956 and became effective September 1, 1957. On December 6, 1957, Assistant Secretary of Interior Royce A. Hardy issued Public Order 1562 to carry out the directive of the public law. The land was turned over to the Bureau of Land Management.

POST-MONUMENT HISTORY

Between 1957 and 1998, the Bureau of Land Management (BLM) has maintained the 320 acre site previously designated as Fossil Cycad National Monument within the South Dakota Resource Area. In 1980, construction within a 300 foot highway right-of-way occurred within the boundaries of the revoked monument. During construction activities, fossil cycad material was unearthed.

In 1997, the BLM published an environmental assessment (EA) that analyzed the Fossil Cycad area relative to meeting the Area of Critical Environmental Concern (ACEC) criteria. The ACEC designation highlights areas where special management attention is needed to protect and prevent irreparable damage to resources. Members of the public nominated the Fossil Cycad area for ACEC designation.

In the Draft Amendment to the South Dakota Resource Management Plan prepared by the BLM, states, "BLM management objectives should involve the long-term conservation of the area's geologic, and paleontologic values for future generations to study and enjoy. " The preferred alternative (Alternative C) indicates the following determinations: 1) retaining the area in public ownership would help make the scientific information available to the public; 2) restricting activity would help protect the area; 3) by allowing rights-of-way, important scientific information may be uncovered during surface disturbance; and 4) this information would be recovered by BLM and made available to the scientific community.

Fossil Cycad National Monument was never officially open to the public and never had a visitor center or public programs. According to paleontologist Dr. Theodore White, "No present areas of the National Park Service contain fossil cycads. Therefore it could be concluded that the area should have been retained in the system based on its merits in relation to the thematic evaluation." The legislation abolishing the monument contains the following statement, "That if any excavations on such lands for the recovery of fissionable materials or any other minerals should be undertaken, such fossils remains discovered shall become property of the Federal government." (S. 1161).

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