

April 1, 1952

Dr. Nello Pace  
Associate Professor of Physiology  
University of California  
Berkeley 4, California

Dear Dr. Pace:

Your article in the March, 1952, Research Reviews and in particular the photograph showing bristle cone pines was of special interest and leads me to inquire whether any special permission is needed to reach the site of the lower research station.

I have been interested for a good many years in sampling the oldest conifers in the Rockies in connection with our dendroclimatic research, which the enclosed reprint summarizes very briefly. Sometime in July I expect to do some field sampling in the Sierra Nevadas and perhaps can get a chance to study the trees in your region also.

Sincerely yours,

Edmund Schulman  
Assoc. Prof. of Dendrochronology

lgp



April 7, 1952

Professor Edmund Schulman,  
University of Arizona,  
Tucson, Arizona

Dear Professor Schulman:

I am replying to your letter of April 1 addressed to Professor Pace, with respect to White Mountain.

No special permission is needed to reach the site of the lower station. You simply drive from the village of Big Pine according to directions which anyone there can give you. There is a dirt access road for the last twenty miles which is easily traveled by any car, except for a few rather steep grades. We should be glad to have you visit the station at any time you wish.

I think there is a very interesting field for investigation in the area. The bristle-cone pine exists in practically pure stand between the elevation of 9,000 and 11,000 feet. This forest shows all the appearance of being moribund. There are considerable areas of bare rocky slopes which clearly were forested in the relatively recent past but which now contain only the dead trunks of falling trees. At the margin of the existing stands the trees are slowly dying and there are practically no seedlings to be found anywhere.

A good deal of other evidence points to a rather severe climatic change within the relatively recent past. One opinion held rather widely is that this is due to a dry cycle accompanied by over grazing during the last 50 or 75 years. I myself am rather inclined to the idea that the change has been in progress a much longer time and may perhaps represent a gradual desiccation since the last pluvial period a good many hundred years ago. The problem is one to which a tree ring study could make a very significant contribution, and I hope that you will be able to find time to come up and at least make a rapid survey of the area.

Sincerely yours,

*S. F. Cook*

S. F. Cook,  
Professor of Physiology,

INYO NATIONAL FOREST - 151 CHURCH STREET - BISHOP, CALIFORNIA

# Office Memorandum • UNITED STATES GOVERNMENT

DATE: July 16, 1953

TO : Files

FROM : FOREST SUPERVISOR

SUBJECT: U-CLASSIFICATION-WHITE MOUNTAIN NATURAL AREA

## MEMORANDUM FOR FILES

The following is recorded for inclusion in the eventual report on the White Mountain Natural Area:

On 8/20/51, Ranger A. E. Noren wrote to the American Forestry Association, 919 Seventh Street N.W., Washington 5, D.C., and nominated a Bristlecone pine found on the White Mountain Range in the Association's Big Tree Project, as follows:

Location: S.12, T. 5S.R. 34 E, M.D.M., Mono County  
Elevation: 11,400  
Circumference at  $4\frac{1}{2}$ ' above ground: - 37.7'  
Height: about 40'  
Spread: about 45'

The Association subsequently accepted this nomination, stating in its letter of 9/10/51:

"Accordingly, we are entering it in our records as the champion of its species, and it will appear in our forthcoming printed Report on American Big Trees."

The champion tree is located within the proposed White Mountain Natural Area.

cc: White Mtn. Dist.

*H. J. Davis.*

*Not included. See report.*

*6.8*



Dr. S. F. Cook  
School of Medicine  
University of California  
Berkeley 4, California

Dear Dr. Cook:

At last, after two previous planned visits which didn't materialize, I collected some tree-ring cores in the neighborhood of the lower station and in one timberline area on White Mountain. I would like to express my appreciation of the very courteous and enthusiastic cooperation of your personnel there.

You are quite right in thinking this is a very interesting area in terms of dendrochronology. In fact, the cores I obtained were so good I am planning a special trip next Sunday--weather and other unknowns permitting--to more extensively sample two or three particularly interesting individuals. I should then be in a position to make some fair estimates both of approximate maximum ages and also of climatic-indicator value of the selected trees; it looks as if, eventually, we may be able to derive very valuable supplementary climatic histories from these trees. The current sampling can represent only a preliminary survey.

Sincerely yours,

Edmund Schulman  
Visiting Prof. of Dendrochronology

Prof. Fritz Went, of the Earlhart Plant Research Lab  
here, accompanied me on the trip, and was  
enthusiastic about certain animals he collected.



October 3, 1953

Mr. Al Moran, Ranger  
U. S. Forest Service  
Big Pine, California

Dear Mr. Moran:

Recently I had the pleasure, after some correspondence with Dr. Cook of Berkeley, of sampling some of the trees at the Lower Station and also at upper timberline on White Mountain. The boys at camp told me you were very much interested in some of the stands as a potential Natural Area.

The sites I sampled are definitely among the most interesting of all those I've sampled during the past twenty years in this country and abroad. One or two trees up there are of particular interest (in the two days we were there it became clear there is at least a month's good sampling work to be done in the region) and I am planning to make a hurried trip next Sunday for additional samples. We will try to stop by your office Saturday nite or Sunday nite, if plans go through.

In any case, I would be glad to get all the information you may be in a position to give us on the bristle-cone and limber pines of the White Mountains. The samples I got from the tree you have labelled "The Patriarch" indicate it to be one of the truly old pines. When the analysis of the cores is complete I will write you more fully.

Sincerely yours,

Edmund Schulman

Visiting Professor of Dendrochronology



November 4, 1963

Dr. S. F. Cook  
School of Medicine  
University of California  
Berkeley 4, California

Dear Dr. Cook:

The complete reduction of the White Mountain cores involves much laboratory work which must necessarily await funds for assistants, but I thought you might be interested in some preliminary results with respect to ages. Since the work is incomplete perhaps these should be considered as for your information for the time being.

The oldest precisely dated limber pine (Pinus flexilis) shows an innermost ring on the core, very near the pith at a low level in the stem, at A.D. 296; the oldest bristle-cone pine (P. aristata), inner ring on the core being well cut from the pith, at A.D. 535. Precise dates are possible because a recognizable chronology, which permits solution of cases of missing rings, etc., is present. I have cores from several other trees in the 1500-year age class. It is evident, after this careful selection of the probably oldest trees for sampling, that this age class represents an upper limit for almost all of the pines on White Mountain; these are indeed magnificent ages, for until my recent results on limber pine in the northern Rocky Mountains, the determined maximum ages for any species of Pinus were under 1,000 years.

Since my attention was first drawn to these trees by your photograph in the Research Reviews article, perhaps you can help me trace to source the basis for the views on great age of these pines. I was informed that Mr. Al Noren, the Bigpine ranger, to whom I have written, has done some ring counting. One of the trees in the 1500-year class, a very large one he labelled "The Patriarch".

Sincerely yours,

Edmund Schulman

November 4, 1953

Mr. Al Noren, Ranger  
U. S. Forest Service  
Big Pine, California

Dear Mr. Noren:

We are still working on the cores collected from the old pines on White Mountain, regarding which I wrote you on October 3. I had hoped to stop in to see you on our week-end trip in early October, but darkness overtook us while we were still collecting Sunday evening and we had to hurry back to Pasadena.

I look forward to having a chat with you sometime about this most interesting stand of trees. In the meantime, we would greatly appreciate any information you can give us regarding their distribution, the work towards making this a Natural Area which I am told you have been much interested in, etc.

It is already clear that these trees will provide us with excellent climatic information, along the lines of previous work briefly outlined in the enclosed reprints.

Sincerely yours,

Edmund Schulman  
Visiting Professor of Dendrochronology

*Comp  
Res Rev.*



UNIVERSITY OF CALIFORNIA

DEPARTMENT OF PHYSIOLOGY  
SCHOOL OF MEDICINE  
BERKELEY 4, CALIFORNIA

9 November 1953

Dr. Edmund Schulman  
Department of Geological Sciences  
California Institute of Technology  
Pasadena, California

Dear Dr. Schulman:

I was very much pleased to receive your letter of November 4 telling of the results you obtained with tree dating at White Mountain. I am glad to learn that our trees are of respectable age but on the other hand I am glad in some ways that they do not out-date the Sequoia and redwoods. Some time I hope that you will be able to establish dating patterns so that it will be possible to get some estimate of the age of the many dead trunks which are lying on open status slopes. Some of these I feel must be of really great antiquity.

As to the source of the views on the great age of these pines I have no information except common gossip in the Bishop area. I suspect that you are correct in thinking that ranger Al Noren is largely responsible. Several months ago Dr. Pace and I had an interview with Mr. Davis, the new forest supervisor at Bishop, and were informed that the Forest Service proposes to establish a so-called primitive area near our base camp for the preservation of this timber. One of the reasons advanced by Mr. Davis for taking this step is the reputed great age of the trees, in particular the very large one which you mentioned in your letter. Davis seemed to have the notion that some of the pines would out-date the Sequoia and this, of course, would be the basis of considerable favorable publicity for this forest. I am very gratified that you have put the quietus on this particular danger.

If we can facilitate your work in any way, please do not hesitate to let me know.

Sincerely yours,

*SF Cook*

SFC:LC

S. F. Cook, Professor  
of Physiology.



November 11, 1953

Dr. Carl F. Russell, Superintendent  
Yosemite National Park, California

Dear Dr. Russell:

During a conversation with you in early July, 1952 on a field trip from the University of Arizona, I recall you showed much interest in the White Mountains. I did not succeed in getting into the high country and sampling trees in that range until this fall, when I made two surveys. As a result I am eager indeed to get all the information I can on any work that has been done on the remarkable pines of the White Mountains.

*Pennin*  
There was a ~~reference~~ <sup>Pennin</sup> by Professor Cook of the University of California Medical School to these pines and their supposed great ages, in a popular article in the Research Reviews. At the time I wrote an article, enclosed, for the same journal I had not yet visited the area. Cook's comment is the only thing I've yet seen in print; are there any others?

I would also be much interested to hear about the plans I understand are under way to have the upper level White Mountains made a Natural Area, in part. The locality I was shown as the one proposed surely contains very spectacular trees, though I believe on the basis of evidence now in hand, still very sketchy, that a locality some miles distant contains substantially older trees.

Sampling of western juniper in Yosemite last year was quite incomplete but sufficiently productive to make me eager to get into the back country again for a more extensive survey. This will of course have to wait at least till next summer.

Sincerely yours,

Edmund Schulman  
Visiting Professor of Dendrochronology

*Edmund Schulman*



January 4, 1954

Mr. W. S. Davis, Supervisor  
Inyo National Forest  
Bishop, California

Dear Mr. Davis:

I appreciate very much your sending me the copy of the White Mountain report, returned herewith. This was, to me, one of the most interesting and instructive bits of reading in many a day.

You are quite right in believing that the White Mountain pines can provide a chronology exceeding that at Mesa Verde in length. My preliminary collections have already yielded a definitively dated sequence in excess of 1,500 years long; it now remains to put this on a sound statistical base and to extend it to the maximum possible for the area. I am looking forward indeed to next summer's work.

Here's looking for a visit from you soon.

Cordially yours,

Edmund Schulman



February 5, 1954

Wilford S. Davis, Supervisor  
Inyo National Forest  
Bishop, California

Dear Mr. Davis:

I neglected to ask you, during the so enjoyable visit with Mrs. Davis and you, about a small point of fact. I have a note in my file that Ranger Alvin Noren found and named "The Patriarch". Is this correct? Since Dr. Mirov worked in the White Mountains some years ago, there might be a small possibility of his being concerned in this.

Separately, I am sending another small set of reprints which you might be interested in having for your files.

Sincerely,

Edmund Schulman

*J. F. Wilford  
Bishop, Calif.  
TR-1-50  
PL 50*



July 6, 1955

Mr. Paul Manis  
White Mountain Research Station  
Bishop, California

Dear Mr. Manis:

Mr. Davis writes me that you were kind enough to offer to meet us at Westgaard Pass, since it looks as if our transportation is not the kind that will make the road beyond the Pass.

At the moment it appears that we will not get to Bishop before the 18th. Perhaps it will be best to leave specific arrangements to then, when I will phone you, perhaps that Monday afternoon or evening, for a possible meeting at the Pass early Tuesday.

I am indeed looking forward to another view and sampling of the remarkable White Mountain pines.

Yours,

Edmund Schulman  
Assoc. Prof. of Dendrochronology



11 September 1957

Mr. Joseph T. Radel  
Supervisor, Inyo National Forest  
Bishop, California.

Dear Mr. Radel:

Attached is the Blanco Mountain quadrangle showing the limits of distribution of bristlecone pine as derived from the available aerial photos and our own extensive ground observations during the past summer's field work in the White Mountains. You will note that some small portions of the boundary line are dotted, the ground observations being incomplete.

In addition to the Blanco-Reed Flat and the Silver Canyon units, the Naval Research Station area, which, of course, extends beyond the Blanco quadrangle and is thus shown here only partially, might also well be included in the proposed Experimental Forest, since the NRS area contains bristlecone pine on granite, rather than on the carbonate rocks. Essentially, the NRS extends northward and westward to join the existing Natural Area.

The bristlecone forest in the small Silver Canyon unit is very irregular at its lower altitudinal limit and so I have drawn in the limit at the 10,000 ft. contour, which is "safe" for this relatively high unit.

On the basis of our field surveys of 1953-56, and especially the definitive, summer-long survey of 1957, we recognize that within the Blanco-Reed Flat and the Silver Canyon units live perhaps more than a hundred bristlecone pine trees exceeding 4000 years in age and probably several thousands of trees in the 3000-4000-year age classes. These stands thus contain, by a very great margin, the oldest known living things.

The extraordinary longevity of some bristlecone pine trees becomes of specially high scientific importance in light of their excellent quality as growth-ring recorders of past climatic changes, a quality which is to be found in far less than 1% of the world's conifers.

Perhaps more important than either of the preceding aspects is the potential that the bristlecone pine forest of the White Mountains contains for basic research in longevity, genetics, and other areas of forest biology.

With appreciation for the unfailing cooperation of the Inyo National Forest personnel during this and preceding seasons of field work,

Sincerely yours,

Edmund Schulman  
Dendrochronologist

ES:hg  
1961



30 November 1957

Miss Ann M. Bracken, Director  
Arizona State Dept of Public Welfare  
Phoenix, Arizona

Dear Miss Bracken:

In response to your Teletax request of this morning regarding

Mr. Joseph Wentworth;

Mr. Wentworth was manager of the White Mountain High Altitude Research Station during the past two summers and I thus had the opportunity to see him frequently in the course of my field work in that California range. I found him to be most cooperative and responsible; he apparently got along very well with his associates and with the numerous visitors and suppliers at the Station.

Very truly yours,

Edmund Schulman  
Assoc. Professor of Dendrochronology



## THE FILES

W. S. DAVIS, Forester

April 16, 1958

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SHOP

U-CLASSIFICATION-Inyo-Ancient Bristlecone Pine Forest

FILE

The publication of the late Dr. Schulman's fine article in the National Geographic Magazine about the ancient bristlecone pine forest in the White Mountains of California has aroused widespread interest in the unique stand. Statements are now being heard that discovery or recognition of the area originated outside of the Forest Service. This is not so.

Former District Ranger Al Noren in 1951 succeeded in getting the American Forestry Association to recognize the largest tree in the ancient forest as the champion of its species. This is the bristlecone pine which today is known as the Patriarch. Then, spurred on by a June 11, 1952 general memorandum from the Regional Office, the Inyo made an administrative study of the area with the idea of recommending it for special classification. On June 29, 1953 the forest requested the California Experiment Station to send a qualified group out to check its findings and stated: "It is barely possible that a few of the larger trees might surpass the Sequoias in age." Dr. Mirov and Professors Mason, Metcalf and Cockrell enthusiastically endorsed special classification for the ancient forest after a visit, and on November 13, 1953 Acting Chief Forester Hopkins authorized a portion of it set aside as a natural area.

Dr. Schulman appeared on the scene in the fall of 1953, having learned of the area through the formal recognition of Ranger Noren's Patriarch. He took some core samples and in the March 26, 1954 issue of SCIENCE stated that he had found a maximum age of 1419 years, and that older trees could probably be found. Subsequent investigations in the area by Dr. Schulman led to the discovery in 1956 that many trees exceed 4,000 years in age and far outdate the Sequoias - thus confirming the Inyo's estimate made three years before.

The late Dr. Schulman stands alone as the discoverer of the oldest living things on earth and his work leading thereto was outstandingly brilliant. But others who may claim that they were the first to recognize the ancient bristlecone pine forest as being unique should know that the credit belongs and remains with the Forest Service.

W. S. DAVIS

2cc-Chief

2cc-Inyo





MACALESTER COLLEGE  
SAINT PAUL 5, MINNESOTA

April 30, 1958

RECEIVED  
MAY 5 1958  
CHIEF I & E  
W. O.

Tree-Ring Research Laboratory

Dr. Richard E. McCardle, Chief  
Forest Service  
United States Department of Agriculture  
Washington 25, D.C.

Dear Dr. McCardle:

The United States Department of Agriculture press release of April 13, "Forest Designated to Preserve Oldest Living Things," announces a timely and worthwhile preservation of the unique stand of bristlecone pine. As one who has worked on tree rings and tree growth for the past 27 years please permit me to ask several questions and make a suggestion.

1. Will any effort be made to check the ages announced by Dr. Schulman?
2. Did he detail the methods he used? How were the several separate trunk growths co-related? (The Article in the National Geographic did not say; nor was this detail covered in his 1956 announcement of the old trees.)
3. Does the designation of a Preserve mean that no one can go in to the region and verify the work of Schulman? I am now working under my second grant from the National Science Foundation on the problems of "Tree growth and climate." If possible, I should like to visit the old trees this summer. Dr. N.A. Bowers, who operates a tree-ring laboratory in Atherton, California, has worked on bristlecone pine specimens brought from the area in question and, like myself, is greatly interested in these old trees. However, I feel sure neither of us could afford the time or energy to make the trip to the high country for tourist purposes only.
4. In 1949 the University of California sent me a segment of bristlecone pine and I found the trees to be of excessive age based on ring counts, as submitted. However, a ring count and age in years may be two different things.
5. The establishment of the preserve is a fine and timely action. Do you not think that type sequences of the rings for the past 4600 years should be obtained and preserved in a museum for future scientists? Who knows what will happen to the trees in view of climatic changes, wind, and erosion?
6. May I suggest that a study be made of the three species of California trees which attain great age and that a report be issued containing both popular and scientific information. California has the bristlecone pine, the Sequoia, and the old juniper, Juniperus occidentalis. In 1940, the U.S. Forest Service issued a pamphlet on "Stanislaus National Forest" in which are pictured not only the Sequoia but also the Bennett Juniper whose diameter was over 14 feet and whose age was estimated to be over 3000 years. This juniper was named and given a tentative age by methods described in the magazine of the California Botanical Society, "Madrono," for January, 1937, Volume IV, pages 21 to 28.

If there is anything this laboratory, or the undersigned personally can do, it would be a pleasure to cooperate with you in this worthy cause.

Very truly yours,

Waldo S. Glock

Waldo S. Glock  
Chairman



March 29, 1972

Editor  
National Parks & Conservation Magazine  
1701 Eighteenth Street, NW  
Washington, D. C. 20009

Dear Sir:

Congratulations on publishing Darwin Lambert's excellent article, "Bristlecone Harmonies" in the March 1972 edition of the National Parks & Conservation Magazine. The recognition that the U. S. Forest Service was the first agency to set aside natural areas to protect the species is correct, but the establishment of the White Mountain area in the Inyo National Forest in 1953 was not the initial event. More than two decades earlier Regional Forester Allen S. Peck authorized special protection for a bristlecone pine area high up on Mt. Evans in Colorado's Arapaho National Forest, and in 1932 it was officially classified as the Mt. Goliath Nature Study Area. Today it is more properly known as the Mt. Goliath Natural Area, and encompasses 160 acres.

While a district ranger on the Arapaho in the late 1930's I took increment borings of some of the windswept trees in the Mt. Goliath area and found ages up to about 800 years. When I became Supervisor of the Inyo National Forest in 1953 the much larger bristlecone pines in the White Mountains came to my attention, and here the increment borer gave indications of truly astonishing age. At a visual presentation on the bristlecone pine made to the board of directors of the Sierra Club late that summer, I ventured the opinion that the White Mountain strand might well contain the world's oldest living thing. This, coupled with our classification of the White Mountain Natural Area the same year, came to Dr. Edmund Schulman's attention. He soon confirmed what had up to then been only an educated guess, and in 1957 he found the 4,600 year old "Methuselah" tree.

It may well be, as Mr. Lambert's article suggests, that the long-lived bristlecone pine in the White Mountains is a more durable subspecies of the *Pinus aristata* of the Rockies. But in any event the unique bristlecone pine has had the attention of professional foresters for a long time, and I appreciate this opportunity to fill in the history of when the Forest Service first gave it official protection.

I would greatly appreciate it if you would forward a copy of this letter to Mr. Lambert for his information.

Sincerely,

W. S. DAVIS

W. S. DAVIS, Chief  
Division of Recreation





# Report Raised Forest's Vogue

Few Visited Bristlecone Stand Before Trees Were Labeled Oldest Living Things

By CARLE HODGE

Dick Wilson, who is a forest ranger and not a researcher, recalled yesterday how a scientific report changed his life.

Wilson, a stocky, outgoing man, is district ranger for a high, dry swath of the White Mountains in extreme eastern California.

His district has never been the same since Dr. Edmund Schulman, a University of Arizona tree-ring researcher, published his findings on the area in 1956.

"Dendroclimatic Changes in Semiarid America" was as technical as the title sounds. It was crammed with charts and complex computations.

But in it Schulman, who died two years later, reported that the bristlecone pines of the White Mountains apparently are the world's oldest living things.

Schulman said his study of a core (out of more than 500) taken from one specimen there showed it to be about 4,600 years old.

His discovery had an electrifying effect on scientists everywhere. And for Wilson and other forest service men on the scene the news brought dramatic changes.

"I don't imagine much more than a couple of cars a week went up into that area before Schulman's announcement," the forester said. "In 1958 it had 1,500 visitors."

Last year there were 3,000, despite the fact that road repairs blocked the way during much of the summer, the only season at which the best of the bristlecones can be seen. The ancient trees grow at elevations between 8,500 and 12,000 feet.

The road, once almost im-



DICK WILSON

passible, has now been improved and its steeper grades bypassed. As a result, Wilson expects "nearly 5,000" visitors this summer.

He visualizes the time, perhaps in the next few years, when so many people drive up to see the prehistoric pines that a paved road will be necessary, and perhaps a museum.

"As the number of visitors increases, so will our protection," the ranger said. When the age of the trees first became known, souvenir hunters hacked at them, and professional sellers of interesting wood carted away bristlecone by the truckload.

Wilson spent the past week here on his first visit to the university's Tree-Ring Laboratory. "I wanted to see the lab," he said, "and tie in a little closer what all of us are doing."



area in 1956.

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One thing he and the UA people have done is prepare "self-guiding trails," with markers, through the bristlecones. A UA team, including Dr. C. W. Ferguson, who helped with the Schulman studies, has recently resumed the project.

They hope they may find, among other things, even older trees there. Wilson, who was with Schulman when the 4,600-year-old pine was found, remembered that as early as 1950 forest service scientists had declared the trees were very old.

Preliminary investigations then indicated that one tree was 4,000 years old. "That's the sort of thing that could make you real proud," Wilson said. "The only trouble was, that particular tree turned out to be only 1,500 years old."



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