OAK ISLAND MYSTERY FIBERS

Paper by

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This paper is submitted to those who have interest in solving history's mysteries through scientific examination. With an emphasis on botanical, archaeobotanical and ethnobotanical examination, the topic within asks a simple set of questions outside the scope of knowledge of the author. Answers to those questions, or comments to help ascertain those answers are solicited and are greatly appreciated. Thank you for responding to this query.

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Scenario

Treasure stories often come and go as they are explained away into the legend and lore of regional history. Yet there is one treasure story which has survived more than 228 years of research, searching, scientific and historical analysis and steadfastly has links with different world populations, and covering centuries of time. This saga is the longest running treasure searching operation in history and continues to this day. This evidentiary report involves botanical aspects of this unexplained enigma known as *The Oak Island Treasure Story*.

Oak island is one of 365 islands located in Mahone Bay centered on the eastern Atlantic coast of Nova Scotia, a province in Canada; at latitude: 44' 30' 59.99" N Longitude: -64' 17' 34.20" W. Located in Lunenburg County. The island is approximately 140 acres in size, roughly a mile-long by half-mile wide, combining two or more glacial drumlins which rise to a current height of 36 ft above sea level.

Much of the Oak Island Treasure Story was written over fifty years *after* the legend and lore tells of its beginning around 1795. The original story has been embellished, retold, and modified so many times, most of the public believe it to all be a myth once generated by either searchers seeking investors or landowners trying to cash in on the popular legend of Pirate Captain Kidd.

The islands' earliest inhabitants were recorded in 1751; though like much about the island and its inhabitants, little is documented. Settlement of the province was in waves, believed to have started with Portuguese, French, Scot and English immigrants; brought to populate, tame and control the territory for their sovereign supporters. Through the latter 18th century England was transporting settlers to the Lunenburg area through land grants and other incentives.

Many searchers have dug within the island over time and many odd artifacts have been found, which only spurred almost continuous excavation and financial ruin in the hunt for treasure. Almost a hundred shafts and tunnels, a thousand boreholes and deep trenches have been dug within the island. And except for those odd artifacts, only one recondite piece of evidence has yet to be explained – tons of *coconut fiber* (**CF**); specimens of which have radiocarbon dated between 1229-1330 AD.

Throughout the history of researchers, miners and searchers, organic fiber artifacts believed to be coconut fiber have been found deep underground, but primarily in two locations: The *Money Pit* (**MP**) and atop what is believed to be a *Filtration System* (**FS**) found under the beach sands of Smith's Cove. Both constructs are on the eastern drumlin closer to the open ocean, and factual evidence of both have long been lost or decimated by eager searchers recklessly bulldozing to stop the mysterious flood tunnels. Many scientists do not believe either construct was manmade and many suggest the **MP** to have once been a sinkhole and the **FS** was not part of a connected flood tunnel system; which had stymied searcher efforts digging within the Money Pit area.

The calculated total volume of **CF** found below ground could fill up 2½ forty ft. metal shipping containers, with the fibers themselves weighing in at 1.54 metric tons. See ***Appendix A, "Oak Island Coconut Calculation***," to understand the formulation used to make this determination. The volume of fiber is one of the impressive issues promoting this artifacts archaeological significance.

To generate this much coir would require retting 18,000 coconut husks. See ***Appendix B,*** "***Retting Coconut Fiber***," to understand the physical morphology and chemical fermentation changes affecting the fiber within the husk retting process.

The most advanced technologies have and continue to be deployed to the island for solving the mystery. Today, the opinions and proof of constructed flood tunnels have been recorded and the general location of the **MP** and **FS** are generally known. The search continues to employ archeologists, geoscientists, geologists, biologists, chemists, astrologists, hydrologists, historians, engineering firms, and renown natural science agencies in attempts to peel apart the enigma still baffling searchers today. Yet no botanist nor archaeobotanist has brought their expertise to this ongoing conundrum. Perhaps now is the time.

This report attempts to compile forensic records and researched information regarding the organic fiber artifacts found within Oak Island with experts who can untangle the quandary as to its identification. Currently these fibers are believed to come from the husk of the coconut palm (*Cocos nucifera*) and are referred herein also as *coir* (**CF**). See ***Appendix C,*** "***Coconut Palm Coir Fiber (CF)***," for general information on *Cocos nucifera* and its fibers. Historically, as shown later, these fibers had also been identified in the laboratory as manila grass a.k.a. Zoysia (*Zoysia matrella*), unknown animal hair, and manila hemp a.k.a. abaca (*Musa textilis*). Recently, my research has indicated the organic fiber artifacts *may actually* derive from the Date Palm Tree (*Phoenix dactylifera*), and perhaps more specifically, to the Judean Date Palm Tree. See ***Appendix D, "Date Palm Fiber (DPF)***," for general information on *Phoenix dactylifera* and its fibers. It may be possible to further determine if it belongs to one of the variants researched and discussed within the *Methuselah Project* conducted in Israel and discussed herein. See ***Appendix E, "Methuselah Project Implications***."

Regardless of whether the organic fiber artifacts are positively confirmed and identified as **CF** or they can be distinguished as **DPF**, and with the repeatedly determined radiocarbon dating from several different labs, this fiber will have proven the arrival of European and Middle Easterners were in North America much earlier than previously thought… as bones from those two groups were also artifacts found deep within Oak Island constructs.

Perhaps the science of botany and archaeobotany will be the proper scientific field to advance what happened long ago on Oak Island. As the Woods Hole Oceanographic Institution claimed in their 1996 Draft Report (cited within this paper) "***these organic fibers were brought to the island by 'ancient voyagers' and for flood tunnel purposes***."

I hope this challenge inspires you to read on and use your expertise and experience to review the assembled data and offer comments and solutions to confirm and finalize the identification of these mysterious fibers which play such an important part in determining who was on Oak Island. The answers to the posted questions will help in this quest. The usual suspects may surprise you. *Can you help untangle the mystery?*

Questions

This report is seeking professional botanical and palm expert assistance to answer the following questions. It is believed by this amateur, answers to these questions would greatly uncover *WHO* was on Oak Island before the historical record and based on the organic material – *WHY*. Please review the attached compiled literature, obtained documents and photographic materials to assist in your resolving the issues at hand and in helping answer these questions…

1. Can the botanical identity of these frequently found organic fiber specimens from Oak Island be ascertained to a high degree of certainty?

2. Can these specific organic fiber specimens highlighted in this report and identified by others, be confirmed as ***palm fiber***?

3. Can these specific organic fiber specimens highlighted in this report and identified by others, be confirmed as ***coconut husk fiber***?

4. Can these specific organic fiber specimens highlighted in this report and identified as coconut husk fibers, also be determined to be ***coir fiber*** (having been processed through retting)?

5. Can these specific organic fiber specimens highlighted in this report be identified as ***date palm fiber***?

6. Can these specific organic fiber specimens highlighted in this report and identified as palm fiber and now identified to be date palm fiber – can they be further identified as ***Judean Date Palm Fiber***?

7. If those specific organic fiber specimens highlighted in this report and identified by others, cannot be botanically identified to a degree of certainty in your assessment, what description or level of identity would you be willing to assign to each or all of the specimens in this report?

8. If you were to further investigate the identity of these specific organic fiber specimens from Oak Island presented in this report, what course(s) of action would you recommend be taken to reach a higher certainty of botanical genus or species identification?

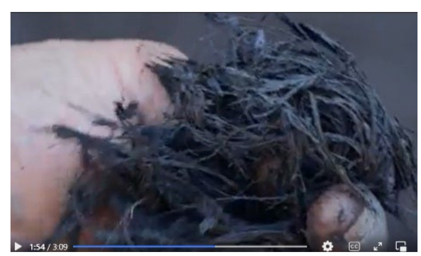
Section 1: Oak Island Evidence

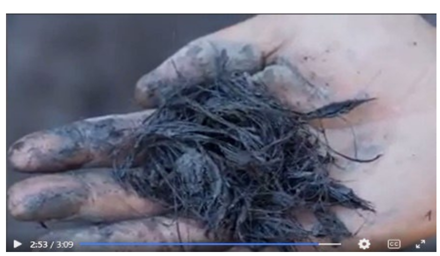
The evidence of the organic **CF** specimens found and analyzed throughout the history of the Oak Island Treasure Story is offered here. This documentation is arranged in a chronological order from most recent to the past. With more recent findings of **CF** on the island, presented documentation includes; SEM micrographic images, photographs, and video-evidence of the provenance of the found organic fiber. As we step back in time in this chronology, the SEM micrographs become less vibrant or do not exist, but lab reports and expert statements are included. Radiocarbon lab dating tests are included when they have been obtained. Further back in time, we only have various documentation to state the volume and identification made of those mystery fibers. Though the chronology continues (see **Appendix F, "*Chronology of Oak Island Coconut Fiber*"**), only the latest documentation is provided here in Section 1, for brevity. The remainder going back to as early as 1804, can be found in Appendix F.

This report is not issued to argue with or correct any scientific determinations made by any agency, lab, person or university in the past; but to provide a fully documented evolution in the determination of the identification of the organic fiber artifacts found within Oak Island.

Chronology of Mystery Fibers (most recent)

2020 Mar. 3 History Channels' Cable TV series *Curse of Oak Island, Season 07/Episode 15 – "Surely Templar."*
Members of the current search team excavating in Smith's Cove, find more 'coconut fiber.' Images are from the above episode aired on the above date.





These fibers were not radiocarbon dated. The color is what one would expect being so dirty and stained from being at a deeper level within the island, but the clump-like aspect works against the fine hair description of coconut coir fiber.

2019 Jan. 22 History Channels' Cable TV series *Curse of Oak Island*, Season 06/Episode 10 – "*Fingers Made of Stone*."
Members of the current search team in Smith's Cove find what may be one of the 'finger drains' (part of flood tunnel system connected to the **FS**) when it is unearthed. While Archaeologist Laird Niven was excavating the finger drain, Charles Barkhouse discovers a moderate amount of **CF** shown below.

These fibers were not radiocarbon dated but appear closer to the color one would imagine as **CF**. Yet these fibers seem much less curly or coiled as expected. As claimed and viewed In this episode, **CF** was found within a *flood tunnel finger drain*, and water was washing over the **CF** as it exfiltrated from deeper within the island at Smith's Cove, near the previously found **FS**. Their immersion in this hydraulic construct kept them cleaner and less clumped than other fibers found at various depths under the beach sands, as previously seen.

2018 Dec. 4 <u>History Channels' Cable TV series *Curse of Oak Island*, Season 06/Episode 04 – "*A Legacy Revealed*."</u>

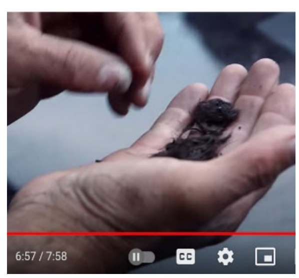
Members of the current search team drill down into borehole **DE6** when an impenetrable object stops drilling at 203 ft. Drilling is moved to another location ID'd as borehole #7.5 (7.5 ft west of DE6). Core samples from 160 ft depth are examined when Craig Tester finds a single thread of **CF** within the bore sample. Axe-cut wood is recovered 10 ft below in the following bore section.

Curse of Oak Island Cable TV series records do not say whether this specimen was confirmed as **CF** or if it was radiocarbon dated. It is included in this report to demonstrate the organic fiber was frequently found in different locations and depths by searchers over the 228 year searcher saga. The shape of the fiber is consistent with that of coir.

2014 Jan. 12 <u>History Channels' Cable TV series *Curse of Oak Island*, Season 01/Episode 02 – "*The Mystery of Smith's Cove*."</u>

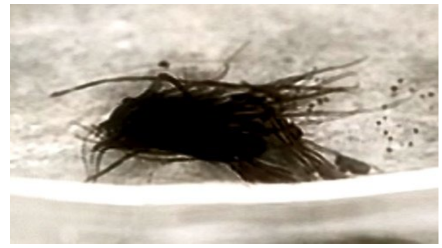
Newly arriving members of the recently purchased island by Rick & Marty Lagina, start chronicling their search for treasure on Oak Island. Led by Dan Henske, longtime searcher who now joins the Laginas, takes the new searchers to Smith's Cove in hopes of finding **CF** and becoming the first artifact the new team has located. They find a small amount of **CF** approximately 2 ft below the surface at low tide, under rocks, sand and clay. The **CF** was later ^{14}C dated to "**between 1260 – 1400 A.D. with 95% confidence.**"

CF found in this episode is later shown to be taken to Acadia University, Nova Scotia, for examination and identification by Biologist Dr. Roger Evans. During this episode, Dr Evans uses SEM micrographs to compare the newly-found specimen with a "confirmed" sample said to be coconut fiber offered by the search members. Its source is unknown. Dr. Evans compares the two specimens using SEM and declares the newly found specimen to be identical with the "confirmed" sample and thus identifies it as coir **CF**. SEM images displayed by Dr. Evans during this episode are shown on the following page. Dr. Evans says this proved the Oak Island organic fibers are **CF** when compared to that of the "confirmed" source of **CF** provided by searchers.



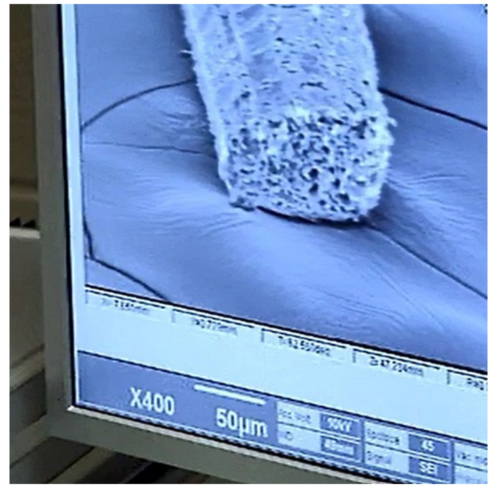
The **CF** shown in this episode were not clogged with clay and debris as was found in earlier excavations. The "confirmed" fiber sample was dry when taken out of a clear sealable baggy and presented to Dr. Evans. The newly found **CF** was in a Tupperware container wadded and wet. A small specimen was taken by Dr. Evans using tweezers shown at video stamp date 4:30/7:58. Again, it is unknown what the provenance is of this "confirmed" **CF** sample but most likely was 'loaned' or given to the Laginas by longtime searcher Dan Henske or more likely, Dan Blankenship. Both men had found much **CF** in the 60's thru 90's as they sought the island treasure. Or, this sample may be part of that which WHOI had examined in 1995 and later returned.

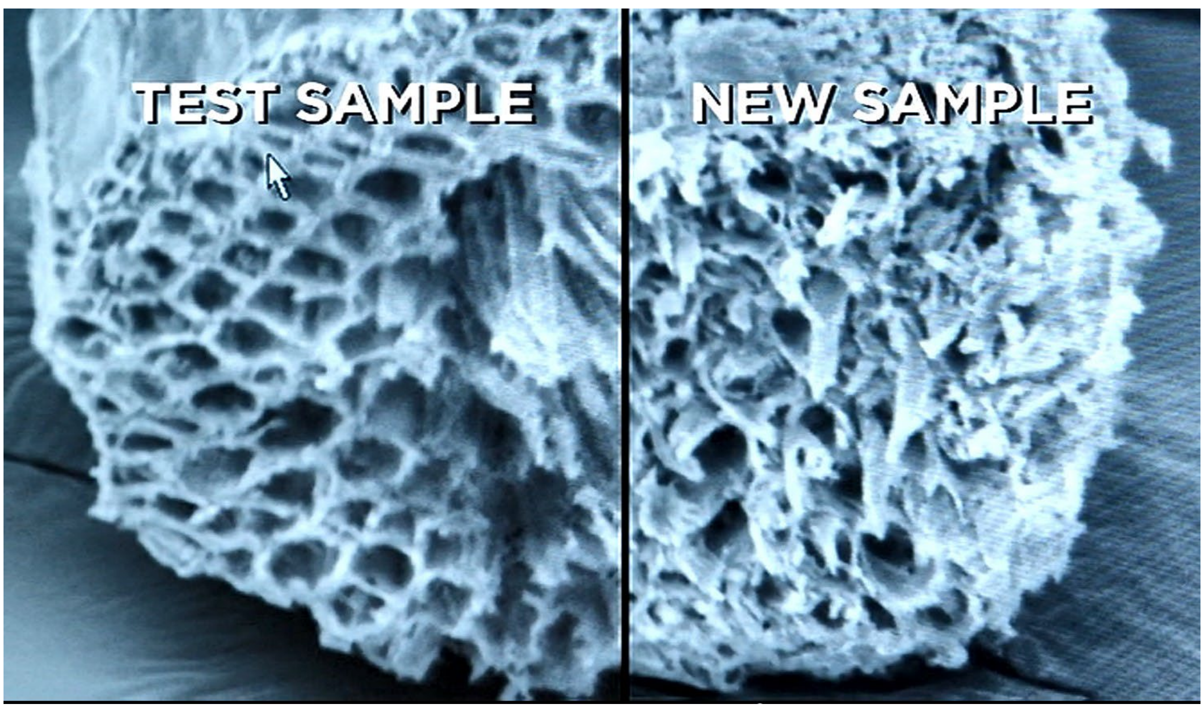
The image to the right is the specimen recently found by the new searchers arriving on the island. Its' SEM image is shown at x400 magnification, below right and labeled as NEW SAMPLE.



Here the "confirmed **CF**" specimen given to Dr. Evans for comparison. Its' SEM image is magnified at x650 and labeled as TEST SAMPLE.

At the bottom of the page, Dr. Evans offers split-scene image of the Test Sample and New Sample for visual SEM comparison, and in his words "*proof they are a match and of the same coconut fiber.*"





In my amateur perspective, I personally do not see evidence of the Lacuna (center hole) in these SEM images (see sample image to the right). The TEST SAMPLE in the combined SEM image shows a rupture at the lower end, but when seen at x650 above, this rupture does not appear to be a Lacuna per se. "*One unique property of **CF** is its microstructure which has an irregular honeycomb-like structure, giving the fibers a very high specific stiffness (E/p) in bending.*" (Bradley/Conroy, 2019).

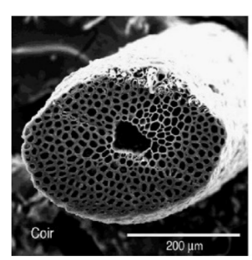
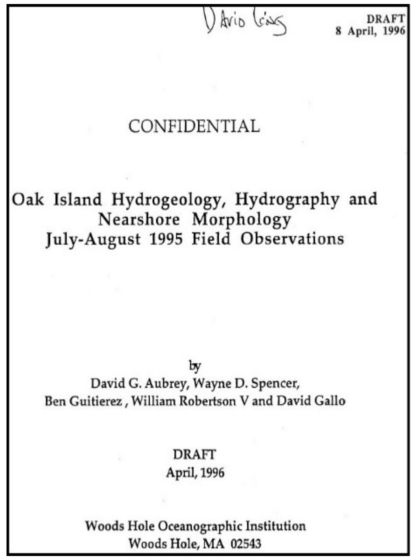


Image Source: [1]

1996 Apr. 8 <u>Woods Hole Oceanographic Institutions' "*Oak Island Hydrogeology, Hydrography and Nearshore Morphology July-August 1995 Field Observations – Draft Report*."</u>

This draft report provides radiocarbon testing documentation, SEM micrographs and expert determinations on the organic fiber artifact specimens collected by WHOI from Oak Island.


DRAFT
8 April, 1996

CONFIDENTIAL

Oak Island Hydrogeology, Hydrography and Nearshore Morphology July-August 1995 Field Observations

by
David G. Aubrey, Wayne D. Spencer, Ben Guitierez, William Robertson V and David Gallo

DRAFT
April, 1996

Woods Hole Oceanographic Institution
Woods Hole, MA 02543

Because the 1995/96 WHOI Draft Report provides the lion's share of botanical examination and investigation available for this report, all pages or sections within the WHOI Report discussing coconut fiber, even tangentially, are reprinted here.

The SEM images in this report are of both "known" *Cocos nucifera* microcell imagery as well as cells of the organic fiber artifacts found on Oak Island during WHOI's July – August 1995 field observations. There Draft report states as follows…

<u>ABSTRACT</u>

ix) Radiocarbon age dates of two "coconut" Fibre samples were run. One sample was from D. Blankenship (via Oak Island Discoveries); it was dated at **765 ypb**. The second sample was found in Smith's Cove by Dan Henskee and D. Aubrey; it was dated at about **1100 ypb**. The provenance of Smith's Cove sample is unclear (whether from original workers, searchers, or natural deposition at the coast from ocean currents). Additional research is taking place to clarify the possible origins of this material. *Page ii*.

xi) A further search plan is outlined for reducing level of uncertainties in several areas including the origin of the island, human use of the island, and deep bedrock caverns & possible human artifacts contained therein. *Page ii*.

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<u>BEACH PITS AND MORPHOLOGICAL OBSERVATIONS</u>

Organic material from the beach pits was prepared for dating at the AMS facility in Woods Hole, Massachusetts. Two small jars of peat were sent to the facility for dating along with two wood samples and three samples of possible coconut fibre. Before the samples could be analyzed they had to be dried in an oven. The peat samples had to be thoroughly homogenized, ensuring all the material from each sample would provide a mix of similar material for the analysis. The separately homogenized samples were then subsampled three times for analytical purposes for a more accurate date. *Page 15*.

<u>ANALYSIS OF WOOD AND VEGETATION SAMPLES</u>

During the field investigations, several samples were acquired for further investigation, including wood samples, fibrous material resembling coconut fibre, and peat from the beach pits. These samples were investigated using Scanning Electron Microscopy (SEM), Accelerated Mass Spectroscopy (AMS), electron scanning for elemental composition, and visual methods. These methods are the most sophisticated methods available for investigation of carbon and related materials, for purposes of age-dating, source determination, and composition detection. Samples are described in Table 6. Methods for radiocarbon dating, plus a description of their utility and accuracy are also presented in Attachment D, with the full data reports from the National Ocean Sciences AMS Facility at WHOI (NOSAMS). The NOSAMS provides markedly

improved accuracy for radiocarbon dating compared to methods used previously by searcher; it also can date samples of much smaller mass (including the ability to date open ocean water samples!). *Page 36*.
The implications of this rate of relative sea-level rise are important for the searchers. If the relative sea-level rise has been about .43 feet per century, then at the time the coconut fibres may have been deposited (some 800 to 1100 years before present]; see Table 6), then sea level was also at a lower stand: some 3.4 to 5 feet below present levels. Thus, evidence left by people working at the site during this period must be referenced to a sea level lower by some 5 feet. *Page 37*.

Image Source: [2a]

Table 6
Radiocarbon-dated samples
(see Attachment D for details)

Receipt	ID	Description	Location	Age (ybp)*	Age Error
10164	OI-ICF1	Seaweed	From beach surface along Smith's Cove, 25/7/95. Sampled by DGA and BG. Fibrous, fibre-like seaweed mat.	Modern	
10165	OI-W6	Wood	Provided by Dan Blankenship: wood from borehole 10x at 165'.	120	35
10166	OI-W7	Wood	Provided by Dan Blankenship: wood from 10x (?)	75	30
10167	OI-5-CF3	Coconut fibre	Dug from Smith's Cove by DGA and Dan Henskee, 27/7/95	1140	30
10168	OI-3-CF2	Coconut fibre	Provided by Dan Blankenship	765	35
10169	OI-BP-2	Peat	Dug from Beach Pit 2 at depth of approximately 8 feet below MSL. Along south shore barrier beach, across from the swamp.	1940	40
10170	OI-BP-8	Peat	Dug from Beach Pit 8 at depth of approximately 10 feet below MSL. Along south shore barrier beach, across from the swamp.	2340	35

*ypb= years before present

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COCONUT FIBRE

Coconut fibre has taken on some aura of importance at Oak Island for several reasons:

- It was found as a filter fabric, along with seagrass, at the Smith's Cove outlets of the flood tunnels, reported by previous searchers.
- It was previously dated and stated to be old: A letter from Richard C. Nieman of St. Louis, Missouri dated 6 Oct. 1993, reports a date on coconut fibre of **1229 AD** ± 70 years. This sample was obtained by David Tobias (or perhaps Dan Henske, see Nieman letter of 27, Sept. 1993) from Smith's Cove, and reported by Beta Analytic, Inc., of Miami, Fl.
A second test of coconut fibre showed an age of **1278 AD** ±60 years (about 715 ypb).
Thus coconut fibres are the one material which have been verified to be old.
- Coconut fibre was found underneath logs unearthed at Smith's Cove in the 1970's by Dan Blankenship and hypothesized to be original and old.

We therefore dated two coconut fibre samples. The first, receipt 10168 (OI-3-CF2) was provided by Dan Blankenship to Oak Island Discoveries and presented to… *Page 39*. *continued…* WHOI to date. The age was determined to be **765 ypb ± 35**. This age is indistinguishable from the age of the samples dated by Beta Analytic and reported above. We hypothesize we must have dated a subsample of the same material. The second coconut fibre came from just below low tide level within Smith's Cove. It was excavated by Dan Henske in the presence of D. Aubrey [WHOI] and others on 27 Jul. 1996 [**1995**].

After dewatering the site where Henske knew the sample to be located, Dan dug down about 8 inches to find the fibre which we dated. We have no knowledge of how the fibre came to the position where Henske located it; only that we sampled it on that day.

This second coconut fibre sample (receipt 10167 and ID OI-5-CF3) dated to **1140 ybp** ±30 years (or approximately **AD 855**). [****]**

In order to determine whether this material indeed was coconut fibre, we consulted some experts. Unfortunately, the fibre was heavily decomposed, consisting of only about 5% carbon by weight, a low percentage for most vegetative materials. We examined the photographs by Scanning Electron Microscope, a sophisticated means to examine materials at very fine scale. SEM work was performed by xxx of the U.S. Geological Survey in Woods Hole, MA. Fig. 10 shows some SEM photo-micrographs of sample OI-5-CF3.

We sent the SEM micrographs and portions of the original fibre sample to two palm experts: ***Scott Zona*** of the Fairchild Tropical Garden, in Miami, FL, and Prof. (Emeritus) ***Natalie Uhl***, of Cornel University. Correspondence with these two individuals is contained as Attachment E.

Dr. Zona thought the fibres might be husk fibres of a coconut, but his comparison with modern [coconut] fibres was inconclusive. Dr. Uhl has been of great assistance, but she is still continuing her investigation. She concluded that the SEM micrographs do resemble fibrous bundle sheaths in palm stems. However, without the full bundle (including the xylem to check on the vessel structure), she could not be conclusive. She does not believe the material can be identified to genus and species. She is currently working with a colleague, Dr. Francisco Guanchez from Venezuela, who is a specialist on ***Leopoldinia***, a genus long exploited for fiber. They are examining the materials at present at Cornell.

For comparison, we have taken SEM micrographs of the coconut fibre at Oak Island, as well as mesocarp coconut fibre from ***Cocos nucifera***, a coconut commonly found in the tropics (Fig. 11). Though notable similarities exist between the two types of fibres, we await final confirmation from the palm and coconut specialists. *Page 40*.

****NOTE:** It is my opinion that there is a misapplication of "**ybp**" used when giving a common date for both CF specimens in the WHOI Draft Report above. It appears the author of this Report used *1995* as the ybp date instead of using *1950*, commonly referred to as *epoch* - in that time period as the "years before present." This gives a false common date by about 45 years. Therefore…

A. Receipt 10167 / ID OI-5-CF3, dated to 1140 ybp ±30 years, is (1950 – 1140 ybp = **810 AD** ±30 years)

B. Receipt 10168 / ID OI-3-CF2, dated to 765 ybp ± 35 years, is (1950 – 765 ybp = **1185 AD** ±35 years)

Based on the sequence of pages, the List of Figures at the front and the previous textual descriptions, we believe the below image, untitled set of SEM images within the WHOI report are **Fig. 10**. It is said Fig. 10 shows some SEM photo-micrographs of sample OI-5-CF3. This is the second coconut fibre sample tested by WHOI (receipt 10167 and ID OI-5-CF3), dated to **1140 ybp** ±30 years (or approximately **AD 855**).

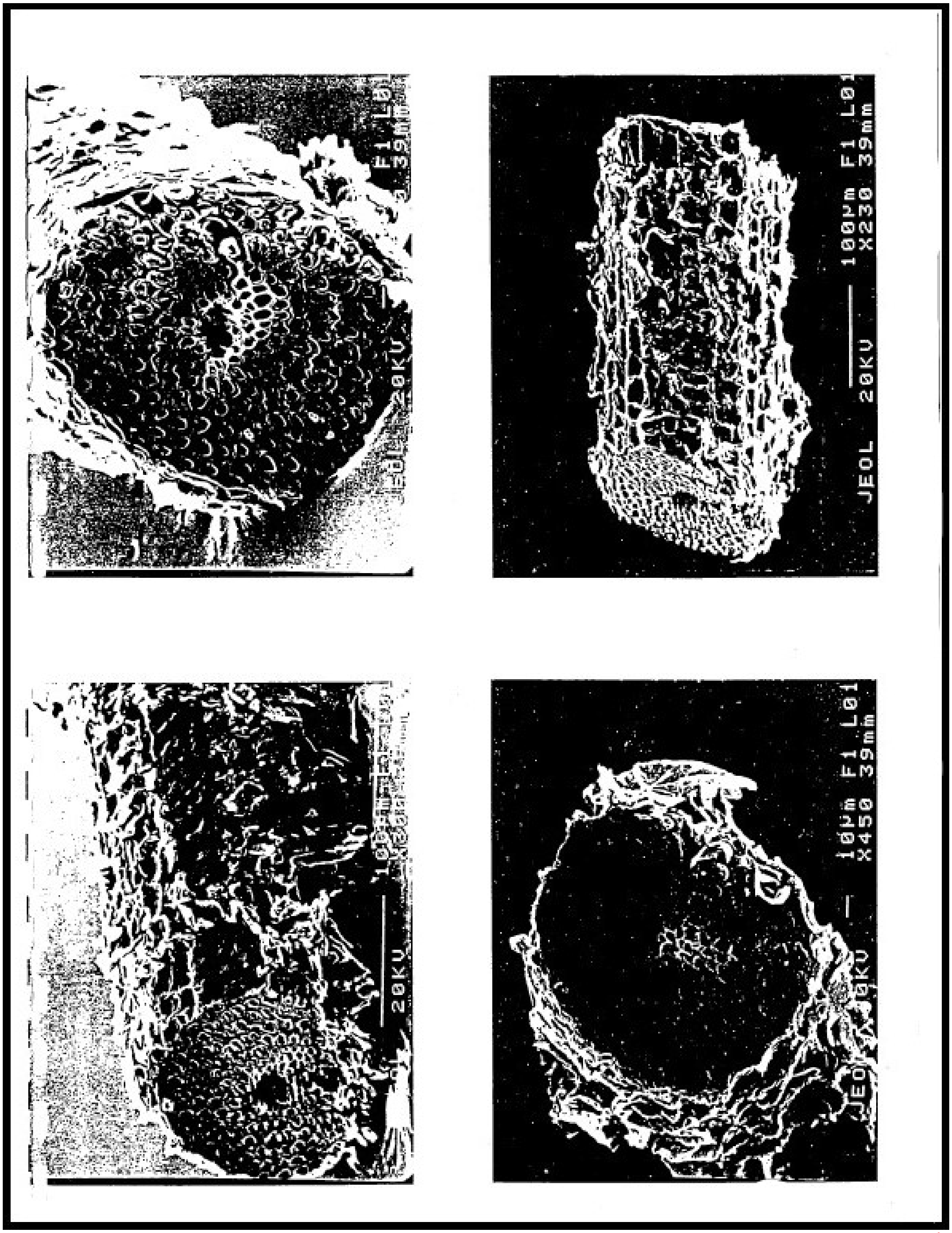


Image Source: [2b]

Continued…

This image has been identified as **Fig. 11** and reflects SEM photo-micrograph images of the first Oak Island sample tested by WHOI, receipt 10168 (OI-3-CF2), dated to **765 ybp** ±30 years (or approximately **AD 1230**) and provided by Dan Blankenship. Also is a SEM image of "*mesocarp coconut fibre from Cocos nucifera – a coconut commonly found in the tropics.*" No date given for the modern sample shown.

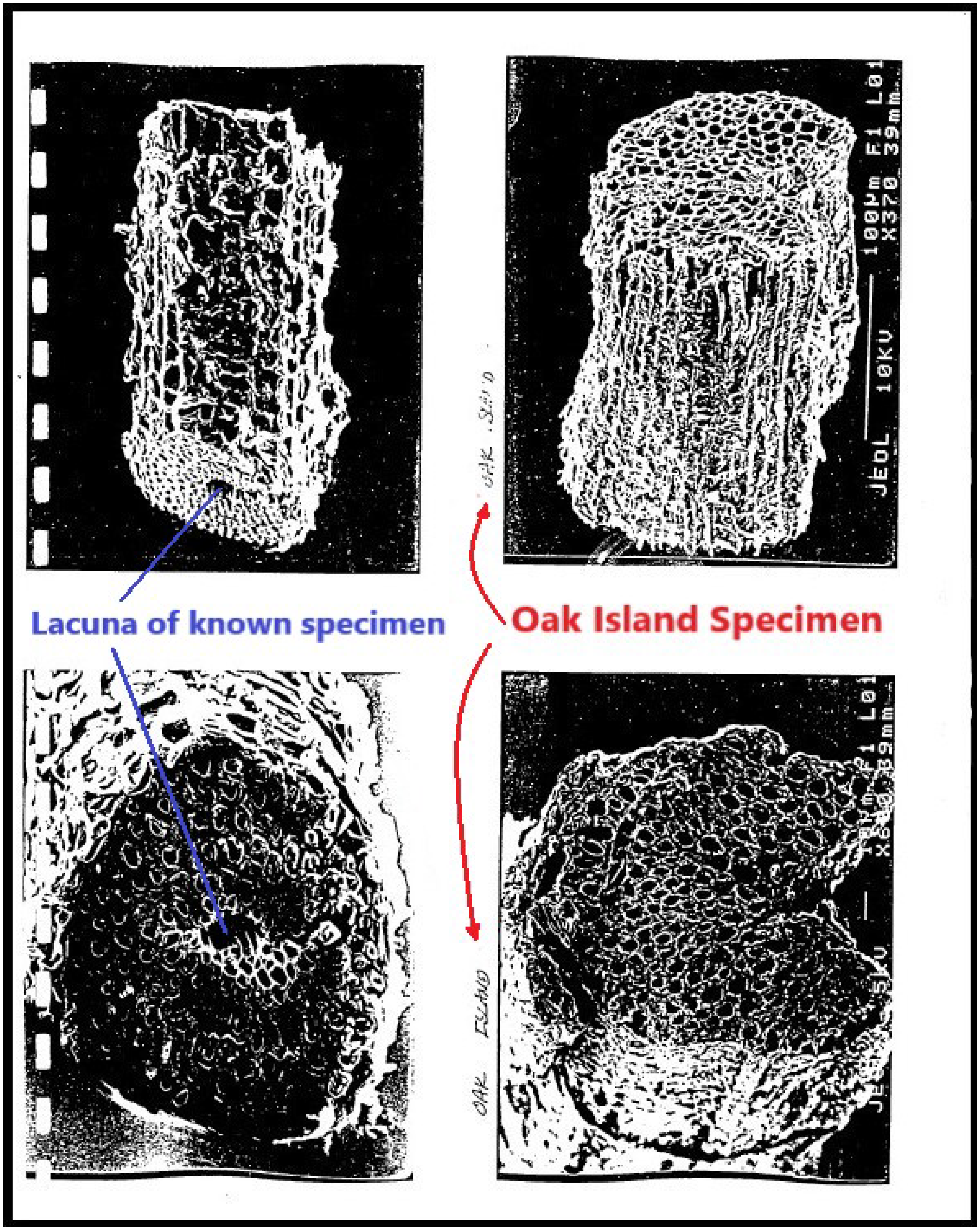


Image Source: [2c]

My comment are added in color above.

Continued…

Continued…
The coconut fibre, if verified as we believe it will be, may have reached Oak Island through four primary pathways:

- **I) "Planted" on the island by previous searchers.**
- **ii) Natural transport by Gulf Stream and inshore currents.**
- **iii) Dunnage discharged at Oak Island by a previous ship.**
- **iv) Brought and used by ancient voyagers for flood tunnel purposes.**

No evidence at present allows us to discount pathway i) above, other than Triton Associates claim of finding the fibre; we cannot discount previous searchers or others "planting" the material.

We are unfamiliar with other instances where the Gulf Stream has transported a significant amount of coconut fibre intact to a single location. We are currently researching this factor, with help from Natalie Uhl and her colleagues.

We cannot discount the potential use of fibre as dunnage (iii), from a ship previously using Oak Island. For instance, a ship involved in the wood (Oak) trade might have come to the island with this dunnage. Why the fibre would be so old is another matter.

Finally, we cannot discount the final pathway (**iv**): "Use by ancient voyagers." Perhaps the only way to determine whether this was an appropriate pathway or not is to discount the other three pathways. We are examining pathway ii) at present; clarification of other pathways is certain to be more difficult.

<u>FUTURE ACTIVITIES</u>
We have provided an independent correspondence a list of items which we believe will help clarify the mystery of Oak Island, including elements to address the following:

- Clarifying the stratigraphy on the island, by proper sampling of boreholes on the island at five more locations.
- Examining water within the clay and deep bedrock for geological evolution by use of various isotopic tracers (nitrogen, oxygen, etc.)
- Examining records of old trade routes dating to about **1000 AD**, to determine whether or not this area was on ancient trade-routes.
- Examining the geology of the offshore area using on-intrusive methods (sub-bottom profiling) to determine if the stratigraphy offers clues about the geological evolution of the island.
- Archaeological investigation of Smith's Cove and other potential historical and pre-historical sites.
- Photographic investigation of boreholes into bedrock, including 10-X (if possible), new borings, plus borings near 24.8.

Page 42.

NOTE: THIS AUTHOR HAS ALREADY PROVEN PATHWAYS i, ii, and iii HAVE NO MERIT AND COULD NOT PLAY A ROLE IN **CF** BEING FOUND IN THE MANMADE CONSTRUCTS WITHIN OAK ISLAND. AN ABBREVIATED EXPLANATION CAN BE FOUND IN ***Appendix G, "Pathways Disproven*."**

On the following pages are images of the communications between WHOI and Dr. Natalie Uhl and Scott Zona, as well as WHOI radiocarbon graphing of **CF** specimens.

Response from Scott Zona…

Fairchild Tropical Garden

11935 Old Cutler Road, Miami, Florida 33156-4299

(305) 665-2844
Fax: (305) 665-8032

9 Jan 1996

Mr. Ben Gutierrez
Woods Hole Oceanographic Institute
360 Woods Hole Rd. MS 22
Woods Hole, MA 02543

Dear Ben,

I've finally had a chance to look at the specimen of fiber, which I am returning to you, along with the SEM photos, in this envelope. I'm afraid I can't be of much help. The fibers don't look like palm leaf-base fibers (such as one sees on *Coccothrinax*) to me in that they are in more or less parallel groups. Could they be stem fibers with the ground tissue decayed? Possibly, but your letter indicated that you didn't think the fibers had been in an anaerobic deposit, hence decay would have been less likely. Could they be fruit fibers, such as the husk fibers of a coconut? Maybe, although my light-microscope comparison with modern fibers are inconclusive. I'm enclosing a small sample of coconut husk fiber from a specimen in our herbarium *(Hull H-32)*. You may wish to make SEM photos or try retting away the ground tissue to see how the fibers look.

Sorry I couldn't be of more help. It's an interesting find. Please let me know what you conclude.

Best wishes,

&;t ?
a:t

Palm Biologist
zonas@servax.fiu.edu

Response from Dr. Natalie Uhl…

Dec 19 08:34 1995 standard input Page 1

From nwul@cornell.edu Thu Dec 14 15:23:35 1995
Return-Path: <nwul@cornell.edu>
Received: from postoffice,mail.cornell.edu ((132.236.56.7)) by mud.whoi.edu (4.1/SMI-4.1)
id AA06231; Thu, 14 Dec 95 15:23:33 EST
Received: from postoffice.mail.cornell.edu ((128.253.177.15]) by postoffice.mail.cornell.edu
Date: Thu, 14 Dec 1995 15:16:39 -0500
Message-Id: <199512142016.PAA03679@postoffice.mail.cornell.edu>
X-Sender: nwul@postoffice.mail.cornell.edu
X-Mailer: Windows Eudora Version 2.0.3
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: ben@mud.whoi.edu
From: nwul@cornell.edu (Natalie Uhl)
Subject: Specimens
Status: R

Dear@. Gutierrez,

We have had a look at the material you sent. The SEM photos of the transections of the fibers do closely resemble the configuration of the fibrous bundle speaths in some palm stems. It is not possible to say jefinitely that these are palms just that they could be. It would help to have all of the bundle, i.e., the xylem to check on what sort of vessels might be present. We might then be able to state more strongly that the material is from a palm Regretably I don't believe there is any way to identify the material to genus and species. As I told you by phone Francisco Guanchez is here from Venezuela. He is working on Leopoldinia, a ;enus that has long been exploited for fiber. We expect in March to look into the anatomy of fibers in that and several other other palms, We could examine the material you sent a little more closely at that time, unless you would like the specimens returned before then. Sincerely, Natalie Uhl

6 words

Continued…

The following radiocarbon report was included in the 1996 WHOI Draft Report which dealt with all the ^{14}C testing performed through the National Ocean Sciences AMS Facility. I have only included here those 4 pages regarding 'coconut fiber.'

Image Source: [2d]

NATIONAL OCEAN SCIENCES AMS FACILITY

.obert J. Schneider
.ssoc. Director – Ext. 2756
Karl F. von Reden
.taff Physicist – Ext. 3384
Ann P. McNichol
Staff Chemist – Ext. 3394

Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543-1539
Phone: (508) 457-2000 x 2585
Fax: (508) 457-2183

January 11, 1996

REPORT #: 96-005

Dr. David Aubrey
Dept. G&G
Mail Stop 22
W.H.O.I.

Dear Dave,

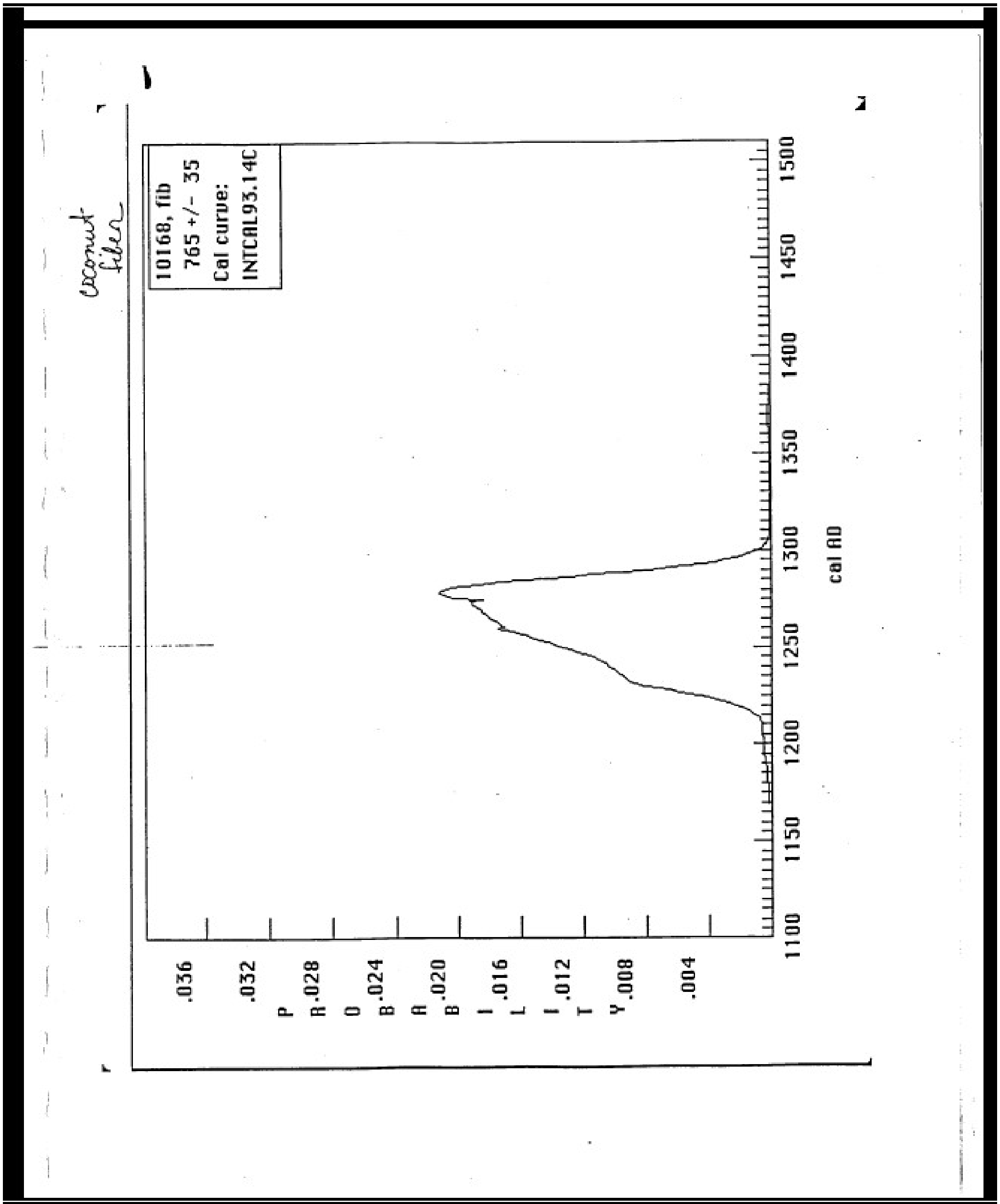
Please find the enclosed NOSAMS ^{14}C Results Report on your remaining 2 samples from Oak Island, Nova Scotia. As with the previous 5 results, there will be no charge for these analyses; it will be considered in-house research. Should you have any questions regarding your results please contact me.

Sincerely,

Robert J. Schneider, Acting Director
National Ocean Sciences AMS Facility

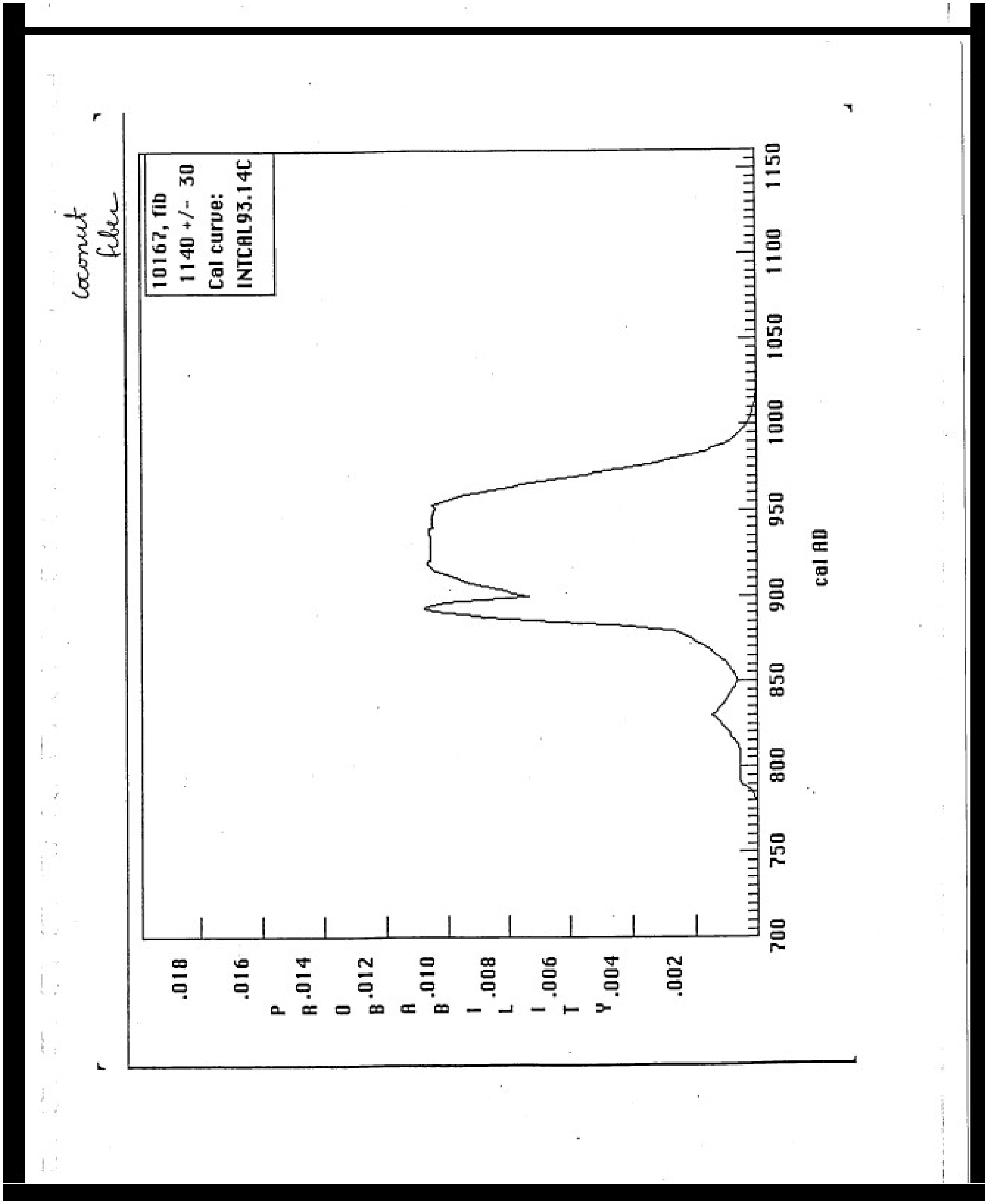
Page 1.

Image Source: 2e



Page 2.

Image Source: 2f



Page 3.

Image Source: [2a]

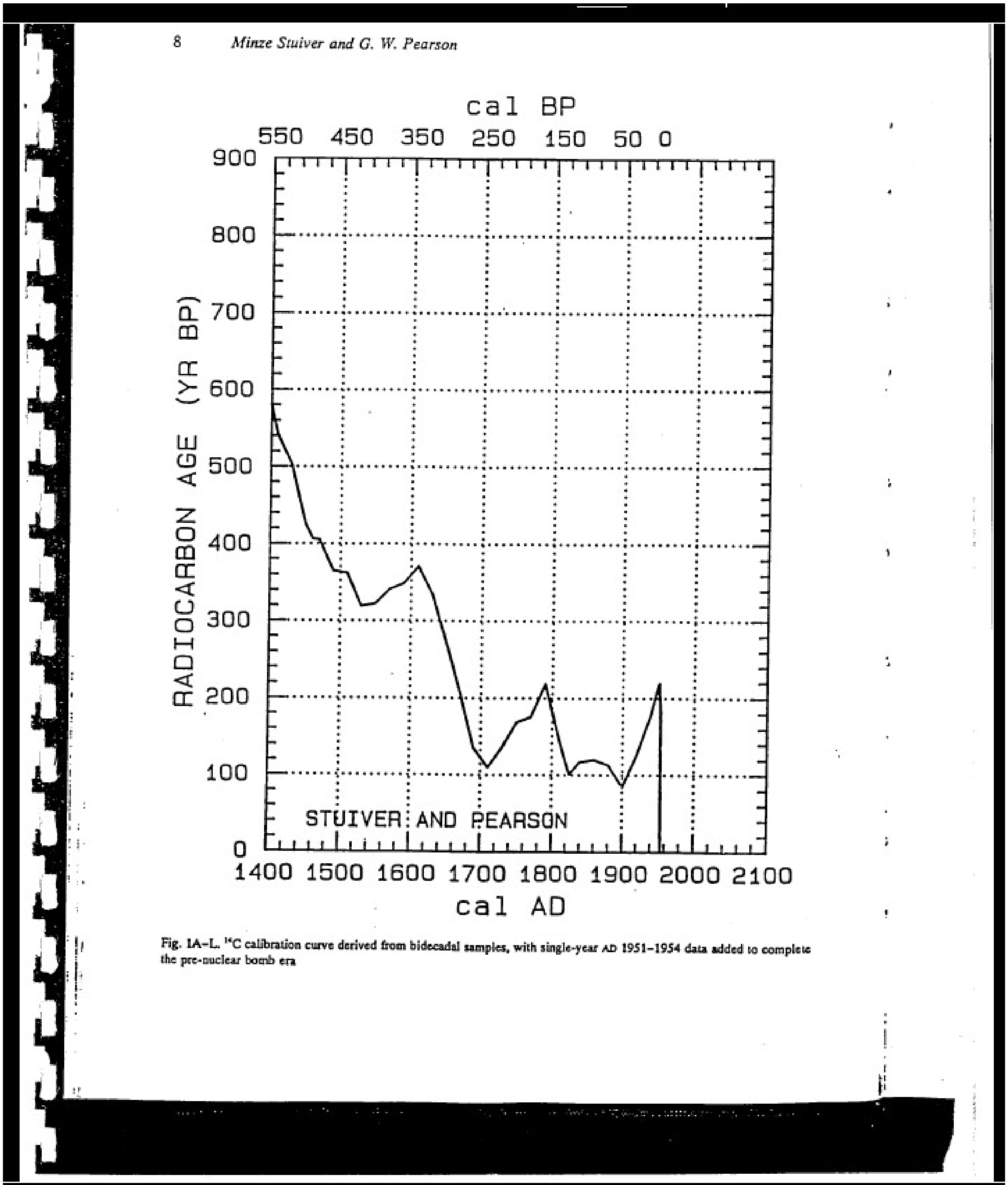


Fig. 1A–L. ^{14}C calibration curve derived from bidecadal samples, with single-year AD 1951–1954 data added to complete the pre-nuclear bomb era

Page 4.

Additional Chronology entries of descriptions and documentation of **CF** found on Oak Island are continued in ***Appendix F, "Chronology of Oak Island Coconut Fiber."***

The following section provides published botanical and chemical analysis and SEM imagery of both Coconut Palm (*Cocos nucifera*) and Date Palm (*Phoenix dactylifera*) in literature, to help in determining the organic fiber artifacts identification that have been found on Oak Island.

Section 2: Coconut Husk Fiber & Date Palm Fiber

Palm Fibers

Plant fibers are derived from plant cell walls and therefore can have different origins within the plants. Some of them are found in the xylem of the plant, for example, fibers derived from wood [5]. Others are derived from the seeds, as in the case with cotton [6] and kapok [7]; these seminal hairs are not 'fibers' in the botanical sense of the term, but trichomes possessing a very specific structure and architecture. Due to their high microfibrillar angles and their very thin walls (for the kapok), they exhibit generally low mechanical properties. The other plant fibers are generally derived from the phloem of dicotyledonous plants or from tissues located at the periphery of the vascular bundles [8]. Among the phloem fibers, primary and secondary fibers are distinguished; primary fibers extracted from the cambium have the best properties because they have a structural role within the plant [9]. These plants include but are not limited to nettle [10], flax [11], hemp [12], and jute [13]. The fibers of the vascular tissues can be located in the culms (bamboo [14], in the leaves of the monocotyledons (sisal or abaca) [15], **in the mesocarp of the fruit (coir)** [16] **or around the trunks (date palm trees)** [17].[1]

Coconut coir fiber (**CF**) is a byproduct of processing the protective husk which envelops the coconut fruit of the Coconut Palm Tree - *Cocos nucifera,* into usable fibers. Date palm fiber (**DPF**) (also called coir) is obtained from processing the sheath layer of fiber which surrounds the Date Palm Tree – *Phoenix dactylifera*. This sheath layer covers tender tissues of new date palm leaves as they grow out from the trunk, and remain attached to the trunk, turning into a coarse-brownish woven-like mesh. This can be removed during annual pruning and processed into usable fibers.[2]

The date palm is a rich source of cellulosic fibers, however, the fibrous sheath (mesh) surrounding the trunk is considered the competing source with **CF**. There are other by-products of pruning from which **DPF** can be extracted, such as, the midribs, spadix stems, and the leaflets. Cellulosic fibers are found in nature in two forms; fibers that are present in fiber form and fibers embedded in a natural matrix inside the plant. The first type of fiber is used as is and do not require further extraction, though are often washed, dried then cut. Whereas, the second type of fiber requires further processing through many delignification and/or extraction processes (retting).[3]

The by-product (coir) from retted coconut husks as well as the stripped mesh sheath fibers from the layer surrounding the trunk of the date palm.[4]

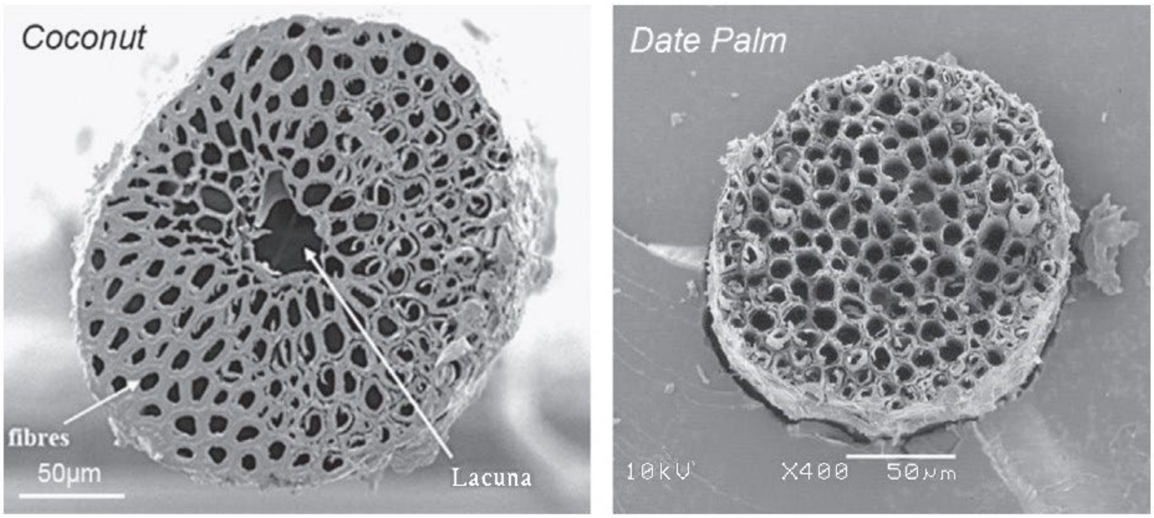
[The author uses 'coir' to describe both plant fiber extracts, though in my opinion, may be confusing to some.]

Visual Comparison of Coconut Coir Fiber (left) after extraction and processing, and Date Palm Fiber (right) before fiber processing (separation).

Image Source. [5]

SEM images and charts comparing the **CF** and **DPF** cell structures and specifics from literature are provided for your comparison, analysis and review of those SEM images and photographs which identified the Oak Island organic fiber artifacts as being from *Cocos nucifera*. It is hoped this material will assist you in finding a declarative identity of the organic fiber artifacts from Oak Island.

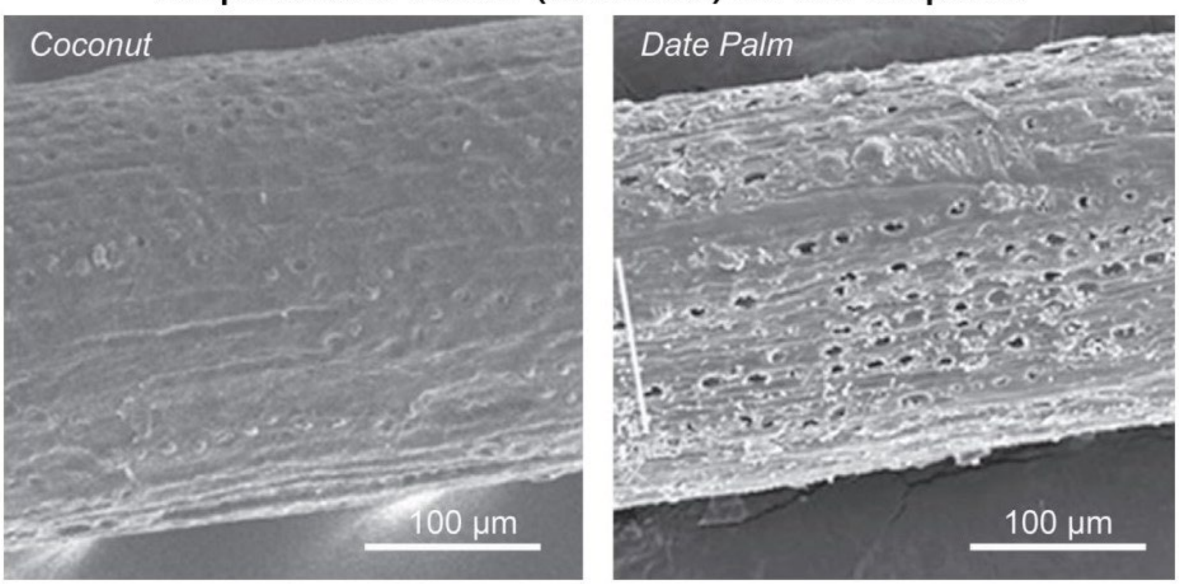
Literary-sourced SEM Imagery & Data on CF and DPF



Cross sectional shape of coconut coir (left) and date palm coir (right)

Image Source: [6]

Comparison of CF and DPF (sheath fiber) and their composites



Surface morphology of 2.5% NaOH treated coconut coir (left) and date palm fiber (right)

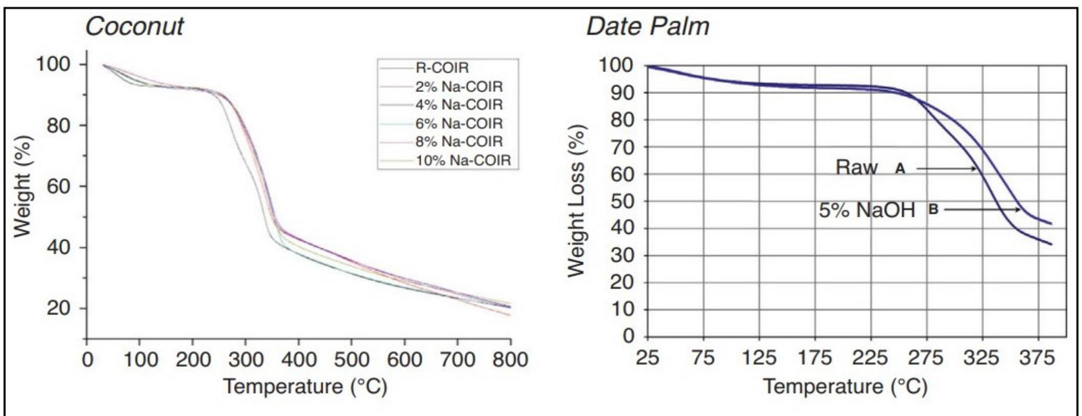
Image Source: [7]

Though chemical makeup of **CF** & **DPF** is also provided in their representative appendices, here is a collection of literature posts on chemical analysis.

Image Source:[8]

Comparison Between the Chemistry of CF and DPF					
	Cellulose (%)	Lignin (%)	Hemicellulose (%)	Pectin (%)	Source
Coconut coir CF	42.44	45.4	0.25	3	A
	43.44	45.84	0.25	3	B
	43.4	45.8	0.25	3	C
	41.14	35.25	15–17		D
Date palm DPF	50.6 ± 1.3	31.9 ± 1.3	8.1 ± 0.3	-	E
	47.5	39.86	12.64	-	F
	48	24	19	-	G
	43 ± 2	35 ± 5	8 ± 2	-	H

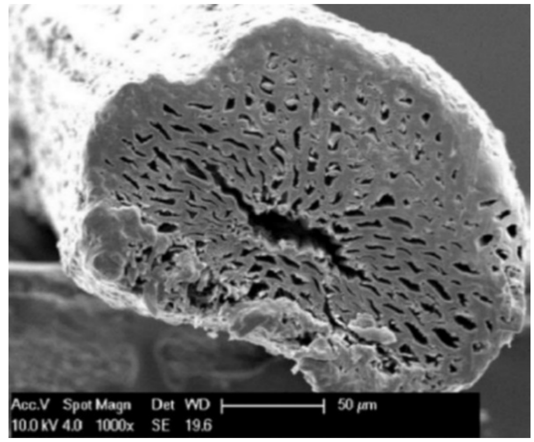
A. "*Abrasive Wear behavior of Chemically Treated Coir Fibre Filled Epoxy Polymer Composites*." By M.A. Khan, et. al., Published in *American Journal Mechanical Engineering Automotive*. (2014). 15 Pages.
B. *"Mechanical Properties of Polypropylene Composites Reinforced with Chemically Treated Coir and Abaca Fiber*." By M. Haque, et. al., Published in *Journal of Reinforced Plastic Composites*. 29 (2010). Pgs. 2253-2261.
C. *"Coir Fibre Reinforcement and Application in Polymer Composites: A Review*." By D. Verma, et. al.. Published in *Journal of Material Environmental Sciences*, 4 (2013). Pgs. 263-276.
D. *"Effects of Surface Treatments on Tensile, Thermal and Fibre-Matrix Bond Strength of Coir and Pineapple Leafe Fibres with Poly Lactic Acid*." By R. Siakeng, et. al. Published in *Journal of Bionic Engineering*, 15 (2018). Pgs. 1035-1046.
E. "*Characterization of Date Palm Lignocellulosic By-products and Self-bonded Composite Materials Obtained thereof*." By N. Saadaoui, et. al. Published in *Material Designs*, 50 (2013). Pgs. 302-308.
F. "*Chemical Analysis of Different Parts of Date Palm (Phoenix dactylifera L.) Using Ultimate, Proximate and Thermo-gravimetric Techniques for Energy Production*." By R. Nasser, et. al. Published in *Energies*, 9 (2016). P. 364.
G. "*Chemical Modification of Date Palm Mesh Fibres for Reinforcement of Polymeric Materials. Part I: Examination of Different Cleaning Methods*." By I. Taha, et. al. Published in *Polymerics – Polymer Composites*, 14 (2006). P. 767.
H. "*Contribution to the Study of Thermal Properties of Clay Bricks Reinforced by Date Palm Fiber*." By A. Mekhermeche, et. al.. Provided at AIP Conference Procedures, 1758. AIP Publishing, 2016.



Typical TGA curves of raw coconut coir (left) and date palm fiber (right)

Image Source: [9]

Coconut Palm Fiber (**CF**) Image Sources: [12]

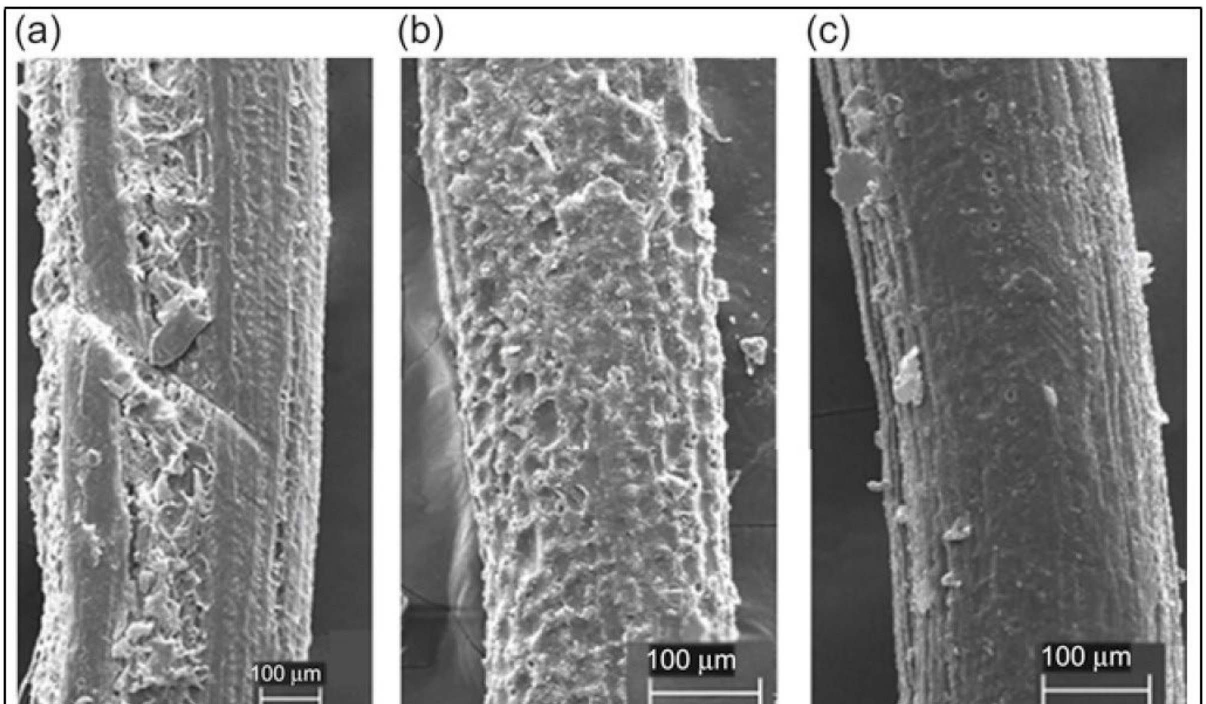


The scanning electron micrograph shows the micro-fibrils by longitudinal parallel ridges. **CF** contain impurities; wax, fatty and globular protrusions making the fiber surface extremely heterogeneous (See "a") with prominent cracks, micro-pores and irregular wax-like deposition are detectable. The surface morphology of backwater retted fiber (See "b") has more irregularities and impurities than the raw fiber, which might be due to formation of an additional salt coating through its backwater retting followed by air drying without washing. [Below]

[This must be considered when examining the Oak Island organic fiber artifacts has they have been under beach sands soaked in salt water in an anaerobic environment for hundreds of years.]

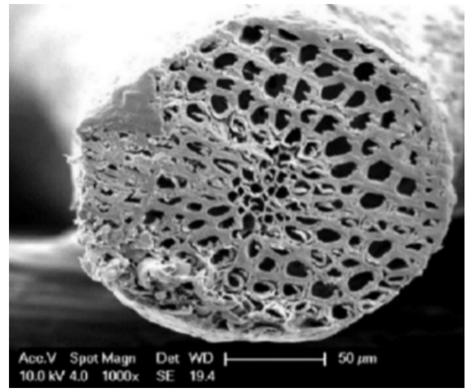
Comparing to raw and backwater retted coconut fibres, treated fibers appeared to be clean, with a smoother surface and it is possible to observe a reduction of fats and waxes. Washing with plain water could not remove these impurities; however, treatments of alkali can clean the surface exposing the surface pores called as pits (See "c") (van Dam et al., 2006; Rosa et al., 2009; Basu et al., 2015), which were not revealed on the surface of raw and backwater retted fibers.[10]

Image Sources: [11]

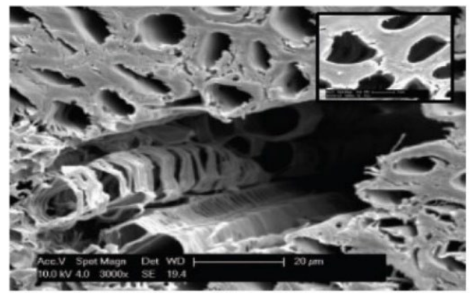


SEM micrographs of Coconut Fiber (CF) raw (a), backwater retted (b), chemically retted (c)

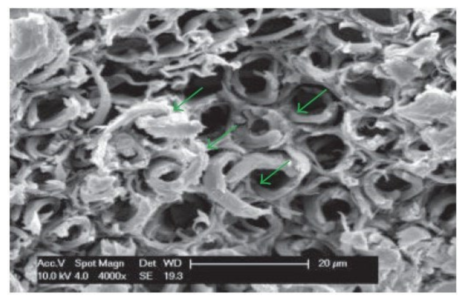
SEM images point out the dilemma that has been reported to be a factor affecting the mechanical properties of natural fibers through biased calculations, that is, the method used for diameter measurement. Although using optical microscope images to determine the diameter of the fiber has been stated to be an adequate technique, still the assumption that the cross-section of the fiber is circular influences the estimation of the cross-sectional area. For instance, the maximum diameter measurements for the fiber shown to the right are almost double the minimum diameter. This means that depending on the view observed in the optical microscope image, an error of up to 50% can exist. Image Source: [12]



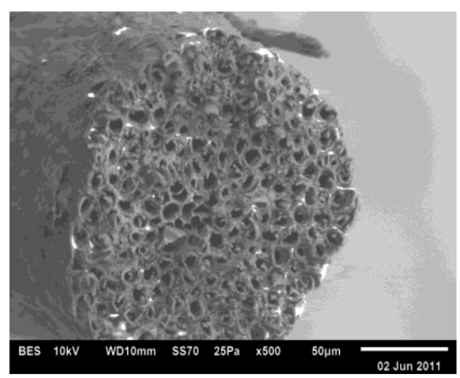
Nevertheless, this statement cannot be generalized since some of the fibers do have circular cross-sections such as the coir fiber shown to the right. Moreover, measuring the diameter using this method and calculating the failure stress of the material are not only ignoring the fact the fiber is not circular but also assumes a uniform density across the cross-section. This is not the case for lots of the natural fibers as can be seen in SEM images of coir fibers on this page, since the fiber cross-section shows a large amount of hollowness in the fiber that is not considered in diameter measurement. Image Source: [13]



This means that the strength measurements are misled as the area effectively carrying the load is well less than the measured one. The high magnification SEM image in these four images suggest that the microfibrils towards the center of the fiber tend to have a coiled spring-like structure, with this spring being lined with a thin layer as shown in the inset in the same figure. Image Source: [14]



The scenario of failure could be that this thin layer first is stretched (bearing the load), then it fails, and that would represent the first stage in the stress-strain curve. After that, the spring itself is carrying the load and this is the second part of the curve until it fails, which means that the whole fibre failed. Image Source: [15]

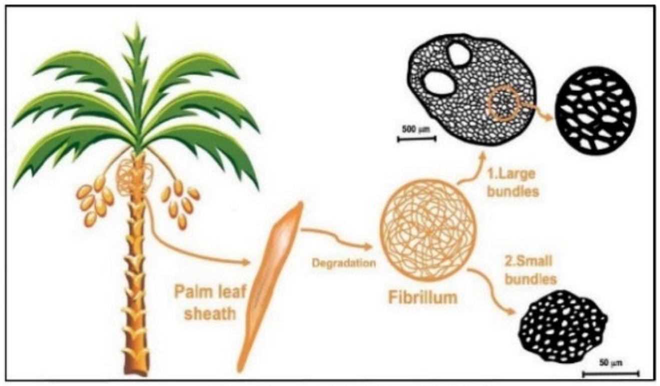


A third critical property of the coconut fiber in the husk is its low density (1.1 g cm–3)and high ductility (15 % to 40 %), [10, 11] allowing it to protect coconuts from fracturing on impact after their descent of 60 ft to 80 ft (18.288 m to 24.384 m) (from their high "nest" in the coconut tree. This excellent ductility gives the coconut husk the capacity to absorb a large amount of energy on impact, protecting the coconut from breaking on impact. It also means that composite materials that use coir fiber will have good formability as well as good impact strength. A fourth unique property of coconut fiber is its microstructure, as seen in a (SEM) Fig. above. [12]. The coconut coir fiber has an irregular honeycomb-like structure giving the fibers a very high specific stiffness (E/ρ) in bending.*

https://www.researchgate.net/publication/337278794_Using_Agricultural_Waste_to_Create_More_Environmentally_Friendly_and_Affordable_Products_and_Help_Poor_Coconut_Farmers

Date Palm Fiber (**DPF**)

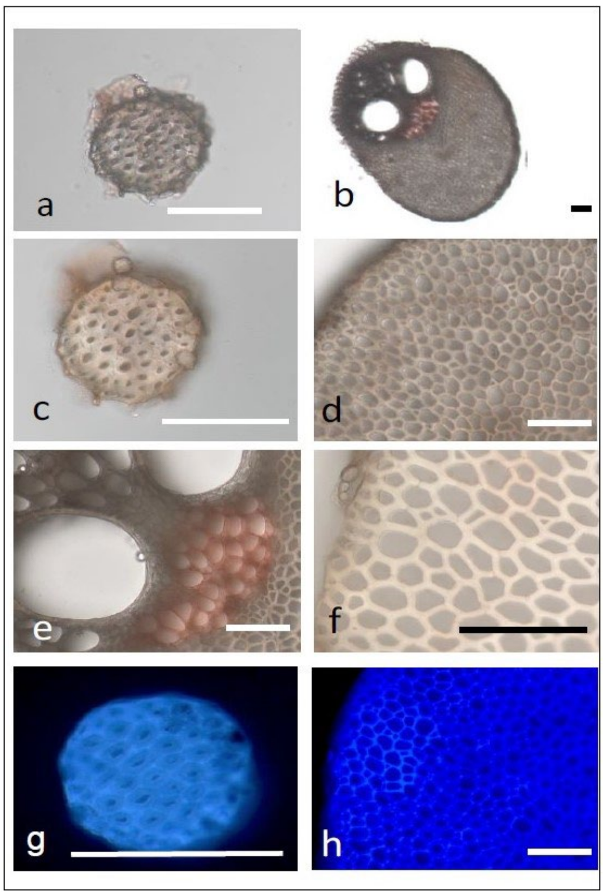
Image Source:[16]



Schematic View of DPF Bundles Origin & Identification.

The palm tree stem is covered with a mesh made of fiber bundles, called fibrillum, creating a natural, woven mat [mesh] of crisscrossed fibers of varying diameters. The fibrillum forms from the natural decomposition of leaf sheaths and surrounds the remaining petioles of old leaves.[17]

This fibrillum has a function of thermal protection of the plant with entrapped air between the fiber bundles.[18] **DPF** were fractured by hand after immersion in liquid nitrogen. Scanning electron microscopy (SEM) images of the fracture surfaces were taken using a SEM Jeol JSM 6460LV. Two bundles of **DPF**, one millimeter in width and one much smaller were selected from the raw material and then cut transversely by hand.



This set of images present various views, obtained through optical microscopy and highlighting the main morphological differences between the two fiber elements. **DPF** bundle sections in (a)-(f) were examined by visible light microscopy, whereas (g)+(h) micrographs were observed under UV exposure. Histological features of non-stained small and large bundles are shown in (a)+(b), respectively. Congo red stained images (c)+(d) show a small and a large bundle, respectively, while (e)+(f) are focus on a large bundle. Firstly, one can notice the structural differences between the two kinds of bundles. The small one exhibits a homogenous structure made up of an assembly of elementary fibers with thick cell walls; single fiber diameter is approximate 10 µm and cell wall thickness around 3-4 µm. Furthermore, the Congo red stained image (c) is evidence of the presence of hemicellulose components within cell walls.[19]

Image Source: [20]

Interestingly, the large bundles have an opposite organization and structure with thin cell walls (f) and large lumens. Also notice the presence of large vascular tissues with a diameter 100-200 .m. The function of these large bundles provides a conductive path in the leaf; the large vascular vessels may enable to conduct raw sap and small bundles the elaborated one. Congo red staining experiments reveal low hemicelluloses or cellulose content in the cell walls except in the vascular vessels area, these localized and specific structures can be developed in order to reinforce stiffness in the vascular areas to protect these essential elements. Bundle stiffness can also be ensured by high lignification rate of cell walls, compared to the small bundles, as highlighted on (h). Another explanation of this reaction to Congo red can be the age of the cell walls; the younger ones may possibly be less lignified.[21]

A final analysis in this descriptive section focusses on the presence of silica, which was noticed through SEM analysis embedded in the surface of large bundles. Silica can be deposited in monocotyledonous cell walls (Esau) and especially in leaves where content can be as high as 41%-wt. In **DPF**, small silica cells are formed and called *stegmata*. Silica in plants can provide resistance to attack by pathogenic fungi and predaceous chewing insects and other herbivores. **Finally, the presence and the shape of the silica bodies can be an interesting way for species identifications (Prychid, Rudall, Gregory, 2004)**.[22]

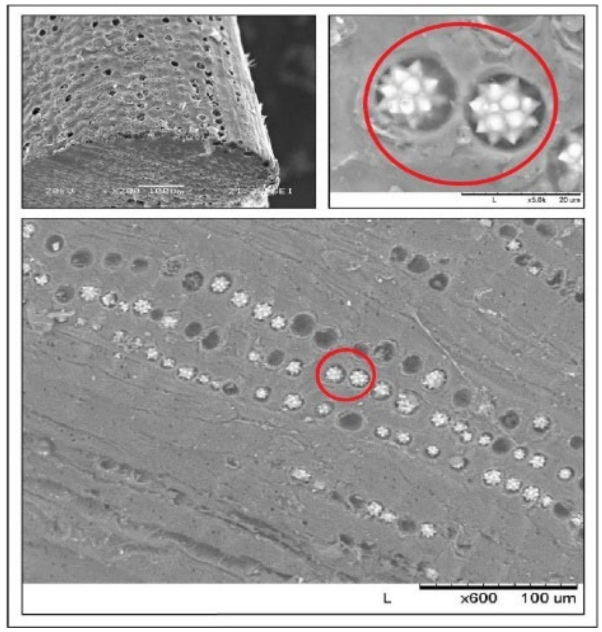


Image Source: [23]

Higher degradation temperatures of **DPF** may be due to higher observed silica content. A residual mass of 15.9 wt.% was measured when heated to 800 °C, which would be a mixture of charred organic material and inorganic inclusions, such as silica bodies. The high degree of *hysteresis* may be explained by high lignin content of **DPF** (Hill, 2009*), and the presence of substantial micro-scale porosity in the fiber surface (filled with silica bodies). However, most interestingly, **DPF** were also found to be unique, in comparison to other fibers (jute, **coir**, flax, hemp, cotton), having the largest RH region (up to 10%), where adsorption and desorption curves overlap (i.e. 0% hysteresis region). This may give **DPF** a capacity to absorb and hold moisture, potentially of vital importance in supporting the growth of these date palm trees, generally growing in water-scarce regions.[24]

Hill CAS, Norton A, Newman G. The Water Vapor Sorption Behavior of Natural Fibers. J Appl Polymer Sci 2009;112:1524–1537. doi:10.1002/app.29725.

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[2] "*Comparison of Coconut Coir and Date Palm Coir (sheath Fiber) and Their Composites*." By Mohamad Midani, Lobna A. Elseify, Tamer Hamouda and Ahmed H. Hassanin, Aug. 2022. Researchgate. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9 Page 331.

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[5] "*Comparison of Coconut Coir and Date Palm Coir (sheath Fiber) and Their Composites*." By Mohamad Midani, Lobna A. Elseify, Tamer Hamouda and Ahmed H. Hassanin, Aug. 2022. Researchgate. Page 332.

[6] "*Comparison of Coconut Coir and Date Palm Coir (sheath Fiber) and Their Composites*." By Mohamad Midani, Lobna A. Elseify, Tamer Hamouda and Ahmed H. Hassanin, Aug. 2022. Researchgate. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9. Figure on Page 335.

[7] "*Comparison of Coconut Coir and Date Palm Coir (sheath Fiber) and Their Composites*." By Mohamad Midani, Lobna A. Elseify, Tamer Hamouda and Ahmed H. Hassanin, Aug. 2022. Researchgate. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9. Figure on Page 336.

[8] "*Comparison of Coconut Coir and Date Palm Coir (sheath Fiber) and Their Composites*." By Mohamad Midani, Lobna A. Elseify, Tamer Hamouda and Ahmed H. Hassanin, Aug. 2022. Researchgate. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9. Figure on Page 338.

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[11]. "*Coconut Fibre: its Structure, Properties and Applications*." By Leena Mishra, Gautam Basu, Feb. 2020. Published in Handbook of Natural Fibres, Vol. 1. ICAR-National Institute of Research on Jute and Allied Fibre Technology, Kolkata, West Bengal, India. Pages 12-14.

[12]. "*Coconut Fibre: its Structure, Properties and Applications*." By Leena Mishra, Gautam Basu, Feb. 2020. Published in Handbook of Natural Fibres, Vol. 1. ICAR-National Institute of Research on Jute and Allied Fibre Technology, Kolkata, West Bengal, India. Figure on Page 14.

[13]. "*Looking for Links Between Natural Fibers' Structures and their Physical Properties*." By Nicola M. Everitt, Nesma Alboulkhair, and Mike Clifford, Aug. 2013. Conference Papers in *Materials Science*, Jan. 2013. Publication at: https://www.researchgate.net/publication/259639561 1 Figure on Page7.

[14]. "*Looking for Links Between Natural Fibers' Structures and their Physical Properties*." By Nicola M. Everitt, Nesma Alboulkhair, and Mike Clifford, Aug. 2013. Conference Papers in *Materials Science*, Jan. 2013. Publication at: https://www.researchgate.net/publication/259639561 1 Figure on Page 8.

[15]. "*Looking for Links Between Natural Fibers' Structures and their Physical Properties*." By Nicola M. Everitt, Nesma Alboulkhair, and Mike Clifford, Aug. 2013. Conference Papers in *Materials Science*, Jan. 2013. Publication at: https://www.researchgate.net/publication/259639561 1 Figure on Pages 5-6, 8.

[16]. "*Exploring the potential of waste leaf sheath date palm fibres for composite reinforcement through a structural and mechanical analysis*." By Alain Bourmaud, et. al., Dec. 2017. ResearchGate. DOI: 10.17863/CAM.21000. Figure on Page 21.

[17]. "*Exploring the potential of waste leaf sheath date palm fibres for composite reinforcement through a structural and mechanical analysis*." By Alain Bourmaud, et. al., Dec. 2017. ResearchGate. DOI: 10.17863/CAM.21000. Page 2.

[18]. "*Natural Thermal-Insulation Materials Composed of Renewable Resources: Characterization of local date palm fibers (LDPF)*." By Sair A. Oushabi, Tanane Y. YAbboud, and J. O. Cigasova. Published in Journal of Materials Environmental Sciences, 6, (2015. Pages 3,395 – 3,402.

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Section 3: Appendices

Appendix A

Oak Island Coconut Calculation

It was discovered and documented in sworn statements, reports, scientific examinations and letters about the Oak Island Treasure Story, that since 1804 an organic fiber artifact believed to be **CF**, was found and extricated from manmade constructs within the island. The bulk of this fiber was found in the Money Pit and the Smith's Cove filtration system. The formula below uses this reportage and the dimensions of those manmade constructs, in calculating at a minimum, the volume of **CF** found.

FORMULA

A. The Money Pit being a 13 ft round diameter shaft, so too, would be whichever platform(s) the coconut fiber had been placed – 13 ft in a round diameter. A space of 13 ft in round diameter is equivalent to 132.732 square ft – or **132.73 ft^2.**

B. Few reports give the thickness of these fibers, but some do state it was 2 inches thick. The distance between platforms was said to be 10 ft. The weight burden of the 10 ft of refill (dry, soft glacial clay)[1] piled on top of those fibers, creates a downward force of the soil consisting of 1,060 Lbs. per ft^2.

C. Due to the impact of the weight upon the fibers, it is forensically determined that a 2-inch-thick horizon of fibers found by searchers, were most likely much thicker originally. Under this much pressure and over the time period projected it is estimated the original thickness of the coconut fiber would have been a 4 to 6 inch-thick layer. Most likely, this volume may have even been thicker when originally applied to the platform. Therefore, we conservatively assume a ratio of **1:2**, and the original volume of coconut fibers placed on the platform is determined to be **four inches thick**.

D. The equation to represent the amount of coconut fiber found within the Money Pit is calculated using a more conservative interpretation of only a single platform was covered in fibers. Again, as you can see in Appendix C, *"On the Record,"* several searchers reported coconut fiber found on multiple platforms or elsewhere in much thicker volume. With a platform round diameter of 13 ft and 4 inches thick originally, the calculation of coconut fibers equates to **44.24 cubic ft.**

E. Thus the volume of coconut fiber found in the ***Money Pit*** would be **44.24 ft^3**.

Additionally, coconut fibers were found buried within Smith's Cove beach under three feet of wet sand. Searchers were seeking the source of seawater which appeared to continually flood the search shafts in the Money Pit area. They found and exposed what appeared to be a water filtration system and a potential source for the mysterious flood tunnels. This was found to be a sizeable area under the sands at Smith's Cove.

F. Once searchers seeking the flood tunnels removed 3 ft of sand, they were able to expose the hidden system. The filtration system covered an area of 7.5 ft (between high and low tide marks), by 145 ft in length along the beach. This was an area of approximately **1,087.50 ft^2**!

G. Again, 3 vertical ft of wet sand weighs approximately 390 Lbs. ft^3.[1] This would be sufficient pressure to compress +4 inches of volume of coconut fiber, over time, into the 2 or 3-inch-thick horizon reported by searchers. Using the same conservative formulation at Smith's Cove as we had just done for the Money Pit (ratio 1:2), we equate: 4-inch-thick compressed coir matting covering 1,087.5 ft^2 of area, would require **362.50 ft^3 of coconut material**.

H. Alone, these two locations of coconut coir fiber on Oak Island, will formulate the known volume of this organic material. Both volumes were artificially installed in man-made constructs. The total volume of coconut coir fiber found at these two sites is 406.74 ft^3. [44.24 ft^3 + 362.50 ft^3 = 406.74 ft^3] or **407 ft^3.**

I. Therefore, the minimum total volume of coconut fiber found in both the Money Pit and in Smith's Cove on Oak Island, would be **407 ft^3**.

The task now is to translate the known volume of coir fibers found within Oak Island, into an identifiable quantity of coconuts. Since we know coir fiber is acquired through the retting process of husks from a full-grown (mature) coconut, we will turn to that process to translate our volume of coir fiber. We reviewed several coir fiber industry sources determining what the equivalents are in today's husk retting process. Every formula and descriptive assumption is referenced so readers can validate the equations depicted below. These are listed immediately following the end of the formulation. These and the other sources referenced in Appendix I, *"Cuckoo for Coconuts,"* provide the material to duplicate this formulation.

NOTE: Today's wide assortment of hybridization of both the *nui kafa* and *nui vai* coconut types make it difficult to determine what type of coconut fiber our current wholesalers are selling. Therefore, we are using industry data of bulk coir fiber operations from the most prevalent source of *nui kafa* coir fibers (India). Some data sources are from coir fiber retailers who may or may not mix fiber inventories, store their product in humid-controlled warehouses, or process multi-type or hybridized husks.

J. With that in mind, an average individual mature *Indian* coconut weighs 1.2 kg (1200.0 grams) total weight.[2] This size coconut in dry weight is 44% husk (.39 kg), 23% shell (.17kg) and 33% copra/meat (.37 kg).[2] Removed from coconut was 0.24 kgs of coco water.[2] This husk can reliably provide **80-90 grams** yield of total fiber per husk (mesocarp) once nut is out. [3, 4, 5, 6]

K. These husks are collected; and the retting process begins. After soaking, hackling, paddling, and drying, the husk fibers have been separated from the pith/peat. Coconut husks, excluding nut, are composed of approximately 70% pith or 'peat,' and 30% coir fibers in dry weight.[3]

This formulation uses the international standard *Avoirdupois System* (avdp) of mass measurement. This is based on a pound (lb.) equating to 16 ounces; and not the Troy System where the pound equates to 12 ounces. Though this system was commonly used since the 13th century it had been modified several times. The system was finalized in 1959. Therefore, the number of coconuts necessary to provide our coir fiber requirements for Oak Island today, will reflect a minor variation from that the ancient voyagers collected for their trip to Oak Island back in their radiocarbon period.

L. Equation A: A 10-ounce, or 283.5 gram coconut husk after retting, yields about 3 oz, or 85.048569375 grams of finished coir fiber.[4] The retting eliminates pentosan, tannin, pectin, fats, and leaves extractives called pith, peat, or dust.[5] Therefore, each coconut produces **85.048569375 grams** of finished fiber, weighing **3 oz**.

M. Using Alternate Equation B: On average, 1,000 coconut husks after retting, yield 90 kg of refined coir fiber.[3] 90 kg divided by 1,000 husks equals **90 grams** of refined coir fiber per husk.

N. Using Alternate Equation C: Husk weighs about 35% of the weight of a nut, containing 30-50% of fiber.[6] The yield of fiber is 10-17.5% of weight of nut.[6] Generally, 1,000 husks yield about 90 kg of fiber in India.[6] Further, 1,000 husks produce 31.75 kg (13.9%) bristle quality fibers, 59.0 kg (25.9%) of mattress quality fibers.[6] 90.75 kg of refined fibers, divided by 1,000 equal **90.75 grams of refined coir fiber per husk**.

O. Based on these three different equations by harvesters of volume of refined coir fiber per husk, this formula will conservatively quantify each husk produces **90 grams of fiber, per 3 ounces**.

To understand the packaging of refined coir fibers to equate volume with cubic feet, we turn to Diton Incorporated;[7] who clearly describes the best packaging formula equation. Their formula is explained below and can be found on their website at www.diton.com/coirloose.html . They are resellers of loose refined coir fibers from Kerala State, India.

P. A bale of slightly compressed (1:2 ratio) refined coconut coir fibers from Southern India, measures 25” x 18” x 12” and has a volume of 3.13 cubic feet.[7] This bale weighs 50 Lbs. ± 2 Lbs. [7] When hydrated, the coir volume of this bale, expands to 6 cubic feet.[7] The weight differential (if any) of the hydrated fibers is not included in this equation as it is not known, nor can it be obtained. Any variance in weight between the dry compressed and the hydrated fiber volume, is excluded as a “conservative variable” and not factored in. Therefore, conservatively each hydrated **bale equates to 6 cubic feet.**

Q. Oak Island was found to have a minimum of 407 cubic feet of coconut coir fiber. These fibers were believed to have been compressed by a 1:2 ratio (2 inches = 4 inches). Divide 407 cubic feet of coir on Oak Island, by 6 cubic feet (hydrated/uncompressed coir volume per bale), equal **67.8333333333, fifty pound bales.**

R. The total weight of all 67.8333333333 bales of refined coir fiber, multiplied by 50 Lbs. each, equal 3,391.66666667 Lbs. Or **1.538434121585 metric tons.**

S. 1.538434121585 metric tons is equivalent to 54,266.666666725 ounces. This is then divided by 3 ounces [see “**L**” above [4, 5]], and this equates to 18,089 husks. **18,089 is the number of coconuts needed to generate the number of husks to process into 407 cubic feet of coconut coir fiber.**

T. Using Alternate Equation B: Each refined husk yields 90 grams of coir fiber [see “**M**” above [3]]. The number of grams in 1.538434121585 metric tons is 1538434.121585 grams. Divide this number by 90 grams, equals 17,094 90 gram husks, or **17,094 coconuts needed to generate the number of husks to process into 407 cubic feet of coconut coir fiber**.

U. Using Alternate Equation C: Each 1,000 refined husks produce 31.75 kg of bristle fibers and 59.0 kg of mattress quality fibers, equaling 90.75 kg of total fiber [see “**N**” above [6]]. 90.75 kg of fiber per 1,000 husks, equate to 90.75 grams per husk. 1.538434121585 metric tons equates to 1538434.121585 grams. Divide this number by 90.75 grams per husk, equals 16,952 husks, or

<u>16,952 coconuts needed to generate the number of husks to process into 407 cubic feet of coconut coir fiber</u>.

V. NOTE "**S**": This equation was based on 3 ounce per 85.048569375 grams. Instead of dividing by ounces, this equation uses the grams to divide. Therefore, Having determined there are 1538434.121585 grams in our metric tonnage, divide these grams by 85.048569375 equals **<u>18,089 husks.</u>** Verifying the same figure as shown in Q above.

W. The total number of coconuts determined under the three different formularies shown ["**L**," "**M**," and "**N**" above], equate respectively to "**S**" at **18,089** coconuts, "**T**" at **17,094** coconuts, and "**U**" at **16,952** coconuts.

X. Applying the individual weight of a coconut at 1.2 kg [see "**J**" above] to these final determinations, indicate the total weight of "**S**" at **21.7 metric tons**, "**T**" at **20.5 metric tons**, and "**U**" at **20.3 metric tons** of coconuts, respectively.

Y. ***Good question!*** Why would you want to haul around 21 metric tons of coconuts, or **1.54 metric tons** of retted coconut coir fiber to Oak Island?

Z. Based on the evidence published on the description and location of coconut coir fiber found within the manmade constructs and having determined the volume of coconut fiber found on Oak Island and confirmed by eyewitness reports; the conclusion is coconut coir fiber was an important and integral aspect of this operation. We have used multiple formulations based on the forensic evidence to demonstrate to the reader, this was an intentional endeavor.

The above formula was verified by Engineer Kyle Holden.

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Appendix B
Retting Coconut Fiber

"*Retting* process plays a crucial role in coir making [**CF**]. Retting of husk results in the separation of the leathery exocarp from the fibrous mesocarp. In the retting process, coconut husk is steeped in shallow water in areas most often located near the backwaters, which are subjected to tidal action. The retting period normally ranges from 6 to 11 months. The steeped husks imbibe water and sinks downward in the water. Normally it takes two to three months for microorganisms to act upon the husk. This lag phase or delay is due to phenolic substances present in the husk. These substances check the proliferation of the microorganisms and retard their activity. The tidal action leaches out the retardants. The ret liquor becomes slowly turbid with the formation of a scum. This is followed by a rise in temperature and evolution of foul-smelling gas resembling that of hydrogen sulphide. Microorganisms are the chief agents involved in all natural retting processes. Retting brings about the loosening of the fiber from the surrounding non-fibrous tissues through the degradation of the binding materials collectively referred to as pectic substances. The source of the microorganism involved in the retting could be (1) plant pathogen or saprophyte or both, carried on by the husk and (2) the air, water or marine microorganisms. This may be a naturally occurring inhabitant or invader to the environment. The principal change brought about in the plant tissue during retting is the breakdown of pectic substances, which form the chief constituent of the middle lamellae between the fiber cells and the cementing material. During progression of retting, there is a fall in pectin, pentosan, fat and tannin contents and practically no loss occurs in the cellulose and lignin contents. The finding of Betrabet and Bhat (1959) led them to the conclusion that the pectins or the pentocellulose, which probably form the binding materials, undergo a microbiological degradation during the process. Pectic substances are found in primary cell walls and intercellular cementing material. The simplest monomer of pectin is galacturonic acid. Galacturonic acids are linked in (1-4) fashion. Pectic substances are classified according to the degree of polymerization of galacturonic acids. A simple classification of pectic substance is pectic acid, pectin and protopectin. Galacturonic acid is a carbon source that is utilized by the microorganism. Hydrolytic and nonhydrolytic enzymes mediate the cleavage of galacturonic acid. The action of hydrolytic enzymes results in galacturonic acid of different sizes. In the nonhydrolytic breakdown, unsaturated galacturonic acids are formed. Pectic substances are broken down by the participation of the enzymes like polymethyl galacturonase, polygalacturonase, pectin methyl esterase, pectin lyase and pectic acid transliminase. However, Menon (1935) was of the opinion that biological retting of coconut husks differs from that of other fibrous materials in that, it is not confined to pectin decomposition alone but extends also to the disintegration of the phenolic cement, binding the fibers together (Bhat and Nambudiri, 1971). Leaching of phenol is observed to accelerate the biochemical activity. The rise in temperature of the ret liquor is believed to be due to the activities of cellulolytic enzymes. Cellulose is the major constituent of secondary cell walls. Hydrolysis of cellulose ultimately yields glucose, which is an important energy source of microorganism. The breakdown of cellulose is mediated by the enzyme cellulase. These enzymes are secreted by many microorganisms (Nagarajan et al., 1987). Essentially, the retting process seems to involve the hydrolysis of pectins by enzymes from *Micrococcus species* as also in sisal (Jayasankar et al., 1967). Pandalai et al. (1957) has established that the retting water should be saline and that periodical change of water is an important condition for the production of good quality fiber. One of the important observations made in the retting of husks was that polyphenols from the husks are constantly leached out into the surrounding steep liquors during the course of retting

(Jayasankar, 1966). Menon and Pandalai (1958) have pointed out the relatively high percentage of such polyphenols in coconut husks as the very reason for the delay in the completion of the retting process. Examination of the aerobic microflora for their pectinolytic activity revealed the general ability of several bacterial genera such as Aerobacter, Bacillus, Escherichia, Micrococcus and Paracolobactrum to be particularly conspicuous in this respect. Though the ability to degrade pectin is not as widespread among the yeasts as in bacteria (Bhat, 1966), Bilimoria and Bhat had demonstrated that pectinolytic activity in Cryptococcus lausentii, a marine yeast (Bilimoria, 1962). Hydrolysis of pectin by certain other salt tolerant yeasts has also been reported (Bilimoria 1962, 1966) by the yeast encountered in coir rets and this property was restricted to the genera *Rhodotorula* and *Cryptococcus* (Jayasankar, 1966). After retting, the husks are taken out of water and washed to get rid of mud and dirt. The outer skin is then peeled off and the husks placed on wooden blocks and beaten with a wooden mallet for separating the fiber from the pith. A further cleaning is done and the fibers thus obtained are spread out in the sun to dry. It is occasionally beaten and tossed up with poles to remove the remnants of pith and impurities still adhering to the fiber. This also helps the mixing of long and short fibers thoroughly." [1]

[1]. "*Coir Fiber – Processes and Opportunities*." By Akhila Rajan and T. Emilia Abraham PhD. Published in *Journal of Natural Fibers*, Jan. 2007. Polymer Section, Regional Research Laboratory (CSIR) Thiruvananthapuram, 695 019, Kerala, India.

Husk after coconut seed removed

Soak/retting husk for 9-11 months

Final retting/dry of fine coir fiber

Paddling dried retted husks into coir

[2]. "*Sri Lanka: Spinning Livelihoods from Coir Fiber*." By Feizal A. Samath, Oct. 30, 2008. IPS News. http://www.ipsnews.net/2008/10/sri-lanka-spinning-livelihoods-from-coir-fibre/

Appendix C
Coconut Palm Coir Fiber (CF)

The Coconut Palm (*Cocos nucifera*) produces a unique fiber from its seed. The outer husk (mesocarp) of the fruit ('nut') is used to make fibre (coir), along with a non-fibrous product, coir dust (cocopeat). It now has widespread uses in horticulture as a replacement for peat moss. The fibre from the husk is used for ropes, mats and geotextiles. Mature nuts for copra, coir or desiccated coconut are left on the palm until 11 months or more from pollination when the fresh skin colour shows dry, brown patches to being fully brown and the coir is brown.[1]

Leef, flower & fruit of Cocos nucifera
(Source: Vozzo, 2002)

[1] "*The Encyclopedia of Fruit and Nuts*." Edited by Jules Janick and Robert E. Paull. 2008. Printed in the UK by Cambridge University Press, Cambridge. ISBN 978 0 85199 638 7. Pages 107-115. Fig. P 110.

Coir belongs to the group of hard structural fibers and is lignocellulosic in nature. The coarse, stiff, reddish brown fiber is made up of smaller threads, each about 0.01 to 0.04 inch (0.03 to 0.1 cm) long and 12 to 24 microns (a micron is about 0.00004 inch) in diameter, composed of lignin, a woody plant substance, and cellulose. Coir fiber has the advantage of stretching beyond its elastic limit without rupturing, as well as having the power to take up a permanent stretch. Its resistance to microbial degradation and salt water is unique. These husks are then processed through "retting," which plays a crucial role in modifying the fibers in making coir.[2]

[2] "*Coir Fiber – Processes and Opportunities*." By Akhila Rajan and T. Emilia Abraham PhD. Published in *Journal of Natural Fibers*, Jan. 2007. Polymer Section, Regional Research Laboratory (CSIR) Thiruvananthapuram, 695 019, Kerala, India. Page 30.

Provided in ***Appendix B, "Retting Coconut Fiber"*** is a full description of the retting processes microbiologic, biochemical and extraction techniques of fiber from the coconut husk. Since the Oak Island **CF** has been tested to be many hundreds of years old, it's assumed it was retted in ancient times, which greatly decreased its biodegradability, especially in a dark, anaerobic saline environment.

Morphological studies of coir fibers show a framework of organized aggregates of cellulose molecules called micro fibrils embedded in a matrix of non-cellulosic polysaccharides and lignin. Among the nonsaccharide components of the cell wall, lignin stands out as the unique aromatic polymer. The middle lamella and primary cell wall undergoes the greatest lignification and the least is secondary wall. The purpose of lignification appears to be one of strengthening the cell wall by cementing the cellulose micro fibrils together and protecting them from chemical and physical attack.[3]

[3] "*Coir Fiber – Processes and Opportunities*." By Akhila Rajan and T. Emilia Abraham PhD. Published in *Journal of Natural Fibers*, Jan. 2007. Polymer Section, Regional Research Laboratory (CSIR) Thiruvananthapuram, 695 019, Kerala, India. Page 34.

CF is multicellular in nature and the largest fibers may have a length of 35 cm and diameter of 0.3 to 1mm being thickest in the middle of their length. Coir is light, elastic and water resistant and also resistant to mechanical wear. It is a natural cellulosic fiber and apart from cellulose contains lignin and other substances, which serve as building materials for the cell structure. When the fibers first become differentiated in the tissue of the mesocarp, they are almost white and as they become increasingly lignified they darken first to a golden yellow, which is the color of the coir prepared from the slightly immature nuts. From the dry husks of well-matured nuts, the coir is darker in color having red-brown tinge. Good quality coir is clean, golden yellow in color with unbroken individual fibers. Thermal stability studies of coir fibers by means of TG showed a two-step decomposition curve and an onset of degradation between 190 and 230 °C (Bismarck et al., 2001). **Coir having the highest lignin content is the most resistant to chemical and microbial attack among the natural fibers**. Coir is highly lignified and contains less cellulose. Menon (1936) did some preliminary studies on the chemical changes leading to the lignocellulose complex of mature coir. Because of high lignin content coir is more durable when compared with other natural fibers. The percentages of the constituents–cellulose, cellulosan, lignin and hemicellulose vary largely, depending upon the age of the nut from which the coir is derived (Menon, 1936). In this respect, coir fiber differs from jute in that the latter has a uniform chemical composition at all stages of the plant growth, from the earliest stage to maturity. The aromatic compounds of phenolic nature present in the husk of tender coconut (Menon, 1936) serve as lignin precursors. The nature of the lignin complex and the various constituents of the fiber are suggested to be in some form of association or in combination (Prabhu, 1957).[4]

[4] "*Coir Fiber – Processes and Opportunities*." By Akhila Rajan and T. Emilia Abraham PhD. Published in *Journal of Natural Fibers*, Jan. 2007. Polymer Section, Regional Research Laboratory (CSIR) Thiruvananthapuram, 695 019, Kerala, India. Page 35.

Chemical Composition of Coconut Coir & Coconut Fiber as compared to Wood

No	Components	Coir	Fiber	Wood
1	Lignin (%)	29.23	45.84	25-30
2	Cellulose (%)	21.07	43.44	40-50
3	Hemicellulose (%)	8.50	0.25	20-30
4	Pectin (%)	14.25	3.00	
5	Water (%)	26.00	5.25	

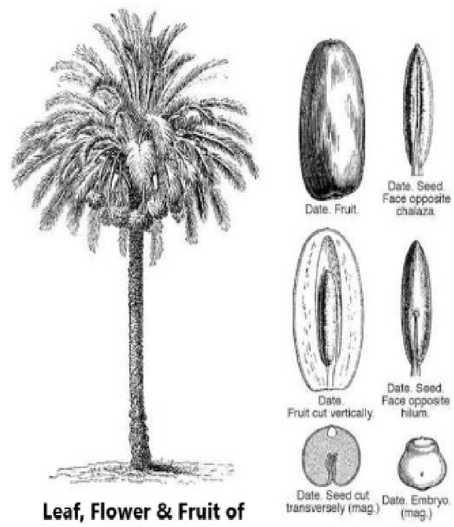
Image Source: [5]

[5] "*Physical and Mechanical Properties of Binderless Medium Density Fiberboard (MDF) from Coconut Fiber*." By T. Puspaningrum et. al., 2020. IOP Conference Series. Published in *Earth and Environmental Sciences.* **472** 012011.

Appendix D
Date Palm Fiber (DPF)

“Date Palm, *Phoenix dactylifera* L. (*Arecaceae*), is a major fruit crop in arid regions such as North Africa and the Middle East. Dates are one of the oldest known fruit crops and have been cultivated in the Middle East and North Africa for thousands of years (Zohary and Hopf, 2000). There has also been non-food uses through this period, as well. For instance, seeds can be used as animal feed or strung as beads. The wood of date palms can be used for doors, beams, furniture, rafters and firewood; leaves can be used for matting, baskets, roofing, fencing and shelter; and fibres from the date palm can provide thread and rigging for boats. **DPF** can be obtained from several parts of the date palm, though the date palm leaf sheath is most analogous to **CF**.”

“The leaf base is that part of the petiole that sheathes the stem. It functions mechanically as a stressed cylinder (similar to a barrel) and supports almost all of the mechanical stresses to which the leaf is subject. It initially develops as a closed tube but goes through considerable modification throughout the life of the palm. On many palms, the base remains attached to the trunk or stem for some time after the blade and the petiole drop off. In some cases, the pattern of leaf-base stubs is a distinctive feature of the palm’s appearance. On palms, the sheath splits near its base or disintegrates but leaves behind a mass of fibre of varying weave and consistency. The tubular leaf bases of some feather-leaved palms sheath each other so tightly around the stem that they form a conspicuous neck-like structure called a crown shaft.” [1]



Leaf, Flower & Fruit of Phoenix dactylifera (Source: LeMaout, 1877)

[1] “*The Encyclopedia of Fruit and Nuts*.” Edited by Jules Janick and Robert E. Paull. 2008. Printed in the UK by Cambridge University Press, Cambridge. ISBN 978 0 85199 638 7. Pages 138-150. Fig. P 140.

Date Palm Tree parts used for Extracting Respective Fibers

Image Source: [2]

[2] “*Evaluation of Mechanical, Physical and Morphological Properties of Epoxy Composites Reinforced with Different Date Palm Fibers*.” By Basheer A. Alshammari, et. al., Jul. 3, 2019. Published in *Materials*, 2019, 12, 2145. Page 4 of 17.

“As for the mesh fibers, they were manually separated either by hand or in water, and this method of separation was only used with mesh fibers (Kriker et al. 2005; Rao and Rao 2007; Shalwan and Yousif 2014; Mokhtari et al. 2015; Ali and Alabdulkarem 2017; Oushabi et al. 2017; Tioua et al. 2017). Mesh fibers exist in a form that make the separation of fibers seems easy as shown in the biological extraction techniques could be classified into two types; retting and enzymatic treatment. First, retting process was used by Rao et al. by soaking the fibers in water for long period of time, then mechanically extracting them (Rao and Rao 2007). This water soaking technique was also used by Ibrahim et al. and Neher et al. (Ibrahim et al. 2014; Neher et al. 2016). As for mesh fibers, the FTIR results obtained by Alawar et al. showed that the NaOH treatment caused an absorption in band of the C=O group which was assumed to be due to hemicellulose removal. However, the authors observed that a significant change in the chemical structure has happened between the treated and untreated fibers (Alawar et al. 2009). The results of Abdal-hay et al. confirmed the previously mentioned results. The C–H and C=O peaks disappeared after the alkaline treatment which is due to the removal of hemicellulose. Moreover, there was an absorption in the band of O–H group; which may be due to the removal of lignin and wax from the fibers' surface. The authors found that the best results were obtained when the fibers were treated with 6% NaOH (Abdal-hay et al. 2012). Finally, the mesh fibers diameters were larger than the other types of fibers. Moreover, no significant effect on fibers dimensions was observed as a result of different extraction techniques; this could be due to the fact that mesh fibers are often found in a fiber form which somehow misled researchers into thinking that they didn't require further processing. **In general, the density of date palm fibers is lower than that of sisal, hemp, and coir.** The density values are average density values obtained from the literature.” [3]

Chemical Composition of DPF

DPF	Cellulose	Hemicellulose	Lignin
A (Palm tree leaf stalk)	35.00%	15.40%	20.10%
AA (Palm tree fruit bunch stalk)	44.00%	26.00%	11.00%
G (Leaf sheath fiber)	43.50%	24.00%	18.00%
L(Palm tree trunk fiber)	40.00%	9.75%	29.50%

[3] “*Evaluation of Mechanical, Physical and Morphological Properties of Epoxy Composites Reinforced with Different Date Palm Fibers*.” By Basheer A. Alshammari, et. al., Jul. 3, 2019. Published in *Materials*, 2019, 12, 2145. Figure P. 4.

Appendix E
Methuselah Project Implications

The genesis of this entire report is based on my discovery of a 2022 article in the Jerusalem Post, celebrating the anniversary of botanical achievements of germinating 2,000 year-old date palm seeds by the *Arava Institute of Environmental Studies* at Kibbutz Ketura, Israel, in 2005.[1] I refer to this as the *Methuselah Project:* as the oldest person in the bible - grown from the oldest germinated seeds in effort to solve the oldest ongoing treasure story in the world.

Ironically, here is not the place to explain how I got here. Not yet. I think keeping this report brief will help get the task accomplished which needs your help. Should interested parties respond, I am willing to divulge the background story which will explain your future impact in world history.

The question for this appendix is simply a bit more complex and I do not have the background or the lingo to say it without proving my lack of botanical competencies. So let me try my best.

> **QUESTIONS**: If the organic fiber artifacts from Oak Island are more likely from a date palm tree (*Phoenix dactylifera*) **DPF** than the Coconut Palm tree (*Cocos nucifera)* **CF**, this itself has historic importance as it having been found in large bulk, in Nova Scotia, Canada; and ^{14}C so long ago. And then, can they be further scrutinized to possibly be identified as coming from a Judean Date Palm Tree - recently exhumed from botanical history? And if that determination is possible, can any gene-associated traits, allelic values or other genotype information be used to determine variant or cultivar family identification of those artifacts?

The identification as **DPF** alone is tremendously significant in that it possibly provides a direct link to time and place, and an immensely probable link to a group of that time and place who found their way to this island off the coast of Nova Scotia! The further association with a variant of *Phoenix dactylifera*, i.e., the Judean Date Palm, would help indicate the purpose for it being found on that singular island off the coast of Nova Scotia, and what other cargo may have been onboard.

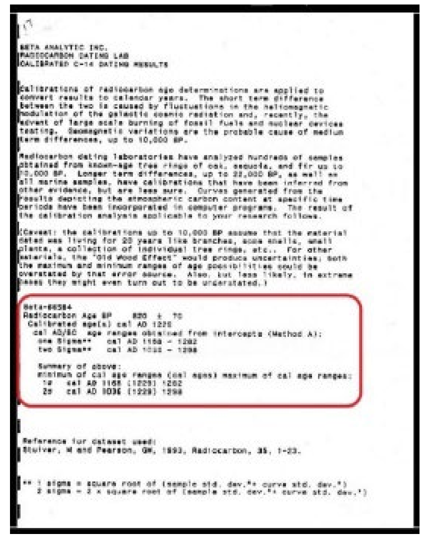
It is assumed by this amateur that one of the reasons why the organic fiber artifacts identified as **CF**, was because the Judean Date Palm had extirpated at the time of previous biological examinations and reviews performed, dating back to 1849. The lack of any KEW, IPNI, CANBR, ITIS, IOPI or other plant indices with information until 2005 of the *Judean Date Palm*, could make it nearly impossible to give a palm tree identification, let alone a Judean Date Palm determination. Even with those technologies and indices available in 1995 to WHOI and by Dr. Evens review in 2014, such identification was extremely problematic. Today the situation is different and hopefully primed to assist.

With the current date palm germplasm being constituted by two highly differentiated gene pools, I am not sure what can be accomplished via this Report. However, I am able to contact those with access to the **CF** samples which were once accumulated on Oak Island, and if an expert voices interest or possibilities that a full identification of the organic fiber artifacts could be made and are interested in such an examination, I will link parties involved to assist and compensate such effort. It is at this time the full scope and understanding of the interest will be revealed.

Appendix F
Chronology of Oak Island Coconut Fiber (Continued)

The historical record of Oak Island **CF** timeline continues here from where it stopped in **Section 1**. These documents have no SEM or botanical imagery but do provide radiocarbon testing and searcher documentation to demonstrate the frequency and volume of **CF** uncovered on Oak Island over time.

1993 Oct. 26 "BETA Analytic Lab radiocarbon dating results on Specimen #Beta-66584 (coconut fiber). Report sent to Dick Nieman."



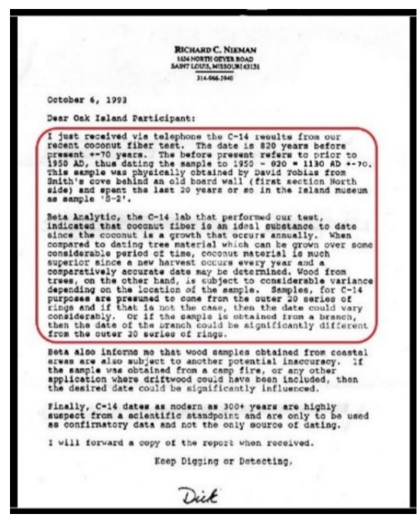
The ^{14}C test results for specimens submitted. Only the test results for **CF** are highlighted on the report shown on the right. The text is reproduced below for clarity.

Beta-66584 Fibers
Radiocarbon Age BP **820** ± 70
Calibrated age(s) **cal AD 1229**

Cal AD/BC age ranges obtained from intercepts (Method A):
one sigma** cal AD 1168 – 1282
two sigma** cal AD 1036 – 1298

Summary of Above:
Minimum of call age ranges (cal ages) maximum of cal age ranges:
cal AD 1168 (1229) 1282
cal AD 1036 (1229) 1298

Notation on page states: **95% confidence in range 1168-1298 AD**."



Cover Letter by Dick Neiman forwarding Report on specimen #Beta-66584 October 6, 1993**.**

"…I just received via telephone the C-14 results from our recent coconut fiber test. The date is 820 years before present ± 70 years. The before present refers to prior to 1950AD, thus dating the sample to 1950 – 820 = 1130AD, ± 70. This sample was physically obtained by David Tobias from Smith's Cove behind an old board wall (first section north side) and spent the last 20 years or so in the Island museum as sample 'S-2'.

Beta Analytic, the C-14 lab that performed our test, indicated that coconut fiber is an ideal substance to date since the coconut is a growth that occurs annually. When compared to dating three material which can be grown over some considerable period of time, coconut material is much superior since a new harvest occurs every year and a comparatively accurate date may be determined. Wood from trees, on the other hand, is subject to considerable variance depending on the location of the sample. […] *Beta also informs me that wood samples obtained from coastal areas are also subject to another potential inaccuracy. If the sample was obtained from a camp fire, or any other application where driftwood could have been included, then the desired date could be significantly influenced. Finally, C-14 dates as modern as 300+ years are highly suspect from a scientific standpoint and are only to be used as confirmatory data and not the only source of dating."*

1990 Oct. 4 "BETA Analytic Lab radiocarbon dating results on Specimen #Beta-39897 (coconut fiber). Report sent to Dick Nieman."

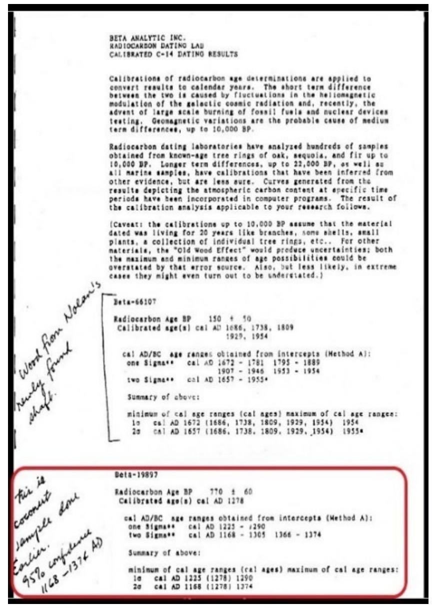
Triton Alliance's Dick Nieman receives ***^{14}C*** test results for specimens submitted. Only the test results for **CF** are highlighted on the report shown on the right. Text is reproduced below for clarity.

Beta-39897 Fibers
Radiocarbon Age BP **770** ± 60
Calibrated age(s) **cal AD 1278**

Cal AD/BC age ranges obtained from intercepts (Method A):
one sigma** cal AD 1225 – 1290
two sigma** cal AD 1168 – 1305 1366 - 1374

Summary of Above:
Minimum of call age ranges (cal ages) maximum of cal age ranges:
cal AD 1225 (1278) 1290
cal AD 1168 (1278) 1374

Notation on page states: **95% confidence in range 1168-1374 AD**."



BETA ANALYTIC INC.
RADIOCARBON DATING LAB
CALIBRATED C-14 DATING RESULTS

Calibrations of radiocarbon age determinations are applied to convert results to calendar years. The short term difference between the two is caused by fluctuations in the heliomagnetic modulation of the galactic cosmic radiation and, recently, the advent of large scale burning of fossil fuels and nuclear devices testing. Geomagnetic variations are the probable cause of medium term differences, up to 10,000 BP.

Radiocarbon dating laboratories have analyzed hundreds of samples obtained from known-age tree rings of oak, sequoia, and fir up to 10,000 BP. Longer term differences, up to 22,000 BP, as well as all marine samples, have calibrations that have been inferred from other evidence, but are less sure. Curves generated from the results depicting the atmospheric carbon content at specific time periods have been incorporated in computer programs. The result of the calibration analysis applicable to your research follows.

(Caveat: the calibrations up to 10,000 BP assume that the material dated was living for 20 years like branches, some shells, small plants, a collection of individual tree rings, etc.. For other materials, the "Old Wood Effect" would produce uncertainties; both the maximum and minimum ranges of age possibilities could be overstated by that error source. Also, but less likely, in extreme cases they might even turn out to be understated.)

Wood from Nolan's newly found shaft.

Beta-66107

Radiocarbon Age BP 150 ± 50
Calibrated age(s) cal AD 1686, 1738, 1809
1929, 1954

cal AD/BC age ranges obtained from intercepts (Method A):
one Sigma** cal AD 1672 - 1781 1795 - 1889
1907 - 1946 1953 - 1954
two Sigma** cal AD 1657 - 1955*

Summary of above:

minimum of cal age ranges (cal ages) maximum of cal age ranges:
1σ cal AD 1672 (1686, 1738, 1809, 1929, 1954) 1954
2σ cal AD 1657 (1686, 1738, 1809, 1929, 1954) 1955*

This is coconut sample done Earlier. 95% confidence 1168 – 1374 AD

Beta-19897

Radiocarbon Age BP 770 ± 60
Calibrated age(s) cal AD 1278

cal AD/BC age ranges obtained from intercepts (Method A):
one Sigma** cal AD 1225 - 1290
two Sigma** cal AD 1168 - 1305 1366 - 1374

Summary of above:

minimum of cal age ranges (cal ages) maximum of cal age ranges:
1σ cal AD 1225 (1278) 1290
2σ cal AD 1168 (1278) 1374

The 3-page redacted Cover Letter to "Oak Island Participants (Triton Alliance)" from Dick Nieman, dated October 7, 1990, discussing efforts to identify the organic fiber artifact is shown next.

"Subject: Carbon 14 analysis of coconut fiber. During our visit to Oak Island this summer, Dan Henske provided some samples of what is believed to be coconut fiber. […] Dan informed me that this was the same material which had been removed in great quantity by earlier searches and the same material which had been identified by the Smithsonian as coconut fiber.

My next step which was explored involved a trip to the Missouri Botanical Gardens which was recently the subject of a feature article in the August, 1990 issue of National Geographic. I inquired of these professionals as to what could be learned from our sample. Would it be possible to determine exactly what the material was? Could the country of origin be determined? Was it possible to learn anything from this sample except dating which I had planned to do by C-14 analysis? The answer to all these questions was in the negative.

While Missouri Botanical Gardens was not prepared to identify the material, they did, however, suggest submitting the fibers to the Tropical Product Institute located in London, England.

The C-14 test was performed and I learned the result by telephone on October 4, 1990. Dr. Tamers informed me that the date translated to 1180 A.D. ± 60 years (1950-770=1180) and asked if I was shocked at the result. I replied that I was indeed shocked. He assured me that since he was aware of the anticipated date, he checked and rechecked his procedures and found absolutely everything to have been performed correctly and had a high degree of confidence in the result. We had agreed earlier to save a small portion of the sample such that we could verify the result by the Accelerator method if we desired to do so at a future date with a smaller sample size. I can visualize no other reason for the presence of coconut fiber other than its incorporation as part of the original project and until evidence is present to the contrary, I can only believe that is was used as a filtration mechanism by the original constructors when the project was executed. It does not appear that the fiber could have been deposited by natural tidal action, a subject which has been dealt with at length by other authors. Also, since the last ice age concluded about 12,000 years ago, it does not appear that glacial till can explain a date of 1180 A.D. It appears modern science is trying to tell us something – I wonder what it is?"

1976 Oct. 21 "Written response from Oak Island Searcher Robert R. Dunfield to author D`Arcy O`Connor, regarding examinations on **CF** found during his excavations."

"[…]#3, Yes. The coconut fiber was analyzed to be "coir," a fibrous mass between the coconut shell and the outer husk, which was used as dunnage in the early days of primitive shipping. The so-called cement is nothing more than limestone."

1976 Aug. 10 "Written response from Mildred Restall, wife of Oak Island searcher Robert Restall to author D`Arcy O`Connor, regarding **CF** encountered during his excavations."

"[…] We used to find mats and mats of coconut fiber (in Smith's Cove). And do you know what we used to do? Dig it out and we had a shed down there with a little platform on it. We'd just leave it out there (to dry) and people would take pieces of it. We never realized the value of it at the time. Chappell had a hunk of it. I have none left, I know that. Now that coconut fiber; we called it coconut fiber. But that fellow (Erwin) Hamilton, he said that it was bark off spruce trees (scraped off by earlier searchers when they were making spruce timbers for their cribwork). He claims that's what it was. But it's been analyzed as coconut fiber. And when you pull bark off you take it off in long strips, not short pieces like that (which we found). We gave some of our fiber to people who had it analyzed, and they [Dunfield] *said it was the husk of coconuts. We had a fellow in the States who had it analyzed by some place in New York. We didn't have copies of the analysts' report, just in the letters."*

1976 Jul. 20 "Written response from Claude C. Chappell, son of Oak Island Searcher Melbourne R. Chappell and owner of 15 island lots, to author D`Arcy O`Connor, regarding **CF** found during his excavations."

"…He (Restall) did an awful lot of digging around Smith's Cove by hand trying to locate [the] *drains. He found a lot of coconut fiber there too. In 1895 when father went to Oak Island for the first time, he told me that there was a pile of that coconut fiber that had been piled up on the shore by the searches in 1849 when they uncovered it. He said it was piled up on the shore and that it would fill a big truckload. And when I was there in 1931, I looked around and got several pieces of coconut fiber. Some of it was sent to the Smithsonian Institution for analysis; some of it was sent to Tobias for analysis in Montreal or Toronto. I don't know who did his (Tobias) analysis. It wasn't dated, just authenticated as definitely coconut fiber; the fibers off the husks of coconut."*

1975 May 18 "Written response from Oak Island Searcher Fred Nolan and owner of 7 island lots, to author D`Arcy O`Connor, regarding **CF** found during his excavations."

"…I have some coconut fiber. There's not much of that stuff left around. Restall gave me that. He found quite a bit of it on that beach in Smith's Cove."

1975 Mar. 26 "Written response from author D`Arcy O`Connor to Chief Botanist, James H. Soper of the National Museums of Canada, Museum of Natural Sciences, Ottawa, Canada K1A OM8 Canada, regarding Oak Island **CF**."

"Dear Dr., Soper; Thank you for your letter of March 21 and your assistance in helping me track down the data on the coconut fiber. At your suggestion I have written Dr. Paquin of the NRC's Technical Information Service and shall await his reply.

1973 Sep. 20 "Chapter XIV, 'Coconut Fiber,' in an unpublished book by Melvin R. Chappell titled "*The True Story of Oak Island*." Melvin was son of William Chappell, Oak Island searcher from 1895-1897."

"Attention is drawn to several references made in the story to a brown fibrous substance, or coconut fiber. It is recorded that a small quantity of brown fibrous substance closely resembling the husk of a coconut, was brought up on an auger when drilling in the Money Pit. It is also recorded that in working on the shore, "the workmen came to a covering or layer of brown fibrous plant the fibre very much resembling the husk of a coconut." Mr. Lowden, refers to it and says: "it is not the fiber used in the manufacture of Manilla rope." He also quotes S.C. Fraser, who stated definitely that is was coconut husk, or fibre. It will be noted that Mr. Lowden mentions the fact that considerable of this fiber was found in good state of preservations under the sand on the beach at Smith's Cove in the summer (1895) and carried away by visitors. In one of S.C. Fraser's letters, he writes: "There was tons and tons of that coconut fiber on the works at the shore, and in the [money] pit." During the summer of 1916, a small quantity of this fiber was dug up at Smith's Cove, under instructions and in the presence of Mr. F.L. Blair. This was preserved, and a specimen thereof was mailed to the Smithsonian Institution, Washington, D.C., with request that they identify it. We quote their reply:

> "The specimen of fiber submitted is undoubtedly from the fibrous husks surrounding a coconut. This fiber is especially resistant to the effects of sea water and under the conditions under which it was found might have been there for several hundred years."

No such fiber, material or substance is found elsewhere in Eastern Canada, either on its shores, inland or on its islands except on Oak Island, and there only in two spots; Smith's Cove and the Money pit. Was it put there by nature or man? If by nature, why not elsewhere in the vicinity or surrounding country? How did it get down 100 or more feet in the Money pit and not in the surrounding soil at the same, or any other depth so far as known? If placed there by man, from whence did it come, and when, and for what purpose was it used in the locations where found? The answer will be found at 155 feet in the Money pit. When the author was on Oak Island in 1931 a considerable amount of the coconut fiber was still to be found at Smith's Cove. Also during Mr. Restall's operations at Smith's Cove in 1959-1965 he uncovered several pieces of this fiber. Mr. William Chappell stated that when he was on Oak Island in 1895-1897 there was a large amount of this coconut fiber [still] *piled on the shore which had been removed when the drains were uncovered in 1849-1850. Pages 40-41."*

1971 Apr. 28 "Draft Report from H.Q. Golder Associates, Consulting Geotechnical Engineers, to Oak Island searchers Triton Alliance Limited."

"1850: Truro Co. Excavation of Smith's Cove uncovers 2 inch layer of coconut fiber. (Appendix I, pages 7-9)."

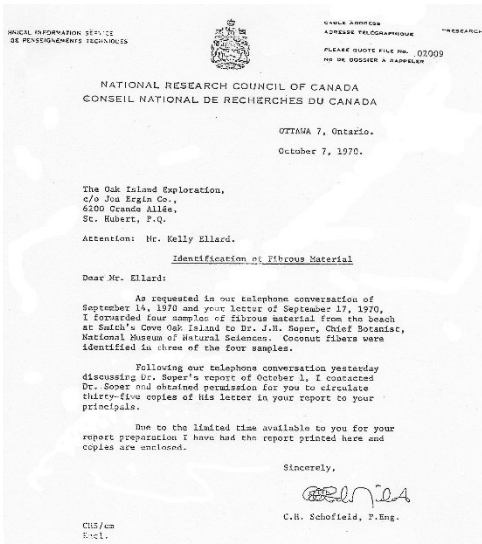
"1866-1867: Truro Co. Boring at 90 ft within Money Pit, down south side and found coconut fibers and charcoal at 128 ft depth. (Appendix I, pages 15-17)."

1970 Oct. 7 "Written response to Oak Island Searcher attorney Jon Ergin by C.H. Schofield of the National Research Council of Canada."

*"As requested in our telephone conversation of September 14, 1970, and your letter of September 17, 1970, I forwarded four samples of fibrous material from the beach at Smith's Cove Oak Island to Dr. J.H. Soper, Chief Botanist, National Museum of Natural Sciences. **Coconut fibers** were identified in three of the four samples."*

1970 Oct. 7 “National Research Council of Canada Identification of Fibrous Material Letter, to Mr. Kelly Ellard (The Oak Island Exploration), releasing findings by Dr. J.H. Soper, Chief Botanist of Oct. 1, 1970, with photo of artifact.”

“Coconut fibers were identified in three of the four samples.”



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NATIONAL RESEARCH COUNCIL OF CANADA
CONSEIL NATIONAL DE RECHERCHES DU CANADA

OTTAWA 7, Ontario.

October 7, 1970.

The Oak Island Exploration,
c/o Jon Ergin Co.,
6200 Grande Allée,
St. Hubert, P.Q.

Attention: Mr. Kelly Ellard.

Identification of Fibrous Material

Dear Mr. Ellard:

As requested in our telephone conversation of September 14, 1970 and your letter of September 17, 1970, I forwarded four samples of fibrous material from the beach at Smith's Cove Oak Island to Dr. J.H. Soper, Chief Botanist, National Museum of Natural Sciences. Coconut fibers were identified in three of the four samples.

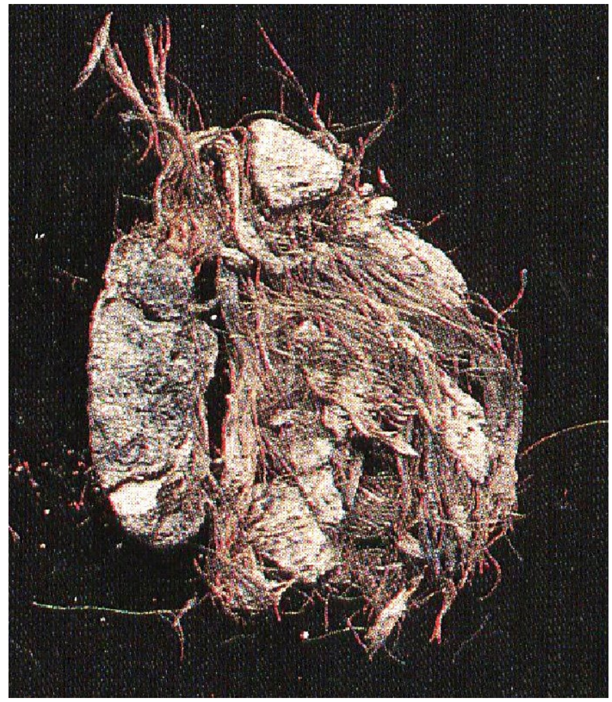
Following our telephone conversation yesterday discussing Dr. Soper's report of October 1, I contacted Dr. Soper and obtained permission for you to circulate thirty-five copies of his letter in your report to your principals.

Due to the limited time available to you for your report preparation I have had the report printed here and copies are enclosed.

Sincerely,

C.H. Schofield, P.Eng.

CHS/em
Encl.



1969 Nov. “Written records from Oak Island Searcher Daniel C. Blankenship regarding **CF** found during his excavations.”

“Incidentally, large amounts of sticky blue clay was found in layers over the area near the log, as well as grass and some material that looks like coconut husks.”

1966 Sep. 15 “Written response to Oak Island Searcher Reginald V. Harris from K.J McCallum, Professor of Chemistry, University of Saskatchewan, Saskatoon, Canada, National Archives MG1 Vol. 383, 2093M.”

“It should also be appreciated that the measurement proports to give the age in terms of the time at which the particular organic material was growing.” … You indicate the presence of coconut fibre. I know little about this material, but I presume it is less likely that old coconut fibre would have been used.”

1966 Aug. 19 “Written letter from Oak Island Searcher Reginald V. Harris to Dr. C.G. L. Friedlander, Dalhousie University, Halifax, Nova Scotia. National Archives MG1 Vol. 385, regarding the commentary of **CF** found on Oak Island.”

“At Oak Island there are huge quantities of coconut fibre buried below the surface of the shore in what is called Smith’s Cove. The layer is approximately two feet thick and is covered by a deep layer of stone also about two feet thick. This fibre stretches for a length of 145 ft. around the shore of the cove. In addition to finding the coconut fibre along the edge of the cove, there were smaller quantities found in excavating the so-called Money Pit; in which ten platforms of logs were found between the surface and a depth of 100 ft. On several of these platforms there was a quantity of coconut fibre. My assumption is that the fibre has been there at least for two hundred and fifty years and it is presumed that it came from the West Indies.”

NOTE: It is believed Mr. Harris is incorrectly transmitting a mis-type in a report which read 2’ instead of 2” as is generally reported by other sources.

1966 Feb-Mar "Dunfield sends unknown fiber to University of Southern California for examination."

"After refilling the partially crane-excavated Money Pit, Dunfield orders it to be refilled and a platform built on top for four 6-inch (15.2cm) boreholes sunk down to 190 ft. Boreholes find unknown fiber material, which is sent to his alma mater, USC. Ends searching for the year in April (Harris and MacPhie 2005, Clarke 2023)."

1966 Jan. 31 "Written letter from Reginald V. Harris to new Oak Island Searcher Robert R. Dunfield, that Harris received from the Department of Obstetrics and Gynecology at the Albany Medical College of Union University, Albany, NY. National Archives MG1 Vol. 383, on Oak Island fiber submitted for identification."

*"Mr. Kirwan and the members of the Laboratory Staff, after spending considerable time in the examination of this hair sample, have found no evidence that would permit the scientific conclusion that it is human hair. In his opinion, **it is an animal hair of unidentified origin**."*

1965 Dec. 22 "Written response from Director William A. Rovertine, Department of Obstetrics and Gynecology, at the Albany Medical College of Union University, Albany, NY, to Reginald V. Harris regarding the Oak Island fiber submitted for identification."

*"To date, the analyses have not been completed but I expect to have some results shortly. The carbon dating is being done by a nuclear instrumentation firm in Chicago as a public service for us. Since this firm does carbon dating on a paid service basis, samples submitted by paying customers much necessarily be processed first. The analysis of the **hair sample** is being done as a special favor by one of the foremost experts on human hair in the area. However, since this present position requires constant traveling, it took us some time to contact him. When I receive the results of the analysis, I will promptly forward them to you."*

1947 Aug. 4 "Written response from Oak Island attorney Gordon Blair of Traders Finance Corporation Ltd, Sint John, New Brunswick, to L. Elbert Smith of Dallas, TX, regarding his knowledge of excavation in the Money Pit and finding **CF**."

"Replying in brief to your inquires, the shaft was originally circular in shape, 12 or 13 feet in diameter, and it was uniform in size as far as at least 90 feet. It was a very hard blue clay and was not shored or supported in any way by timber when opened. Some say it was cribbed when opened by the original workers, and that the cribbing was taken out as they refilled […]No timber was encountered between ten feet below the surface and 95 feet, the latter being proved by drilling. There were marks every ten feet on the way down, such as a layer of charcoal, one of putty bladders, another of beach gravel, and one of coconut husks, etc."

1939 "Written interview from Oak Island Searcher Gilbert D. Hedden and 98 year-old Captain Anthony Vaughan (believed descendant of original finder of the Money Pit on Oak Island."

"Born on the old Vaughn family farm, he was present on the island probably during the Truro Company digs [1849]. *Apparently, he worked "the beach" at the age of 10 years old and recalled, "large quantities of fiber" being removed. Ultimately, he wasn't too impressed with life on the island and ran away at the age of 15 for a life on the sea. That the Vaughn's themselves did not put much stock in it (the Kidd Story) but did amass a great fortune in supplying lumber and other supplies to the various* [searcher] *expeditions."*

1937 Nov. 5 "Written letter from Oak Island Searcher Frederick L. Blair to Reginald V. Harris regarding determination by different experts of Oak Island fibers submitted for testing."

*"Re: Cocoanut fibre; doctors differ. An expert at the Smithsonian Institution stated it was undoubtedly **cocoanut fibre** and under the conditions in which it was found, may have been there for hundreds of years. Other experts have before this, pronounced it **Manila hemp**. Considering the quantity found in former years, both at the shore and at the pit, I cannot see that it is of material importance whether it is one or the other. I prefer, however, to accept the Smithsonian opinion. Fraser, who superintended the work in the sixties* [1860's]*, stated in a letter that were "tons and tons of cocoanut fibre on the shore and at the works" at the pit. A party told me in Chester in 1916, that he tramped over bushels of it at the pit mouth. That does not sound much like the remains of a ship's cable or hawser."*

1937 Oct. 26 "Written letter from Reginald V. Harris to Oak Island Searcher Gilbert D. Hedden sharing the reported findings from Albert F. Hill of Harvard University Botanical Museum. National Archives MG1, Vol. 381, 1264."

*"I have just had a reply from the Botanical Museum of Harvard University, to whom I sent some of the cocoanut fibre. You will remember that this material was pronounced cocoanut fibre by the Smithsonian Institute. The Harvard Museum writes as follows; 1, The material has suffered somewhat from its burial in the ground, but even as it is readily distinguishable as **Manila hemp**, the external appearance is misleading, but typical Manila hemp fibers are to be noted in a microscopic examination of macerated material. 2, It seems quite logical to surmise that the deposit on the shores of Oak Island In Mahone Bay represents the partly disintegrated remains of some ship's cables or hawsers. I do not know whether this is a case of doctors differing. Possibly the two reports are not inconsistent."*

1937 Oct. 22 "Written response from Albert F. Hill, Research Assistant, Botanical Museum of Harvard University to Reginald V. Harris regarding Professor Fernald's determination of Oak Island fiber. National Archives, MG1, Vol. 380."

*"As Professor Fernald has probably informed you the fiber samples which you sent to him were turned over to the Museum for Identification. The material has suffered somewhat from its burial in the ground, but even so it is readily distinguishable as **Manila hemp**. The external appearance is misleading, but typical Manila hemp fibers are to be noted in a microscopic examination of macerated material. It seems quite logical to surmise that the deposit on the shores of Oak Island in Mahone Bay represents the partly disintegrated remains of some ship's cables or hawsers."*

1937 Aug. 27 "Written letter from Reginald V. Harris to Oak Island Searcher Gilbert D. Hedden informing him of wood determination and status of fiber determination from the Gray Herbarium of Harvard University."

"I have a reply from the Gray Herbarium, Harvard University, about the oak leaves, which reads as follows; "The specimen of oak which you sent, certainly belongs to the characteristics Red Oak of Nova Scotia. The leaves are small and shallowly lobed, but that is because, I take it, the trees grew in a somewhat exposed habitat. As for the fiber, I will hold it for opening of our college year, when some of our anatomists return to Cambridge, and ask then to examine it. Personally, I cannot speak with any authority of it. Very truly yours, RVH"

1937 Jul. 22 "Written response from Hugh P. Bell, Head of Department of Biology, Dalhousie University, to Oak Island attorney Reginald V. Harris regarding CF found on Oak Island. National Archives, MG1 Vol. 381, 1204."

*"In reference to the fibrous material that you showed me this morning, I am not sufficiently familiar with all forms of fibrous to identify this with any degree of accuracy. My knowledge is limited to a few common forms. However it appeared to me to be angiosperm material probably from some member of the lower monocotyledons, but I do not wish you to take this as a definite statement on the matter. In view of the situation in which this material was found, I would suspect that it is a very old deposit of our common eel grass (**Zostera marina**). To get an accurate determination of this material it should be sent to the Bureau of Plant Industries, Washington. If it turns out to be eel grass it will be very interesting from a scientific standpoint for, as you know, this plant disappeared from the Coast a few years ago and is now coming back slowly. A noted English Botanist claims that the plant which is coming back is not the old form but a hybrid between that old form and another species. If your material is identified as eel grass it could be determined from it whether the plant which grew on our coast a good many years ago was the same form with which we have been familiar. For this purpose samples of your material should be sent to the Oceanographic Institute, Woods Hole, Massachusetts and to both the Kew Garden and the British Museum, London, England. Of course this should not be done until after the people at the Bureau of Plant Industries have definitely identified it as eel grass."*

1895 Jun. 19 "Written letter from S.C. Fraser, searcher worker at Oak Island, Briggs Corner, Queens, New Brunswick, Canada, to A.S. Lowden Manager of Oak Island operations. Five pages."

"[…] McNutt's boring after all other work on the island until last year was concluded; found disturbed earth, coconut fibre, and pieces of wood down to 155 feet. Now there was tons and tons of that coconut fiber on the works at the shore and around the treasure in the pit. Pray what is it doing 150' below the former place of the treasure? […] I did not know that the earth of the island undisturbed, had coconut fibre and wood mixed with it. The pamphlet says, "East India Grass", it is not; but coconut fibre nearly as well preserved as what I took off the coconut when examining and comparing them."

1895 "Excerpts from "*The Story of Oak Island – 1895*," by Frederick L. Blair. Excerpts from the 'Buried Treasure' section, part of the Oak Island Treasure Company's Public Share Offering, to include from the 'Additional' information section.

"[…] then 4 inches of oak and 6 inches of spruce; then into clay 7 ft. without striking anything else. In the next boring… On withdrawing the augur several splinters of oak, such as might come from the side of an oak stave, and a small quantity of brown fibrous substance, closely resembling the husk of a coconut, were brought up. […]After removing the sand and gravel covering the beach, they came to a covering or bed of a brown, fibrous plant, the fiber very much resembling the husk of a coconut, and when compared with the plant that was bored out of the Money Pit already mentioned, no difference in the two could be detected. However it was subsequently proved to be a tropical plant, in former times used as 'dunnage' in storing ship's cargo. The surface covered by this plant extended 145' along the shoreline, and from a little above low to high water mark, and about two inches in thickness. Underlying this and to the same extend was about 4-5" of decayed eelgrass, and under this was a compact mass of beach rocks free from sand or gravel… ADDITIONAL: (P. 10) "I spent some time, last summer and fall, on the island. While there, I lodged at the house of a Mr. Maginnis, who is a grandson of one of the discoverers. From him and Robert Creelman, who got his knowledge from Vaughn, another of the finders, I learned many more of the particulars of the discovery, having been connected with nearly every company from 1849 until now, he is thoroughly acquainted with the work described in this book and endorses the foregoing story in nearly every particular. […]One of the ten feet marks found in the "Money Pit" was a layer of putty. This was used in glazing the windows for a house shortly after being built on the Western Shore. Other layers were of charcoal. These articles are usually found among the stores of sea-going crafts. "The brown fibrous plant resembling the husk of a coconut" spoken of in the prospectus, which was found in such large quantities on the shore, and everywhere that the pirates' work was found, is called by some "Manilla Grass." It certainly is not the fiber used in manufacturing the manila rope, which is the fiber of a tree like the banana. S.C. Frazer writes, "The pamphlet says East India Grass." It is not; but is coconut fiber, nearly as well preserved as what I took off the coconut when examining and comparing them." Considerable of this was found among the sand, last summer, and carried away by visitors. Although it had been there perhaps 200 years, it is in a good state of preservation yet."

1866-1867 "<u>Journal ledger excerpts of searcher work carried out on Oak Island between Dec. 1866 through Jan. 1867. Account by James McNutt, Secretary of the searcher entity Oak Island Eldorado Co., dba – The Halifax Company. Transcribed by archivist Les MacPhie. See pages 1-6.</u>"

> *"[…] and resumed the work at 30 feet where the others left off. At 40 feet a tier of charcoal, at 50 feet a tier of smooth stones from the beach with figures and letters cut on them, at 60 feet a tier of manilla grass and the rind of a coconut, at 70 feet a tier of putty, at eighty feet a stone 3 feet long and 1 foot square with figures and letters cut on it, and it was free stone being different from any on that coast. […] Then, in boring the remaining holes, two oak planks were passed through of the thickness of 4 inches and about 3 feet apart. A sort of grass was brought up by the auger, the same as found in the pit at 60 feet and a substance white in color and much resembling putty. […] They then commenced between high and low water marks and, after clearing off the dirt and sand, found a pit covered with the same kind or grass and coconut rind as found at 60 feet in the pit. And also brought up with the auger underneath the grass. The pit was filled with broken stone nicely laid in arches running out below low water mark. […] also oak chips and manilla grass and two large smooth stones that had been taken off the surface of the earth. […] December 1866, boring through soft clay and blue mud, below 18 feet clay becomes more sandy and dry, at 20 feet water commenced to flow up the tube carrying up clay, gravel and stones as large as would come up through tube, also chips of wood and coconut fiber and a considerable amount of what appeared to be charcoal. 1866-1867 Oak Island Eldorado Co./Halifax Co. Money Pit 90 ft platform. Bored down on South Side and found coconut fibers and charcoal at 128 ft. depth."*

1862 Oct. 16 "<u>Published article excerpts in the *Liverpool Transcript* [Nova Scotia] titled "The Oak Island Diggings," by Jotham Blanchard McCully. Pages 3 & 8.</u>"

> *"[…] Work was evidently done by hands in both pits, and also at the beach, where we found flag stones made in the form of drains and covered with a kind of grass, not the growth of this country, and the outer rind of the coconut."*

1861 Sep. 30 "<u>Published article excerpts in *The Nova Scotian*, titled "The Oak Island Folly," by Patrick. Pages 1-4 .</u>"

> *"[…] The ground on the part of the island, where search is made for the treasure, is formed of compact clay, mixed with round lumps of stone to the depth of 110 feet, perfectly dry, excepting in one pit where the water comes in at 98 feet from the surface. Over 50 years ago, a company from Onslow took the earth from this pit, and found it was dug at some former period, and carefully filled in with earth, in which they found wood, charcoal, putty, & coconut fiber. At 93 feet from the surface they probed with a crowbar and struck a platform of wood 5 feet beneath them; after which the water came in, and neither they, nor any company that followed them, ever again sent a shaft so far down. […] At the shore there were drains laid most skillfully, and underneath, the sand covered with a kind of grass, which one of the best Botanists in the Province informed us grew nowhere in the British North American Provinces. This same grass was bored up from about the platforms in the old pit; it was also found in these drains - shewing the two works to be connected."*

1848 "<u>Sworn affidavit of J.W. Andrews, C.E.M.E Consultant Engineer. As a boy, watched searcher operations in 1849 on Oak Island. Currently lives in Brooklyn, NY. National Archives, MG1 Vol. 383, Part of Frederick L. Blair Report.</u>"

"[…]Next, the digging a pit in this circular space which showed evidence of a previous excavation. Again, the sinking of the pit to a depth of (as memory serves) about 90 to 110 feet when water to the depth of 30 feet was found in this pit and morning when the workmen came to resume work. […]A covering of fiber over one of the plank platforms said to be coconut fiber – later said to be a vegetable growth from Japan or Mexico. I have a sample of it that I have had for many years, which I obtained directly at the works."

Appendix G
Pathways Disproven

As discussed earlier, the 1995-96 Woods Hole Oceanographic Institutions' Draft Report stated in their view there were only four "pathways" with which the **CF** could have reached Oak Island. Though they offered to provide follow-up research on several of these potential pathways, no such Final Report was issued or paid for, nor additional commentary provided.

In our two-volume forensic research compilation – "*Oak Island Mystery Trees and other Forensic Answers*," our authors and contributors fully and exhaustively investigated these and other popular theories how **CF** may have found its way 'into' Oak Island, Nova Scotia. A full read of the findings which are summarized below, can be found at www.oakislandmysterytrees.com which is the repository of the appendices examining and proving these first three pathways have no merit and are extremely improbable. Use the passcode '**COIR**' to enter the websites portal, where 16 appendices dealing with all of the first volumes answers, can be found and reviewed.

Pathway i - Planting by Searchers

What was implied by WHOI, is that perhaps, a member of the Triton Alliance Search Team (treasure seekers at the time of WHOI's arrival to the island) or some affiliate, surreptitiously planted or colluded to have WHOI members miraculously "find" coconut fiber on Oak Island. WHOI authors hypothesized reasoning to do such a thing, was that by finding such ancient fibers the media hype and excitement may breathe new life into Triton Alliance's search activities in this 200+ year old search for treasure. In fact, many people, over the years have believed **CF** was put there to stimulate investor interest in buying searcher shares or increase island property values. Why **Pathway i** has no merit is…

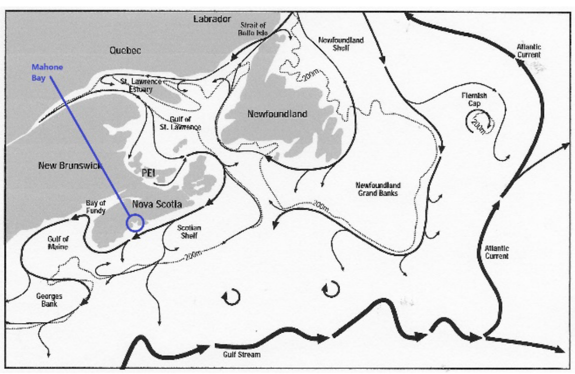
- Coconut Fiber was first discovered in the Money Pit in 1804, by a secretive searcher organization (Onslow Company) whose members were all relatives of those who found the site, circa 1795. The effort was short-lived and not divulged to the public. The fiber found was first thought to be a variety of fibers… animal hair, part scalp of a Black Slave, Manila Hemp (abaca) as well as Zoysia grass.
- While the exact identification was argued between prestigious universities at the time, and a lengthy hiatus existed before the next searcher organization (Truro Company) attempted to find treasure in 1849, no written mention of coconut fiber or even the excavations on Oak Island surface until 1869.
- In 1850, the Truro Company, in an effort to end flooding by a hidden pirate tunnel, dug up the beach shore of Smith's Cove and discovered what is referred to as the Filtration System (**FS**). Well documented as to its design, the containment area of the **FS** was 145 ft long, 7.5 ft wide, and 5 ft. deep. This included a massive amount of coconut fiber covering a thick layer of eelgrass, under 3 ft thick layer of beach sand. The word about the coconut fiber became well known as residents in the entire bay community, took bushels of the fiber home for gardening purposes.
- In 1861 - the *Oak Island Association*, 1866 - the *Oak Island Eldorado Company*, 1867 - the *Halifax Company*, 1893 - the *Oak Island Treasure Company*, 1909 - the *Old Gold Salvage and Wrecking Company*, and perhaps twenty other "leasees" dug into Oak Island and found additional coconut fiber, which had still not been officially identified as such. Fiber continues to be found with each new searcher, and while six people are killed in such excavations, it is not positively identified as **CF** until the Smithsonian Institution makes the first determination in 1916, and again in 1936.

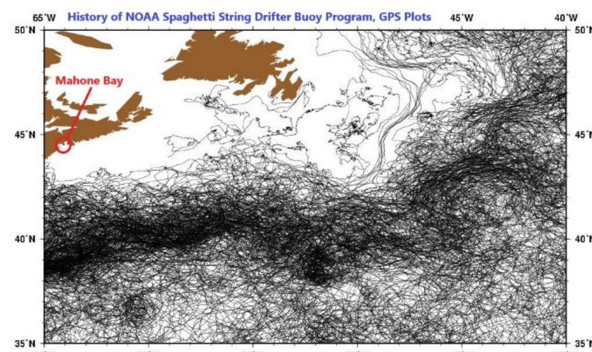
- Prior to WHOI's two-month long investigation, researchers, geologists and searchers find coconut fiber in borehole drilling, trenching and excavation by a massive digging crane operation, attempting to dig the heart out of the island. Fibers were collected and then absconded by tourists and looky-loos throughout the 1960's.
- Though Triton Alliance had several business partners, no shares of the entities under that name were ever sold. Additionally, no island lots were sold or put up for sale during their business operations.

The WHOI **Pathway i** could be eliminated had they done due diligence. However, even a cursory review of the islands history should have shown WHOI Report authors, such a gimmick had no value.

Pathway ii - Natural Transport by Gulf Stream and Inshore Currents

The National Oceanic and Atmospheric Administration (NOAA) has performed decades of drifter buoy studies of the Atlantic Oceans' currents, gyres and flows. The evidence to prove coconut fiber, whether in a 2 metric ton sargasso mass or as flotsam/jetsam a little at a time, is conclusively proven it could not have happened. The evidence is best seen visually. Below are two images which show the direction of ocean water movement as well as the course of thousands of drifter buoys employed over 23 years. One clearly shows there are opposite currents which block entrance into Mahone Bay, where Oak Island is one of 365 islands. No other island has ever reported coconut fiber on its shores. The second image is a compilation of "Spaghetti Strings," which are records of the daily movement of drifter buoys launched afloat to determine flow.





Pathway iii - Dunnage Discharged at Oak Island by a previous ship.

This pathway is based on a misstatement that **CF** was "*thought to be used as dunnage on old sailing ships*." The fiber being discussed was manila hemp - *not coconut fiber*. Yet when the fiber was later identified as **CF** in 1916, the theory amalgamated and stuck with **CF**. In fact, neither manila hemp nor coconut fiber has ever been used as "dunnage" on *ANY* ship.

There is a reference out of Brazil in the 1700's of "Coker Nuts/Coquito Nuts" being used as dunnage. These gum-ball sized nuts come from the Chilean palm tree, a feather-leaved palm (*Jubaea chilensis*). Coquito nuts look like miniature coconuts and have a very similar flavor to coconuts but are not coconuts. See further information below.**

A further rebuke of this myth is that bulk coconut fiber is spontaneously combustible when wetted – a condition frequented by sailing ships of that era. As a volatile cargo, **CF** has many requirements on its proper stowage due to its oil content, ability to ingurgitate oxygen, and to self-heat when wet.

Further, coconut coir fiber will stain any other cargo it comes in contact with and it absorbs moisture and holds it like a baby diaper. This actually maintains moisture on cargo meant to be dry. **CF** emits an unpleasant odor, which can taint odor-sensitive products. Finally, none of hundreds of maritime-sourced definitions of DUNNAGE include any part of the coconut. And there are no marine logs or records reflecting it was used as such.

A common myth is **CF** was used as dunnage (protection of stowed cargo) during the lumber transport from Nova Scotia to destinations like Europe, Colonial America and the West Indies. Common sense challenges this theory on several levels. Timber was one of the most important exports out of the Canadian eastern maritime provinces between 1650 and 1900 and did supply all of those locations with both milled lumber and bulk logs. Yet Nova Scotia had no access to **CF** to "pack" the timber when loaded into ships as cargo. Nor did Nova Scotia import any **CF** for any purposes, as the only source during this period, would be India or with very limited sources – Ceylon (Sri Lanka). Though the first Coconut Palms were found in Puerto Rico of the West Indies in 1549, the knowledge of or practice to ret coconut husks to produce coir fiber, did not find its way to the Caribbean Sea region until 2008.[1]

[1] "*Reviving the Caribbean Coconut Industry Through Small Business.*" CARICOM/CARDI www.intracen.org/news-and-events/news/reviving-the-caribbean-coconut-industry-through-small-business

In addition to previously stated reasons of **CF** unacceptable usage as dunnage, you should contemplate the logic of coir fiber being used to protect lumber or logs being transported by ships. How exactly would such a fine, light-weight bulk fiber act as a protector of heavy stowed lumber? What physical or mechanical capability could **CF** perform to be a dunnage-appliable product? This is an absurd myth with no historical record or physics application.

And if you still have doubt or heard this fancy before, then consider the radiocarbon dated age of the **CF** found on Oak Island. How did sailing ships transport timber from *ANY* port, get access to **CF** that would have been four hundred years old at the time of such exporting? How did the **CF** find its way into a shaft on a platform 60 feet below, or under 3 ft of beach sand, and only on one of 365 islands in this one bay? For more resource-cited information on this specific Pathway, please read Appendix L, "*Dunnage Done – Floater A Foul*," in Volume Two – *Oak Island Mystery Trees and other Forensic Answers – Compendium*.

> ****Coker Nuts / Coquito Nuts:** They have a brown exterior and a white interior with a hollow center. They measure ½ to ¾ inch (1.3 to 1.9 cm) in diameter. They are completely edible (raw or cooked), and are crunchy, with an almond-like sweetness. Coquito nuts, also referred to as coker nuts, pygmy coconuts, or monkey's coconuts and grow in Mediterranean-type climates worldwide, including in the state of California.[8]
>
> ***"Dunnage*** *- Coker-nuts -- as they are now generally called, and indeed "entered" as such at the Customhouse, and so written by Mr. McCulloch, to distinguish them from cocoa, or the berries of the cacao, used for chocolate, etc. -- are brought from the West Indies, both British and Spanish, and Brazil.* ***They are used as dunnage in the sugar ships, being interposed between the hogsheads*** *[barrels]****, to steady them and prevent their being flung about****."* [9, 10]

The remaining **Pathway iv** – discusses the **CF** having been brought and used by "ancient voyagers." This is where the identification of the Oak Island organic fiber artifact as being **CF** or **DPF** becomes very impactful in learning the true history of exploration to the New World. Your assistance in this organic fiber artifact determination will change the history books!

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