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FIELD GUIDE TO
FOSSIL COLLECTING AT WHITEHAVEN IN CUMBRIA

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Whitehaven Beach stands out as one of the only locations in the country where fossil plants from the Carboniferous period, which is approximately 359.2 to 299 million years ago, can be collected along the shore and along the cliffs. The beach is a traditional pebble and sand beach which is also popular with sea-anglers. Heading towards the cliff, the beach terrain changes and shale becomes increasingly noticeable and it is from these shale rocks that the plant fossils are found. The cliff above is now sadly much overgrown, but there is still a good exposure where collecting can be undertaken, especially where scree has fallen from above.

You'll need a good geological hammer for this locality and a bolster chisel, for splitting rock.

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THE GEOLOGY

Whitehaven's history is steeped in coal mining, as it sits on once-lucrative seams of coal, formed during the Carboniferous era, when Britain formed part of the southern margin of Laurussia and was located in tropical latitudes near the equator. The period saw a shift from arid terrestrial environments to shallow marine conditions, with Britain undergoing a northward drift and a change in climate from arid to hot and humid.

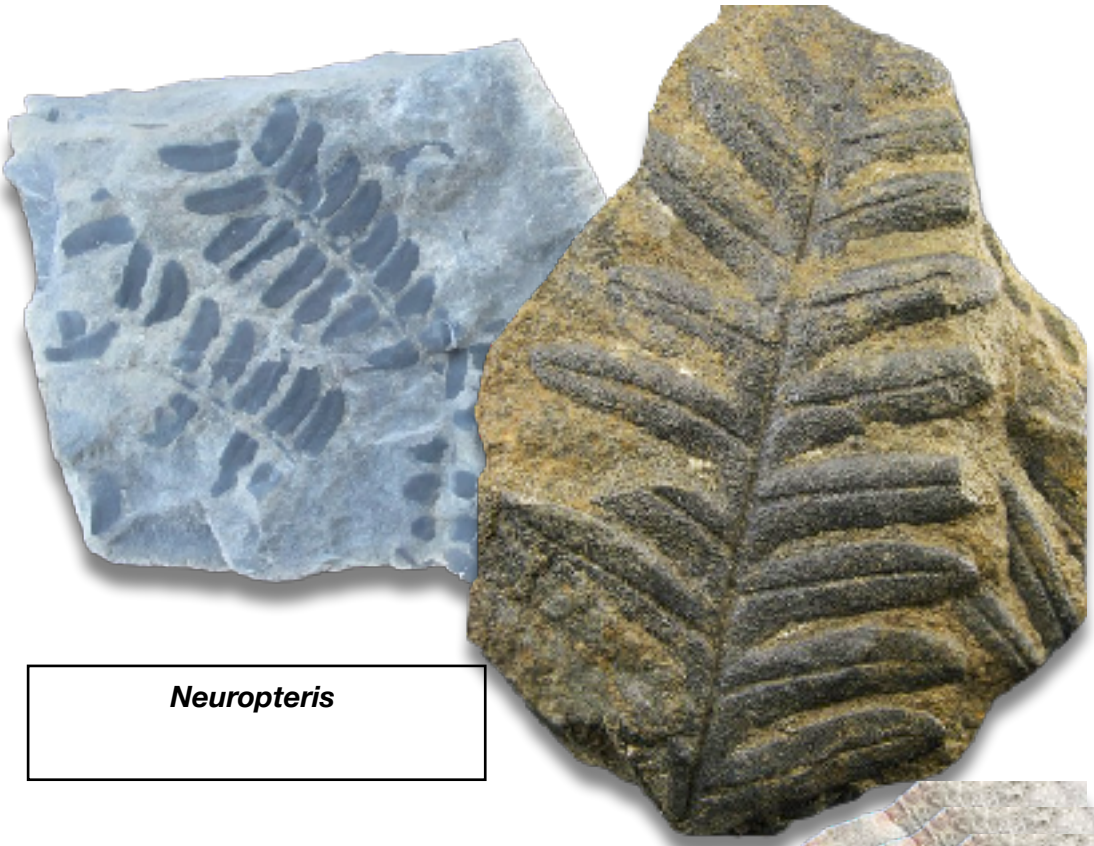
The rocks here are believed to be Late Bolsovian to early Asturian (Westphalian D) as indicated by plant remains, which puts the location at around 359.2 to 299 million year old, being Upper Carboniferous. Fossil plants found at this location represent a time when plant life flourished and forests were populated by giant cycad trees and ferns. A substantial river once flowed to the southwest through this environment and the Countess Sandstone, provides us with evidence of this.

The location is divided into two distinct fossil collecting areas; **the cliff section**, (with many of the plant fossils of exceptional preservation and with good collecting opportunities) and t**he section of foreshore** beneath exposes beds of Bolsovian age (311.7–306.5 Mya) from the Westphalian Stage, which generally consists of far better fossil material.

The main rock here is the Whitehaven Sandstone Formation, with its associated shales, with the lower part of the formation being deposited from a major braided river system that flowed from the north-east. The upper part of the formation represents deposition in lacustrine environments with minor river channels.

The base of the formation is taken where the non-reddened, mudstone-dominated succession meet with thin coals of the underlying Pennine Coal Measures Group.

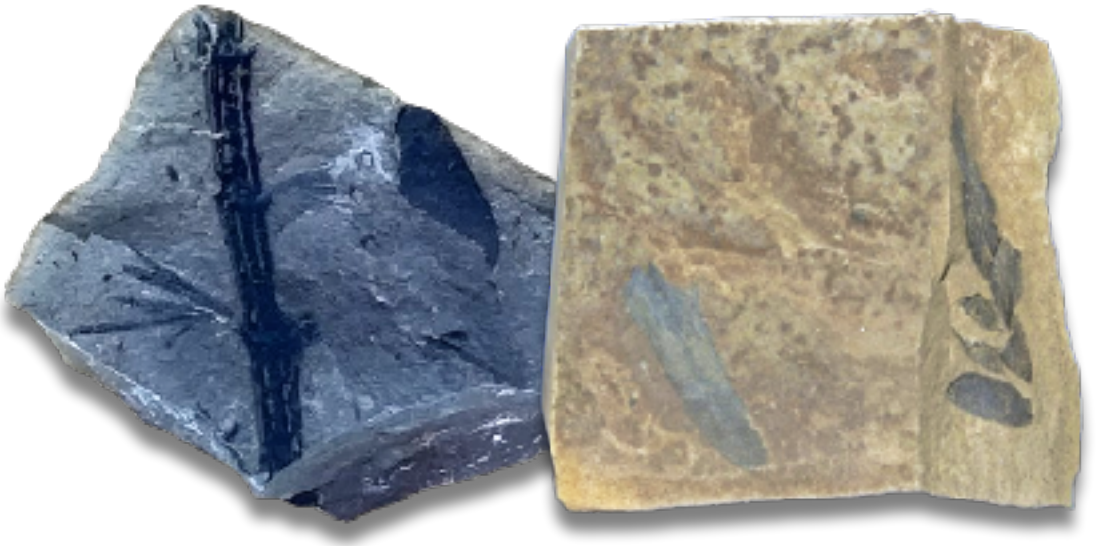
The foreshore is full of fossil roots in between layers of plant material. Use a bolster chisel to separate the shale layers for the plant fossils The most common plants include *Annularia*, *Neuropteris* and *Asterophyllites,* and many of these can be found in their original life positions, which makes this location extremely important. The cliff section requires following routes which are quite overgrown. Examine the scree slopes where rocks have accumulated. Do not hammer into the cliff face. The best bed for *Calamites* can be found in the lower hard beds of the cliff section.



Neuropteris

Pecopteris

Pecopteris

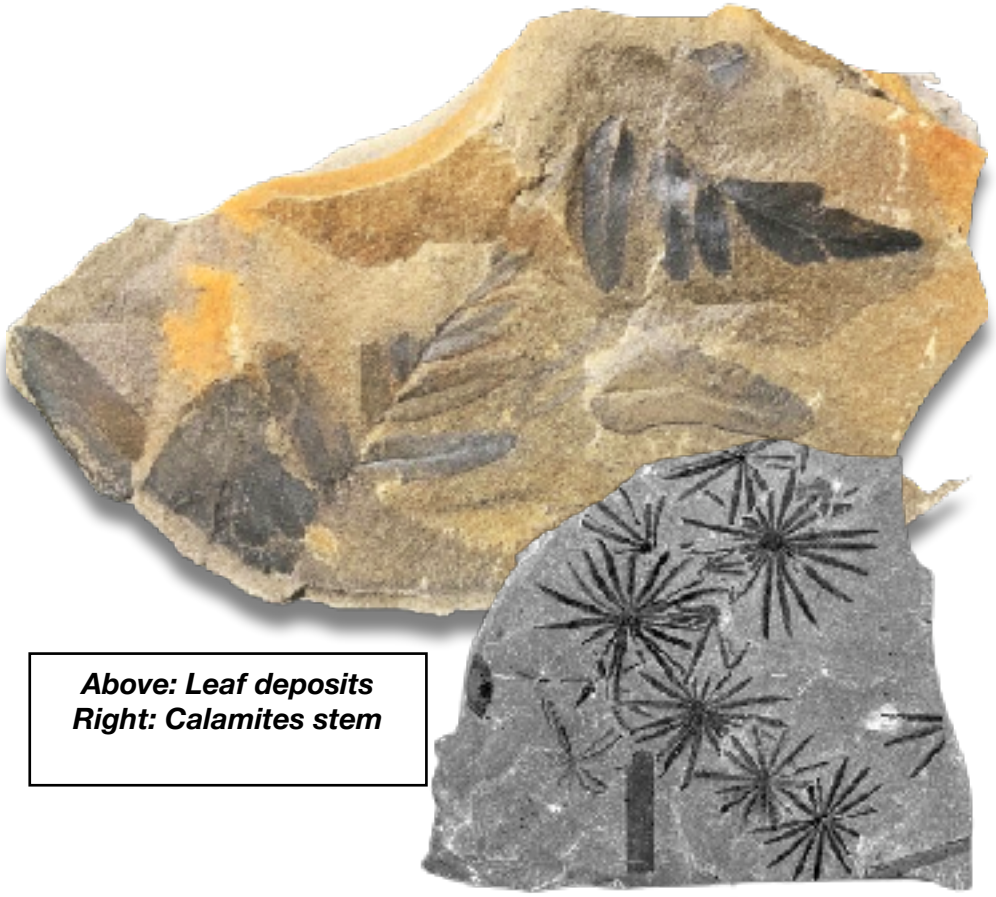


***Asterophyllite* Leaves and Stem**

***Calamites* root**

Annularia sp

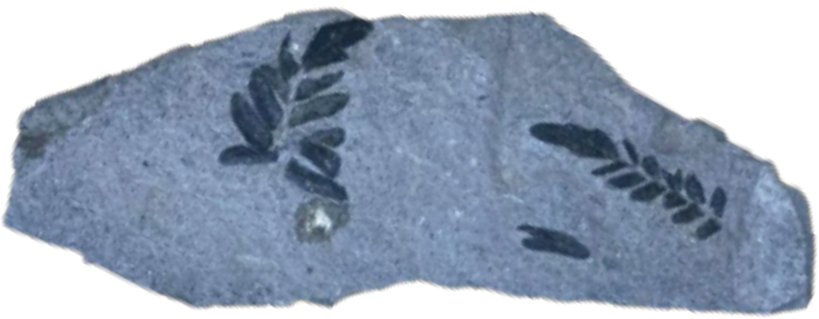
Calamites (Stylocalamites) suckowi
Park of the bark of a giant horsetail.



Above: Leaf deposits
Right: Calamites stem

Neuropteris

Annularia sp



Neuropteris

CLEANING & STORING YOUR FINDS

Cleaning & preservation

The fossils collected from Whitehaven will require no further preparation. Save for a 2wash they are good to go!

Storage

Storage is a matter of preference but small boxes of card or plastic are probably a good place to start (See https://earthlines.com**).** Most importantly, your specimens need a label. A fossil collection will be worthless if you do not, at least, record where you found the fossil, even if you don't know the fossil names - you can always name them at a later time. A simple label like this example will be useful.

Name: Neuropteris sp.
Location: Whitehaven, Cumbria
Geology: Whitehaven Sandstone Formation
Age: Upper Carboniferous. Bolsoviann Stage
Date found: march 2014