

Fossil hunters head for Britain's terror bird beach

Category: England, Stories

written by Editor | 21 February 2025



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by William George

Fossil hunters from around the world, armed

with buckets and spades, are heading for Britain's terror bird beach, where a local amateur collector discovered the skeleton of a flesh-eating bird. The metre-tall raptor ate its last meal 54 million years ago.

The previously unknown flightless bird has been named *Danielsi Raptor phorusrhacidae* in tribute to local palaeontologist Mike Daniels and is the 21st type of terror bird recorded. They were the apex predators due to their hunting pace, killer claws and beaks. Their fossils and bones have been discovered in South America, Texas, Florida and Mongolia. And now England, at the fossil beach at Walton on the Naze, North Essex.

Mike Daniels also recovered 50 other unknown species of birds from the sub-tropical Eocene period, which marked many important evolutionary events for many bird avian species. Fossil hunters and beachcombers are keen to make similar discoveries at the Naze Fossil Beach as word spreads about the discoveries.

He single-handedly dug out and carried 15 tons of London Clay from the unique fossil-strewn Naze beach; during his 640 separate "digs", he recovered the terror bird and the 54 million-year-old skeletons of 700 birds, 50 of which were unknown to experts. That represents a lifetime of work for an amateur bone hunter.

The finds are currently being investigated by palaeontologists at *Museums Scotland* and other visiting scientists who are keen to inspect the finds and plan their digs at Naze Beach.

Dedication family heritage

As fellow palaeologists from around the world begin to study his discoveries in detail, the first scientific reports reveal previously unknown species - the first find studied related to "terror birds", the

apex species in South America and named *Danielsi Raptor phorusrhacidae* in a posthumous tribute to its discoverer who died in 2021, age 90. He lived in Holland on Sea, a few miles from the Naze fossils beach.

The 50 “unknowns” in the Daniels collection will likely have the prefix “Nosi” (Naze) or be classified in a new family-level taxon, “*Waltonortygidae*”, as a tribute to the amazing dedication of Mike Daniels’ resultant family heritage.

London Clay is from the Palaeogene period that ended 23 million years ago and is found beneath Greater London and Essex County. It is one of the two sedimentary rock types formed in deep, warm seas during the Cretaceous and Palaeogene Periods when tropical seas dominated this part of England.

Although born in Whitstable, Kent, in 1931, Mike’s parents soon moved to Essex. He lived in Loughton for many years, working as a cabinet maker, before retiring and moving with his wife Pam to Dulwich Road, Holland-on-Sea, in 1985. He could pursue his passion for collecting fossil birds from the London Clay of The Naze.

Mike was a lifelong collector. Early on, he formed an impressive collection. Certainly, by the 1960s, he was collecting and finely preparing 80 million-year-old Upper Chalk sea urchins from the Grays, Purfleet and West Thurrock areas of south-west Essex. Mike also collected from the world-famous *Jurassic Coast* of Dorset and Oxfordshire quarries.

Collected fine specimens

He was a founding member of the *Tertiary Research Group* formed in 1969 by enthusiastic researchers working on Palaeogene deposits of the London and Hampshire Basins. Mike researched and collected from numerous coastal exposures of lower Eocene London Clay of the Isle of Sheppey, Kent, and of Essex at Wrabness, Harwich, Walton-on-the-Naze,

Burnham-on-Crouch and inland pits at High Ongar and Aveley.

Mike was particularly adept at collecting London Clay fossils, which are notoriously scarce and often difficult to find. He was granted, in 1969, privileged access to deep road and reservoir excavations near Redbridge Station, Charlie Brown's Roundabout and Waterworks Corner in northeast London and collected many fine specimens.

In the early 1970s, the M11 motorway was constructed from London to Cambridge. This passed quite close to Loughton, Essex, where Mike then lived.

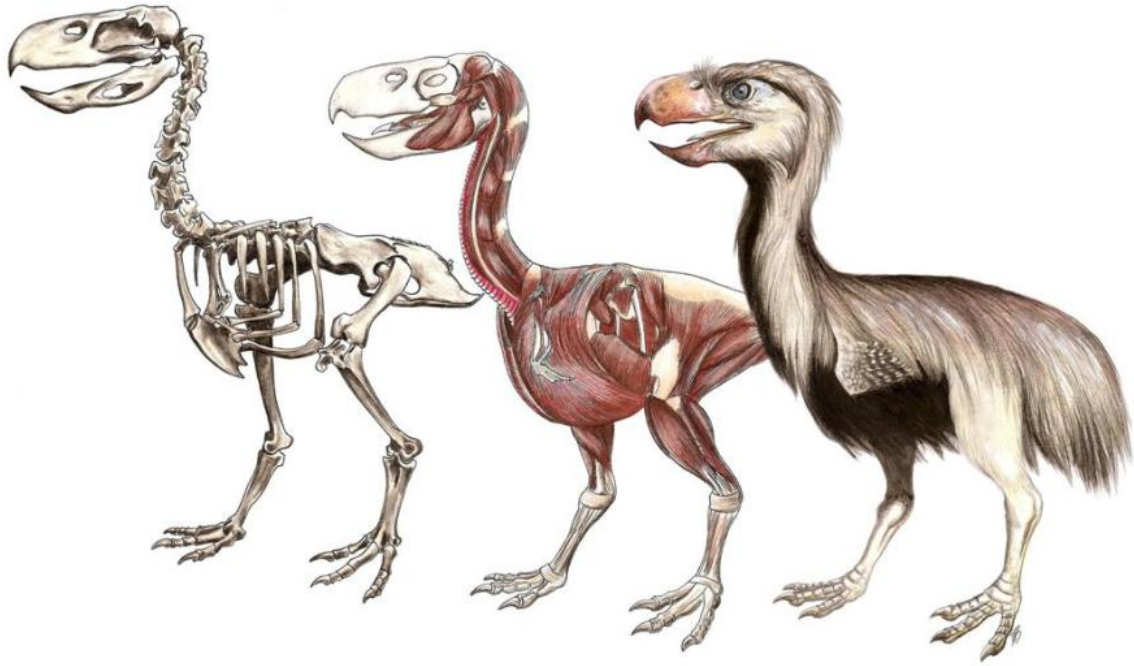
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Britain's terror bird skeleton found in North Essex by amateur fossil hunter, Mike Daniels.



Mike Daniels digging for bird fossils on Naze Beach, North Essex.



Anatomy of a newly discovered terror bird named Danielsi Raptor phorusrhacidae after Mike Daniels.





Terror bird skeleton. The discovery at Walton on Naze was a unique species.

Mike assembled an impressive collection of London Clay fossils, including shells, crabs and lobsters, from the M11 near Chigwell, Debden and further north on the Hertfordshire border at Birchanger near Bishops Stortford. The southerly dip of the strata progressively exposed older London Clay towards the north. At Birchanger, several fossil bird bones were found in 1974, and Mike soon realised lower London Clay of the same age was exposed in the former South Ockendon Clay Plant and at Walton-on-the-Naze. Careful searching of the foreshore at the Naze soon proved this to be the case.

Rapidly eroding cliffs

On retirement in 1985, Mike moved to Holland-on-Sea and began systematically collecting at nearby Walton, using the same sieving processes employed earlier at Birchanger. He discovered large numbers of important smaller finds, including birds, turtles and snakes.

He also collected microtektites formed when a meteorite hits the Earth. Sediment and rock are often melted and ejected into the air. As this melted rock falls, it quickly cools and forms into a glassy rock called a tektite. Mike collected from Walton, Frinton, Holland-on-Sea, Clacton and Jaywick, all in North Essex.

At Walton, Mike would scour the London Clay exposed and rapidly eroding by the sea at the lower part of the cliff, on the beach and foreshore. When he noticed patches of woody fragments, he carefully excavated the clay and removed it for processing at home. The “woody pockets” were formed some 55 million years ago by a floating mass of drifted waterlogged material sinking to the seabed and acting as a trap for material moving along the bottom of the sea. This concentrated the fossils, which are normally quite scarce.

The bird bones were often linked together and occasionally even articulated, and Mike would carefully extract these from the clay. He was still regularly collecting at Walton until 2005.

How to find bird fossils on Walton on the Naze beach

Between 1975 and 1998, Mike Daniels made about 640 field visits to Walton on the Naze, first from Loughton and later from Holland-on-Sea. He estimated he drove 27,000 miles - spending £3,500 on fuel; and conservatively walked 2,500 kilometres or miles. His Walton journeys would have taken him further than once around the world, and he would have walked the distance

from, say, London to Istanbul. He took about 3,600 hours or 150 days to process about 15 tons of London Clay, producing some 700 fossil birds – 50 unknown to palaeontologists.

Beachcombing clue: *Look harder at the base of the Naze cliffs, where recent falls have occurred. Search any woody deposits alongside London Clay. The bird skeletons are embedded in the clay and can be fully exposed by soaking and washing the clay at home.*

Mike achieved international recognition for his collecting and preparation of specimens and tremendous depth of knowledge of avian anatomy. He conversed on equal terms with world experts and earned a great and thoroughly deserved reputation. For many years, experts on fossil birds flocked to his house in Dulwich Road, Holland-on-Sea, to examine his specimens. Unfortunately, specimens may only be published in academic scientific publications if they are available for other researchers to explore in public institutions. Understandably, Mike was most reluctant to part with his cherished specimens while still studying them.

Several people, concerned with ensuring his legacy and the safety of this incredibly important collection, tried to convince him of the necessity of depositing or at least bequeathing his priceless finds to a national museum. Fortunately, Mike had earlier made contact with Dr Andrew Kitchener at *National Museums Scotland* (NMS) in Edinburgh while visiting his daughter Caroline, who was then living in Scotland.

Accordingly, in 2021, his internationally renowned collection of fossil birds and recent comparative material was bequeathed to NMS, where it is now safely housed. Gerald Mahyr, a German palaeontologist who is Curator of Ornithology at the *Senckenberg Research Institute* in Frankfurt am Main, Hesse and Dr Andrew Kitchener of NMS are now

curating the collection and systematically writing and publishing very detailed articles about the specimens.

Some of Mike's other Essex fossils, prehistoric material, and related archives have been kindly donated to the *Essex Field Club*, where some are displayed. The rest of the collection is available for researchers.

Mike lived to the great age of 90 and, despite increasing infirmity and deafness, was able to correspond with his many friends, family and co-researchers until shortly before his death. He was always firing off emails or writing letters on topics of interest to him. I was fortunate to be friends with Mike from the 1960s when we often visited Walton-on-the-Naze and other sites searching for fossils.

Sadly, Mike passed away following a fall in 2021, shortly after we had celebrated his 90th birthday in his house and garden in Holland-on-Sea, Essex. Subsequently, his great works have been recognised by the terror bird species designation *Danielsi Raptor phorusrhacidae* and *Waltonortygidae* for the other 50 previously unknown finds.

: : Author, William George is the *President of the Essex Field Club*, founded by William Cole in 1880. Charles Darwin and Alfred Russel Wallace were appointed first honorary members.

UPDATE

The Naze has fossils dating from 55 to 52 million years ago, from the London Clay. At this time, Essex was covered by 200 metres of sea, with the nearest land in the current English Midlands. The climate was then sub-tropical; vegetation would have been palm trees, mangroves, magnolias, etc. Most fossils are mainly marine but include animals and vegetation carried out to sea by river estuaries. SOURCE: *Essex Wildlife Trust*.

Nearly everyone visiting Walton on the Naze will be able to find sand shark teeth, fossilised wood and Red Crag shells all year round. Much

rarer are mackerel shark teeth but the fossil everyone wants to find is a megalodon tooth. Only about six of these are found every year. Because of the constant erosion of the cliffs, newly exposed fossils appear all the time, but you can never tell from day to day what may turn up. *Essex Wildlife Trust* offers guided walks and fossil hunts so you can discover your hidden treasure.

Naze fossils include shark and ray teeth and vertebrae, fossilised wood, bird bones, lobster, crab, shells, turtles, snakes, crocodiles and a few mammals. Walton also benefits from another layer called the Red Crag, which is 3-2 million years old and stuffed with marine shells. This layer only exists in Essex and a few locations in Suffolk. An internationally rare shell found at Walton is *Neptunea angulata*, or the left-handed whelk, which is notable because it spirals the opposite way to all other shells. If you find a fossil, you can visit The Naze Nature Discovery Centre nearby, where a staff member will help you identify it. SOURCE: *Essex Wildlife Trust*.

Technical article on Walton on the Naze Eurocene Discoveries authored by Gerald Mayr and Andrew C Kitchener, Department of Natural Sciences, National Museums Scotland, where Michael Daniels' collection is held for further study.

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