

The Great Sugar Loaf

May 2016

Geological Context

The Great Sugar Loaf (501m), a prominent, scree covered, pale pink quartzite, conical mountain peak standing out on the north Wicklow and Dublin skyline is composed of Cambrian quartzite bedrock (called the Bray Head Formation) with greywacke/quartzite bedrock on the south/southwest slopes.

They are some of the oldest rocks in Wicklow and were deposited in deep water in an ocean that divided Ireland in two called the Iapetus Ocean. At that time both NW and SE Ireland were situated far away from each other, both south of the equator.

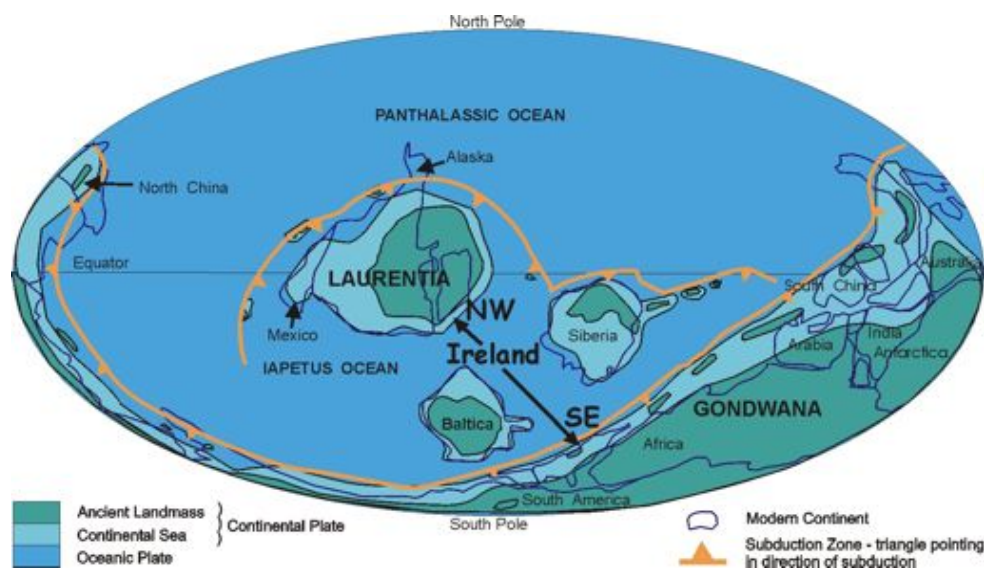


Plate reconstruction for the late Cambrian. Both NW and SE Ireland were situated far away from each other, both south of the equator.

Sandstones deposited in this ocean were later metamorphosed into quartzite, and now make up the hard ridges of Bray Head and the distinctive Great Sugar Loaf.



The Great Sugar Loaf



Bray Head

The Cambrian Period

The Cambrian Period, the first geological time period of the Paleozoic Era (the “time of ancient life”), lasted about 53 million years and marked a dramatic burst of evolutionary changes in life on Earth, known as the “Cambrian Explosion.” Among the animals that evolved during this period were the chordates, animals with a dorsal nerve cord; hard-bodied brachiopods, which resembled clams; and arthropods, ancestors of spiders, insects and crustaceans. The beginning of the period, is thought to have the lower boundary at 543 million years ago with the first appearance in the fossil record of worms that made horizontal burrows. The end of the Cambrian Period is marked by evidence in the fossil record of a mass extinction event about 490 million years ago. Trilobites were the dominant species during the Cambrian Period.



Cambrian trilobite fossil.

Local context

The Great Sugar Loaf contrasts with the rounded mountains to the west, which are made of Devonian Granite. Both NW and SE Ireland were still situated south of the equator, but the closure of the Iapetus ocean had brought them together.

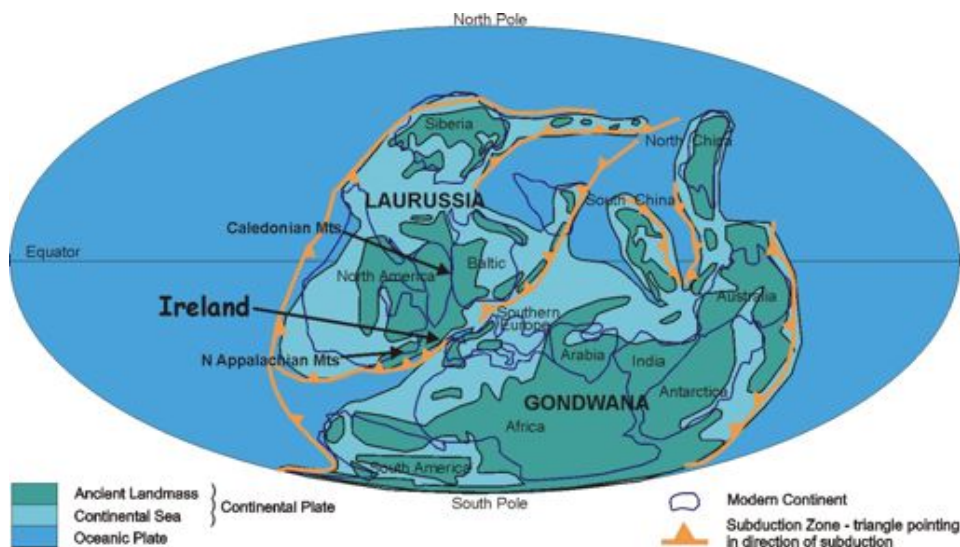


Plate reconstruction for the Early Devonian. Both NW and SE Ireland were still situated south of the equator but the closure of the Iapetus ocean had brought them together.

The granite was injected in several batches to form large masses called batholiths. As these cooled slowly below the surface, they solidified into a coarsely crystalline rock. Eventually 100 million years later, the overlying rocks had been eroded away so that by the Carboniferous period (350 Million years ago), the granite was at the surface. The crags at Glendalough and Luggala are part of these batholiths.



Glendalough



Luggala



Tiktaalik Rosae

The Devonian Period

The Devonian (410 million to 354 million years ago) with its semi arid climate and great rivers depositing 'Old Red Sandstones', is often known as the "Age of Fishes," although significant events also happened in the evolution of plants, the first insects and other animals. The earliest known tetrapod a primitive amphibian, was the Tiktaalik Rosae. It is considered to be the link between the lobe-finned fishes and early amphibians. Tiktaalik was probably mostly aquatic, "walking" on the bottom of shallow water estuaries.

Valentia Island

Fossil footprints forming several trackways are preserved in Devonian siltstones on Valentia Island in Southwest Ireland. They were made by one of the first known tetrapods, as it walked across a fluvial plain. The spacing of the tracks give an indication of the animal's size (about 1 metre long), and fossils of other Devonian tetrapods suggest the creature would superficially resemble animals such as Tiktaalik. As the first discovery of this type in Europe and the oldest in situ record of an amphibian animal, the site is now protected as an important part of Ireland's heritage.



Fossil tetrapod footprints, Valentia Island.



Alas! It's not a Volcano!

The scree on the slopes of the Great Sugar Loaf are Quaternary in age (the most recent 1.8 million years), having formed from freeze-thaw activity during the last glaciation.

Popularly mistaken for a volcano, its metamorphism has rendered the rock extremely erosion-resistant and the mountain owes its shape to the weathering characteristics of quartzite.

The elevated terrain comprising the Great Sugar Loaf, Little Sugar Loaf and Bray Head marks the northern margin of a tectonic slide (a fault formed in close connection with folding) roughly along the course of the River Dargle. Here, Cambrian rocks were thrust up onto younger Ordovician rocks (found between Bray Head and Killiney Hill and southwest beyond Rathdrum). This NW directed thrusting occurred

during a great mountain building event called the Caledonian Orogeny, 475-400 million years ago. The Late Caledonian Leinster granites were also formed at this time.

Great Sugar Loaf and Little Sugar Loaf are separated by Kilmacanoge Valley which was part of a regional north-south subglacial meltwater drainage route that included the Scalp (north) and Glen of the Downs (southeast). The mountain summit affords wonderful views of these spectacular meltwater channels, which are incised into high topography of solid bedrock. Scree occurs in virtually all upland areas throughout Ireland, particularly on quartzite mountains such as Great Sugar Loaf, Errigal (Co. Donegal) and the Twelve Bens (Co. Galway).

Homo Sapiens Pre History

If you look at the National Monument Service interactive monument listing\map, you can see that the whole Great Sugar Loaf area is dotted with megalithic sites approximately 3,500 years old.

According to Chris Corlett and Aidan O Sullivan in their book *Wicklow Archaeology and History Vol. 1*, evidence from research suggests that The Great Sugar Loaf was considered to have ritualistic significance.

It is mentioned occasionally in the *Dindsenchas* (meaning "lore of places"), a class of onomastic text in early Irish literature. The *Dindsenchas* recounts the origins of place-names and traditions concerning events and characters associated with the places in question. References to Great Sugar Loaf as "*Oe Cualann*", "the renowned, the ancient *Oe*" and "*lofty Oe*" suggest that the mountain was an important landmark at the beginning of Christianity.

Archaeological evidence also shows that Pre Christian rituals were fascinated with it.

Ritual landscape



Sunrise at The Great Sugar Loaf

The earliest settlers in the area were Mesolithic hunter-gatherer-fishers communities. It is thought these people made natural places their religious centers rather than constructing burial monuments etc.

The monumental megalithic tombs of the Neolithic first farmers are a clear indication of their desire to domesticate the landscape. Topographical features played a huge role in the orientation of these monuments. As these farmers opened up the landscape to create their fields, the Great Sugar Loaf would become an increasingly dominant feature.

Several Neolithic monuments take account of its presence on the distant horizon suggesting that it has developed some form of symbolic meaning.

Bronze Age

The best and clearest evidence for an extensive ritual landscape around the Great Sugar Loaf dates to the Bronze Age. Through out the area are a wide range of Bronze Age ritual and burial monuments, which appear to celebrate the dominant presence of the mountain in the landscape.

There are no religious monuments on the mountain itself except two cairns on the northern shoulder which appear to mark Early Bronze Age burials.

The smaller, more northerly one is very low (7m diameter), the other just to the south is larger (13-15m diameter and 1.5m high) and has a hollow at the centre where a block of white quartz is visible.



Two cairns on the northern shoulder may mark Early Bronze Age burials.

Onagh Portal Tomb

The ruined Onagh portal tomb is situated on the SE-facing lower slopes of Knockree Hill. As one faces the entrance, the Great Sugar Loaf forms a very dominant profile on the horizon to the SE.



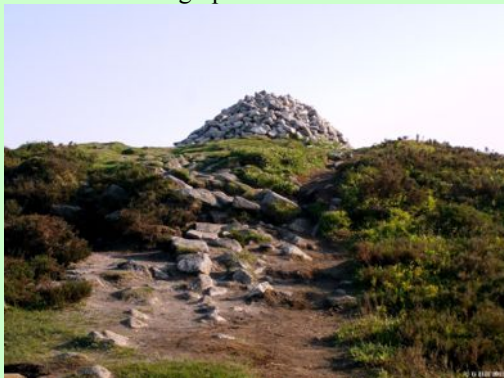
Onagh portal tomb



Location of Onagh portal tomb



View of Sugar Loaf from Onagh portal tomb



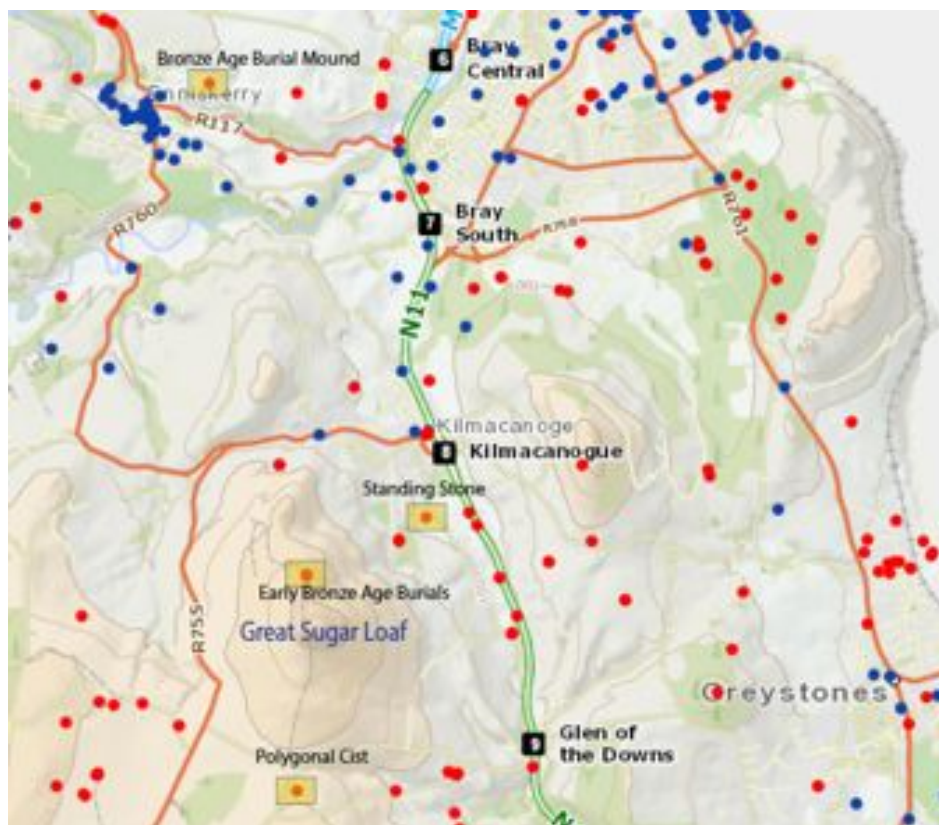
Fairy Castle Passage Tomb,
Three Rock Mountain

Fairy Castle Passage Tomb

The probable passage tomb known as 'Fairy Castle' believed to be under the stone pile on Three Rock Mountain, is thought to have been constructed with reference to the Great Sugar Loaf which is the only landmark visible to the SE of its construction.

At Monastery, near Enniskerry, there is a high, unexcavated oval mound with a flat top 5m in diameter thought to represent an Early Bronze Age burial mound. The mound is covered in trees and the sides are quite eroded. From the top of the mound there is a commanding 360° view, dominated by the Great Sugar Loaf to the south.

In Fassaroe, on the border with Monastery, in a field locally called “the mote field”, a polygonal shaped cist was found which contained the cremated bones of a male adult. The field name suggests a mound of some form may have marked this burial, perhaps similar to the one nearby in Monastery and in this area the Great Sugar Loaf forms a very prominent profile to the south.



Yellow boxes indicate two Bronze Age Burial Mounds, Standing Stone and Polygonal Cist in the vicinity of the Great Sugar Loaf, just some of the many megalithic sites in the area.

More information can be found by clicking on the National Monument Service interactive monument listing\map. <http://webgis.archaeology.ie/historicenvironment/>

Further Early Bronze age burials took place in the shadow of the Great Sugar Loaf. At Calary Lower, a polygonal shaped cist containing an inverted Encrusted Urn which held the cremated remains of a child was found. A pygmy cup and cremated bone were also found not too far away in a sand pit at Kilmacanogue.

Two Wedge tombs, one known as “The Giants Grave” at Ballyedmonduff and the other at Shankhill in south county Dublin are both thought to have been built with reference to the Great Sugar Loaf. It would have formed a very dramatic backdrop during any ceremonies there.

Ballyedmonduff Wedge Tomb

Ballyedmonduff Wedge Tomb is located north of Glencullen, (Gleann Cuilinn) on the south-eastern slope of the Two-Rock mountain in a clearing amid a pine forest plantation. It is known locally & marked on the Historic map as 'Giants Grave' and is a fine, unusually large wedge tomb which once had commanding views to the SW and the Great Sugar Loaf. It is from the early bronze age, circa 1700BC. Some of its kerb-stones are massive and still hold some cairn material. The rectangular, double-walled gallery is well defined and is divided into a portico, main chamber and a closed east chamber but unfortunately the roof stones have collapsed inwards. It was excavated in the 1830s and then again in 1945 by Sean O'Riordain and Ruaidri de Valera. By the 40s it was almost entirely covered in earth. Within the burial gallery was found sherds of Beaker pottery, a stone mace head and very small quantities of cremated human bone. A socket for a pillar or stone was found in the ante chamber suggesting some sort of ritual stone.



Wedge tomb, known as “The Giants Grave” at Ballyedmonduff

http://www.megalithicmonumentsofireland.com/COUNTIES/DUBLIN/Ballyedmonduff_WedgeTomb.html
<https://visionofthepastblog.com/2013/06/10/ballyedmonduff-wedge-tomb-co-dublin/>

Shankhill Wedge Tomb

Shankhill Wedge Tomb lies hidden in a field boundary amongst huge bramble bushes and is very difficult to access. It is marked on the OS map as 'Dolmen'. It consists of a huge roof stone, supported by two side slabs and a sill stone. Much of the remaining structure is hidden under the thick bushes, making it difficult to define the out-line or the orientation of the tomb.



Shankhill Wedge Tomb

http://www.megalithicmonumentsofireland.com/COUNTIES/DUBLIN/Shankill_WedgeTomb.html

Early Bronze Age rock art, Onagh, Enniskerry



Badly weathered outcrop with remnants of cup ring markings with Great Sugar Loaf in clear view (left) and close detail (right). http://www.megalithomania.com/show/site/419/onagh_rock_art.htm

The large outcrop with these markings is badly weathered and only the large cup mark would really alert you to the presence of the other markings. There are several small cup marks, one of which has two rings.

Its location, on a small promontory of land below a portal tomb pointing towards The Great Sugar Loaf, combined with its low table like shape gives the impression of an altar. The face with the carvings is nearly horizontal, sloping slightly toward The Great Sugar Loaf.

Below is a boulder found in Baltynanima near Roundwood Co. Wicklow with similar cup ring markings, which have not been weathered so extensively. This gives an idea of how the stone at Onagh would have looked pre-weathering.



Cup rings on a boulder Baltynanima near Roundwood Co. Wicklow.

Late Bronze Age

The Great Sugar Loaf continued to form a religious symbol at the end of the Bronze Age. Late Bronze Age standing stones and a ring-barrow burial monuments are situated in Kilmurry, Ballyremon Commons and Glencullen, all orientated with respect to the mountain.

There appears to have been an attempt to retain the purity of the Great Sugar Loaf as a sacred symbol by observing it from the burial and ritual monuments at ground level which were situated in the settled landscape of the people, the land of the living. It probably formed one element of a wide and complex world of religious rituals and deities.



Kilmurry Standing stone on a NE-facing slope with extensive views to the east, higher ground to the west and the Great Sugar Loaf in the Background.

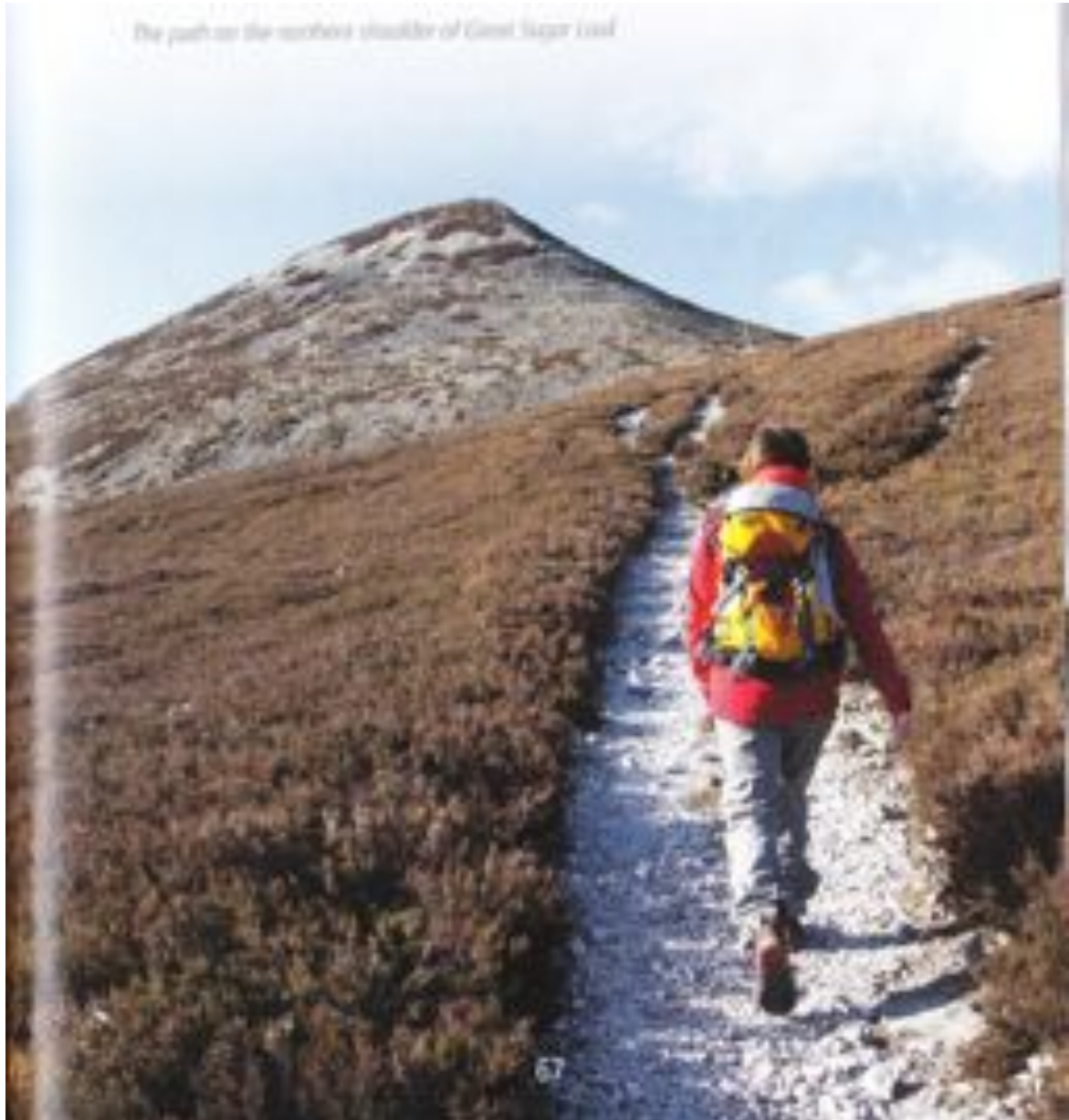
Comparisons are drawn between The Great Sugar Loaf and Croagh Patrick in Co. Mayo. They are similar in shape and dominate the landscape. There are striking ways in which several monument types are located within each ritual landscape. For example; the situation of the standing stone at Kilmurry North in the shadow of the Great Sugar Loaf, can be compared with three standing stones in Murrisk Demesne in the shadow of Croagh Patrick. Neither of the mountains have been transformed themselves. This suggests they were considered important features as they stood and acknowledged as a dominant, natural entity.

The extensive evidence for religious worship of the Great Sugar Loaf in the Bronze Age probably coincides with a rise in population at this time and with the widespread clearance and opening up of the landscape to make way for intensive farming, making the mountain more visible in the landscape.

Present evidence suggests that by the dawn of Christianity, the mountain had lost its religious significance.

The Great Sugar Loaf Today

Due to the easy access and popularity of the Great Sugar Loaf, foot-fall erosion has affected it greatly as with many of the Wicklow hills. The southern 1km-long route to the summit is severely eroded down to the bedrock and litter is a major problem.



Severely eroded route to the summit on the Great Sugar Loaf.



Litter, Rubbish, Trash



Car park area and surrounding ditches at the west side of the Great Sugar Loaf



All the mounds surrounding the carpark contain rubbish embedded within them.



What a disgrace!



The problem with litter at the Great Sugar Loaf has been taken in hand by IMC member Jon McCarty. He organized a clean up for the 7th of May 2016. Here is a piece about his motivation and inspiration to initiate the cleanup.

The Great Sugar Loaf Cleanup

Jon McCarty

I set out one warm afternoon to walk to the top of the nearby Great Sugar Loaf mountain. When I arrived, the car park was in disrepair and looked quite like a landfill. I didn't really pay too much mind, locked my car (as it seemed like a dodgy area), and started walking up the hill. As I got higher the trash started to lessen and I started enjoying the hike more. I got to the top and took in the views noticing that there was even some trash at the summit, which I thought to be quite unusual. I stayed there for a while as hordes of children came and went from the summit. I laughed to myself and wondered where all these kids were coming from and why they weren't in school. As I left the summit and walked back down a thought came over me: "what are these children learning by seeing the mountain this way?" I wondered. Over the next few days I began to ponder more about this question. Are the children learning that it's ok to throw trash in nature? How could they not. All the adults seemed to be content with the mountain looking this way, why shouldn't they be the same? That's when I knew I had to do something.

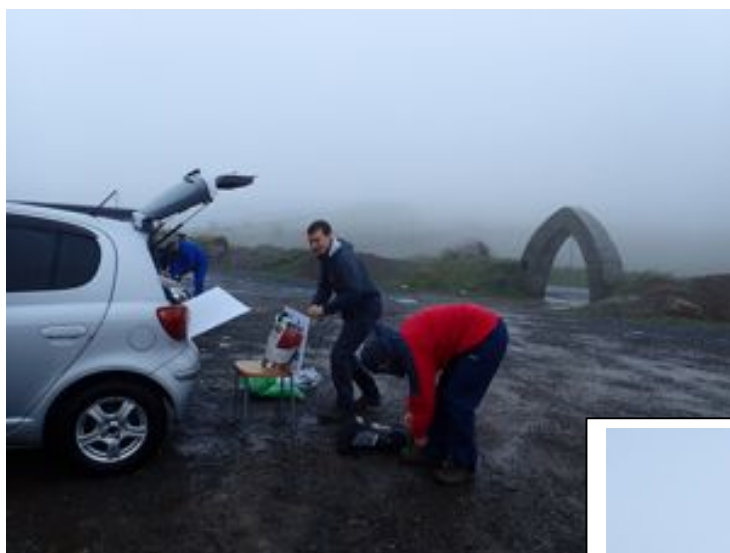
Having no idea where to start I contact the Environmental Officers of the IMC (conservation@irishmountaineeringclub.org) to give me some guidance. Síle got back to me and we started to devise a plan to make the Great Sugar Loaf look great again. She put me in contact with the National Spring Cleanup (<http://www.nationalspringclean.org/>) and the Wicklow Local Authority (0404 64117). We scheduled a date for the litter pick, got insured for free from the nation spring cleanup initiative, got free bags/gloves/pickers from the Wicklow Local Authority, and we were off and running. We then promoted the event on the IMC forum and MeetUp.

We had a great turnout and even handed out bags and gloves to the general public who were happy to help out as they hiked the mountain! One boy who just came to walk up the mountain with his father got a different experience than the children that I had seen on my first trip to the Sugar Loaf. As he came down the mountain with a big green bag full of trash you could see the pride beaming from his face. He had made a difference and we all made sure he knew it. If we are to pass the torch to the next generation then we must actively engage with them, involve them, and lead by example.

If you see something that needs to be changed, take steps to change it. The Environmental Officers of the IMC are there to help and a few phone calls can go a long way.

In Short

1. See something that needs to change
2. Contact IMC Environmental Officers (conservation@irishmountaineeringclub.org)
3. Contact Local Authority (<http://www.nationalspringclean.org/Litter-Collection.php>)
4. Plan & Promote (IMC forum/MeetUp.com)
5. Get out and make a difference!



**Jon and Keith setting
up shop.**

Niamh hard at work



**Steven and Keith
tackle a mound**

**Ed, Ed's daughter, Dave, Síle,
Dónal, Keith, Steven & Niamh**



A job well done

Approximately 15 bags of rubbish were cleared mostly from the car park area and lower slope, including a vacuum cleaner, gas canister, a container of floor polish and the sail of a boat!



The 'Loot' from the west car park and lower area of the Great Sugar Loaf

Niamh not included...



Jon, Niamh, Dónal, Dave, Ed's daughter and son, Steven, Síle & Keith.

The Future

Steven has suggested to Wicklow County Council that as a preventative measure, could they consider smoothing out & seeding the earth mounds which surround the car park. The area is in a very bad state and its untidy appearance most likely encourages the littering. It gives the impression that the car park and general area is un-cared for.

A public information panel at the car park would help to inform visitors of the sensitive nature of the site, how to minimize damage, and promote the geological and archaeological heritage of the mountain.

It was also pointed out that the Great Sugar Loaf is on the way to Glendalough, the most important tourist attraction in Co Wicklow and many tourists would naturally consider paying it a visit. This could prolong their stay in the county contributing further to the local economy. Furthermore, the Great Sugar Loaf could even be considered as a very important jewel in the crown of the 'Ancient East' tourism initiative. Should this be the case it would need to be kept clean and beautiful.

Jon has organised and is promoting a similar event for the 11th of June 2016 to clean the top half of the Great Sugar Loaf.

<http://www.meetup.com/Sugarloaf-Cleanup/>

<http://www.irishmountaineeringclub.org/event/great-sugar-loaf-clean-up/>



Before

After





Jon...
The Main Man

Thankyou

A hundred million 'thankyous' to IMC club members Dónal, Dave, Ed and family, Niamh, and to 'MeetUp' members Keith and Stephen (a great authority on the archeological significance of the area) for their work on the Sugar Loaf in May. A huge, special thanks to Jon McCarty for organizing the whole event.

Make The Great Sugar Loaf look Great Again

Jon has also set up

Adopt A Mountain Campaign

check it out here.

<http://adoptamountain.org/>

References

Sleeman A., McConnell B., Gatley S., 2004, *Understanding Earth Processes, Rocks and the Geological History of Ireland*.
Geological Survey of Ireland.

Corlett C., O'Sullivan A., 1998, *Wicklow Archaeology and History Vol. 1*
Wicklow Archaeological Society.

<http://www.livescience.com/28098-cambrian-period.html>

<http://www.livescience.com/43596-devonian-period.html>

<https://thehsi.org/2015/01/06/tetrapod-trackway-the-path-of-our-ancestors/>

https://www.gsi.ie/NR/rdonlyres/0B57BD87-37FA-41AF-A523-767DED825C19/0/WW034_Great_Sugar_Loaf.pdf

<http://webgis.archaeology.ie/historicenvironment/>

http://www.heritagecouncil.ie/fileadmin/user_upload/Publications/County_Heritage_Services/Wicklow/Wicklow_Pre_history.pdf

http://www.megalithomania.net/show/image/1327/glencap_commons.htm

http://www.megalithicmonumentsofireland.com/COUNTIES/DUBLIN/Shankill_WedgeTomb.html

http://www.megalithicmonumentsofireland.com/COUNTIES/DUBLIN/Ballyedmunduff_WedgeTomb.html

http://www.megalithomania.com/show/site/419/onagh_rock_art.htm

<https://visionsofthepastblog.com/2013/06/10/ballyedmonduff-wedge-tomb-co-dublin/>