

GRIMSBY GOLF CLUB 'IN HARMONY WITH BIODIVERSITY'



The total amount of greenhouse gas emissions (including carbon dioxide and methane) that are generated by our actions enhancing GLOBAL WARMING

PRODUCTION OF RAW MATERIALS
I am made from Polypropylene (PP) or high density Polyethylene (HDPE) as a result of:
Crude oil exploration
Refining crude oil
Cracking process
Polymerisation

MANUFACTURING
Made from Polypropylene (PP) or High density Polyethylene (HDPE)
I am transformed into a tee by INJECTION MOULDING machinery
Factories in CHINA/USA/AUSTRALIA/CANADA & others

DISTRIBUTION
I am transported from manufacturers to distributors throughout the world
**The carbon footprint of planes is 20/30 X more than ships



90% of the original material must be converted into CO₂, water and minerals by bacteria, fungi or microbes within 6 months to be safely reabsorbed into the environment

Polyethylene (HDPE) 450yrs + Polypropylene (PP) 30yrs+ but releases CADMIUM & LEAD which are toxic to plants/animals


AS HDPE I am recyclable
However ONLY 9% of plastic produced & consumed worldwide have been recycled
12% incinerated
79% landed in landfill sites
**Over 5 billion plastic golf tees end up in landfills and pollute our environment every year!??



When discarded as garish coloured tees I attract certain foraging bird species which then collect me and transport me to a completely new, undisclosed location - sometimes to their own nests to be eaten but if discarded washed into waterways & ultimately the sea



Photo-degradation & weathering on land breaks up my structure into smaller pieces & if I reach the oceans ultimately converted into microplastics fragments of 0.1 µm-5 mm & nanoplastics is 0.001-0.1 µm
As a microplastic I can have a toxic effect on fish and other aquatic life

**** 8 million metric tons of plastic enters the ocean from land every year**



FROM OCTOBER SINGLE USE PLASTICS WILL BE BANNED
Include plastic golf tees in the 1 October 2023 single-use plastic ban!!?
<https://petition.parliament.uk/petitions/641581>

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REASONS **NOT** TO USE PLASTIC GOLF TEES



Made from fossil fuels



Huge carbon footprint



Will still be here in
hundreds of years



Only a tiny percentage
is recycled



Leaches toxins into
food & drink



Causes hormone
disruption & cancers



Pollutes our oceans



Kills marine animals
and birds



Enters our food chain

**LESS
PLASTIC.**

WWW.LESSPLASTIC.CO.UK

GRIMSBY GOLF CLUB
'IN HARMONY WITH BIODIVERSITY'

PLEASE DO NOT USE PLASTIC GOLF TEES –THEY ARE NOT BIODEGRADABLE

1. PLASTIC GOLF TEES are not eco-friendly because they are not 100% biodegradable ie. they cannot be broken down by bacteria/fungi/microbes to be safely absorbed into the environment
Made from Polyethylene (HDPE) this golf tee would **take at least 450yrs to biodegrade**

Made from Polypropylene (PP) this golf tee would **take at least 30yrs to biodegrade** & would release CADMIUM & LEAD which are toxic to plants/animals

2. If discarded or lost as garish coloured tees they attract certain foraging bird species which then collect the tees and transport them to completely new, undisclosed locations, including waterways or sometimes to their own nests to be eaten



3. Through a variety of pathways including sewers/rivers they may reach beaches & the sea



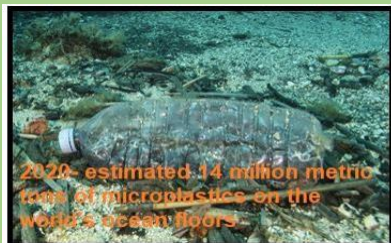
Collected on Cornish beach 2017(1day)



Plastic waste kills 1 million seabirds a year

Albatross

4. Photo-degradation & weathering on land & ultimately the sea breaks plastic into smaller pieces, ultimately microplastics (pieces smaller than 0.5mm) & ultimately nanoplastic (smaller than 100nm)



2020- estimated 14 million metric tons of microplastics on the world's ocean floors

5. 14 million tons of plastic enters the World's oceans annually
UK contributes 1.7 million tonnes of plastic annually into the ocean



2023- estimated to be over 2 million metric tonnes of plastic afloat in the world's oceans

Accumulates in food chain & ultimately has a toxic effect on fish & other aquatic/marine life

PREDICTION 2040

There will be 600 million tons of microplastic waste in our oceans

****Since the large scale introduction of plastic after the 2nd World war **8.3 billion metric tonnes** of plastic has been produced

FOR ALL THE PLASTIC USED & CONSUMED ON THIS PLANET:
ONLY 9% HAS BEEN RECYCLED, 12% HAS BEEN INCINERATED
79% HAS ENDED UP IN LANDFILL AND/OR THE ENVIRONMENT eg. THE OCEANS

PREDICTION 2050

12 BILLION TONS OF PLASTIC WILL END UP IN LANDFILLS & THE ENVIRONMENT

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The total amount of greenhouse gas emissions (including **carbon dioxide and methane**) that are generated by our actions enhancing **GLOBAL WARMING**. Carbon sequestration is the capturing, removal and storage of carbon dioxide (CO₂) from the earth's atmosphere. The carbon that trees capture is stored in their biomass ie. wood

PRODUCTION OF RAW MATERIALS
 After 60yrs, mature White Birch forests are established with heights of 20m. During this time the trees have sequestered carbon dioxide from the atmosphere – contributing to reducing global warming. However high carbon emissions through energy use of heavy duty machinery for felling, sawmill operation & transport to factory will offset this benefit somewhat. However factories may be adjacent to forest eg. **Greenfield manufacturing in North East China**

MANUFACTURING
 The process results in milling wooden dowels to produce tees but results in a high percentage of waste shavings. High carbon emissions result due to energy used for operating machinery. The waste shavings ie. biomass may be used to power the mill ie. burnt-increasing CO₂ emissions and/or used to produce biofuel ie. ethanol
****A 20cm diameter White birch log provides 3,000 tees**
****About 40,000 wood tees per tree!?!?**

DISTRIBUTION
 High carbon emissions through transportation from manufacturers to distributors throughout the world
****The carbon footprint of planes is 20/30 X more than ships**



A White Birch forest will sequester carbon for many years but when felled & tees are manufactured their stored carbon will ultimately be re-released into the atmosphere through decomposition when discarded or lost ****they are not recycled**. **Forest loss and damage is the cause of around 10% of global warming**

Wooden golf tees made from White Birch trees mainly in USA/ China (Also from Red Cedar in USA)



DURABILITY/PERFORMANCE
 Creates more friction and is capable of decreasing a ball's velocity. Wooden tees are only inclined to snap when forced into hard turf. The strength of a wooden tee far exceeds that of a plastic tee however offers less strength and durability than bamboo tees. **Moso bamboo is 4-5 times stronger than traditional hardwood**. **1.5x stronger than an average wooden tee**



Deforestation of White birch forest as an ecosystem results in habitat loss - reducing the available food, shelter & breeding grounds for a diverse range of organisms – a potential permanent loss in biodiversity

wooden tees manufactured in china
https://www.youtube.com/watch?v=rJUvdJ2B_k
https://www.alibaba.com/product-detail/2023-New-Arrival-Wholesales-Price-Golf_1600917256065.html
wooden tees manufactured in USA
https://www.youtube.com/watch?v=gWQu9ZG-N_E



90% of the original material must be converted into CO₂, water and minerals by bacteria, fungi or microbes within 6 months to be safely reabsorbed into the environment. Discarded wooden tees are relatively harmless to wildlife. Biodegrades within 6yrs but if painted could slow down decomposition
**** Remember plastic tees 400 + years**

MOSO BAMBOO GROWTH RATE

Bamboo golf tees are made from harvested Moso bamboo culms/poles. With a potential growth rate of 114.5cms/day, through spring(**for only 60 days**), culms/poles are on average 18 m tall and 11 cms in diameter, The resulting culm/pole never grows in height/ diameter again & **will only be mature to harvest after 6/7yrs** –hardened by lignification

White birch trees for wooden golf tees mature after 30+ years



<https://lewisbamboo.com/pages/growth-chart-of-bamboo>
<https://lewisbamboo.com/pages/how-bamboo-grows>



Made in: **CHINA/TAIWAN//VIETNAM/JAPAN**
 from: **MOSO Bamboo, Phyllostachys edulis, GRASS family POACEAE** In China 4,677,800 hectares are Moso bamboo forests – which is 72.69% of all bamboo forests in China
****One of the fastest-growing plants in the world****

DURABILITY/PERFORMANCE

As it's technically a grass, not a tree, there are no weak points along its length due to the design of the natural fibres within the bamboo which means it's more flexible and less prone to snapping
 This means that bamboo tees are also capable of being re-used repetitively with minimal replacement needed It's also better for club mower blades compared with plastic alternatives!
 It has a greater strength to weight ratio than concrete.
The tensile strength of steel is 23,000 PSI, while the tensile strength of bamboo is 28,000 PSI!!
Moso bamboo is 4-5 times stronger than traditional hardwood, 1.5x stronger than an average wooden tee



90% of the original material must be converted into CO2, water and minerals by bacteria, fungi or microbes within 6 months to be safely reabsorbed into the environment
 Discarded bamboo tees start to degrade after 6 months & will have decomposed totally within **2/3 years**
 No chemicals/toxins are used in processing bamboo into tees & coatings are water based so are not detrimental to the environment/wildlife ie. no contamination of groundwater
****6 years for wooden tees / 400+ years for plastic tees**



PESTICIDES/HERBICIDES NOT REQUIRED

Contains a natural substance called "**Bamboo-kun**" – an antimicrobial embedded in the lignin cell walls giving a natural resistance to pests, bugs, bacteria and fungal infestation **FERTILIZERS NOT REQUIRED**
 The bamboo plant's nutrient-rich leaves will drop off during growth or harvest and fall onto the ground below, decompose and transfer those nutrients into the soil
****Reduces the potential environmental impact associated with the use and runoff of agricultural chemicals**



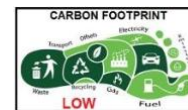
NO WATER IRRIGATION REQUIRED

Moso bamboo's intricate underground dense, fibrous root/rhizome network works as an effective soil erosion inhibitor, improving land management and preventing landslides during frequent monsoons/ heavy rain
 A Moso bamboo forest hectare stores over 35000 litres of water in its culms/poles throughout the rainy season, deposited back into the soil during the dry season



NO DEFORESTATION

Generally 20-25% of the poles in a bamboo forest / plantation can be sustainably harvested each year
Moso is a monopodial running bamboo, with its' underground root/rhizome system,(spreading for many metres in all directions). This system supplies the necessary nutrients for other attached, dormant & developing buds/culms to continue to grow in succeeding years
 Therefore harvesting the mature poles does not disturb the future potential of other dormant culms/poles. **Thus no deforestation has taken place.** Forest/plantation sustainable for a 100years



The Greenhouse gas emissions resulting from the CULTIVATION, MANUFACTURING AND DISTRIBUTION are OFFSET BY the following:
 One hectare of Moso bamboo grove sequesters ie. captures & stores up to 60 tons of CO2 each year. One hectare of trees would sequester only 12 tonnes CO2/hectare per year
ie. Moso bamboo sequester 5X more greenhouse gases than most tree species
****Plus, it releases 35% more oxygen to the atmosphere than an equivalent stand of hardwood trees ie. produces 7X more O2**

LOCAL ECONOMY & EMPLOYMENT

The cultivation/production/harvesting of Moso bamboo allied to the manufacturing of golf tees contribute significantly to the local economy, providing employment opportunities in rural areas where bamboo forests thrive

1.MOSO BAMBOO CULTIVATION

Moso bamboo forests are the prime source of the culms/poles needed for manufacturing golf tees



The optimal density of Moso forest is 4,000 culms/ poles per hectare for timber ie. bamboo golf tees producing 6-10 tons of culms per year.

Due to its monopodial underground, running bamboo features generally 20-25% of the culms/poles in a Moso bamboo forest can be sustainably harvested each year without decreasing the size of the plantation or the number of poles per hectare

The harvesting of the culms/poles does not require heavy machinery but carbon emissions from vehicles transporting culms/poles to tee factory are unavoidable.

However *****Greenswing & Ocean bamboo tees** are manufactured locally adjacent to bamboo forests/groves to reduce additional transport links & therefore carbon emissions

****With the demand for Moso bamboo 'timber' increasing groves/plantations are being formed through deforestation (reducing carbon sequestration).** The most widely used method of propagation is planting Moso bamboo offsets (the lower part of a single culm with 3-5 nodes with the underground rhizome & roots attached) This is labour intensive but minimal machinery/transport is required ie. low carbon emissions

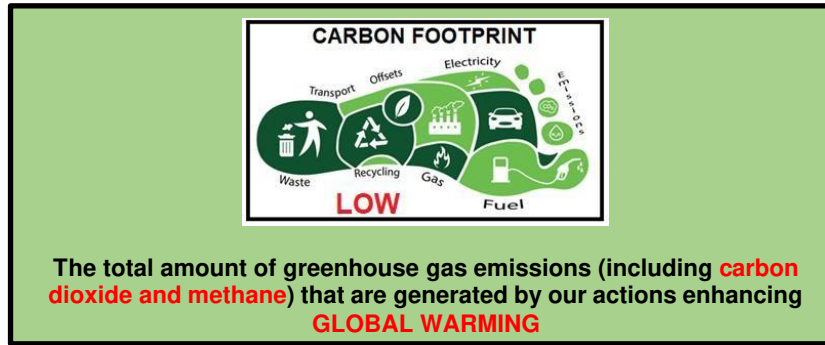
A grove/plantation can be formed after about 5 years, but it will take about 10 years to establish a grove providing 10/12cm diameter culm/poles & 20m high

Once fully established carbon sequestration will be revived –to be sustained for a 100years

Propagation videos:

<https://www.youtube.com/watch?v=AX9vBi0LxsU>

<https://www.youtube.com/watch?v=Vip1mnC3Nn8>



2.MANUFACTURING Factories in CHINA/TAIWAN//VIETNAM/JAPAN



The mills can only produce 500 tees per culm so large volumes of bamboo are required resulting in greater carbon emissions due to machinery high energy use Additionally, **75 percent of the material is lost** when milling the dowels into a bamboo tee

The resulting waste shavings ie. biomass is eventually used to power the mill ie. burnt- increasing CO2 emissions.

However the waste shavings may also be used to produce biofuel ie.ethanol whilst **Greenswing bamboo tees manufacturer** uses it to fertilise mushroom cultivation Videoclips of manufacturing bamboo tees:

https://www.alibaba.com/product-detail/Wholesale-Manufacturer-High-Quality-Golf-Pegs_1600476327344.html

https://www.alibaba.com/product-detail/High-Quality-Wholesale-Golf-Accessories-Bamboo_1600910114118.html?spm=a2700.7724857.0.0.f4e761430jy2BA&s=p

https://www.alibaba.com/product-detail/Customization-Wood-Golf-Tees-70mm-83mm_1600397046801.html

3.DISTRIBUTION

Moso bamboo tees are transported from manufacturers in CHINA/TAIWAN//VIETNAM/JAPAN to distributors throughout the world, usually on large freighters

****The carbon footprint of planes is 20/30 X more than ships**

*****The Greenhouse gas emissions resulting from the CULTIVATION, MANUFACTURING AND DISTRIBUTION are OFFSET BY the following:**

One hectare of Moso bamboo grove sequesters ie. captures & store up to 60 tons of CO2 each year. One hectare of trees would sequester 12 tonnes CO2/hectare per year **ie. Moso bamboo sequester 5X more greenhouse gases than most tree species**

****If 10 million hectares of bamboo were planted on degraded land worldwide, it is estimated that bamboo plants and their products could save more than 7 gigatons of carbon dioxide in 30 years - which is more than 300 million electric cars could save in the same period."**

****Plus, it releases 35% more oxygen to the atmosphere than an equivalent stand of hardwood trees ie. produces 7X more O2**