

# WHAT DID THE MOON EVER DO FOR US?

(ERM... LOADS ACTUALLY)



**Did you know that the Moon doesn't just go round and round the Earth? It's also MOVING AWAY?** (I don't entirely

blame it, to be honest. Humans aren't exactly acting like ideal neighbours right now, ed)

**Calculations vary, but scientists think that every year our Moon drifts up to 3.8 cm further away from our planet.**

So what would happen on Earth if

the Moon just up and vanished one day? Ed

**Well, it's very unlikely. Our Earth/Moon partnership is probably quite safe for the next 5 billion years, but it's still an excellent question. The science is complicated. Much of it is purely theoretical and argued about, but let's take a look, shall we?**

## TIDE AND WEAK

For thousands of years, scientists and scholars have worked hard to understand how the Moon's presence affects our planet. In 1687, **Sir Isaac Newton** deduced that there are **gravitational influences** between the

Earth and the Moon. The Earth's rotation is affected by **tidal bulges** and **tidal friction**. The gravitational pull between the Earth and the Moon means that the oceans closest to the Moon bulge towards it.\*

So let's start where life on Earth may have begun: in the sea!

Many sea organisms are very sensitive to changes in tidal heights and pressures caused by the Moon. Without it, tides could shrink by around 66.6 per cent. As a consequence, sea life that relies on tidal movements to churn up the ocean floor – I'm talking about mussels, starfish, barnacles and crabs – would be badly affected. If there were fewer of these animals around, it could also have a devastating effect on animals further up the food chain. With nothing to feed on, we'd be looking at mass population declines in the sea and on land.

\* A tidal bulge also occurs on the opposite side of the part of the planet facing the Moon due to **inertia**.

(Hmm, already I'm hoping that the Moon sticks around for a bit, ed)

And that's not all. Weaker lunar tides would also have an impact on the ocean currents that circulate and distribute warm water (and nutrients) around the globe. The change in temperature distribution would affect the weather, and cause further harm to sea life.

## FUN FACT TRUMPET

Every year just after the time of the November full Moon, the world's largest synchronised spawning event happens in the coral reef colonies of the Great Barrier Reef, in Australia. Here, by the light of the Moon, the corals simultaneously release millions of eggs and millions of sperm sacs at once. Isn't nature awesome?

## DON'T GO CHANGIN'

If the Moon went AWOL it wouldn't just affect ocean life – we'd also be looking at some pretty dramatic changes on land. The Moon helps to keep the Earth's tilt oscillating at between 22.1 and 24.5 degrees in relation to the horizontal plane of

our orbit around the Sun. Without its influence, a wildly changing tilt could cause some extreme weather conditions. And without any tilt at all, we'd be living on a planet without seasons!



Seasons in the Northern Hemisphere  
(Reversed in the Southern Hemisphere)

## A HARD DAY'S NIGHT

We know that over time, Earth's rotation has slowed down. When the Moon was closer, around 3 billion years ago, Earth days may have been as short as four hours long! (That's barely enough time to cram in three square meals and a nap, ed) By around 1.4 billion years ago, an Earth day was approximately 18 hours long. It's a complicated picture and it depends on many factors but without any Moon at all, some scientists suggest that our days could be significantly shorter.

## FOLLOW THE LIGHT

Have you ever tried to cross a campsite in the dark on a moonless night? Not easy. Without the Moon to reflect light from the Sun, the night sky would be extremely dark and (dare I say it) even a bit frightening! Fair enough, Venus would look brighter and we'd be able to see more distant stars, but you'd still struggle to

navigate from the toilet block to your tent without tripping over and bumping your head.

I know what you're thinking: okay, so it'd be darker at night, so what?

You're right. Moonlight isn't that big of a deal. UNLESS you happen to be one of those creatures that need it, you know... live.

Sandpipers, for a start, would be very disoriented. Studies have shown that these shorebirds orient their direction of travel according to the position of the Moon, indicating that they could have a **lunar-day biological clock**. A similar mechanism seems to trigger the spawning dances of the *Platynereis dumerilii* marine worm, although the less said about that the better, am I right?

If night-stalking predators can't hunt by night, they may start hunting more during the day. Alternatively, moonless nights could provide predators with better hunting conditions, which could lead to a sudden depletion in small mammal or rodent numbers. Whatever the outcome, it's safe to say food webs would become destabilised. Eventually, under those conditions, entire ecosystems are put in danger.

**So there you have it. A world without the Moon could mean a world without seasons or sea life, a world where predators can't hunt or where prey can't hide, where days end around lunchtime, and lost and bedraggled sandpipers wander around bumping into things. Hmm, my mind's made up. I think I prefer things the way they are.**

AWESOME  
ACTIVITY ALERT!



SCAN ME