As a continuation of the work

in the Red Sea, the team will soon

be reporting on similar heating

events off the coast of Papua New

Guinea, where the bulk of Buston's

research is done. His students trav-

study different aspects of the

anemonefish life cycle, like parental care, growth changes, and

other dynamics in the small fish

colonies. The anemones in the

waters of Papua New Guinea have

also experienced heating events

and bleaching, resulting in notice-

able declines and changes to the

clownfish. Earlier this year,

orators from Newcastle University in the United Kingdom found that a

wild population of clownfish in

Papua New Guinea shrink to sur-

a long time, and unavoidably, I and

all my students now study them in

the context of climate change,'

extinction events, and it ultimately

has cascading effects on the reef,

their paper on the Red Sea points

out. The authors call for surveys in

other regions of the Red Sea, as well

Smith, is that local experts can

strengthen conservation and

restoration efforts to protect the

areas in need, before it's too late.

The hope, according to Bennett-

as worldwide, to evaluate their con

leads to complete extinction.

servation status at large.

Buston says.

"I've studied anemonefishes for

"You get enough of these local

Losing these important species

राष्ट्रदुत

#PANCAKE ROCK

Khao Hin Phap Pha

The Pancake Rock of Nakhon Si Thammarat, Thailand, often referred to as the 'Pancake Rock,' which means the mountain of layered stones





ern region of Thailand, Khao Hin Phap Pha, often 'Pancake Rock.' is one of the country's

What is Khao Hin Khao Hin Phap Pha, which

translates to 'Mountain of cal wonder that features flat. round, and pancake-like rock formations stacked on top of each other. These rock layers, often seen in undulating pa terns, have been naturally shaped over millions of years through a combination of erosion, weathering, and tectonic processes. The end result is a landscape that looks almost otherworldly, like a giant stack of pancakes spread across the side of a mountain The rocks are primarily limestone, which is abundant in this region of Thailand, and they have been eroded over time by rain, wind, and

creating the characteristic layers and smooth surfaces. **How Khao Hin Phap Pha Got its Name** The name 'Pancake Rock' comes from the unique and visually appealing layers of

flat, round stones that resemble stacks of pancakes. As the Khao Hin Phap Pha, with rock formations are quite distinct, it's not hard to see how this nickname took hold among locals and travelers alike. The name captures the imagination of visitors, conjuring images of massive, perfectly arranged pancakes scattered across the landscape. Location and

Accessibility

in the Khao Luang National





Pha, travelers can take a road from Nakhon Si Thammarat town. The site is about 30 kilometers from the provincial capital, making it easily accessible for a day trip. However, getting to the base of the mountain often involves a short hike. The trail is wellmarked, though it can be moderately challenging in some areas due to the steep incline.

The Geological Significance of the Site

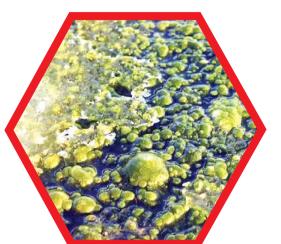
The formation of Khao Hin Phap Pha can be traced back to millions of years ago when the area was once submerged under the sea. Over time, tectonic shifts caused the region to rise and the limestone rocks that were formed in marine environments became exposed to the elements. The combination of marine sediments and natural forces shaped the area into the distinctive formations we see

The layers of rock at Khao Hin Phap Pha are a perfect example of sedimentary rock deposition, where layers of minerals and fossils slowly accumulate over time. The result is a stunning geological landscape that tells the story of the Earth's natural history.

its stunning pancake-like rock formations, offers visitors a chance to explore one of Thailand's hidden geological treasures. It's an ideal destination for those who love nature, geology, and outdoor adventures. Whether you're a seasoned hiker or just a curious traveller, the beauty and tranquility of Khao Hin Phap Pha will undoubtedly leave a lasting impression on anyone

Nemo May Vanish!

To a clownfish, anemone bleaching is a catastrophe, their once safe home turns white, exposing them to dangers lurking in the surrounding reef. Under normal conditions, clownfish are camouflaged and protected underneath the swaying, stinging tentacles of an anemone, which are related to jellyfish. The clownfish secrete a mucus that shields them and their eggs from getting stung, so when they attract a predator fish to the anemone, it gets zapped and eaten.



Jal Khambatta

new study reveals that

heat waves are threat-

ening the future of the

The Red Sea, circled

by desert landscapes, is

home to marine life

accustomed to the

water's bathtub-like

temperatures, often reaching 85 to

But in the past three years,

marine heat waves have made the

Red Sea even hotter. Rising ocean

temperatures, there and around the

world, have been devastating for

many sea creatures, including an

iconic ocean duo: clownfish and

for ourselves as well."

"This should be a big warning

The new paper from a Boston

University-led research team finds

that this extreme heat has caused a

breakdown in the mutualistic rela-

tionship of clownfish, also called

anemonefish, and anemones and

This pair forms one of the most

has resulted in a population col-

widely recognized mutually benefi-

cial relationships in the ocean,

thanks to the hit movie Finding

Nemo. They're adapted to work as a

team to get nutrients and for protec-

relationship of their own with a

microscopic algae called zooxan-

thellae, the same algae that pairs

Anemones also have a symbiotic

lapse in the central Red Sea.

90 degrees Fahrenheit in the sum-

fish made famous by



with coral. Just like corals,

anemones expel the algae from their

tissue during periods of unusually

high heat, causing them to bleach.

longed bleaching can not only lead to the death of the anemone and the

anemonefish, but collapses the

and clownfish groups survive

bleaching events, as they have over

and over again in the last 10 years,

but it hit a point where it was too

bad," says Morgan Bennett-Smith, a

PhD candidate in BU's Marine

Evolutionary Ecology Laboratory

and lead author of the paper in npj

Biodiversity. He has studied

anemones in the Red Sea for the last

decade and has witnessed firsthand

how exceedingly high temperatures

clownfish past the temperature

threshold they can tolerate.

According to Bennett-Smith, the

monitored anemones were bleached

for about six months during that

time. As a result, the paper esti-

mates that 94 to 100% of the clown-

fish died, and 66 to 94% of the

the Red Sea is a place many

researchers have been hoping and

hypothesizing as a thermal refuge,

there would be protected from the

impacts of climate change due to its

location and already hot tempera-

refugium is collapsing in different

ways is especially horrific. It's not

"The fact that even this thermal

"It's especially painful because

e says, meaning that organisms

anemones

entire mutualistic system.

The researchers found that pro-

"We always hope that anemones



#ENVIRONMENT



turning out to be the safe haven we thought it was." To a clownfish, anemone bleaching is a catastrophe, their once safe home turns white. exposing them to dangers lurking in the surrounding reef. Under normal conditions, clownfish are camouflaged and protected underneath the swaying, stinging tentacles of an anemone, which are related to jellyfish. The clownfish secrete a mucus that shields them and their eggs from getting stung, so when they anemone, it gets zapped and eaten.

attract a predator fish to the Human-caused climate change has heated the ocean to new extremes, and has started to unravel the mutualistic relationships that sustain underwater environments. like those between algae and corals. algae and anemones, and anemones and clownfish

"Historically, anemones have bleached relatively little compared to corals, but now we're getting up to evels where the anemones are bleaching, and that results in a catastrophic breakdown in the mutualsm with the anemonefishes that everybody knows and loves," says

he team, in collaboration with colleagues at Harvard University, has also done preliminary testing on the anemones' stinging cells and found that they don't fire as well when pleached. In the lab, they're able to mimic the conditions that lead to bleaching, and study the effects up close. "There's a lot going on; increased conspicuousness, increased time outside of the anemones, increased conflict between the fish, and reduced protection from the anemones," Buston says. "These anemonefish become sitting ducks. They're not great swimmers and don't stray from their anemones, so they presumably get taken off by predators."

Peter Buston, an associate professor of biology and one of the senior authors on the paper. "We're seeing nearly a 100% die-off in a population of fish in response to a heating event," says Buston, who leads the Marine Evolutionary Ecology Laboratory. "This should be a big

warning for ourselves as well." Bennett-Smith didn't set out to study anemone bleaching or the effects of climate change (he was interested in studying the mutualism between anemones and other sea creatures), but he was intrigued when he first observed a bleached anemone in the Red Sea in 2018. At the time, it was an extremely uncommon occurrence. "Since then, year after year, we

keep running into worse and worse bleaching events," he says. Now, it's the main theme of his research at BU. In Buston's lab. Bennett-Smith and a team of BU students are investigating these dvnamics to identify what exactly is

"We're interested in figuring out why the fish disappear and die shortly after the bleaching occurs," says Buston, who is also CAS associate dean of the faculty for the natural sciences. "This

causing the population declines.

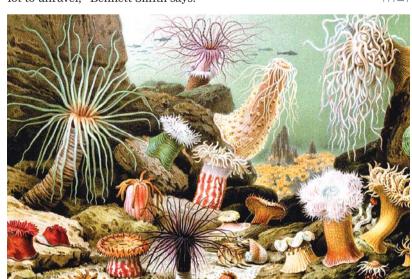
ing post-bleaching that leaves the hypotheses that we're testing in the lab." Their first hypothesis is uous, these bright orange fish get exposed against an unnatural white background. They've also found that the behaviour of the fish changes when their anemones bleach, with more of the clownfish getting into conflicts that leave smaller fish outside of the anemone. The team, in collaboration with colleagues at Harvard University, has also done preliminary testing on the anemones' stinging cells and found that they don't fire as well when bleached. In the lab, they're able to mimic the and study the effects up close There's a lot going on: increased conspicuousness, increased time outside of the anemones. increased conflict between the fish, and reduced protection from anemones," Buston says. These anemonefish become sitting ducks. They're not great swimmers and don't stray from

mutualism is protecting the fish

from predation, so what is happen-

their anemones, so they presumably get taken off by predators." Even if wild anemones recover from the bleaching, once the anemonefish are gone, they become much more vulnerable to their own predators, like butterflyfish, who

ed on anemones. "Anemones aren't as well studied compared to coral, so there's a lot to unravel," Bennett-Smith says.



#BHARTRIHARI

Shatakatraya

Exploring the Poetry of Renunciation, Morality, and Love from an Ancient Indian Philosopher-Poet

Sanskrit literature, Bhartrihari holds a unique place. Known for his piercing insight into human osychology, society, and spiritual life, Bhartrihari's three major collections of Sanskrit verses. the Shatakatrava, have continued to captivate readers for over a thousand years. Composed in and expressive Sanskrit, these verses convey eternal truths about worldly life, ethical conduct, and renun-

Who Was Bhartrihari?

Bhartrihari is believed to have lived sometime between the 5th and 7th centuries CE. He is often identified as a philosopher, grammarian, and poet. In addition to his poetic works, Bhartrihari is also credited with an influential treatise on Sanskrit grammar and linguisphilosophy: Vakyapadiya.

However, it is his poetic work, the Shatakatraya, meaning 'three centuries' (each comprising 100 verses), that remains most beloved. The three collec-

2. Shringara Shataka (Century

of Renunciation) Famous Verses विद्या नाम नरस्य रूपमधिकं प्रच्छन्नगुप्तं

विद्या भोगकरी यशः सखकरी विद्या

"Knowledge is the greatest beauty of a person; it is a hidden, secret wealth. It brings pleasure, fame, and happiness, Indeed, knowledge is the teacher of teachers.

wealth of human beings. या नः प्रीणयते प्रियेति सतया या बाधते तन्मना

> या नः स्वप्ननिषेव्यया च सहदा या स'ता मन्मथा। स्वप्ने दृष्टा रात्रिष सा त्वं मन्मथबन्धराऽसि

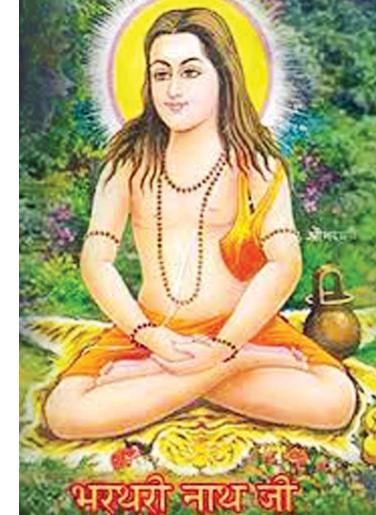
This is a more poetic and emotionally deep verse where the

1. Niti Shataka (Century of of Love) Vairagya Shataka (Century गुरूणां गुरुः?

Translation

Bhartrihari's emphasis on education and character as the true

या वाऽऽगस्मिन दिनान्तरे पनरपि कथमित्यर्थोऽयमालोंच्यताम



ous bond between him and his lotus feet of Lord Shiva." This beloved, whose presence lingers verse reflects a powerful spiritu in his thoughts, dreams, and al transition, turning away from worldly relationships towards nemories.

These verses are filled with divine realization. metaphors and tender expres-Philosophy and Literary sions of love, expressing the subtle dynamics of human emo-Bhartrihari's verses are cele

कुरुते प्रत्यग्जनस्निग्धया विश्वे यस्य विसुम्भणेन महती स्नेहस्य लक्ष्मीः स्थितिः। तं धिक् तं हृदयद्रवप्रणयिनं

साक्षात्कारनिषेवणाय न मनः शंभोः पदे निर्मम? (From Vairagya Shataka)

Translation

"My mind no longer clings to the affection of the people who are dear to the world. That mind, once full of love and



brated not only for their philo-

sophical depth but also for their

literary excellence. Each shloka

is carefully crafted in metrical

form, with refined diction and

clever use of alankaras (poetic

devices) like simile, metaphor

and pun. He blends personal

experience with universal

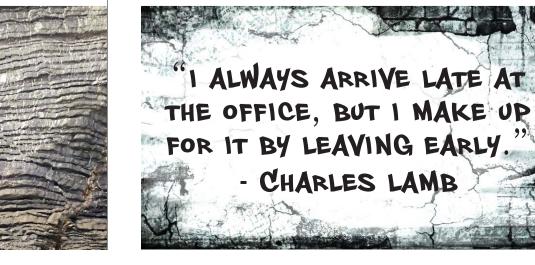
truth, giving his work both emo-

tional intensity and timeless rel

From love to disillusionment from worldly wisdom to renun ciation, he captures the human condition with poetic elegance and philosophical depth. His Shatakatrava continues to offer guidance, comfort, and insight in a world still searching for balance between desire and detach ment, pleasure and peace,

By Jerry Scott & Jim Borgman

THE WALL



BABY BLUES



By Rick Kirkman & Jerry Scott ZITS



