

# WICKED PROBLEM

Difficult or impossible to solve.

Incomplete or contradictory requirements.

Social & Ecological complexity.

Solving one aspect may create other problems.



# WICKED PROBLEM

Difficult or impossible to solve.

Then let's begin to think differently

Incomplete or contradictory requirements.

Embrace Uncertainty

Social & Ecological complexity.

Requires Complex Adaptive Thinking

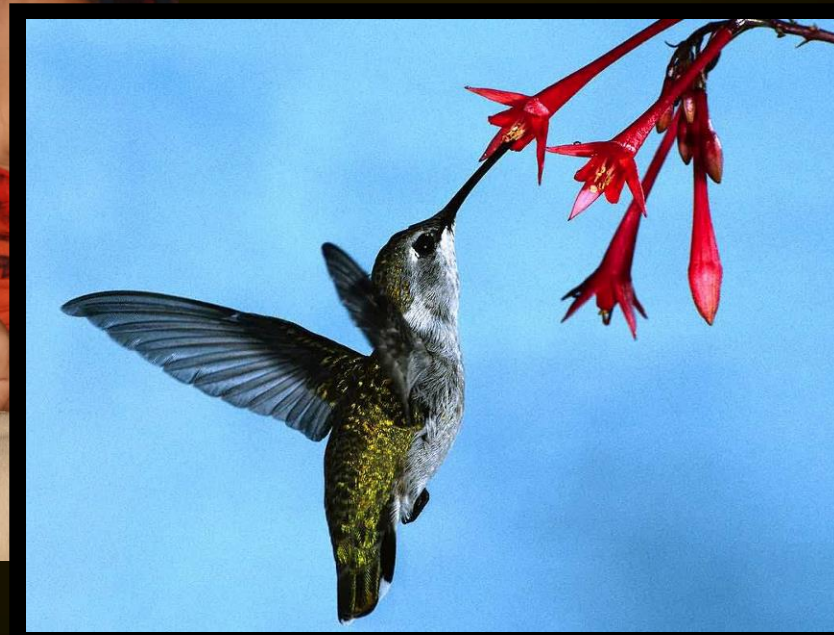
Solving one aspect may create other problems.

Safe enough to try.....





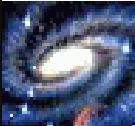
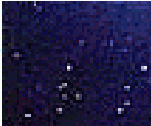
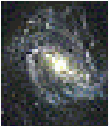
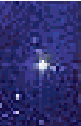
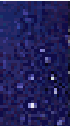
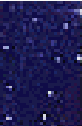

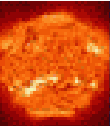
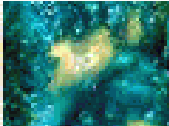
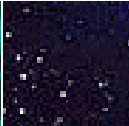
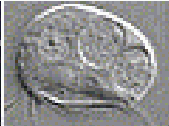
# ZUGUNRUHE



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# BIOMIMICRY




January	February	March	April	May	June	July	August	September	October	November
										

New Year's Day: The Big Bang  
 Milky Way forms  
 Sun and planets form  
 Oldest known life (single celled).  
 First multi-cellular organisms

**December**

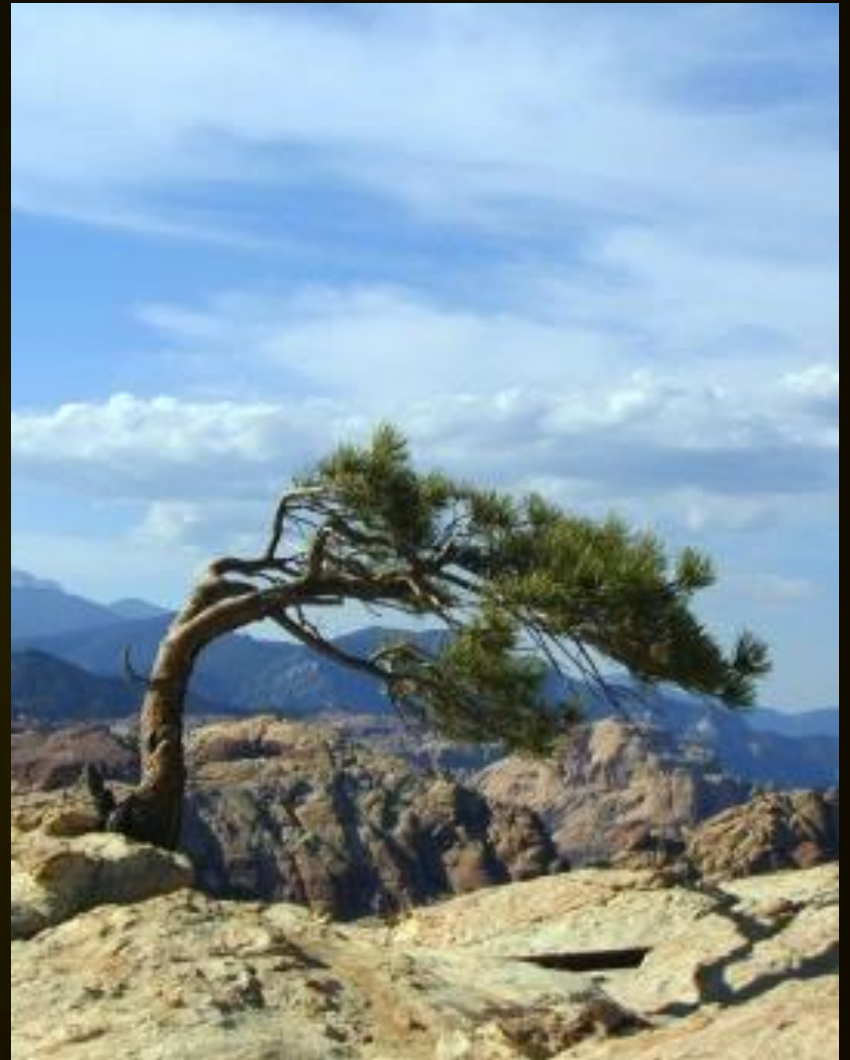
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15 Cambrian Explosion (burst of new life forms)	16	17 Emergence of first vertebrates	18 Early land plants	19	20 First four-limbed animals	21 Variety of insects begin to flourish
22	23	24 First dinosaurs appear	25 First mammalian ancestors appear	26	27 First known birds	28

29  Dinosaurs wiped out by asteroid or comet	30	31 10:15am Apes appear 9:24pm First human ancestors to walk upright 10:48pm Homo erectus appears 11:54pm Anatomically modern humans appear 11:59:45pm Invention of writing 11:59:50pm Pyramids built in Egypt 1 second before midnight: Voyage of Christopher Columbus
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# WHAT CAN WE LEARN FROM NATURE?



# PRESERVE THE MEMORY OF ECOSYSTEMS



Swallowort *V.rossicum*

## SEED BANK & SOIL ECOLOGY



# NATURE FITS FORM TO FUNCTION



# DESIGNS BY NATURE



# NO VOC FINISHES



**NATURAL EARTH PLASTER**



**GREENSEAL CERTIFIED**



A man with a beard, wearing a dark green t-shirt, is shown in profile from the chest up. He is holding a yellow and black spray gun with a flexible hose, and a fine mist of paint is being emitted from the nozzle towards a wall. The wall is off-white and shows signs of being prepared for painting, with some areas appearing slightly textured or primed. The background is a plain, light-colored wall, and the lighting is bright, suggesting an indoor setting with a window nearby.

# PFAS in Paints

*Per- and Polyfluoroalkyl Substances in Paints*

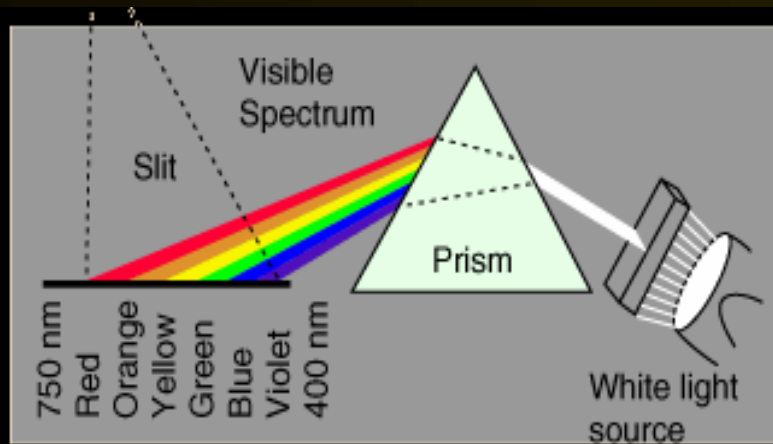
Healthy Building Network | May 2023

# NO VOC CONTENT NO VOC EMISSIONS



It's no wonder that several hummingbird species take their names from precious jewels. As light glimpses the necks of Ruby-throats, Sapphire-bellieds, and Honduran Emeralds, brilliant color shimmers off a distinctive patch of ruffled feathers known as a "gorget" (pronounced gor-jet).

These dazzling ornaments are found on males, and some females, in many of the more than 300 hummingbird species. And what makes them so remarkable, scientists say, is that they are not actually colored at all.

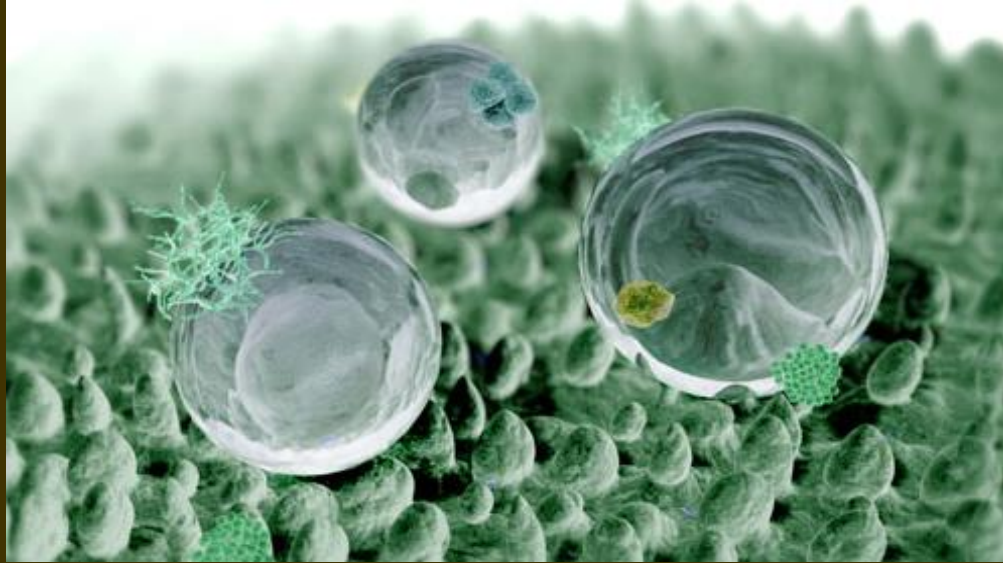




# LOTUS EFFECT



# HYDROPHOBIC





Neliembo nucifera

sto®



**StoCoat™ Lotusan® lowers maintenance costs by extending cleaning and recoating cycles.**

FEATURE	BENEFIT(S)
Super-hydrophobic	<ul style="list-style-type: none"><li>• Extremely water repellent</li><li>• Outstanding resistance to soiling</li><li>• Improved resistance to mold, mildew, and algae</li></ul>
Vapor Permeable	Allows substrate to breathe naturally, resists blisters caused by trapped water vapor
UV Resistant	Excellent color retention





# SELF CLEANING FACADES



INNOVATION: INDUSTRY

**Coating to Keep Consumer Products  
Clean Inspired by Pitcher Plants**  
Adaptive Surface Technologies

**INSPIRED by NATURE**



BIOLOGICAL STRATEGY

**Powdery Wax Allows for Efficient Waste Removal**  
Poplar spiral gall aphid

**INSPIRED by NATURE**



# PHOTOVOLTAIC CELL




INSPIRED by NATURE



# SMART MEMBRANE



**CertainTeed**   
*Quality made certain. Satisfaction guaranteed.*



**stomatex**  
BREATHES LIKE A LEAF

The advertisement features a blue background with a series of white paper figures holding hands in a line, curving across the frame. The figures are cutouts of people in various poses, some standing and some falling. The text 'stomatex' is written in a green, lowercase, sans-serif font, and 'BREATHES LIKE A LEAF' is written in a smaller, white, uppercase, sans-serif font below it.

## “FLEXING NATURE’S MUSSELS”

Kaichang Li an assistant professor at Oregon State College of Forestry was inspired by the ability of mussels to cling to rocks despite the constant pounding of ocean waves.

Mussels attach themselves with a network of amino protein threads, Li and his team mimicked the adhesive by blending protein soy flour with the same amino acids used by the shellfish to create a formaldehyde-free, soy based adhesive.



# NATURE'S ADHESIVES



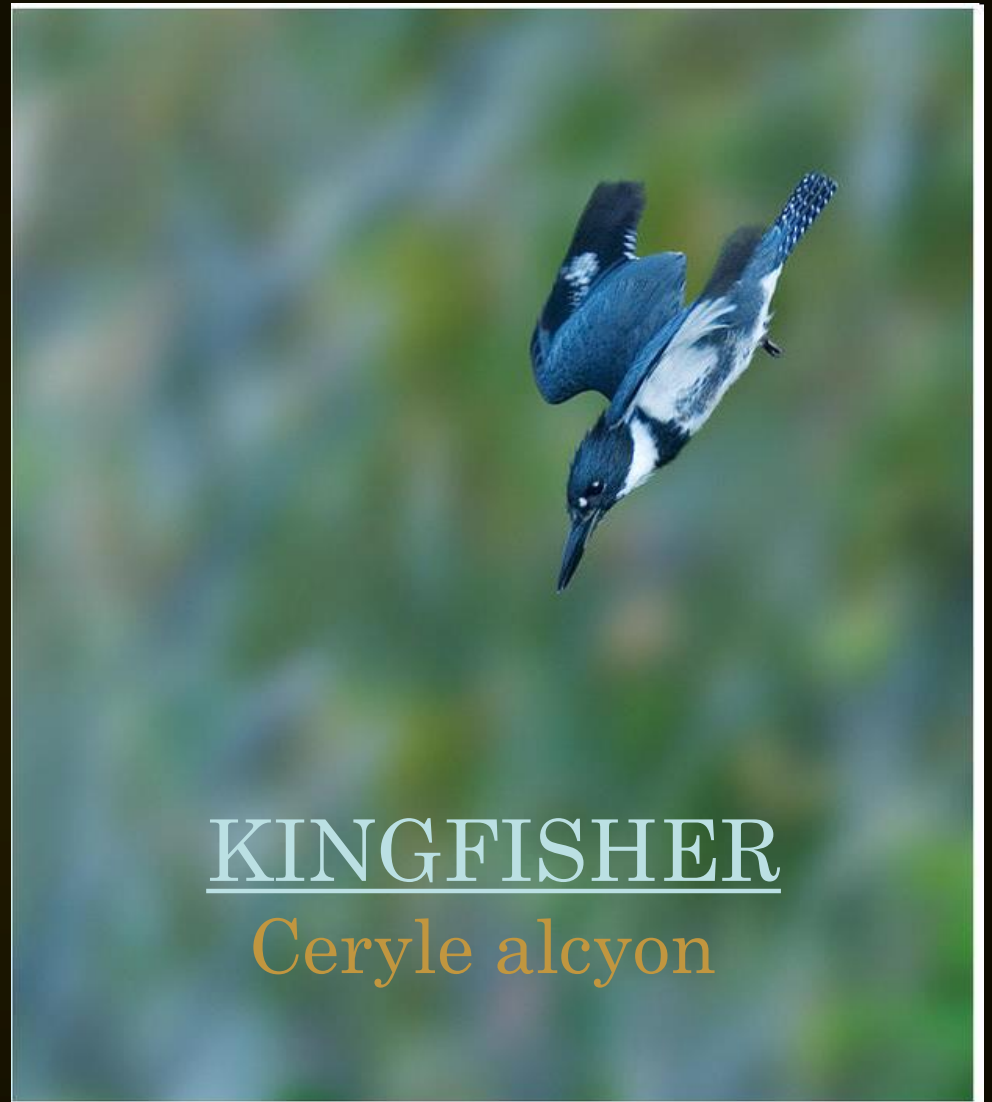


# CABINETRY





# SHINKANSEN “BULLET TRAIN”



KINGFISHER  
Ceryle alcyon



# NEW CONSTRUCTION WITH OLD-FASHIONED CHARM



**ANTIQUÉ CABINETRY**



**RECLAIMED FLOORING  
FROM LOCAL BARNS**





INNOVATIVE STORM  
WATER MANAGEMENT



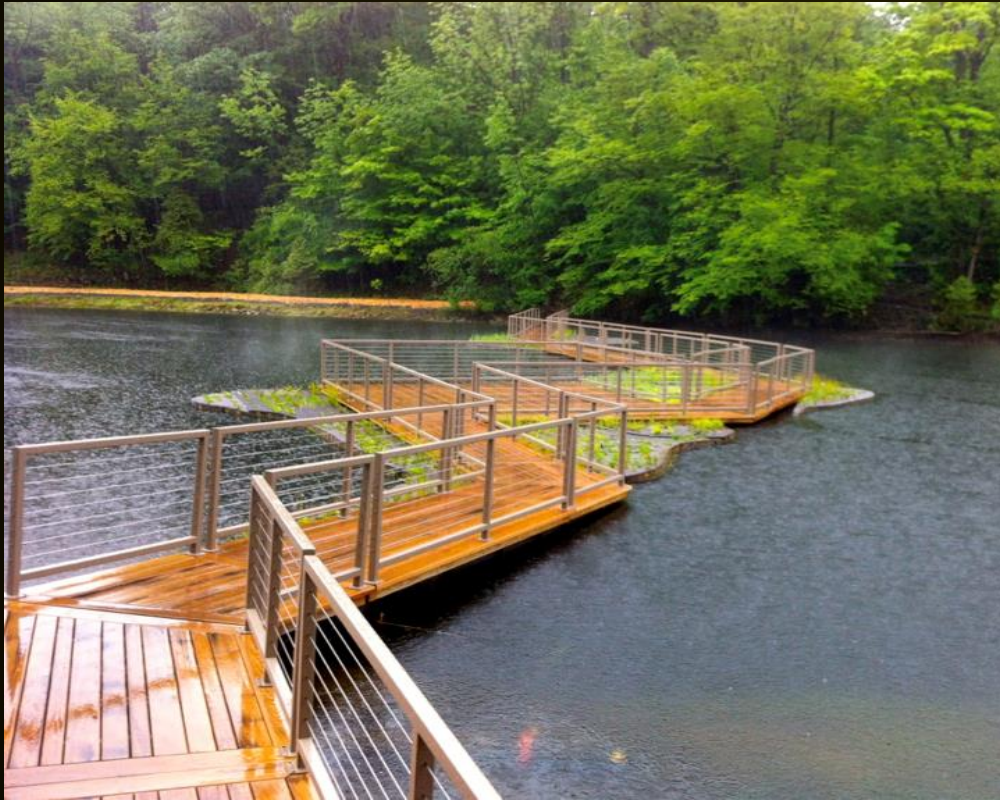
# ECOLOGICAL REGRIME SHIFT



# FLOATING BRIDGE



# ADAPTIVE MANAGEMENT





# LAKE GEORGE



# NATURE'S PERFORMANCE



30% - AQUIFIER

30% - VEGETATION

40% - ATMOSPHERE









# Sustainability

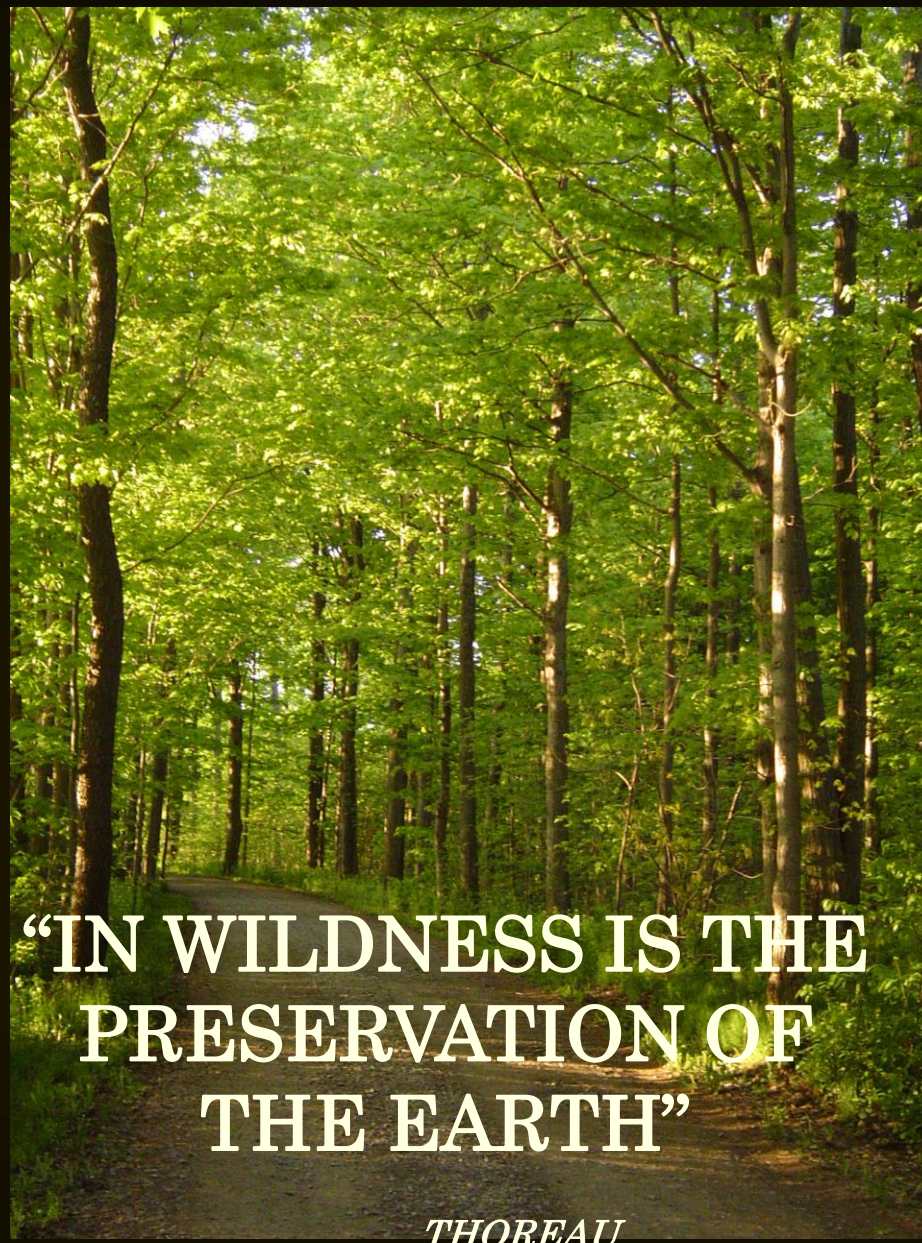


*The Faces of Our Future Generations are  
Looking Up at Us From the Earth...  
And We Step With Great Care Not to Disturb  
Our Grandchildren.*

*Traditional Circle of Elders, Haudenosaunee Confederacy*







“IN WILDNESS IS THE  
PRESERVATION OF  
THE EARTH”

*THOREAU*





“The totality of life...a membrane of organisms wrapped around Earth so thin it cannot be seen edgewise from a space shuttle, yet so internally complex that most species composing it remain undiscovered” [EO Wilson](#)