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Lost Worlds: Life in the Balance

By Amanda McConnell

It was once the heart of the
Mayan civilization
that stretched across
Central America -
a great city known as Tikal.
Its temples were the tallest
in the Western world...
monuments to its kings
and architects.
For centuries, Tikal grew larger...
its arts and sciences flourished.
Then, a thousand years ago,
at the height of its power,
the city was suddenly abandoned.
What happened in this lost world?
What keeps all cities, all
civilizations, alive... then and now?
Cities like New York are
triumphs of human technology -
they feel as if they will
last forever.
And they give us the sense that
we're somehow apart
from the rest of nature.
In big cities, it's easy to
take a lot of things for granted:
Food comes from the supermarket...
water comes from the faucet...
or does it?
Eight million New Yorkers drink clean
water from the Catskill mountains,
a hundred miles away.
If New York had to build water -
purification plants,
it would cost billions.
Here, nature provides that service,
free of charge.
If we could follow the rainfall
down through the leaf litter,
we'd find that
what we think of as "dirt"
is a world teeming with life -
a metropolis much more densely
populated than the city it serves.

In every square inch,
billions of microbes and other
organisms go about their business,
building and enriching the soil
we grow our food in...
helping condition the air
we breathe...
and cleaning the rainwater on its way
downhill to the reservoirs.
It's just one example of what
scientists call biological diversity -
the variety of interconnecting life
that keeps things healthy...
all over the planet
Everywhere, natural has found ways
to thrive.
Each place... each ecosystem...
shapes its own community
of plants and animals.
In every ecosystem, there is a balance
of relationships that keeps it working.
The giant seaweed called kelp...
is many things to many creatures.
It's a hiding place...
It's a nursery
for spawning fish...
and it's a food supply
for the sea urchin,
a spiny creature
with a big appetite.
If there are too many of them,
urchins can virtually clear-cut
the underwater forest
Until the 1970s, this was happening
along the California coast,
all because an animal that
belongs here was missing...
an animal that loves to eat urchins -
the sea otter.
It had been hunted almost to
extinction for its thick coat of fur.
Then, people decided to protect
the sea otter by law,
and their numbers grew...

the balance of life began to
re-establish itself.
Now, wherever there are otters,
the kelp forest flourishes and
so does everything in it
In the tropical forest, biological
diversity reaches its peak.
There are countless opportunities and
life seems to seize them all.
Like the kelp forest,
the health of the rain forest
is maintained by the variety
of its inhabitants -
as long as the natural balance
is undisturbed.
Animals can't live without the
habitats they're adapted to.
Many, like the South American tapir,
are now threatened or endangered
because they're losing the places
they live.
The forests are shrinking.
For thousands of years, more than
a third of Earth's land mass was
covered with pristine forests,
full of life.
The forests of China and lands
around the Mediterranean
were first to be cut...
as towns became cities and nations.
The rate of loss speeded up
with the Industrial Revolution.
But in the last 50 years,
we've cleared more forest
than in our previous history.
Less than half is left
Scientists estimate that thousands of
species of animals, plants, insects,
and other organisms are being
driven to extinction each year,
with unknown consequences.
We are changing the world
too quickly for animals
to be able to change with it

In major institutions around the world,
scientists are now working against time,
to find and understand all the
diversity of life that remains.
Nearly two million species from beetles
to blue whales, have been classified,
but there could be ten times that many,
still undiscovered.
The priority now is to
explore the places
with the most unique biodivercity...
where the web of life
is still intact
Fabian Michelangeli of the American
Museum of Natural History
is going back to his native Venezuela
to join a Rapid Assessment on an expedition...
to the fabled "Lost World" that inspired
the novel by Sir Arthur Conan Doyle.
I don't think we'll find a dinosaur
on this trip,
but in all of South America,
there's no place more incredible
than the table mountains
of Southern Venezuela.
The expedition is being organized in
the capital of Venezuela - Caracas.
Leader of the Rapid Assessment is biologist Margarita Lampo,
whose specialty is amphibians.
I always had a passion for animals,
ever since I was a little kid,
I liked the idea that everything
in nature
was connected to something else.
For ten years now,
I've been studying frogs and toads.
These creatures can tell us so much
about the health of the places
where they live.
My colleague Celsi Senaris and I
are concerned by evidence that
frog populations are declining
all over the world.
Now we have the chance

to search for them
in a place few people
have ever been.
For the next few weeks, we'll be
living in very different conditions.
We're heading southeast towards Canaima.
The plan is to meet our guide
at the airstrip,
go upriver by canoe,
and hopefully to the top of
Mount Roraima by helicopter.
Beneath us is the watershed
of the great Orinoco River.
Tonight we'll stay in a
Pemon Indian village
where we've hired a local boatman.
The table mountains are
a lot closer now.
I like the Pemon word for them - tepuy.
But I can see why others have
called them the Lost World.
Now the river is too shallow
for the boat
We'll hike the rest of the way and
explore the rainforest on our way...
I can't believe the beauty
of this place.
On the riverbank,
we found some fresh tracks.
Only hours ago, a jaguar was here.
This tells us that the ecosystem still
has a full range of biodiversity.
Large predators control the number
of mammals like the coatimundi,
so they don't overgraze
the fruits and seedlings,
or eat too many birds eggs.
This balance helps to ensure
the health of the forest
Now, this is it...
the moment I've been thinking about
for weeks.
Our guide Nadim sayss these pilots
know the mountains better than anyone.

Next stop,
the summit of Mount Roraima.
Mount Roraima is a biological island,
lost in time...
eroded by eons of wind and rain.
The pilots can't shut off
the engine up here.
The weather changes too fast
They have to get out before
the next storm,
and one is coming in fast now.
They'll be back with supplies
in three days, if they can.
I had mixed feelings
watching the helicopter leave.
It was like being left alone
on another planet...
surrounded by images
from the dawn of time.
In these conditions,
shelter is the priority.
Science will have to wait
Roraima is a natural laboratory
for studying the adaptation
of species to harsh environments.
Fabian is the team's plant specialist
All over Roraima, there are these
beautiful miniature gardens.
Most of the summit is bare rock,
so the rain runs off quickly.
Plants only grow in depressions
where water and soil can accumulate.
If we carefully examine these
little islands,
we see that they are just lying
like rugs on top of the rock.
The soil is mostly sand,
with very few nutrients.
But it still supports an
incredible amount of life,
probably most of it exists only on
this mountain, and no where else.
In this nutrient-poor environment,
plants have evolved different

strategies for survival...
Some have become carnivorous,
trapping and consuming insects.
Other carnivorous plants lure insects
with vivid color and attractive scent
And their pitcher-shape is also
a perfect trap.
Thousands of slippery hairs cover
the inside of the pitcher.
It's only a matter of time
before the victim
slips into the bowl
of rainwater where...
larvae and other organisms
break down the insect,
the plant absorbs the nutrients
in the water.
Roraima seems like a great place
for amphibians,
with ponds and streams everywhere.
But at first we saw nothing at all.
And our tests showed that the water
is as poor a food source as the soil.
Any creatures living here have to be
very resourceful.
Then we found our first amphibians:
Tadpoles feeding on clusters
of unhatched eggs.
The mother frog apparently produced
extra eggs,
so her offspring would have
plenty to eat!
Nearby, we saw a frog laying eggs
in a plant -
the only carnivorous bromeliad
known to science.
The water below is full of
captured insects.
Once her eggs hatch, the tadpoles
can make a feast of this soup...
and maybe the plant
gets something too -
like nitrogen from
their waste products.

At dusk, we heard a sound
we never heard before...
definitely amphibian,
but strange...
We look for it until the sound stop.
In the morning we heard it again.
Celsi recorded the sound,
but we never saw the creature
that made it...
Later, we did come across something
truly unique.
A tiny black toad,
threatened by a tarantula.
It didn't jump...
it just walked away...
and climbed the rock.
When the tarantula moved on, the toad
curled itself up and rolled down again.
Now, that I've never seen before!
Why would nature produce a tiny toad
that walks and rolls
instead of jumping?
No doubt,
we still have a lot to learn...
People often ask me why we should
care about creatures like this.
Well, it may have something we need -
like chemicals or medicines.
Or maybe because it's living proof
of nature's ability
to diversify and survive...
in ways we never even imagined.
It's a long way from the Lost World
of Venezuela
to the suburbs of New York,
but the diversity of life here is just
as fragile and just as important
Like the life of remote
rain forests and mountains,
the creatures in our backyard all
play their part in the balance
of relationships that
keeps the world healthy.
Insects need flowers,

flowers need insects,
and we need the food
that pollination produces.
In just one square meter,
young explorers on a field trip
can find a lot of life.
If they look hard enough,
they'll find things even scientists
haven't seen before.
We all need to know what lives here...
what it does...
and what it means to us.
But as we take up more and
more space on the Earth,
we may tip the balance of life...
without even knowing it
It wouldn't be the first time.
The lost city of Tikal was
discovered just over a century ago,
buried in the tropical forest
of Guatemala.
Experts still debate what happened to
this metropolis of kings and priests,
warriors and farmers...
where the rare black jaguar,
sacred to the Mayans,
can sometimes be seen at dawn.
New studies suggest that,
if we could imagine Tikal as it was,
we might see that
its expanding population
had stripped away the forest
for miles around...
exhausted the soil, water,
and food supply...
with famine, warfare...
and collapse not far behind.
Over a thousand years,
the forest has returned...
but the high civilization
of the Mayans is no more.
Did the people of Tikal
lose their life-support system...
without ever understanding it?

Surrounded by the marvels
of a modern city,
we believe we are masters
of our destiny.
But everything in our homes, everything
that keeps us alive, comes from nature.
A hundred years ago,
the people of New York
had the foresight to preserve
a critical part
of its life-support system...
the mountain forests and soil
that clean its drinking water.
Thirty years ago, the marine ecosystem
off the California coast
began to restore itself...
because we had the wisdom
to protect the sea otter.
When we protect nature,
we protect ourselves.
After more than a week on Roraima,
soaked by the rain,
we've flown to another tepuy for
a few days work on its summit
We'll be on our way home soon...
But in a sense, this is our home.
The air is fresh...
and the waters flow endlessly.
These places give us life...
and remind us that we are just
a small part of nature.
Could frogs be
a kind of bellweather
for the health of the planet?
If so, things are okay up here.
Will it stay this way?
I'd like to think that
places like this
to be here for my children.
Maybe our work here will help us to
understand the world we have...
and the world we have to lose.