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The Last Refuge: One Woman's Glimpse of the Arctic National Wildlife Refuge

By Diane Mason

In remote mountains of central China
moisture borne on the monsoons
nurtures a forest world of isolation...
and mystery
Across ages
bamboo [Poaceae (family)] has flourished
in the persistent mists
erecting nearly impenetrable thickets
barriers against time
and the outside world
For nearly a decade
a Chinese scientist has
searched the bamboo
forest for one of the world's
most elusive animals
Though its image is
known to millions
the giant panda
[Ailuropoda melanoleuca] has
kept its life in the wild hidden
from humans
For Professor Pan Wenshi
deciphering the panda's secret
is an urgent matter
The species clings
precariously to existence
Only about
twelve hundred remain
In captivity
pandas have not reproduced enough to
increase or even maintain
their population
If the species is to be saved
we must understand and protect
the secret life of pandas in the wild
Now
an unprecedented opportunity
In a mountain cave
a newborn panda is found...
permitting the first
comprehensive film record
and the first long-term
study of a young panda
embarking on a remarkable life unlike

that of any creature on earth
The Qin Ling mountains...
rugged divide between northern
and southern China...
...and one of the last retreats
of the giant panda
Concealed by dense foliage
and its own distinctive color pattern
the panda is literally
hidden here
In the panda's world
nothing is quite what it seems
The clown-like mask elicits
instant human affection
But it's probably seen as
a threat by other animals...
one of the panda's
many subtle defenses
Pandas are shy
and seldom aggressive
When one is seen,
it is usually retreating
They are solitary animals...
rarely together
But they are aware
of each other...
keeping in touch by sound...
and especially scent
Their social lives consist largely
of reading and leaving scent marks
Rubbing its scent glands
on trees and rocks
a panda says "here I am"
or "there I was"
By smell alone
pandas can tell the identity and
sexual mood
of a neighbor who may go unseen
for months
Almost exclusively
giant pandas eat bamboo
Equipped with a unique sixth
digit ideal for eating bamboo
pandas have been shaped by evolution

for this life-sustaining activity
They consume up to
eighty pounds of bamboo
[Bashania fargesii and
Fargesia spathacea]
a day with great technique
and efficiency
But they're finicky about
this monotonous diet
They eat different parts of the bamboo
in different seasons
Sometimes they prefer the
tender leaves and shoots
while at other times it's the tough
woody stems they crave
It's a lot of work for little reward...
only about 17 percent is digested
So pandas must eat relentlessly
up to 14 hours a day
They eat till they're full
then sleep wherever they are
until they awaken... hungry again
But young pandas
are the exception
To survive they must learn
about the world... they must play
Seemingly vulnerable
the panda has endured while other more
formidable mammals have
become extinct
Its margin of safety is narrow...
but for millions of years
it has been sufficient
Yet an understanding of how
the wild panda survives
has been as elusive as the animal itself
To unlock the panda's secrets
a former logging camp called Shashuping
now serves as a research station
From this base,
biology professor Pan Wenshi
and his students monitor
more than sixty pandas
in the surrounding forest

the first long-term study of
wild pandas and their young
With Lu Zhi, former student
and now a research colleague
Pan has long hoped to discover
why panda young
fragile in captivity
seem to thrive in the wild...
This knowledge could
save the species
After years of patient searching
Pan and Lu Zhi now suspect a birth
has occurred in a high den
and set out on a
September morning to investigate
The treacherous slopes of
Qin Ling are like fortress walls...
and perhaps explain why the existence
of giant pandas here was
not confirmed until 1964
A gentle approach...
to glimpse without disturbing
In a cramped cave an adult
female they have tracked closely...
Cradled in her paws
a tiny pink body
Pan will find that a panda mother
devotes herself entirely to her newborn
She holds and soothes
the baby continuously...
neither leaving the den nor
feeding for 25 days
Blind and helpless
the newborn is dwarfed by its mother...
at about four ounces it
weighs only 1/900th as much
Perhaps in part to prevent
an accidental crushing
the infant panda wields a voice
out of all proportion to its body
Professor Pan's hope is that
by studying the baby's needs
he can learn enough to
help avoid misadventures

of the past involving pandas
and human beings
A panda was not seen alive
in the West until 1936
when a cub named Su Lin
was carried to the United States
Though Su Lin would
survive only 18 months
it was love at first sight
The public craved more pandas
and zoos responded
The sudden fad was called
"panda-monium"...

The panda was immediately beloved
but poorly understood...
treated as if the living animal
were itself a child's toy...
...And the toy arrived without
an instruction manual
Keepers could only
guess at its needs
Nearly half died within five years
As a result of our enchantment
one in ten of the world's remaining
pandas lives in captivity today...
among the most popular
and profitable of zoo animals
The dream has been to breed pandas
in captivity for release into the wild
but arranged matings
produce very few offspring
The result has been a record of more
deaths in captivity than births
Even in a more
natural enclosure
in a Chinese panda reserve
successful reproduction
remains uncertain
A female can conceive
only during a few days each year
In captivity males are
mainly indifferent
in part because they lack
competition and often overweight

Loud love songs frequently lead to
no more than a wrestling match
Even when young are produced
their chances of survival are bleak
In the past three decades
nearly 60 percent have died
within their first year
Despite intense care
this cub would live only five months
So far, it has not been possible to breed
a self-sustaining panda
population in captivity
For the species to survive
protecting it in the wild is critical
But time and habitat
are running out
A panda homeland that once stretched
across southern Asia from
Vietnam to present-day
Beijing has shrunk under human
pressure to only six small
unconnected areas
For about 240 wild pandas
the slopes of the Qin Ling
mountains are a last refuge
By fitting pandas with radio collars
and monitoring their signals
professor Pan and Lu Zhi
have been able
to track the pandas in their
study group from afar...
...and locate them easily
for closer observation
Theirs is an unprecedented bond
between human and panda
Never before have wild pandas wild pandas
become so accustomed to
scientists and allowed them so close
"For nine years in Qin Ling
Lu Zhi and I have lived
among giant pandas
We drink water from the
same small stream with them
and we have stayed together

with them almost everyday
They are familiar
with our scent
These pandas
know us very well
Lone pandas are
often very tolerant
But will a mother be so trusting if they
attempt to visit the
newborn inside the den?
Hoping to conduct a thorough
examination of the panda cub
Professor Pan and Lu Zhi
approach while the mother
feeds some distance
away from the new den.
She has stayed away
so long they now fear the cub
may be dead erasing
a scientific opportunity
and another life in a lineage
where each has become precious
Their fears prove unfounded
Pan knows his time to inspect
the cub is limited
Too long in the den and
despite their efforts to
gain her acceptance
the mother could react violently to
their presence here and attack them
They usually observe
from a distance
but they must sometimes
examine the infant
panda closely to document its growth
It's a female...
an advantage for science
In the years to come
she may bear cubs of her own
permitting study of
a panda family across generations
At seven weeks
the baby weighs more than three pounds
Her eyes are

opening on the world
Her expanding repertoire of
sounds could alarm her mother
still browsing nearby
Pan is heartened by what he finds
the cub appears normal and fit
with a stomach full of mother's milk
and a strong heartbeat
Time is up
The baby must be returned quickly
to avoid a confrontation
In the weeks to come
Pan and Lu Zhi make
an important observation
When her cub is weeks old
a wild mother leaves it to
feed for hours at a time
In the past
this natural behavior was
often though abandonment
and many cubs were
taken from their mothers
only to die later in human care
This all began with a boyhood dream
of adventure in
a far away exotic land...
"When I was in high school
I read Jack London's books
Among the books,
two greatly impressed me
"White Fang"
and "The Call of the Wild"
From then on
I dreamed of living in remote areas like
western America or Alaska
or the Yukon River Valley...
Living in the wild
and among wild animals...
that was my early dream
and I hoped to make it my future
The years have turned early
fascination to enduring devotion
Pan spends months of each year
in primitive conditions

paying some research expenses
out of his own pocket
working late hours
to log and analyze data
in a tiny cubicle that
is both office and bedroom
Pan's other world offers
a stark contrast
The rest of the year
he spends in Beijing
sprawling symbol of
modern industrial China
Here Pan is a biology professor
at Beijing University
His work was mainly
in the laboratory until he
and the panda had their
first fateful encounter
"Um, after graduating
from college
when I was 25years old,
I had the opportunity to
um, to go visit
um, the Beijing Zoo
where they had the first
captive-born baby panda
And that was the first time
that I was able to hold a panda
and it was very interesting
The baby panda
climbed all over me
and that was when
I decided I wanted to
devote my whole
life to studying the pandas"
At a zoo in the ancient capital
city of Xi'an
a visit to a friend...
Her name is Dan-Dan...
a reference to her reddish-brown
and-white coloration
She is one of only three
such pandas they know of
Pan and Lu Zhi think

this color scheme may be
a throwback to prehistoric times
Pandas may have developed their black
and-white coloration
as camouflage during the ice ages
Finding Dan-Dan ill
in the wild
Pan and Lu Zhi brought her
here for temporary care
hoping she would be
released later
Her confinement
disturbed Pan
who was himself
held prisoner in the late
Sixties during the Cultural Revolution
"The Cultural Revolution
was a big mess
No one dared to
speak the truth
Because I told the truth
they put me in jail
beat me and pulled my hair

I thought:

the only thing I can do
is to insist
on seeking the truth..."
After 56 days of beatings and
confinement in darkness, Pan escaped
"Overcoming this
suffering has become the
basis for my conviction as
a scientist always to tell the truth"
In a Beijing classroom
Pan carries his campaign on behalf of
pandas to a
wildly receptive audience
Using props made from the skins
of pandas who died in captivity
Pan teaches about the
need to protect wild pandas
His stories evoke surprise
The children thought pandas

lived only in zoos
Pan wants to inspire understanding
of wild pandas in the generation
that will probably
decide their fate
In a country to nearly
with urgent human needs
he faces a long road
Even some friends cannot understand
why he leaves his home
and family several times a year
for the sake of a wild animal
the trip south to the Qin Ling mountains
is itself a test of resolve
then 14 hours by bus
For Pan, this journey retraces
the ancient retreat
the panda before advancing waves of human settlements
The last stands of wilderness
like the last pandas
survive only where food crops cannot...
at the highest edges of existence
For years, Professor Pan
and Lu Zhi conducted a lonely enterprise
But they have now attracted
a following of students
who staff the Qin Ling research
station in seasonal shifts
To Pan, they hold promise that the
panda will not be forgotten
And they have been
staunch companions in
an adventure that has
sometimes been an ordeal
"There were many difficulties
when we started this research
We always felt cold
and clothes were always wet
Lu Zhi got frostbite
on her face
and Ding Qian had
frostbitten fingers
Mid-December
Four months

have passed since the
birthing season
among Qin Ling pandas
Cubs are now old enough to
crawl from their dens
and are sometimes
found outside
while their mothers
browse nearby
Face to face with humans,
the cub seems by turns
reticent and full of bravado
To symbolize her importance
for the future of pandas
the two researchers have decided to
name her Xi Wang-meaning "Hope"
The christening
is of no interest to a baby
who may sleep 20 hours a day
even when guests are present
Easy slumber
is a panda trait
Nearby, her mother unwinds from
the labors of eating bamboo
Xi Wang seems vulnerable
But animal predators pose
less of a threat than humans
A panda pelt can bring poachers
more than \$10,000
and dozens of panda cubs have
been taken into captivity
by well meaning
"rescuers" who believed
or wanted to believe
that they had been abandoned.
Xi Wang is still nursing
so bamboo
which will dominate her life
is for now just a plaything
A surprise...
The mother returns
and decides to move
Xi Wang to a new den
a routine occurrence

But for Pan and Lu Zhi
it's a rare moment
Despite years of observation
they have seldom seen two pandas
even mother and young
together in the open
Touched by her devotion
they call the mother Jiao-Jiao
or "Double Charming"
In Pan's study area
only one farm has persevered in the
harsh altitudes of panda territory
En route back
the two scientists visit the Li family
who count themselves
protectors of the pandas
Pan has heard reports that a panda
has been sighted in the vicinity
It behaved as though ill
Have the Lis seen it?
They have,
by the river
and were surprised to encounter
one so far down the mountain
In a chill are rain at
one in the morning
Professor Pan and his team are
summoned on a special mission...
Villagers have sent word that a wild
panda has appeared on a doorstep
Pan thinks it may be
the animal seen by the Lis
The scientists are puzzled
by a tendency of
wild pandas to come to human dwellings when ill...
an enigma in a creature
normally so withdrawn
Though they are neighbors
of wild pandas
few in the village have
ever seen one
Beneath corn [Zea mays] dried
for hog [Suidae (family)] feed
the creature huddles

as if seeking help
The animal appears old
Pan asks if the panda
has been fed
It has not
The man discovered it whimpering...
...and he was amazed
Suspecting a digestive problem
Pan decides to treat the
panda back at camp
It proves no easy task to relocate
the 200-pound creature
At Shashuping research station
therapy begins with
a breakfast of bamboo
Weighing the old panda's good
fortune at being rescued
the students call him
by a name that means "Lucky"
Already, his appetite is returning...
Antibiotics and vitamins mixed in honey
meal quickly revive Lucky's spirit
In ancient texts
a creature believed to be the panda was
known as "the iron-eating beast"
...because it chewed up
metal cooking utensils
...and it still tries to
Lucky, it turns out, has
an unruly curiosity
and an indiscriminate palate
Eventually
the cautious researchers manage
to retrieve this unusual delicacy
In Shashuping's field lab
Lu Zhi adds samples
of Lucky's blood to a
growing collection from
pandas living in isolated groups
Through genetic analysis
she seeks to learn how much
inbreeding has occurred
In a hundred years, she fears all
Qin Ling pandas could

be first cousins
This could cause extinction through
harmful mutations and
vulnerability to disease
"There is a critical question:
if this animal is inbreeding
then how much and
how bad the inbreeding could be
This work, we hope
will answer this question
and then we'll find
a way to help pandas"
Recovered after
a week of treatment
Lucky is ready
to be released...
Pan is hopeful
but the scientists know Lucky
may be too old to
survive in the wild
Weeks later
their fears will be confirmed
Again ill
Lucky will be taken
to a feeding center
where he will die
In the bitter cold
of early January
while other Qin Ling animals
hibernate the panda cannot
Enslaved by the need to
eat almost perpetually
pandas continue to
roam the frozen forest
Pan and Lu Zhi have learned to respect
the panda's tough constitution
Thick, oily fur and bulky
bodies insulate them
and they seem immune
to the cold
For Xi Wang, snow is just
a new terrain to explore
Now a five-month-old toddler
she seems dimly aware

that trees are important
In the months to come
they will offer her only safety from
predators in her mother's absence
But to hide in a tree
Xi Wang must
first learn to climb it
For now, baffled by the challenge
she gives up
For those who would study pandas
winter in the Qin Ling
mountains is a test of resolve...
The cold is relentless...
even inside
Days and nights pass
in the shared chores of
a dwelling heated only by wood fire
lit only by candle and lantern
As winter drags on
Jiao-Jiao begins to take Xi Wang
with her while foraging
The ancient Chinese
may have found
in such scenes of tranquility
a symbol of peace
According to one account
retiring armies waved not a
white flag but an image of a panda
For Xi Wang
another attempt to climb
Success brings not only safety
but a measure of youthful adventure
As winter gives way to spring
the panda's realm
in the Qin Ling mountains
reawakens with sound and color
By may
the new foliage intrigues Xi Wang
At nine months
she continues to nurse
but
like human babies
she investigates
the world with her mouth

For Jiao-Jiao
spring brings not only the
bamboo shoots she treasures
but the seasonal agony of ticks
[Metastigmata (suborder)]
and leeches [Hirudinea (class)]
Xi Wang will watch her mother from
the trees another four months
until she's ready to join her
foraging along the forest floor
Once tentative,
she now climbs about freely
sometimes showing greater
daring than judgment
Jiao-Jiao seems concerned
about a well-padded youngster
especially when succulent
bamboo shoots are abundant
For both, life is serene
They look awkward
but pandas are deceptively agile
their joints so flexible
they can bite their own tails
and perform gymnastic routines
in suspenseful slow motion
Clear-cut harvesting
of the panda's forests
is the paramount threat
to their continued existence
Food and cover dwindle
Populations are further isolated
Panda ranges have
declined by half in
only two decades...
primarily from logging
A billion people in China need
wood for homes and heat
In fifty years
it could be almost two billion
Over the years
Professor Pan has
watched timber companies
invade 70 percent
of Qin Ling's panda habitat

He asks how far the
loggers intend to go
Next spring, they will cut
all the way over the mountains
the slopes now roamed
by Jiao-Jiao and Xi Wang
To penetrate the panda's forest
new roads must be blasted
out of the mountainside
By most standards
the operations are crude
sometimes conducted
with a casual daring
that mixes gun powder with cigarettes
Industrial safety is a recent
development here
but despite accidents
the work goes on relentlessly
Risking all
Pan has pleaded with authorities
to stop the logging of Qin Ling
With stubborn insistence
despite threats and harassment
he has succeeded
The government has halted the timber
cutting in the
An excursion to check
on Xi Wang
now outfitted with a radio collar...
It is mid-October
At fourteen months
Xi Wang is passing
her second autumn
Something is amiss
The signals lead to
a tangled clump of brush
Expecting Xi Wang
they find only her collar
Pan believes Jiao-Jiao tore the
collar from her youngster
He suggests they search
for Jiao-Jiao instead
But Jiao-Jiao's signal is weak...
...They will have to separate

and scour the slopes
Xi Wang is invaluable to science
She has been monitored since birth
and has provided
unprecedented information
But for Pan and his crew
this panda has also become a friend
Following his instincts
Pan comes to a steep ravine...
Barely visible among the foliage
sitting casually in a tree
the familiar shape of Xi Wang
To re-establish contact
they must sedate
and re-collar Xi Wang
They must act now
before they lose her again
But her perch above a cliff
makes it a delicate operation
The tranquilizing
dart is necessary
the pain to be inflicted slight
But the moment is
always disconcerting to those
whose lives are dedicated
to protecting wild things
Several minutes pass as
drowsiness sweeps across her
They pray she won't fall
Now docile
Xi Wang stays in the tree
enabling them to bring
her down safely
At 80 pounds
she is a precious but awkward burden
The professor
who is her observer and defender
a father of two daughters
bears her as carefully
as if she were a third
Using radio collars
Pan and Lu Zhi have been able
to keep track of the whereabouts
and activity of more than

Theirs is the first
comprehensive study to document
social and breeding
behavior of wild pandas
These periodic
inspections are inconvenient
for Xi Wang and rob her of dignity
But she is contributing
details of her development
that can be obtained in no other way
Xi Wang's story could affect
her entire species
revealing how to ensure
their survival in the wild
and to improve their
care in captivity
For Xi Wang it has been
a day of curious events
and a close encounter
with another species...
She returns to her mother
and the life of endless simplicity
now interested only
in a drink of water and
soon perhaps, a little bamboo
At the Shashuping research station,
a moment of farewell
After months of work
four of Pan's students
must return to the university
Assistants will come
and go during the years ahead
but Pan intends to stay
here as long as it takes to
understand the life
of pandas in the wild
and to keep them roaming freely
through the surrounding forests
In the ritual exercise
called qigong
Pan daily rekindles
his determination
"My friends in Beijing always ask:
'Why do you continue to work...

"...in the field
year after year?
When will it end?
Your work has been published
Why don't you stop?

I tell them:

is to protect the panda
and to establish
a refuge for them in the wild
That is my mission
but it will be difficult
Achieving this goal may
take my entire lifetime
And even that may
not be enough"
So one man perseveres
as solitary as his pandas
a lonely figure in this
island of wilderness
One man and one panda
Since these scenes
were filmed
Xi Wang has struck
out on her own
In the not too distant future
she could have a cub herself
As pandas have for
millions of years
she will feast on the forest
drink from cold streams
endure the chilly mists
But her passage though life
will be recorded for the ages
because, like her name
Xi Wang represents
for all her species...
a last fateful glimmer of hope