



吉娃斯愛科學繪本

賽夏族語

第6集
看不見的牽絆

翻譯 / 配音 風貴芳

吉娃斯愛科學

賽夏族語版

第六集 看不見的牽絆



族語全文朗讀



英語全文朗讀



華語全文朗讀





'okay Sahoero: ka pinalalazem



So Small You Can't See



看不見的牽絆





tiwaS ki bae'hoy tihoero: 'ae'hae'
'ima 'eInghian ka 'aehoe'.



Giwas and Behuy found a little
black puppy.



吉娃斯和飛卉檢到一隻小黑狗。





bae'hoi tomabo: hiza 'ima 'eIngihan
ka 'aehoe', "aehoe Siro:o' hi "kalo:".
"kalo:" noka Saypapa:aS ka:i' koSa'en
"soday" SikoSa'.



Behuy fed the dog and named it Nalu.
In the Atayal language, Nalu means
"black bear".



飛卉餵小黑狗吃東西，叫小黑狗「嘎魯」。
「嘎魯」在泰雅語是「黑熊」的意思。





kalo: ni tiwaS 'alibihin 'ay taew'an. kalo:
koma:as pak'aewhay 'in 'oya' a
katononan.



Giwas brought Nalu home. Nalu chewed
some cloth that Mother had woven.



吉娃斯帶嘎魯回家。嘎魯咬壞了媽媽織的
布。





'oya' bi'i: ila. tiwaS 'isa:a' 'omawpo'
hi kalo: rae:iw ila.



Mother got angry, so Giwas had to
grab Nalu and run away.



媽媽生氣了。吉娃斯只好抱著嘎魯逃走。





lasiya roSa' mowa:i' komi:im hi payan
'am pakalahang hi kalo:, 'oka' o payan
'okay Siwa'.



The two kids begged Bayan to adopt
Nalu, but he refused.



兩人拜託巴彥收養嘎魯，但是巴彥不答應。





tiwaS ki bae'hooy 'iyakina maraS hi kalo: rima' ray ba:la' pakranaw. nakahini kalo: ranawan ila ra:men 'am kayzaeh tihoero: 'ima SaSo' nom malahang hi siya ka mae'iyaeh.



Giwas and Behuy wanted to take Nalu to the river for a bath. Maybe it would be easier to find a new owner if he was clean.



吉娃斯和飛卉想帶嘎魯去河邊洗澡。
也許乾淨的樣子比較容易找到新主人。





“‘izi’ ‘araS hi kalo: rima’ ‘ay ba:la’!” payan monkakamoeh komoSa’. tomrong hi lasiya rima’ mari’ noka rokol ka biyae’ kahos ‘inay taboway ka ralom.



“You can’t take Nalu to the riverside!” Bayan said nervously. He told them to get taro leaves to scoop water out of his water basin.



「不可以帶嘎魯去河邊！」巴彥很緊張地說。一定要他們摘山芋葉回來舀水甕的水。





tiwaS mari' 'akoey 'ima ranawan ka biyae'. biyae' heshes'ezan, konkononan, biyae' 'ima minataeh 'okik 'i:zo. ni bae'hoy minari' ka biyae' harhara:i'an. biyae' hes'ezan a tomal, biyae' 'inaro' sowiti', 'ima minngataeh ma' 'i:zo' sowiti'.



Giwas picked some clean taro leaves, light green, and round, with a shallow depression. Behuy picked dirty leaves, dark green, and longer with a deeper depression.



吉娃斯摘了很乾淨的葉子。粉綠色、圓圓的，凹的地方比較淺。飛卉摘到髒髒的葉子。深綠色，葉子比較長，凹的地方比較深。





kalo: Sahoero: ka biyae' ma' 'iyakina
koma:as ila. payan 'omam'amoeh 'omelet
hi siya.



When Nalu saw the leaves, he tried to
chew on them too! Bayan stopped him
quickly.



嘎魯看到葉子就想咬。巴彥急忙阻止牠。





ni bae'hoy minari' ka biyae' 'in noka
biyara: a biyae', somi'ael ka hakaken.



The leaves Behuy had gathered were
giant elephant's ear, which are
poisonous to eat.



原來飛卉拿的是有毒的姑婆芋葉，吃了
會中毒。





tiwaS somingzaw Sa', "So: komita'
'ae'hae' Sinraho'e' nanaw ka biyae'
'am nak'ino' Sekla'?"



“How can you tell the difference by
looking at the leaves?” Giwas asked.



「只看到其中一種葉子時要怎麼分辨
呢？」吉娃斯問。





“noka rokol biyae’ hayza’ ’ima naymi:an ka ’oeboeh pakraroton ka ralom konkononan, ray biyae’ babaw minkonkonay.” payan komoSa’.



“The surface of the taro leaves have fine nanoscale cilia hairs that cause water droplets to collect and roll around.” Bayan said.



「山芋葉子上面的奈米級纖毛讓水聚集成水珠，在葉子上面滾來滾去。」巴彥說。





lasiya roSa' honaehnge: 'am komita', 'okay
Sahoero: 'ay biyae' hayza' ka 'oeboeh. bazae'
koSa'en "naymi:", bae'hoy Siyae' atomal,
pakoSa' 'ima kayzaeh kasi'aelen.




The two kids looked closely, but couldn't
see the hairs. Behuy got excited when he
heard the word "nano" because he thought it
was a delicious food.




兩人看了半天，看不出葉子上有毛。聽到
「奈米」，飛卉很開心，以為是好吃的食物。





payan sawsawa'an Sa', "naymi: mina 'ima
'ol'olae'an a tomalan nom homola' ka 'inaro',
noka masa' komita' 'am'okay Sahoero:."



Bayan laughed and said: "A nanometer is
a very, very small measurement of length,
you can't see it with the naked eye."



巴彥笑著說：「奈米是很小很小的長度單位，用眼睛是看不出來的。」





naymi: koza' kin 'ol'olae'an? payan Sa', "So: 'in noka rokol a biyae' paknak pinapapanae'an rape: kin mowahil, noka biyae' 'oeboe' ma' 'am nak 'in noka kalo: a 'ima 'itoSan a tomalan romiS hingha' kin 'inaro'."



How small is it really? Bayan said: "If the taro leaf was as big as the ancient battlefield, the cilia hairs would be the size of the smallest hairs on Nalu's body."



奈米到底有多小？巴彥說：「如果把山芋葉變成像古戰場那麼大，葉子上的纖毛就變成像嘎魯身上最細最短的毛一樣長。」





'am powa' 'oeboe' kayzaeh
pakraroton ka ralom konkononan no?



Why do the cilia hairs turn water
into droplets?



為什麼纖毛可以聚集水珠呢？





So: noka rokol biyae' pakkin sopaloyen 'isa:a' takita' ila, 'am Sahoero: biyae' 'ima hahiponghipong, 'apna'aehae' 'ima mintokolan, babaw hayza' naehan Sam'iyah a monaseb naymi: kin 'ol'olae'an o nak tateleng ka losoko'.



If you magnify the taro leaves, you can see that the surface is uneven. Each protruding structure has needle-like waxy structures 20 to 50 nanometers in size.



如果把山芋葉變很大來看，會看到葉子表面其實是凹凹凸凸的。每個凸出的地方，上面又有20個到50個奈米那麼小又像針一樣的蠟質東西。





ralom “okik hinowa” ki ray biyae’ babaw
ka losoko’ ma’onhael. o hayza’ ka “naymi:”
ralom moto’ “okik hinowa” rempe’ ray
biyae’ babaw.



Water “doesn’t like” to touch those
waxy structures.



水「不喜歡」和葉面上那些蠟質東西在一起。
可是因為「奈米」的關係，水就更「不喜歡」
貼在葉面上。





tiwaS komoSa', "naymi: 'okik 'ol'olae'an
ay? hayza' ay kin wa'isan?"



Giwas said: "Isn't nano really small?
How can it have such a big impact?"



吉娃斯說：「奈米不是很小嗎？有那麼
厲害嗎？」





payan Sa', "ray biyae' 'apna'ae'hae' 'ima
mintokolan, babaw sem'el mayha'ha' 'ima
naymi:an nak tateleng ka losoko'. nakhini ralom
ki losoko' 'ima lalazem ma' mowahil sowiti' ila."



Bayan said: "All of the protruding areas on the
surface are full of nanoscale waxy needle-like
structures, increasing the contact area with water,
so the water doesn't like to touch the leaf 's surface."



巴彥說：「葉面上每個凸出的地方上面又長滿奈米級
像針一樣的蠟質東西，讓水和蠟質東西的接觸面積又
更多更多了。」





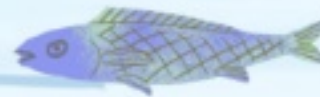
'okik hinowa' ray biyae' kin 'akoey naymi:an ka losoko' rararpe', ray biyae babaw ka ralom 'isa:a' raroton konkonoan, ray biyae' babaw minkonkonay ila. So: 'ima konkonoan ralom 'inay biyae' babaw Sahae', ray biyae' babaw 'ima hara:i' ma' 'arolon, biyae' ma' ranawan ila.



Because the water doesn't like to touch the waxy structures, the water on the leaves collects into droplets and rolls around on the surface. When the droplets roll off the leaf, they bring dust and dirt with them, so the leaf becomes clean.



因為不喜歡和葉面那麼多的奈米級蠟質東西貼在一起，葉面上的水就聚集成水珠，在葉面上滾來滾去。水珠從葉面滾下時，也順便把葉面的灰塵帶走，葉面變得很乾淨。





nakhini'an, minSa'la' Sinahoero: ray liyaen biyae',
'isa:a' ma' koSa'en liyaen biyae' pinatawaw. 'in nok
Sa:iy a bangeS ma' hayza' 'inakhini'an ka howaw,
'isa:a' ka Sa:iy kayzaeh lalangoy kin 'alikaeh!



This phenomenon was first discovered on lotus
leaves, so it is called the lotus effect. Shark skin
has the same effect, so sharks can swim really fast!



這種現象，最早是在蓮葉上發現的，所以又叫做蓮葉
效應。鯊魚皮也有同樣的效果，所以鯊魚才可以游得
很快！





nak'isaza o! saboeh kin Siyae'
tomilhaehael pakranaw hi kalo:.



So that's how it works!
They all happily gave Nalu a bath.



原來如此！大家開心地一起幫嘎魯洗澡。





kalo: minowa' a tomal hi payan,
koykoykoy kan payan langi:.



Nalu really liked Bayan and
wouldn't stop playing with him.



嘎魯很喜歡巴彥，不停跟巴彥撒嬌。





payan mahoero: siya ray 'ima 'ol'olae'an
Sinpan kalo: Sahae' 'ay ba:la',
pak'omahowiS hi siya kin honaehnge:.



Bayan became sad because he was
reminded of a dog named Nalu he had
as a kid who fell into the river.



巴彥想起他小時候養的嘎魯掉進河裡，
讓他難過很久。





tiwaS Sa', "naynay Sa'la' 'ayaeh kin 'abe',
ya:o ma' 'omahowiS a tomal, 'oka' o ya:o
hayza' makakreng komalahang hi naynay o!"



Giwas said: "Nainai once got really sick
and I was sad too, but I took good care
of him!"



吉娃斯說：「乃奈之前病得很重，我也很
難過，但我很仔細的照顧乃奈喔！」





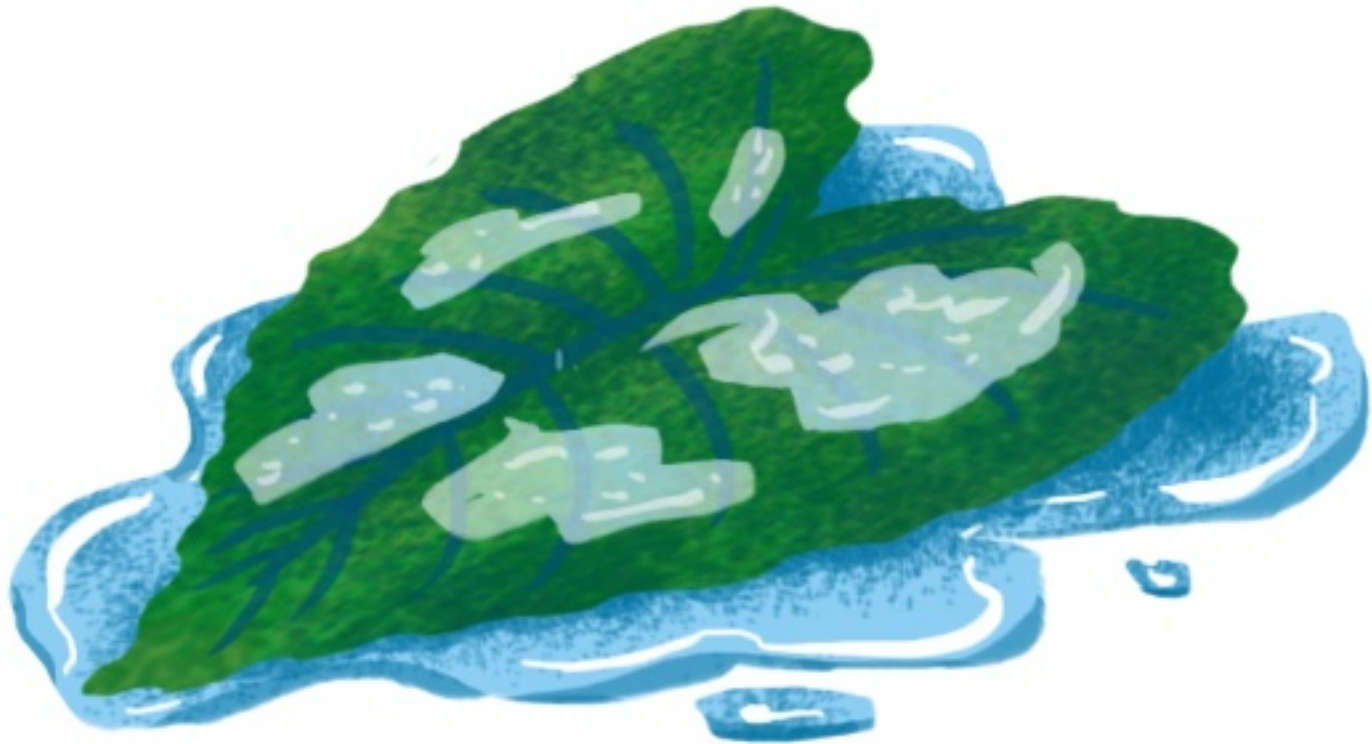
ray payan 'ima pakoSa' naynay San'aewhay
ka kasi'aelen, tiwaS mahoero: karim'aenan
“noka rokol biyae’” komahoes ka ralom 'ini
naynay.



Bayan thought that maybe Nainai had been
poisoned, and Giwas remembered that she
had used “taro leaves” to bring him water
that morning.



巴彥正懷疑乃奈是吃壞肚子時，吉娃斯突
然想起早上還用「山芋葉」裝水給乃奈喝。





'oka' o hiza “noka rokol biyae”
nakhara 'okay pakraroton ka ralom?



But that “taro leaf” didn't form water
droplets.



但是那片「山芋葉」好像不會聚集水珠？





naynay bi'i: a tomal, 'iyoho:'iyoho:mam
'omoe'oe:. 'iwa' naynay hakaken ila!



Nainai got angry and cried out.
Apparently Nainai had been poisoned
from the elephant's ear!



乃奈很生氣，叫得更慘。原來乃奈中了
姑婆芋的毒！

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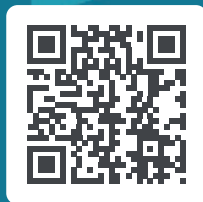
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