



吉娃斯愛科學繪本

魯凱族語

第6集
看不見的牽絆

翻譯 / 配音

Rungudru Pacekele (巴清雄)

吉娃斯愛科學

魯凱族語版

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





Kaimaka-adrelane ka sapamwadreke



So Small You Can't See



看不見的牽絆





Ku Siniyu si Calukusu kyadringai ku
icecelre ka tawpungu.



Giwas and Behuy found a little black
puppy.



吉娃斯和飛卉撿到一隻小黑狗。





Kui Calukusu lupakane ku akaneane ki tawupungu “Cumai” amiya iniane. Kuini “cumai” luya ki kuini ki tapunge, myaki cumai ka-icecelrene si kagarane.



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」在魯凱語是「黑熊」的意思。





Kui Siniyu sailuki ki Cumai mwaki tinaini,
kui Cumai la pakapurici ku tinunuki
tinaini.



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。





Kui tinaini lakalisi liniane. La ubere
kui Siniyu si Cumai.



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。





Kui Siniyu la-iyakai ki Kuringici,
Irilremesu lapu ki Cumai? Kui Kuringici
lakidremeedreme la-iyakai: kainaku
makalapu ki Cumai.



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。





Kui Siniyu si Calukusu la-iluku ki Cumai muvalru si pawbanaw iniyane. Lukabula nawlri-kaai ku ngwabangalre lapu-inyane la-iya.



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。





La-kathathiburu kui Kuringici si iyakai:
araililuku ki Cumai muvalru! mwamalra
ku vasaw ki taai si vaw ku yakai ki
dilrungu ku acilai.



“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。





Kui Siniyu lamwamalra kui mabuula kui vasaw,
kai kamasaleese, lakalrimemeteke. Ala kui
Calukusu kui malraini kui vasaw maakudrulru,
lakasalese turamuru.



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。





Kui Cumai sadrele kui malra ki
Kuringici kui vasaw naw kacela-iya.



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。





Anikamani, kui malra ki Calukusu,
amani kudra valradhenge ku thyagenge.



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。





Lakivaga kui Siniyu iyakai:
vatumanemadu si pathathingale
lusilapane kai vasaw ki taai?



“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。





Kui Kuringici latubalre iyakai: kai vasaw ki taai yakai ku tikiiyane ku ubale ki belenge, lumwa ku acilai ki vasaw, vadulru kai pangucale, lakatai kaiyane ki vasaw ku acilaa-i.



“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。





Naidrele luiya ki ubale lakai makadrele.
Anikamani amanikudra “Naimi” niyaane,
kui Calukusu naw akaneane la-iyaiya.



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。





Kui Kuringici la-ulrakai linyane si iyakai:
kuini “naimi” kaimadu makavadrele
arakai ku maca.



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。」





Thaininu kuni “naimi”? Kui Kuringici laiyakai:
alaiya si lupaipadhane kui vasaw ki taai,
myakaw takaruburuburane swadradradraw,
kui ni ubale ki vasaw, imar-raamaw ki
edredreekanenga ki ubale ki tawpungu.



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。」





Kuni tatiiki kuini lawbale,
animakadulru sarubu kui lacilai?



Why do the cilia hairs turn water
into droplets?



為什麼纖毛可以聚集水珠呢？





Kuini vasaw ki taai lualrane paipai paka-
adradraadraw, Iridrelesu kui thathatha kui myakaw
vavawva ka batekale. Kuini vawva ka batekale,
kuini belenge-ini yakai kui mapusale si malrimale
kui tatiki myakaw “naimi” lamyakaw ceneke ka
kyakabungu ki lusuku.



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。







Ku acilai makucingalre i-drengere ikai ki lusuku. Kui sabebelengenga ki vasaw, yakai kui myakaw lusuku, lakamani kui acilai kaimakayasadra ibelene ki vasaw.



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。





Kui Siniyu la-iyakai: kuini “naimi”
kaikatikiyane? Ani ka maelaelaa-ane?



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？」





Kui Kuringici aliyakai: kai sabebelengenga ki vasaw, yakai kuini thathatha kui myakaw i-naamai, laswadraw ku tmakelakelane, lakaimakangwaludru kiu acilai.



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。」





Kui lacilai malrase ikai belenge ki vasaw, kuini myakawlusuku, lakamani luikai ku acilai kivasaw belenge, kyarimu makakaai ngisasarubu ta-aelre, latwalai ki vasaw belenge ngucilri, lungucilricilri tara wasangiluku ku kudrulru ki vasaw, lakamani kudra kabuula ki vasaw ludrelane.



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。





Kuini tangimyamyane, aswalalanga kithingale pikai ki vasaw ki taai. Kai Irangici ki kaange miyaya kuini, lakamani kai kange lu-ikai ki aciali, kyararimu lu Iredededepe!



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！





Lakiraragai makanaelre si paralubu
pawbanaw ki Cumai.



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。





Kui Cumai madalame kakakadra ki
Kuringici kui dalamaneini.



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。





Kui Kuringici la ngulringaw saka
tikiiyanana ku Cumai sanguta-buru ki
acilai, la kipakwalrikawlai alangilribate.



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。







Laiyakai kui Siniyu: kui takacaemane ki babila, myalryaku kasamadre, animyaini latupudryadringadhaku sirapaleinyane!



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！」





Anikirimu kyangeange kui barangeni ki babila? Kui Siniyu alangulringaw iyakai, saka myalrealre, arakaiyaku ku vasaw ki taai pawngulu ki babila.

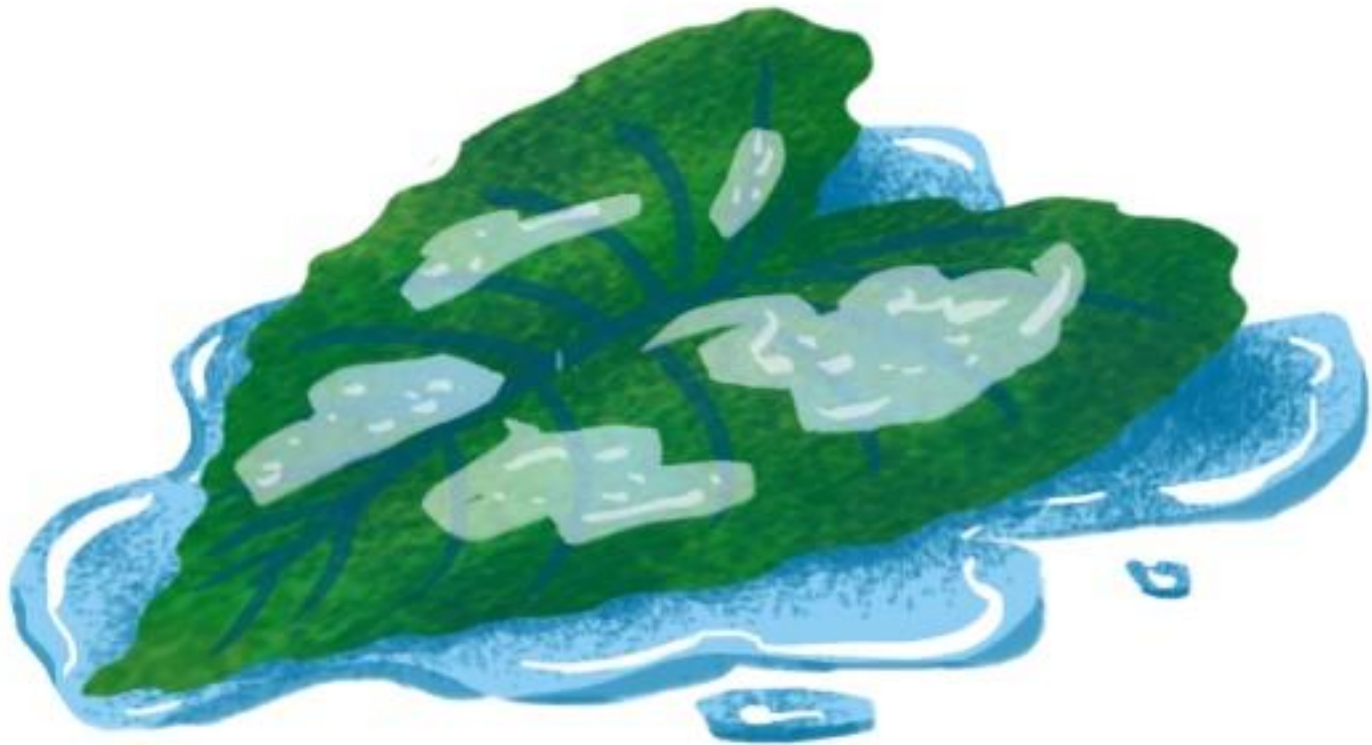


Bayan thought that maybe Nainai had been poisoned, and Giwas remembered that she had used “taro leaves” to bring him water that morning.



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。







Aiya, kuni vasaw ki taai myakaw kai
make vasarumu pikai ki vasaw ku acilai?



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



但是那片「山芋葉」好像不會聚集水珠？





Kui babila langibucubucuku kawkaau.
Alaka kyaduku ki thyagenge!



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！

《吉娃斯愛科學》- 魯凱族語版

第六集 看不見的牽絆

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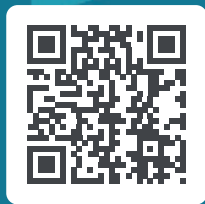
族語翻譯與配音：Rungudru Pacekele（巴清雄）

協力製作：原金國際有限公司、藍海娛樂影音科技股份有限公司

出版日期：中華民國109年3月

吉娃斯 愛科學 Go Go Giwas

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