



**Tree Kangaroo Conservation Program
2006 Annual Field Report**



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Cover photographs by Tim Laman. Wild Matschie's tree kangaroos (*Dendrolagus matschiei*) (top); TKCP staff tracking radio collared tree kangaroos (bottom).

2006 Annual Report

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Keweng 1 village at the Tree Kangaroo Conservation Program 10 Year Anniversary Celebration (left); village children (right).

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LETTER FROM THE DIRECTOR



WOODLAND PARK ZOO

"...helping to create a sustainable future for wildlife."

Greetings!

2006 was a year of celebrations. The Tree Kangaroo Conservation Program (TKCP) celebrated ten years of working in Papua New Guinea hand-in-hand with the Keweng villagers and the entire YUS community on the Huon Peninsula to protect tree kangaroos and their habitat. What has been most amazing to me is the joint commitment and dedication to work together to meet the needs of people and wildlife in one of the most incredible and remote places in the world. In 2006 we also celebrated the launch of an award-winning book about the TKCP called Quest for the Tree Kangaroo by Sy Montgomery and Nic Bishop.

We have come a long way in ten years! In 1996 TKCP started as a conservation research project and has grown by leaps and bounds beyond my wildest dreams. We have gone from searching for evidence of tree kangaroos to being the first to radio-collar and track individual animals for months at a time. We have gone from talking about tree kangaroos at village schools to organizing annual teacher training workshops and sponsoring YUS students to become teachers. We have gone from discussing the ideas of conservation and protected areas to being the first to create a Conservation Area for Papua New Guinea. We have gone from hearing about the health needs of the villagers to starting a community health project called "Healthy Village, Healthy Forest". We have gone from a team of two working on our own through the AZA's Tree Kangaroo Species Survival Plan (TK-SSP) to a long-term program based at Woodland Park Zoo in partnership with Conservation International and other AZA institutions.

The "We" is all of us. It is the TKCP staff and field team members; YUS villagers and landowners; teachers; lawyers; healthcare professionals; government representatives; WPZ staff; Conservation International staff; collaborators from Center for Native Lands and Community Conservation Inc.; private companies, University faculty and students; participants from Columbus Zoo, St. Louis Zoo, Oregon Zoo, Roger Williams Park Zoo, Minnesota Zoo, Milwaukee County Zoo, Toronto Zoo and Currumbin Sanctuary; writers; photographers; artists; filmmakers; and friends and family.

We would especially like to thank our generous 2006 funders including: Conservation International, Conservation, Food & Health Foundation; The International Foundation; National Geographic Society; Shared Earth Foundation; and many zoos, individuals and companies for funding and in-kind donations. Please see Credits and Acknowledgements for a complete list of our collaborators and funders.

In the pages that follow you will find details of our work and accomplishments during 2006 as well as our efforts in the coming year. Enjoy!

Sincerely,

Lisa Dabek, Ph.D.
Department of Conservation



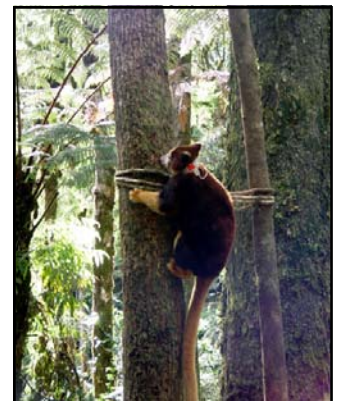
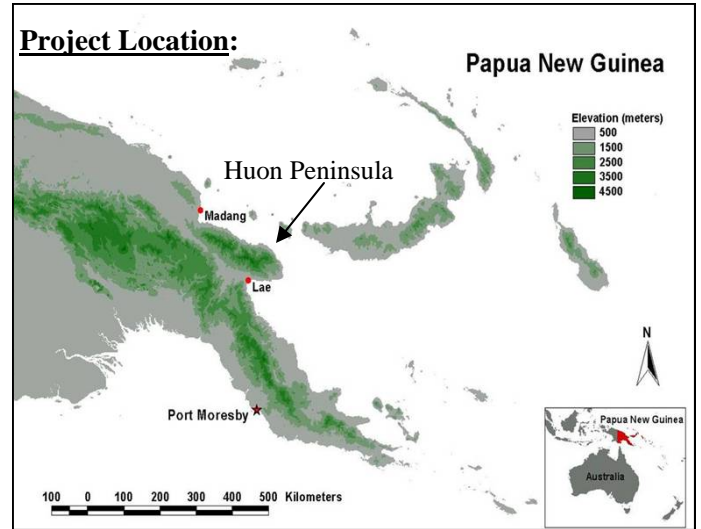
2006 Annual Report

INTRODUCTION



The Tree Kangaroo Conservation Program (TKCP) is based at the Woodland Park Zoo in Seattle, Washington and works in partnership with Conservation International in the United States and Papua New Guinea.

Background: Papua New Guinea (PNG), particularly the Huon Peninsula, is considered a high-priority area for conservation efforts due to the significant amount of intact rain forest, high species endemism and lack of protected areas for wildlife. Destruction of the rainforest by mining, logging, and development threatens the continued existence of Papua New Guinea's unique fauna and flora. The rich biodiversity is PNG's greatest asset and the source of the nation's livelihood. It is estimated that close to 80% of PNG citizens rely directly on the environment for sustenance, and over 95% of the country's land remains in customary clan ownership. Consequently, the people of PNG have a unique opportunity to chart a course towards stewardship of their natural resources -- a movement that is intrinsically connected to their present and future self-sufficiency, dignity, and self-empowerment. As an international community-based program, the TKCP works with PNG village landowners and children, PNG university students and graduates, PNG government officials, PNG and U.S.-based Non-Governmental Organizations (NGO), and other supporting organizations. The TKCP conducts its scientific research, education projects, health projects, and conservation outreach primarily on the Huon Peninsula of PNG, in the YUS Local Level Government (LLG) area of the Morobe Province. YUS is an acronym for Yupno, Urawa and Som Rivers, the main drainages in the region. It includes portions of the Finisterre and the Sarawaged Mountain ranges, with an altitude range from sea level to over 13,000 feet. YUS is a remote area (no road access) consisting of approximately 1,500 square kilometers of forests, villages, grasslands and agricultural areas. YUS LLG comprises many family clans in 37 villages in 13 wards. The human population of YUS is approximately 9,300. Most people in YUS lead a subsistence life depending on crops from their gardens and meat from animals that they hunt, as well as the pigs and chickens that they raise. There are still large areas of unlogged forest, some of which can be classified as pristine. The TKCP maximizes the involvement, support, and training of local landowners and villagers in all its projects. Investment in communities has fostered trust in the TKCP and its goals, and has been vital to the development of local conservation awareness.



Matschie's tree kangaroo (above); Community education (left).

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PROGRAM COMPONENTS



SCIENTIFIC RESEARCH: Through documentation and rigorous study in the YUS area, the TKCP continues to learn about the Matschie's tree kangaroo and other species of conservation and scientific importance.

CONSERVATION: The TKCP has worked at the local, provincial and national level to create partnerships and support for a formal YUS Conservation Area designation through the PNG National Government.



EDUCATION: The TKCP has engaged students at all levels to increase conservation awareness and promote education through teacher workshops and scholarships.

HEALTH: The TKCP has begun working with healthcare professionals to increase supplies and training in the YUS area, particularly with respect to pre-natal health, birth and child immunizations.



Photos top to bottom: Lisa and Gabriel in the field; YUS area landscape; 2006 Graduates at Balob Teachers College; Vaccinating children in YUS village.

2006 Accomplishments TKCP 10 YEAR ANNIVERSARY



Keweng theatre group performance (left); Nicky Tanuka and Keweng members present Lisa with a piglet (middle); One of the signs painted for the celebration: "Celebrating 10th year of TKCP-Research, Education, Health, Conservation" (right).

TKCP 10-Year Anniversary. 2006 marked a decade of work on the Huon Peninsula by the TKCP. In July, a major celebration was held at Keweng 1 village which was the "birthplace" of TKCP. The community prepared for two years for this incredible outpouring of community support and celebration of the work accomplished cooperatively by Keweng villages and TKCP. People attended the celebration from all four Keweng villages as well as from Teptep, Isan and other neighboring villages. Special guests included: Carol Hosford, Woodland Park Zoo Board Member; Former member of Parliament, Ginson Saonu; YUS LLG Councilors and staff; local pastors; YUS Elementary Coordinator, Haring Qoreka; Keweng Theater Group; Keweng school groups; Max Manaono from PNG Binatang Center, Madang; and TKCP staff.



The original TKCP Keweng village tree kangaroo research teams organized the event. Dr. Lisa Dabek was presented with a pig as a gift of appreciation for all of her hard work over the past decade. Woodland Park Zoo Board Member, Carol Hosford, was presented with bilums, necklaces and a pademelon (small kangaroo). There were also gifts for the Conservation International staff who have partnered with TKCP for conservation on the Huon Peninsula. The celebration included many speeches, traditional dances and singsings by the people of Keweng villages. Incredible feasts were prepared by the women of Keweng villages. It was a very moving celebration that truly captured the significance of TKCP's community-based approach.



Top to bottom: Speech by Haring Qoreka; Keweng organizers present gifts to Carol Hosford, representing Woodland Park Zoo; Speech by Ginson Saonu.

All photos on page by Jeff Backer

2006 Accomplishments

CONSERVATION



YUS Conservation Area. In 2006, the formal establishment of the YUS Conservation Area (CA) under the 1978 Conservation Areas Act made significant progress. The process for approval at all levels of government takes more time than initially anticipated. This is the first time the Conservation Areas Act has ever been used in PNG, and thus the TKCP is creating a model that can be used in the future to conserve other habitat and species in PNG. The process for approval involves several complicated layers in a cultural and political hierarchy.

In the YUS area, family groups are known as clans. The clans own land and together several clans make up a village. Villages are grouped into Wards. Thirteen Wards make up the YUS Local Level Government (LLG), which is part of the Kabwum District in the Morobe Province. The YUS Conservation Area is made up of land pledged by clans. The proposal for the Conservation Area has been approved at all of the levels just described. The last step is approval by the National Government.

The official approval of the YUS CA proposal by the Morobe Provincial Executive Council (PEC) took place in February 2006. The submission for the National Executive Council was prepared by TKCP Field Coordinator Toby Ross with collaborators Kepslok Kumilgo, Conservation Officer for Conservation International's Melanesia Center for Biodiversity Conservation, and Tamalis Akus, Legal Officer for Conservation International's Milne Bay Program, and officers from Department of the Environment and Conservation (DEC). The Governor of Morobe, Hon. Luther Wenge, presented the PEC-approved proposal to the Minister for Environment and Conservation, Hon. William Duma in May. Hon. Duma stated that he was fully supportive of the proposal.

Toby Ross worked in Port Moresby with TKCP supporters and government officials to continue progress on the YUS CA. Collaboration with Conservation International's (CI) Melanesia Center for Biodiversity Conservation has been extremely helpful in navigating the process, facilitating meetings, and developing a strategy for future success. The Public Notice was signed by the Minister for the Environment and Conservation at the end of July, and published in *The National* newspaper on 3 August 2006. The 90-day notice period expired on 31 October 2006 with only a few comments.



YUS landscape (top); Toby Ross, TKCP field Coordinator (middle); Team rests above Yawan village (bottom)

2006 Accomplishments

CONSERVATION



Two communities announced that they intend to explore the possibilities of resource extraction on the land they had originally pledged for conservation. This slightly alters the boundaries of the YUS CA (reduced in size by only 7%), with the total size of the CA remaining larger than the goal of 150,000 acres. This development demonstrated the importance of community outreach in YUS community to mitigate the temptation on the part of some communities to explore short term resource extraction. The remaining landowners and the YUS Education Committee voted to remove these two communities from education services. It is hoped that these communities will rejoin the CA in the future. We do not anticipate further changes, and we are encouraged by the resolve of the majority of landowner participants. We expect 2007 to be a landmark year with successful passage and formal gazettal of the YUS CA by the National Executive Council.



View of YUS coastal area, photo by Jeff Backer.

Training for landowners in developing management strategies for the YUS Conservation Area.

TKCP is conducting capacity building (training and mentoring) for local clan landowners to manage the YUS Conservation Area for the long term. As part of this effort, the TKCP has been training and guiding landowners in the development of land management plans through a series of workshops conducted in collaboration with CI-Melanesia. In early June, CI-Melanesia Conservation Officer Kepslok Kumilgo led a one-day workshop focused on the integration of the management plans they have been developing with his guidance and that of the TKCP. Draft rules and violation penalties for the use of the YUS Conservation Area were determined, and landowner participants are presently seeking feedback from their community members. The formation of management committees was initiated; each of the three regions in the YUS LLG will have a local management committee. A 19-member YUS Management Committee was proposed, comprised of YUS landowners, officials from Kabwum District, Morobe Province, DEC, CI-Melanesia, and TKCP staff. The roles and responsibilities of the Management Committee were discussed, and will be further developed in future workshops. The draft resource management plans will be finalized, and approval by the National Executive Council will be initiated in 2007.



WPZ Board Member Carol Hosford presents certificate to mapping workshop participant (left); Another species found in the YUS area: Cassowary (middle); Village children at 10-year anniversary celebration, photo by Jeff Backer (right)

2006 Accomplishments CONSERVATION



Workshop participants discussing maps (left); Map with revisions (right).

Indigenous Mapping Project. The TKCP's Indigenous Mapping project is a collaboration with the Center for Native Lands (Washington DC), with funding from National Geographic Society and CI-Melanesia. TKCP and Mac Chapin, Center Director, held two successful workshops in 2006 at the Rain-forest Habitat in Lae. Wycliffe Antonio headed up a team of cartographers from PNG University of Technology (Unitech) that assisted local villagers to map and digitize the maps. Toby Ross and Karau Kuna assisted workshop facilitation along with Mac Chapin, Kepslok Kumilgo of CI-Melanesia (Port Moresby) and Arthur Ganubella of the Department of the Environment and Conservation (Port Moresby). Landowner representatives (all but one Ward in the YUS area) brought draft Ward maps that they had sketched in their communities using skills they had learned in the first workshop in November 2005.

The first 2006 workshop was spent transcribing the information the villagers had brought onto newly created, cartographically accurate maps with the help of the cartographic team. Many of the villagers had more information in their heads than they had placed on their sketch, and in the workshop they were able to transcribe additional features on the new maps. The Unitech Cartographers digitized the newly created map, and presented the results to the landowners for the next round of editing.

Mac Chapin commented that this project with the YUS communities has been much quicker and smoother than a mapping effort he had facilitated in West Papua, the Indonesian side of the Island of New Guinea, in 2003. This is largely due to the level of trust that TKCP has built up over years of collaborative research in the region. Because of this, villagers are willing to share detailed information about the land and resources they use for their survival.

During the second workshop, decisions were made regarding map design, presentation, and languages (an important consideration in Papua New Guinea, which has over 800 distinct languages). The map will be presented in five languages: English



Wycliffe Antonio discussing the map legend (top); Participants of third Indigenous Mapping workshop, with Mac Chapin standing on the far left (bottom)

2006 Accomplishments

CONSERVATION

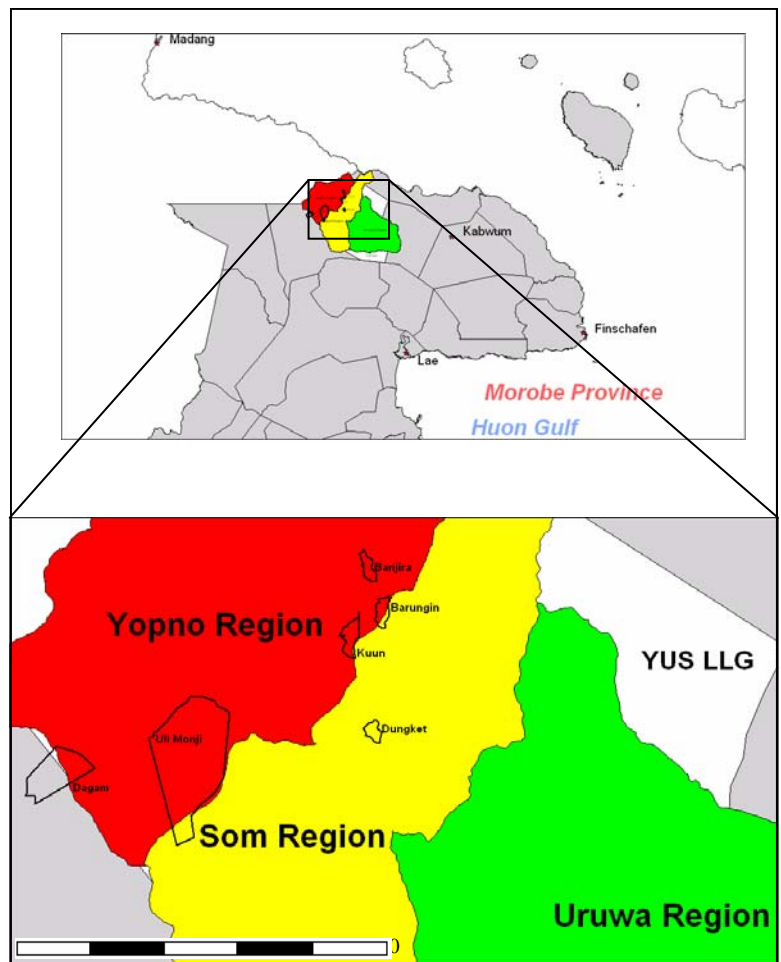


and Tok Pisin as the standard languages, along with the YUS area's three local languages: Yopnogen (Yupno), Yau (Som) & Nungen (Urawa). For example, instead of placing the word "river" on the map, the local rendering will be used – "pakbe", "yamuk" and "mik" in the respective languages). A dictionary was created for this purpose and will be placed on the map.

The field work phase of the project is completed. The maps are currently being designed by the cartographic team from Unitech and will soon be sent to the printer. At each step along the way, groups of villagers will proofread the drafts to make sure that spelling and placement of the names are correct; an infinity of place names in three languages makes this enterprise challenging. The final maps will be distributed in the YUS area communities and among government agencies and NGOs.

Boundary mapping of pledged conservation areas and species inventories. The TKCP sponsored Karau Kuna Jr, TKCP Mapping and Survey Coordinator, to obtain his post-graduate honor's degree from the University of Papua New Guinea by developing a Geographic Information System (GIS) database for the clan boundary mapping project. Data and information were collected through GPS data collection, fieldwork, and landowner interviews during four months of fieldwork in 2006. The GIS database contains scientific and geographic information about each land parcel. In addition, for his honor's thesis, Kuna collected socio-cultural and economic data as well as other general information about the YUS LLG. Kuna and his assistant, Dono Ogate, visited pledged land parcels and mapped the boundaries with assistance from the landowners. This project will help ensure that the YUS Conservation Area is a contiguous area and assist with in management of the area by providing detailed maps.

Due to the complex and rugged nature of the terrain, the collection of GPS points took long periods of time and considerable patience, especially in bad weather and dense forest foliage. Once all the points needed to encompass a parcel of land were collected, the data were then downloaded onto a laptop computer and converted into GIS shapefiles (shown as black outlines on the detailed map to the right).



Map of land parcels boundary-mapped in the YUS Conservation Area by Kuna, 2006.

2006 Accomplishments CONSERVATION



A photographic identification page of mammal and avian species of special interest (flagship species) was compiled so that landowners could identify the species of conservation concern on each land parcel. The photographs were shown to the landowners who then indicated which species had been sighted or other evidence found such as dung, nests, scratch marks or feeding remains. During the course of the boundary mapping, the landowners were trained in how to use the GPS units and perform species monitoring.

In 2006, over 19,000 acres were mapped by Kuna representing 6 parcels of land pledged by clans for inclusion in the YUS area. Kuna will continue mapping pledged conservation land in 2007.



PNG Landowner Law Booklet. Dr. Robert Horwich (Director of Community Conservation, Inc; Wisconsin) collaborated with the TKCP and many NGOs and legal organizations in PNG to write a Landowner Law Booklet, the first of its kind. The booklet describes PNG landownership laws, laws concerned with creating protected areas, some innovative laws for protecting land, and laws concerning land tenure. In 2006, the handbook was translated into Tok Pisin by Martin Negai (lawyer for Morobe Provincial Government). This handbook will be available to other NGOs, community groups and conservation organizations in PNG.



World Environment Day in Teptep village. In June, Danny Samandigne, TKCP YUS Education Coordinator, organized a celebration of World Environment Day in Teptep village. Lisa Dabek, Karau Kuna, Carol Hosford, Jeff Backer and Angie Heath were in attendance for the festivities to highlight conservation awareness in YUS.



Conservation Day in Lae. The first annual Lae Biodiversity Conservation Day was organised by TKCP, Rainforest Habitat, YMCA and the Forest Research Institute. Approximately 10 schools from the Lae area attended totalling more than 500 students ranging from Elementary to Upper Secondary. Toby Ross and Danny Samandigne hosted a TKCP booth at the event and provided information about TKCP's work in YUS to participants.

Lae Biodiversity Conservation Day
Wednesday 9th August 2006



Theatre Performance by YMCA
Poster Competition (Schools only)
Exhibitions by leading
NGO Conservation Groups

FREE Admission

All Exhibitions will be held at:
National Botanical Gardens, Lae

Sponsored by: Forest Research Institute, Tree Kangaroo Conservation Program,
YMCA, Village Development Trust and Rainforest Habitat

Hours -
School Children (only) 8:00am - 12:00pm
General Public 1:00pm - 3:00pm

Top to bottom: Kuna collecting GPS data; Danny speaking at World Environment Day celebration; Kids acting as tree kangaroos at World Environment Day; Poster for Biodiversity Conservation Day in Lae (left)

2006 Accomplishments RESEARCH



Tree kangaroo home range sizes and movements. 2006 was an extremely successful field season for the home range size and movement study of the Matschie's tree kangaroo. This project is being conducted by Gabriel Porolak for his Master's research at James Cook University under Dr. Krockenberger and Dr. Dabek. In June the team successfully radiocollared 6 animals (2 females both with VHF collars and 4 males with 2 GPS and 2 VHF collars) at the Wasaunon field site. The research team, headed by the TKCP Director, Dr. Lisa Dabek and Gabriel Porolak, TKCP Research Scientist, was joined by veterinarian Erika Travis (St. Louis Zoo now with Utah's Hogle Zoo), veterinary technician Trish Watson (Woodland Park Zoo volunteer), Angie Heath (retired zookeeper and nurse), Dr. Andrew Krockenberger (James Cook University – Department of Tropical Biology), Toby Ross (TKCP Field Coordinator), Kuna Karau (TKCP Mapping and Survey Coordinator) and Jeff Backer (TKCP volunteer researcher), and the local Wasaunon research team.

Gabriel and a team of field assistants tracked six animals with VHF collars noting location, behavior, land form type, tree species among other field notes. Four animals were tracked throughout the field season (June to November). One male was tracked for only two weeks before his collar was found below a tree without bite marks suggesting that the animal pulled it off. Another male was tracked until August when he was found dead. He was an older animal and had scars from old wounds when collared in June.

Porolak and the local team did an amazing job of tracking and locating all of the collared animals each day of the study. Preliminary analyses indicate that female ranges are smaller than male ranges on average, and males tend to overlap several female ranges with some overlap in female ranges also.



Clockwise: Research assistants releasing tree kangaroo; Trish Watson with a collared tree kangaroo; Dr. Erika Travis and Angie Heath; Dr. Andrew Krockenberger and Gabriel Porolak; Wasaunon team.

2006 Accomplishments RESEARCH



Tree kangaroo density estimates. In 2006 Jeff Backer, TKCP volunteer researcher, conducted preliminary estimates of tree kangaroo density using data from Yangorong, Dendawang and Sibidak research sites. More analysis and quality checking of the data are needed, but preliminary estimates at Sibidak (1.3 animals per hectare (ha)), and at Dendawang (0.9 animals/ha) concur with Will Betz's estimate of approximately 1 animal/ha, generated from 1999 and 2000 data.

To ensure that standard protocols were being followed by the local field workers, Backer joined the team at Yangorong field site in July to collect dung pellets for density estimates. Ongoing counts will enable the TKCP to identify changes in tree kangaroo density over time within each site, and compare densities between the sites which have different key species and different hunting histories.



Echidna ecology field crew at Yangorong (left); Young female echidna (middle); Tree kangaroo density assistants at Yangorong (right). Photos by Jeff Backer

Long-beaked echidna ecology and conservation status. Jeff Backer, TKCP volunteer researcher, completed a successful season at the Yangorong field site. With assistance of five villagers from Towet village, Backer captured two animals – one juvenile and one young female. Long-beaked echidnas are extremely difficult to find in the wild and one goal of the field work was to determine how much effort it would take to capture animals for tracking studies. Backer and the team averaged 228 person-hours of effort for each long-beaked echidna capture, compared to Musa Opiang's honor's thesis estimate of 492 person-hours per capture. The animals were photographed, weighed, measured and marked using colored tubing glued to their spines. Environmental data on the point of capture were also collected. Fresh signs of echidna were seen at Yangorong at the end of the project, indicating that the presence of the team did not cause the animals to vacate the study area.

Camera traps were tested for echidnas by setting up Camtrakkers at Yangorong research site. Camera locations were based on echidna evidence. Due to technical problems (perhaps due to altitude and humidity) the traps were not successful for documenting echidnas. A few photographs of Bandicoots and a Dorcopsis (right) were captured during the short time that the cameras were operational.



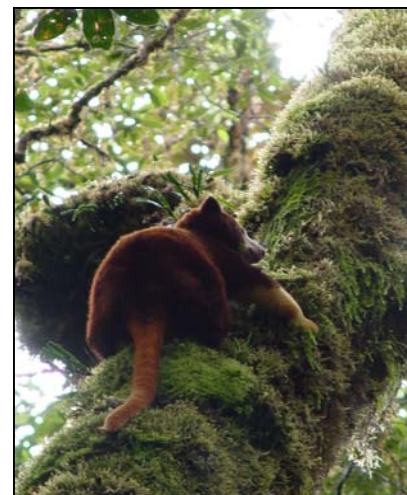
Dorcopsis by camera trap.

2006 Accomplishments

RESEARCH



Tree kangaroo genetics research. T.J. McGreevy continued his Ph.D. program studies at the University of Rhode Island under the direction of Dr. Thomas Husband and Dr. Lisa Dabek in 2006, focusing on the conservation genetics of wild and AZA captive Matschie's tree kangaroo (*Dendrolagus matschiei*). In 2006, McGreevy and volunteer Rand Herron completed DNA extraction of all of the wild *D. matschiei* fecal samples collected by TKCP from 2002 to 2005. In addition Herron extracted wild fecal samples from Doria's tree kangaroo (*Dendrolagus dorianus notatus*) and Goodfellow's tree kangaroo (*Dendrolagus goodfellowi buergeri*) collected by the TKCP in 1999 and 2000. These samples will be sequenced for their mitochondrial DNA partial cytochrome *b* gene and included in a tree kangaroo phylogenetic analysis to further resolve their taxonomy. McGreevy and Herron also tested species-specific polymerase chain reaction (PCR) primers to ID fecal samples. The primers had a misidentification rate of 12% compared to visual misidentification rates which are approximately 57%.



Tree kangaroo feeding ecology research. The TKCP continued collaboration with Dr. David Christophel, botanist and Professor at the University of Denver, to identify Matschie's tree kangaroo food plants from fragments collected in dung samples.



Visiting researchers. After a successful visit to the Wasaunon field site in August 2004, Jared Diamond (Professor of geography at UCLA, Pulitzer Price winning author of "Guns, Germs, and Steel" and "Collapse", and member of the Scientific Advisory Board for Stanford University's Center for Conservation Biology) and David Bishop (Collaborating Scientist at Stanford University's Center for Conservation Biology) returned to YUS in May 2006. During their stay, they visited the Surim field site to conduct a lower elevation bird survey. In addition to documenting 104 bird species, Diamond and Bishop also created a dictionary for the bird names in the Mato language (spoken on the coast in Ronji), and in the Yopnogen language (spoken inland near the Surim field site). They also included notes on whether species are confined to low or high elevations. This work is not only contributing new information to science about bird species and distributions, but is also engaging local communities in wildlife protection and generating further international interest in PNG wildlife and conservation.



Top to bottom: Matschie's tree kangaroo (*Dendrolagus matschiei*); Lisa and field research assistants; David Bishop (right) and Jared Diamond (middle) visit the Surim field site, photo by Jeff Backer.

2006 Accomplishments

EDUCATION



2006 was the start of the new part-time TKCP Education Coordinator, Susan Tallarico, based at Woodland Park Zoo. Funding for this position has generously come from St. Louis Zoo's Papua New Guinea Center.

Fourth Annual YUS Teacher Training Workshop. The TKCP conducted the Fourth Annual Teacher Training Workshop in Sappamanga village during November 2006. Ten schools were represented with 14 YUS teachers, including Danny Samandingke, TKCP YUS Education Coordinator, who helped coordinate the event. The TKCP Education Team included zoo educators Anne Bartin (St. Louis Zoo), Anne Warner (Oregon Zoo), Susan Tallarico (TKCP Conservation Education Coordinator, Woodland Park Zoo), and Danny Samandingke. The 2006 Teacher Training Workshop curriculum guide entitled "Healthy People, Healthy Planet" contained topics including: botany, nutrition, biodiversity, threats to biodiversity, field research techniques, conservation action, and land-use planning. These topics were chosen based on input from teachers who attended the 2005 workshop as well as Samandingke. The curriculum was designed to compliment the PNG National Education Reform standards that teachers are required to cover with their students. Each of the teachers received a curriculum guide including laminated maps of the proposed YUS Conservation Area as well as indigenous maps of the YUS area. The Research and Conservation Foundation (RCF) and Rainforest Habitat in Lae also received curriculum materials so they may use them to educate their audiences about the importance of conservation in PNG.

As part of the week-long workshop events, TKCP Mapping and Survey Coordinator, Karau Kuna Jr., gave a guest lecture to the teachers and explained the particulars of his work in the TKCP mapping projects and GIS. Kuna and the education team led the teachers in an activity during which the teachers set up transect lines in different areas of the school grounds to study and map the number and types of insects that were found in each area. This experience will help build awareness in the local communities, giving them knowledge about the importance of the research being done by the TKCP and how this work is connected to the people and land of the YUS region.



Sue Tallarico leading workshop (top); Workshop participants enacting pupa emerging from a chrysalis (bottom).



Jeff Backer, Danny, Anne Warner, Anne Bartin, and Kuna.

2006 Accomplishments

EDUCATION



International Bug Club. At the 2006 Teacher Training Workshop, teachers were trained on the third curriculum module for International Bug Club (IBC) which included sections on: 1) Insect Biodiversity; 2) Threats to Insect Biodiversity; 3) Field Research Skills; 4) Conservation Action. The curriculum was aligned with PNG's national curriculum. In July 2006, Samandingke conducted follow-up visits to each of the schools who received Bug Club materials and training in past years. Teachers filled out surveys indicating their usage of the materials over the past six months. The surveys will be used to evaluate the efficacy of kit materials and to make modifications. IBC is based at the Woodland Park Zoo and has clubs in 5 US zoos and classrooms in the US and PNG.

TKCP Teacher Training Scholarships. TKCP regularly funds three YUS students per year to attend Balob Teachers College (Lae, PNG) to help alleviate the acute teacher shortage in YUS. Funding comes from the AZA Marsupial & Monotreme Taxon Advisory Group for the Alice Gilley Memorial Scholarship and the St. Louis Zoo. The three graduates in 2006 were Womep Napenuwe, Mumbiangke Napenuwe and Kiniwa Tamaeo. Currently there are eight teachers who have successfully graduated and are now teaching in YUS area schools. This infusion of new teachers to YUS has allowed formerly closed schools to reopen, thereby facilitating more students to have access to education. The YUS Education Committee, during their yearly meeting, assigns the graduating teachers to specific YUS schools and selects the new scholarship recipients based on their applications. The TKCP signs an agreement with Balob Teachers College (Lae) to ensure that they plan on three students each year for scholarship recipients, and enroll them at a specified tuition rate. The students pledge to teach for a minimum of six years in the YUS region upon graduation.



2006 Balob Teacher College graduates (left); Nokopo village children greet TKCP education team (middle); Bug club drawing activity (right).

YUS Education Coordinator. Danny Samandingke, YUS Education Coordinator and full-time teacher in Teptep village, worked closely with Susan Tallarico in 2006 to continue his professional development. To further his formal training, Danny was accepted into a Bachelor's degree program at the University of Goroka and started his 2-years of coursework in February 2007 with sponsorship from TKCP.

2006 Accomplishments

EDUCATION



Conservation Connection: Global Youth Art Exchange. The goal of the Global Youth Art Exchange is to create meaningful connections that will promote the protection of habitats as well as help students in the United States, PNG, and Australia develop an understanding of and respect for other cultures and conservation issues. During the months of September and October 2006, TKCP Conservation Education Coordinator Susan Tallarico made presentations to 100 students from Seattle Public schools. Anne Bartin, an educator at the Saint Louis Zoo in Missouri, reached 200 students in the Saint Louis area. They presented background information on PNG, the YUS community, and the surrounding environment to US students. These students were asked to create letters and artwork using “Mapping Your Community” as the theme. The artwork was distributed to YUS teachers at the 2006 Teacher Training Workshop in PNG and will be used as aids when teachers instruct their students on community, conservation and culture. The retention of traditional knowledge and practices is a large focus in the PNG National Reform Curriculum and in this way the focus of the art exchange attempts to support these standards. During the Workshop Tallarico and Bartin collected artwork created by PNG students. They will present the artwork and letters from PNG to US students during follow-up visits in early 2007.



Australian Outreach. Since November 2003 the TKCP has collaborated with Australian educators in presenting TKCP curriculum. TKCP further connects students globally and provides information on tree kangaroos, also native to Australia, at the Herberton State School in Queensland, Australia. Tallarico made the fourth annual TKCP visit to Herberton and conducted hands-on activities on topics such as habitat loss, invasive species, pollution, over-population and over-consumption to approximately 50 students in grades 4-7. Margit Cianelli, a local wildlife rehabilitator and TKCP collaborator, gave a presentation about rehabilitation and release of local wildlife along with her one-year old tree kangaroo.



PNG student artwork and its creators (top);
2006 Teacher Workshop Participants
(middle); Village school in Nokopo, future
site of 2007 Teacher Workshop (bottom).

Rainforest Habitat, Lae. TKCP and St. Louis Zoo sponsored Rainforest Habitat Curator, Margaret Kanawi, to attend the International Congress on Zookeeping, Gold Coast, Australia in May 2006. Rainforest Habitat is the only zoo in PNG. TKCP team member Dr. Erika Travis visited the Rainforest Habitat in 2006 to assess the animals and provide advice to the keepers.

2006 Accomplishments

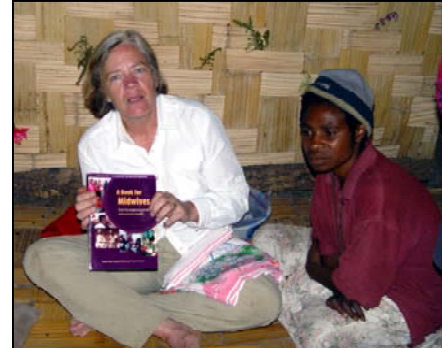
HEALTH



Distribution of Village Birth Assistant Kits. In June, Lisa Dabek, Angie Heath, Carol Hosford (WPZ Board Member) and Toby Ross met with Dr. Theo, the Provincial Health Program Coordinator for Morobe Province to follow up on items discussed with Drs. Nancy Brooks and Blair Brooks in 2005. At that time, three major health priorities affecting YUS communities were identified: 1) The need for childhood immunizations, presently hampered by a lack of equipment needed to keep vaccines refrigerated in villages; 2) Training seminars for village healthcare workers; 3) Training workshops for teachers to promote general health education and awareness.

Prior to the start of the TKCP 10th Anniversary Celebration in Keweng village, four Village Birth Assistants (VBAs) were presented with birthing kits. Each kit contained the following items: 1 medium-sized scrub top, 1 flashlight/torch (non-battery), 1 pair scissors, 1 stainless steel (reusable) umbilical cord clamp, 1 small notebook & pencil (for recording births), and 1 plastic basin. All of these items had been requested by the VBAs. Heath also presented the VBAs with a book entitled “Where There Is No Midwife” (donated by Virginia-based midwife, Trinlee Wood). As part of the 10th Anniversary Ceremony, these VBAs were asked by village leaders to stand before the assembled crowd. In Tok Pisin and in Tok Ples, it was explained that TKCP was providing the VBAs with the medical kits in order to make them better able to assist village women during birthing. The pastor then blessed the Kits and delivered a prayer of thanks. Additionally, Dabek was accorded the honor of naming a baby boy born that day (a birth which Heath was fortunate enough to witness), for whom she chose the name of “Joey” after the young of a tree kangaroo.

Five additional VBA Kits were presented to Mr. Essing, the Community Health Worker at the Teptep Aid Post, who then distributed them among the Teptep VBAs.



Angie Heath presenting “Where There is No Midwife” to a village birth assistant.



Angie Heath with village birth assistants and their new kits.

2006 Accomplishments

HEALTH



First TKCP Health Workshop. In late September, TKCP hosted the first Village Health Workshop in the Yawan village. The workshop was led by Morobe Provincial nurse trainers and Elizabeth Porolak, nurse in PNG for 35 years and mother of Gabriel Porolak, TKCP Research Coordinator. The importance of vaccinations was a topic for the workshop, and for four days prior to the workshop village children (infants to 5-years-old) were weighed, registered and given vaccines. The official workshop started on October 2nd with 49 participants (30 officially registered) in attendance and the arrival of a 4-person Provincial Health Training Team contracted by TKCP. The focus of the workshop was obstetrics and gynecology. Thirty complete health kits were given to the registered participants including a bucket, dish, bowl, cord clamps, razor, gauze, delivery kits, plastic container, chloroquine tablets (for Malaria) and iron tablets.



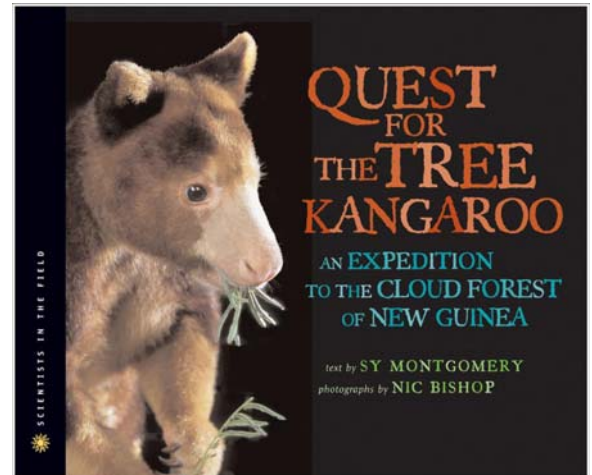
Aid Post in Teptep village (top left); Dr. Nancy Philips treating a YUS village woman (top right); Dr. W. Blair Brooks treating a YUS villager (bottom left); Presentation of birthing kits to village birthing assistants at the 10-year anniversary (bottom right).

2006 Accomplishments

COMMUNICATION & PUBLICATIONS



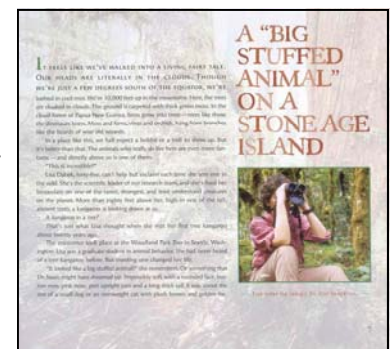
“Quest for the Tree Kangaroo” In 2006 the book “Quest for the Tree Kangaroo” by award-winning author Sy Montgomery and photographer Dr. Nic Bishop was published by Houghton Mifflin. Montgomery and Bishop joined TKCP on the Huon Peninsula in 2005 to gather information and photos for the book which is aimed at readers in grades 4-8. It details the TKCP research on tree kangaroos and the collaboration between TKCP and local YUS people. The Association for Library Services to Children awarded the book a Robert F. Sibert Honor. They say: “Biologist Lisa Dabek and her multinational team search for the beautiful, elusive Matschie’s tree kangaroo in the cloud forests of Papua New Guinea in “Quest for the Tree Kangaroo.” Dramatic color photographs vividly portray the quest for this remarkable animal through the mysteriously foggy forest. This is the third Montgomery and Bishop award-winning “Scientists in the Field” title.”



Several special events were part of the book launch. In Seattle, Woodland Park Zoo (WPZ) Board Member, Carol Hosford hosted a lunch; book readings took place at Third Place Books and the main library in Seattle; WPZ hosted a children’s event for the book at the Education Center and a teachers workshop; there was also a mother-daughter brunch in honor of the book with Sy Montgomery and women scientists from the Woodland Park Zoo, Point Defiance Zoo (Dr. Holly Reed) and St. Louis Zoo (Dr. Erika Travis now at Utah’s Hogle Zoo). There were also book events at the Columbus Zoo, the Minnesota Zoo, and the Howe Library, Hanover, New Hampshire organized by Henny Philips and Ellen Lynch



“Quest for the Tree Kangaroo” has also been honored with the Orbis Pictus Award (National Council of Teachers of English); a finalist for the Henry Bergh Children’s Book Award (American Society for the Prevention of Cruelty to Animals); a Washington Post Top 10 Books for Kids in 2006; Best Book of the Year by the School Library Journal; and A National Science Teachers Association-Children’s Book Council *Outstanding Science Trade Books for students K-12* selection.

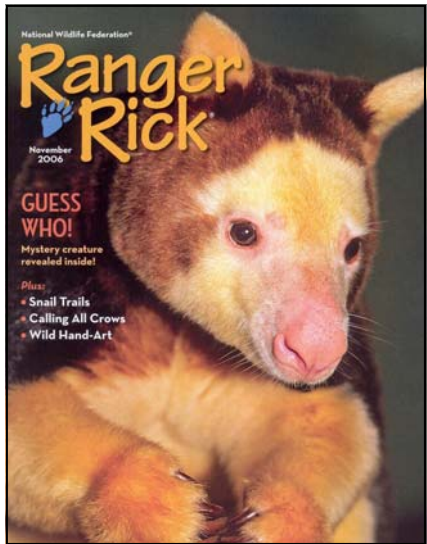


National Public Radio (NPR) also featured the book on *Living On Earth* and KUOW’s (Seattle) *Weekday* Program which involved an interview with Lisa Dabek. The book was also featured in the popular magazine *People*, and the *Connecticut Valley Spectator*.

“Quest for the Tree Kangaroo” book cover (top); one of Bishop’s photos in the book (middle); a page from the book with photo of Lisa (bottom).

2006 Accomplishments

COMMUNICATION & PUBLICATIONS



Ranger Rick. A Matschie's tree kangaroo made the front cover of the November 2006 issue of *Ranger Rick* magazine for young adults published by the National Wildlife Federation (left). The article "Mystery in the Treetops" follows a similar theme to "Quest for the Tree Kangaroo" by Sy Montgomery with beautiful photography of the YUS area by Nic Bishpp.

"Save the tree kangaroo drive". An article written by Sinclair Solomon was the cover story on May 12, 2006 in *The National*, one of the two primary newspapers in PNG. The article describes the YUS Conservation Area as the first to be State-sanctioned. TKCP was hailed for completing the research necessary to establish the Conservation Area, as well as benefiting the people of YUS.

"Locals draw maps". The *Post-Courier*, the other primary PNG newspaper, published an article on the Indigenous Mapping Project on February 28, 2006. The short article discussed the TKCP and the creation of maps based on local knowledge of the villagers which they call "bush sense". A photo featured Dono Ogate, landowner and clan boundary mapping assistant, and Brian Kakini, a cartographer for Unitech.

"Woodland Park Zoo conservationist devotes her life to tracking and protecting the elusive tree kangaroo". A feature of Lisa Dabek was published in the *Seattle Post-Intelligencer* on October 20, 2006. The feature included a description of TKCP and an interview with Lisa about Woodland Park Zoo, TKCP, tree kangaroos and her research.

10-Year Anniversary in the news. The article on the right about the 10 Year Anniversary and the gift that Keweng 1 village gave Carol Hosford appeared in *The Post Courier* (PNG newspaper) on June 29, 2007. Another brief article entitled "Kangaroo upkeep plan marks 10th year" was in *The National* newspaper in PNG on June 27, 2006.

Zootaxa. Stephen Richards' research on frogs was published in 2006 in *Zootaxa* with co-author Paul Oliver. The scientific paper, entitled "Two new species of large green canopy-dwelling frogs (Anura: Hylidae: *Litoria*) from Papua New Guinea", includes data from his work as part of the TKCP biodiversity survey of the YUS area where frog species new to science were found.



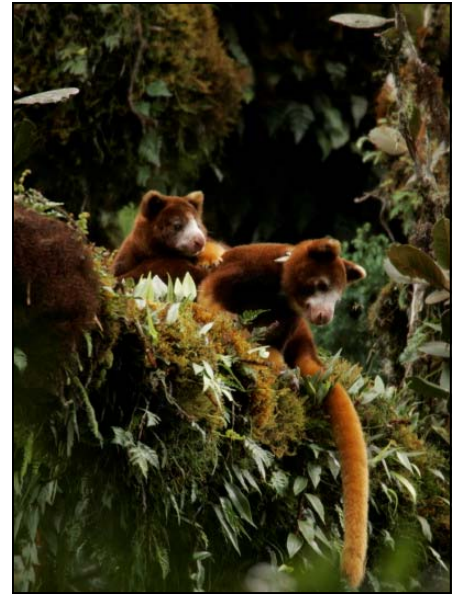
2007 TKCP GOALS AND WORK PLAN



TKCP's goals include:

1. Formalize the YUS Conservation Area through the PNG National Government.
2. Focus on creating the infrastructure for the Community Based Organization (CBO) and capacity building for staffing the YUS CBO as the management structure for the CA.
3. Secure financing for long-term success and stability of the YUS CA and CBO.

The focus for 2007 will include an increase in capacity building to ensure that the YUS people have the resources to manage and participate in the future CBO. This work will be done in partnership with CI's Melanesia Center for Biodiversity Conservation. The current WPZ-based half-time Education Coordinator will be reassigned to a full-time Capacity Building and Training Coordinator position. This position will develop the management structure and staffing necessary for the CBO. This position will also create job descriptions, work plans, training, and evaluation methods for CBO staff. A Board of Directors for the CBO will be established for oversight and will include representatives from YUS, PNG and TKCP. Future local staff positions in the YUS CBO will include the YUS Conservation Manager, the YUS Education Manager, and the YUS Health Manager. Other future CBO positions will include: an In-Country Research Coordinator, who will oversee the research in the YUS area and facilitate relationships with collaborating scientists; and an In-Country Mapping & Monitoring Coordinator who will continue mapping the YUS CA and oversee the landowner monitoring projects.



Wild Matschie's tree kangaroos
(photo by Tim Laman)

Work plan for 2007

CONSERVATION:

- Work with national government officials to ensure the Conservation Area is approved by the National Executive Council under the Conservation Areas Act.
- Finalize GIS map of current CA boundary and formally gazette the map.
- Focus conservation awareness and outreach about natural resource extraction and conservation to the communities that have removed themselves from the YUS CA.
- Print and distribute PNG conservation law booklets to YUS landowners.
- Hold landowner workshops to finalize the draft resource management plans.
- Publish the resource management plans for public comment and garner formal approval by the PNG Minister of the Environment.
- Continue boundary mapping with an initial emphasis on pledged land within the Urawa region in YUS.
- Assist in the creation of the YUS Conservation Committee.

2007 WORK PLAN



RESEARCH:

- Continue telemetry study of habitat use and movements of Matschie's tree kangaroos with a goal of 4-6 animals collared in June. Gabriel Porolak, In-country research Coordinator, will continue leading the tracking efforts and use the data to complete his Master's thesis at James Cook University in Cairns, Australia in 2008.
- Publish the tree kangaroo density estimate study.
- Complete the report on biodiversity surveys of YUS.
- Continue support of T.J. McGreevy's genetic research on the Matschie's tree kangaroo.



EDUCATION:

- Develop long-term conservation education strategic plan, outcomes and evaluation.
- Organize and conduct the 5th annual YUS Conservation Education Teacher workshop.
- Continue training and mentoring of YUS Education Coordinator, Danny Samandingke.
- Continue outreach education to village students and yearly in-service visits with teachers.
- Support three YUS students to attend Balob Teachers College.
- Sustain and support the YUS Education Committee.
- Establish a YUS education office in Teptep village.



HEALTH:

- Develop long-term Health Project strategic plan, outcomes and evaluation with Drs. Nancy Philips and Blair Brooks, and Angie Heath.
- Organize and conduct Healthcare Education workshops for midwives and healthcare workers in YUS villages.
- Seek funding to support the immunization project, including the purchase of solar refrigerators to store vaccines in YUS Aid Posts.
- Develop health and hygiene education curriculum and workshop for YUS teachers.



Top to bottom: Gabriel and a radio collared tree kangaroo; Kuna and research assistants; Lisa and Danny at 10 year anniversary celebration; Village birth assistants.

2006

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