华南生物多样性保育杂志 A magazine for biodiversity conservation in South China

森林脉搏
Living Forests

第十三期 2007春季号 Issue No.12 Spring 2007

另辟蹊径—探索生态旅游与发展之道

Roads least travelled — exploring ecotourism and development

KFBG
Kadoorie Farm & Botanic Garden
嘉道理農場暨植物園

嘉道理农场暨植物园简介
Introduction to Kadoorie Farm & Botanic Garden

嘉道理农场暨植物园是香港的一所慈善机构，早在1951年，嘉道理家族的两兄弟，罗兰士与贺理士，创办本园以推行农业辅助计划，帮助从大陆移民来的贫困农户自力更生。该计划帮助了超过三十万名香港农民改善生活。两兄弟于九十年代先后辞世，但其家族的慈善活动仍延续下来。嘉道理慈善基金会为中国境内及东南亚地区服务贫困社群的计划提供资助，而嘉道理农场暨植物园则因应香港社会的转型，现已建成为一所自然教育与保育中心，并根据1995年通过的香港法例成为一家公益事业公司。我们的任务是「提高大众对人与环境关系的的认识，透过保育与教育，积极改善世界」。本园现推行的计划有野生动植物保育、可持续农业和环境教育等等。

Kadoorie Farm & Botanic Garden (KFBG) is a charity based in Hong Kong, with a tradition of agricultural aid dating back to 1951, when the two brothers Lawrence and Horace Kadoorie began a self-help scheme for poor immigrant farmers from China. This scheme was to help over 300,000 Hong Kong farmers to achieve a good standard of living. Both brothers died in 1990s, but the family's philanthropic activities continue. The Kadoorie Charities fund projects throughout China and the South East Asia region. KFBG, in response to changing priorities in Hong Kong, has become a centre for environmental education and conservation, enshrined by a Government Ordinance in 1995 as a public corporation. The Mission Statement of the KFBG is "TO INCREASE THE AWARENESS OF OUR RELATIONSHIP WITH THE ENVIRONMENT AND BRING ABOUT POSITIVE CHANGE IN THE WORLD THROUGH CONSERVATION AND EDUCATION". KFBG now has thriving programmes in wild plant and animal conservation, sustainable agriculture, environmental education and other areas.

目录
Contents

于《森林脉搏》内刊登之文章，其内容纯属作者之个人意见，与本园立场无关。

The articles in *Living Forests* represent personal views of the authors and are not necessarily shared by the editors or by KFBG.

本期内容
In this Issue

在很多有天然林的地方，保育工作者会考虑开发旅游，务求在不破坏天然资源的情况下增加经费并促进社会经济发展。可惜事实往往知易行难，本有意助保育一把，最终却帮倒忙，反为生态系统带来意料不到的破坏。今期我们尝试探讨当今国内自然旅游的利弊，并反思整体的社会发展。

我们先从香港说起，米埔自然保护区自1980年代开始已吸引一众自然学家参观，该保护区经理杨路年会从旅客体验的角度，描述个中发展的历史与理念。继而北望四川王朗国家级自然保护区，细看这个熊猫之乡如何摇身一变成为生态旅游培训中心，当中蒋仕伟更会道出旅游活动的开发原则、过程与挑战。广西大明山早在80年代开始发展自然旅游，近年加入创新和保育主导的新思维，个中经验则将会交由梁家善为大家逐一分析。这些个案都突显了旅客的学习体验是何其重要，亦展示如何在生态与旅游中取得平衡，让众人皆可受惠。

旅游少不免都会影响当地居民，但人们往往只著眼于利益多于开发的代价。黄国超描述台湾镇西堡山脉的经历，为所有农村社区的一个警惕。温铁军也质疑西方的发展模式究竟在中国的实际应用程度究竟有多大。此外，本期也节录了Helena Norberg-Hodge以拉达克为题的文章，与大家一同反思，摩登繁杂的社会是否让生活其中的人更惬意、更愉快？

这些观点可能使对发展抱持较主流想法的读者感到诧异与意外，因为很多人曾目睹工业化带来物质生活、医药及教育上的长足进步，他们相信每个人也理应有相同的机会。可是气候转变的讯息急遽增加，全球各地的有识之士已开始醒觉主流发展模式如何消耗天然资源及生态系统的抵抗能力，我们如何每天向大气层排放种种的废物。几乎每个月都会有新数据预测，气候变化将会向我们作出报复，大抵会先侵袭生活环境退化最严重地区赤贫的人，最终以全球性灾难收场。我们也许应细心思考、帮助农民从自给自足的生活模式投入现今经济洪流的智慧与慈爱。

针对旅游的程度与类型，可持续发展的愿景提出了许多具启发性的问题。旅游不无代价—二氧化碳的排放及其他相关影响，而航空旅游的破坏力更是尤。或迟或早全球的旅游业理应因化石燃料的减少及飞涨而进入低潮，另一方面，亦有需要唤起外界关注当地人及生态系统面对的困厄，那旅游不是应针对邻近城市的人，而非远途旅客？

另外，今期亦会在其他层面探讨保育与发展的矛盾，张璐及苏志尧会分享他们在粤北的南岭国家级自然保护区周边社区的所见所闻，《保育先驱》则找来了资深的动物学家黎振昌接受本刊访问，披露他对保育的看法，田怀珍等为大家报导南岭的兰花新知。此外，当然少不了《珍稀物种小档案》的份儿，这次会为大家介绍两个海南物种。本期内容如斯丰富，读者实在不容错过。

In many areas containing natural forests, those trying to conserve them have considered promoting tourism, as a way to bring in revenue and facilitate socioeconomic development without destroying natural resources. But these efforts often meet with difficulties, and can cause unforeseen damage to the ecosystems they are meant to support. In this issue we explore nature tourism in practise in China, and pause to reflect on development as a whole.

We begin in Hong Kong SAR, where the Mai Po Marshes Nature Reserve has been attracting many naturalists since the 1980s; reserve manager Lew Young describes the history and philosophy behind the visitor experience. Further north in panda country, Wanglang National Nature Reserve (NNR) has developed into a training centre in ecotourism, and Jiang Shiwei outlines the principles, processes and challenges of their activities. Meanwhile at Guangxi's Damingshan, nature tourism has grown slowly since the 1980s, but has stepped up in innovation and in conservation-orientation in recent years, as Liang Jiaxian relates. All these examples highlight the importance of the visitor's learning experience; they also provide lessons in keeping tourism in balance, for everyone's benefit.

All tourism affects local residents, and often people are better prepared for the benefits than the costs. The tale of Cinsibu in the Taiwan mountains, by Huang Guo Chao, is a cautionary one for rural communities everywhere. The very applicability of western-style development for China is questioned by Wen Tiejun. Meanwhile the experience of Ladakh, in an excerpt from Helena Norberg-Hodge, touches on whether people are actually happier in a complicated modern society.

These views may come as a surprise to people with a more mainstream view of development. Many have seen great material, medical and educational improvements through industrialisation, and believe all people should have similar opportunities. But informed people around the world are being woken up, by our rapidly-emerging understanding of climate change, to problems with the standard development model, in which natural wealth and resilience are continuously expended, and the atmosphere is expected to absorb whatever we throw at it. Almost every month we see new evidence-based predictions on how climate change will pay us back: probably beginning with the poorest, in the most environmentally degraded areas, and ending with global catastrophe. We should perhaps give more thought to the wisdom and kindness of helping rural communities join the charge from self-sufficiency towards the cash economy.

A vision for sustainable development raises profound questions about levels and types of tourism. Travel has a cost, in carbon emissions and in associated impacts, and air travel is especially destructive. Sooner or later global tourism will presumably decline anyway, as fossil fuels deplete and soar in price. On the other hand there is a need to alert the outside world to the qualities and the plight of peoples and ecosystems. Does this argue for targeting tourists from nearby cities, rather than far afield?

Other conservation-development dilemmas are explored elsewhere in the issue. Zhang Lu and Su Zhiyao give their observations on communities around Nanling NNR in north Guangdong. Veteran zoologist Li Zhenchang is persuaded to give his informed views on various issues in the "Conservation Pioneer" slot. Tian Huaizhen and colleagues report on the orchids of Nanling, while two more species take their bow in the spotlight.

资讯及新闻
Notices and News

中国项目动态

本年经历的人事变更也不少，王海滨已返回祖国发展。自2001年成为中坚分子的吴世捷也将到珠海的「北京师范大学—香港浸会大学联合国际学院」执起教鞭，曾与他共事的人都不会忘记他渊博的植物识见和别树一格的形象。最后的是吴狄姬，自2002年加入本园后，她既是嘉道理农场暨植物园奖学金的统筹主任，亦担任本刊的执行编辑，她现正在香港中文大学出任研究助理。这些年来，不论《森林脉搏》的版面设计或是出版效率都大有改进，她的努力，彼此都是有目共睹的；在此谨祝他们各人都有更佳的发展！

适逢中国项目的人事调动，我们也对本刊的动向作出探讨，并有意将它变成网站形式运作，以吸纳更广大的读者群。现诚邀各位填妥随本期附上之问卷，或到本园网址：www.kfbg.org表达意愿。如有其他意见，也不妨与我们分享。

嘉道理农场暨植物园奖学金消息

由广西师范大学、广西壮族自治区林业局及香港嘉道理农场暨植物园携手合办的2006年度嘉道理农场暨植物园奖学金报告会于2006年9月1日至2日在广西桂林举行。

为促进各方沟通及资讯交流，报告会议首次公开让院校、科研机构人员及媒体参与。活动吸引了超过500名人士出席，其中包括了5份报刊、4间电视台及1间广播电台的记者编辑。

除了15位在学的嘉道理农场暨植物园奖学金得主作出工作报告外，灵长类专家黄乘明教授与本园王丽贤小姐分别为本次报告会做了关于“世界灵长类资源与分布”和“可持续生活”的专题演讲。

三位成功毕业的2003年度奖学金得主亦于会上获发证书。龚世平、张璐及吴捷他们顺利完成他们分别有关海南淡水龟、广东物种多样性的垂直格局、倒木昆虫生物多样性的博士研究。毕业后龚世平及张璐现时分别于华南濒危动物研究所及华南农业大学任教，而吴捷则于深圳大学继续深造博士后课程。

各参加者更于奖学金报告会随后一天前往猫儿山国家级自然保护区进行实地考察，在保护区局长蒋得斌先生的带领下考察了区内有关管理、教育及保护措施。

而2006年度嘉道理农场暨植物园奖学金面试亦同时顺利进行并甄选了四位学生，他们的研究题目如下表：

姓名	课程	院校	研究题目
吴飞	博士	中国科学院昆明动物研究所	广西大瑶山地区不同栖息地鸟类多样性
谢屹	博士	北京林业大学	濒危物种保护政策研究：海南黑冠长臂猿的案例
连云峰	硕士	海南师范大学	锯缘摄龟的生态学和保护生物学
雷伟	硕士	海南师范大学	海南岛水獭的地理分布及保护生物学

表一：2006 年度嘉道理农场暨植物园奖学金得主之研究项目

保护海南石灰岩生境

今年三月在一个由海南省野生动植物自然保护中心及本园合办，在昌江举行的研讨会发表了近期海南岛石灰岩生境调查的结果。海南石灰岩生境占海南陆地面积不足于3.5%，但却是一种独特的石灰岩季节雨林类型，有18种特种植物及13个陆生贝类特有种。最具保育价值的是俄贤岭（昌江县及东方县）及马嘴岭（三亚及五指山市、保亭及乐东县）。会上亦讨论了石灰岩的生态功能，包括其文化意义。与会者及其他国内外专家促请海南省政府保护这些生境的同时，海南省野生动植物自然保护中心亦特别在有关地区加强了打击非法活动的力度。

资料来源：海南日报　06.04.06

甲虫对热带森林生物多样性的启示

一项西双版纳象甲科昆虫群落之研究发现当地的96种象甲在植被亚型间存在着极大差异。象甲不同的密度以暖温性落叶阔叶林和季节性雨林为最高，又以落叶林及半常绿季雨林为最低。此外，物种方面以季节性雨林最为丰富，而暖温性阔叶落叶林的物种最为贫乏。每个植被亚型都包含生境专化种和稀有种，其中以季节性雨林的数量最丰富，半常绿季雨林次之。作者呼吁各界应多加关注季节性雨林及半常绿季雨林在生物多样性保护上的重要功用。

资料来源：李巧，2006。西双版纳自然保护区9种植被亚型象甲科多样性比较。*生物多样性*14 (1)：73-78

多样性丰富的柳莺

近日有研究显示东洋界一些中国柳莺（*Phylloscopus*属和*Seicercus*属）的学名与种属关系的改变，凸显生物多样性分布格局的特殊复杂性。研究工作开展至今，发现了两个黄眉柳莺的复合种：*Phylloscopus inornatus* 及*P. humei*，五个黄腰柳莺的复合种：*P. proregulus*、甘肃柳莺（*P. kansuensis*）、*P. chloronotus*、*P. forresti*及云南黄腰柳莺（*P. yunnanensis*），四个白尾柳莺的复合种：白斑尾柳莺（*P. davisoni*）、*P. xanthoschistos*、海南柳莺（*P. hainanus*）及*P. ogilviegranti*，四个冠纹柳莺的复合种：大冕纹柳莺（*P. occipitalis*）、*P. claudiae*、*P. goodsoni*及棕扇尾莺（*P. reguloides*）。山柳莺的复合种则可能包含了多个以往被认作等同于 *P. trivirgatus* 的物种，例如多个岛屿特有种。金眶鹟莺迄今至少拥有8个复合种：比氏鹟莺（*Seicercus valentini*）、韦氏鹟莺（*S. whistleri*）、淡尾鹟莺（*S. soror*、*S. omeiensis*）、灰冠鹟莺（*S. tephrocephalus*）、*S. burkii*、*S. poliogenys* 及白眶鹟莺（*S. affinis*）。此外，环系种暗绿柳莺（*P. trochiloides*）包含两个共生亚种（*P. t. viridanus* 和 *P.t. plumbeitarsus*）从北部的亚尔泰区经一列间渡种群连接至南方。研究结果显示结合分类与生态研究对生物多样性保育的重要性。

资料来源：Rheindt FE, 2006. Splits galore: the revolution in Asian leaf warbler systematics. *BirdingASIA* 5: 25-39. 及其中参考文献。

公众在全球气候变化年代对科学的认知

处身于对科学认知大为重要的时代下，最新调查却揭露公众在汲取科学知识方面上的限制。中国科普研究所的调查发现绝大部分（91%）的中国民众都是经电视获得科技信息，经报纸杂志的比例为45%，而浏览因特网获得科技信息的比例只有7%。

英国非政府组织帕诺斯研究所（Panos Institute）对4个发展中国家进行的研究表明，这些国家的媒体对气候变化的

理解不足，使当地对气候变迁的公众辨论并不热烈。中国日报记者贾鹤鹏指国内也鲜有当地气候变化的报导。帕诺斯报告敦促决策者及科学家采取“零科学术语”的信息交流。国际公众科技传播网(PCST)于2006年的会议上，便促请科研人员公开讨论，以提高公众的科学素养。

资料来源：中国科普研究网: http://218.241.72.18/webpage/zgkpyj/index/xxzd/data/web_1530.html

科学与发展网络（SciDev.Net）http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2848&language=1

http://www.scidev.net/gateways/index.cfm?12&GFTOKEN=77679088fuscaction=readitem&rgwid=1&item=News&itemid=2705&language=5&CFID=13530

2006国际自然保护联盟红色名录修订

国际自然保护联盟(IUCN)刚发表的《红色名录》显示全球有16,000个受危种，发现有1/3的两栖动物、1/4的针叶树和兽类，及1/8的鸟类面临灭绝威胁。相比之下较少华南非海洋动物的状况出现变化，某程度反映本地野外生物学家之缺乏。云南的毛叶粉背蕨(*Aleuritopteris squamosa*)，因生境破坏退化而被列为濒危种；海南特有的海南条蕨(*Oleandra hainanensis*)的评级也由易危变为濒危。针叶树中国水杉的状况亦由数据缺乏(DD)变为濒危。

最近才被确定在香港东北部出没的斑灰蜻(*Orthetrum poecilops*)已被列为易危。海南小树蛙(*Philautus hainanus*)和海南锯腿树蛙(*Rhacophorus hainanus*)这两种新发现的海南特有种，则被评为数据缺乏种，前者为吊罗山特有，后者则分布于吊罗山、尖峰岭及霸王岭，同样评级也放诸于在西藏、湖南或安徽最新被描述的两栖类物种。

黑尾塍鹬(*Limosa limosa*)及海南特有的细辛蕨(*Asplenium cardiophyllum*)及弯羽凤尾蕨(*Dryopteris cyclopeltidiformis*)现在都是近危种。因在中国受捕猎的影响，也使罗纹鸭*Anas falcata*变为近危种。由于近日有消息指云南的黑颈长尾雉(*Syrmaticus humiae*)对捕猎及生境退化的抵御及回复能力较想像中理想，该物种的等级由易危降为近危。然而，其野外种群仍小，且零星分布。

资料来源：www.redlist.org/; www.iucn.org/en/news/archive/2006/05/02_pr_red_list_en.htm

亚洲河流管理缺乏科学理据

一个有关亚洲河流状况的评估指出，亚洲河道的科研结果对决策者或是水源项目开发方式的影响力甚低。水源配给政策往往由农业及工业的人为需求支配，却忽略了许多生态系统内溪流最低水量之需要。

要恢复亚洲河流的原状并不切实际，但某些退化河道若然得到立法及科学信息的积极配合，仍可有望修复部份生物多样性。为加强这方面的力度，委实需要确认对出于河流生物多样性有益及有害的生态特质，及那些特质令河流更易受人类影响。

资料来源：Dudgeon D, 2005. *River rehabilitation for conservation of fish biodiversity in monsoonal Asia.* Ecology and Society 10: U112-U131.www.ecologyandsociety.org/vol10/iss2/art15/

中国森林认证工作组

在森林认证委员会(FSC)「中国森林认证工作组」。森林认证委员会是一所独立的非营利组织，以推动生态良好、社区得益经济可行的森林资源可持续经营为宗旨。中国森林认证工作组是继世界自然(中国)基金会、中国林业科学院和森林认证委员会共同发起另一工作小组后诞生的。该会的政策工作组现时正全面回顾全球人工林的政策与准则。

资料来源：世界自然基金会，经 forests.org/articles/reader.asp?linkid=55004; 森林认证委员会 www.fsc.org/plantations/

新国际热带木材协定

2006年1月，180个缔约方已重新修订1994年签订的国际热带木材协定(ITTA)。国际热带木材组织(ITTO)的主要工作目标不仅是「促进合法采伐及可持续经营林区的热带木材国际贸易之发展及多样化」，亦推动「热带用材林的可持续经营」。ITTO将会加强这些可持续采伐热带木材的市场行销及分享更多有关认证的信息。为达可持续森林管理(SFM)，该组织将会帮助各国加强森林执法力度和管理方法，惩处热带木材的非法采伐和相关贸易，完成SFM和森林恢复。并将加强各国收集和报告热带木材贸易和森林管理数据的能力。新协定将于2008年生效，正式取代现行协定。

资料来源：中国绿色时报http://www.greentimes.com/News/lm_123/61718.asp

广州市民重视高质量的城市公园

广州一项用者自付民意调查共采访了340名市民，结果显示广州家庭对城市公园予以高度重视。他们著重公园的位置、高度的绿化覆盖率及环境质量。公园被城市人视为一个远离繁嚣的私人空间。96%的受访者表示愿意支付入场费，他们所愿意支付(每月至少17元人民币)的平均数额比实际入场费更高，且与收入挂钩。调查显示广州市内的绿色地带市值每年五亿人民币—是其开支总值的六倍—相信能提供足够理由更关注华南城市中的绿化环境。

资料来源：詹志勇及Chen WY, 2006. Recreation-amenity use and contingent valuation of urban greenspaces in Guangzhou, China. *Landscape and Urban Planning* 75(1-2): 81-96.

云南承诺保育缅甸森林

云南政府已命令取缔在缅甸北部进行的非法伐木活动，并责令中国工人离境。5月份的边境贸易木材数量已大幅下降。2005年底，缅甸政府亦于北部实施禁伐，唯执法水平参差。

资料来源：http://www.globalwitness.org/press_docs/China%20Blocks%20Timber%20From%20Burma%20CHINESE.pdf

梵净山鱼类种群数字下降

贵州梵净山国家级自然保护区的鱼类调查指当地的本土物种丰富度呈下降趋势，特别是鲤形目，原因可能与滥捕和水域生境破坏有关。调查发现85个物种，包括海南拟鲿(*Pseudohemiculter hainanensis*)、峨嵋后干鳅(*Metahomaloptera omeiensis omeiensis*)及福建纹胸鮡等(*Glyptothorax fukiensis fukiensis*)等保

护区新记录。

资料来源：代应贵及李敏，2006。梵净山及邻近地区鱼类资源的现状。*生物多样性* 14(1): 55-64.

广东热带森林的防火措施

中国林科院森林资源研究所开展了一个项目，拟协助减少热带森林火灾的发生。项目将会在广东的试点及示范点改善林火监测及设立防火警报。此外，亦会透过设置卫星热带林火监测及管理系统、示范及技术培训，于省、市及县级的森林推行全面林火管理。

资料来源：ITTO Tropical Forest Update 15(4): 20.

白皮书概述成绩，但环境形势依然严峻

中国刚发表的白皮书列出了中国现行的环保法制及体制，以及工作成果。虽然此文件并不对成效进行批判性的评论，却总结这些年来工业化和都市化的急速发展，加剧水体、土壤和大气的污染、而人口与经济的增长，均使环境备受史无前例的压力。在「十一五」(2006-2010) 规划里的主要目标包括：在保持经济增长的发展水平的同时，也要改善重点地区和城市的环境质量，并遏制生态环境恶化趋势；单位GDP的能量消耗减少20%；污染物的排放总量减少10%；森林覆盖率由现时的18.2%提高至20%。 除实现经济发展和环境保护并重外，政府建议以法律的、经济的、技术的和适当的行政手段来整治环境问题。国家环保总局副局长祝光耀在白皮书发布会上，说形势变得越来越差，并且不容乐观。估计2005年污染代价差不多是国家生产总值的10%，而用作环境保护用途的只是13% GDP。

资料来源：新华网http://big5.xinhuanet.com/gate/big5/www.xinhuanet.com/zhibo/20060605/zhibo.htm

China Programme changes

We have to say farewell to three members of the China Programme team this time. Wang Haibin has returned to the Mainland. Ng Sai Chit is to take up a teaching post at United International College at Zhuhai. A key member of the team since 2001, his vast botanical knowledge and quirky style will be missed. Finally Norris Ng, known to many as coordinator of the KFBG Studentships programme as well as managing editor of this magazine since 2002, is now working as a research assistant for the Chinese University of Hong Kong. As *Living Forests* has grown she has steered it through improvements in appearance and punctuality. We wish them all well.

The team changes coincide with a debate on the future of the magazine, as we consider turning wholeheartedly to the Internet. We invite your comments, for or against such a switch, and on other aspects of *Living Forests*. See the questionnaire accompanying this issue, or on our website at www.kfbg.org.

KFBG Studentship news

In collaboration with Guangxi Normal University and the Forestry Department of Guangxi Zhuang Autonomous Region, the 2006 KFBG Studentship meeting was conducted in Guilin, Guangxi on 1-2 September. To facilitate greater exchange of views and information, this year's studentship presentations were for the first time open to attendance by all interested parties including members of the media. The two-day activity attracted over 500 participants and ten local media representatives, from five newspapers, four TV stations and one radio station.

In addition to progress reports by all 15 current studentship holders, two plenary lectures were delivered by key-note speakers: Prof. Huang Chengming on conserving the world's primates and KFBG's Ms. Idy Wong on sustainable living.

Certificates were bestowed to three 2003 studentship graduates, Drs Gong Shiping, Zhang Lu and Wu Jie who have successfully completed their respective doctoral studies on hard-shelled turtles in Hainan, altitudinal patterns of species diversity in Guangdong, and saproxylic insect biodiversity in South China. Gong and Zhang are now teaching, in South China Institute of Endangered Animals and South China Agricultural University respectively, while Wu is pursuing a post-doctoral degree at Shenzhen University.

The following day the current studentship holders, this year's applicants and guests were taken on a guided visit of Maoershan National Nature Reserve by the Director Mr. Jiang Debin, to look into management, education and conservation measures in the reserve.

Interviews were also conducted for the 2006 KFBG studentships, and four students were successful. Their research topics are listed in the table.

Hainan's limestone ecosystems recognised

In March a workshop was held in Changjiang to reveal findings of recent studies of Hainan's limestone ecosystems, supported by Hainan Wildlife Conservation Centre (HWCC) and KFBG. The ecosystems, covering less than 3.5% of the island, were found to support nationally unique limestone seasonal rainforest, with 18 plants and 13 snail species found nowhere else on Earth. Highest in conservation importance were the largest and most continuous patches at Exianling (Changjiang County and Dongfang City) and Mazuiling (Sanya and Wuzhishan Cities, Baoting and Ledong Counties). Ecosystem services and cultural significance of the limestone areas were also discussed. HWCC also launched an enforcement drive on illegal activities in the sites. Meanwhile workshop participants and other national and international experts urged the Hainan Government to conserve these ecosystems.

Source: Hainan Daily, 06.04.06

Beetles give insights into tropical forest biodiversity

A study of weevil (beetle) assemblages at Xishuangbanna, detecting 96 species, found great differences among forest subtypes. Weevil densities were highest in warm deciduous broadleaf forest and seasonal rainforest, and lowest in deciduous and semi-evergreen monsoon forest. Seasonal rainforest was also highest in species richness, while warm deciduous broadleaf forest had the fewest species. While every subtype had habitat-specific and rare species, seasonal rainforest was the richest in these, followed by semi-evergreen monsoon forest. The author urges more attention to seasonal rainforest and semi-evergreen monsoon forest for their important roles in biodiversity conservation.

Source: Li Q, 2006. Diversity comparisons of Curculionidae between 9 subtypes of vegetation in Xishuangbanna Nature Reserve. *Biodiversity Science 14(1): 73-78.*

Name	Degree course	Institution	Research topic
WU Fei	Ph.D.	Kunming Institute of Zoology, CAS	Avian diversity in different habitats at Dayaoshan, Guangxi
XIE Yi	Ph.D.	Beijing Forestry University	Policy review of endangered species conservation: Case study of Hainan Gibbon
LIAN Yunfeng	M.Phil.	Hainan Normal University	Study of ecology and conservation biology of the turtle *Pyxidea mouhotii*
LEI Wei	M.Phil.	Hainan Normal University	Geographical distribution and conservation biology of otters in Hainan

Tabel 1: 2006 KFBG Studentship holders and their research topics

The remarkable radiation of leaf warblers

Recent studies on the leaf warblers (*Phylloscopus* and *Seicercus*) in the Oriental realm reveal changes in the names and relationships of some China species, and a reminder of the extraordinary complexity of biodiversity patterns. While work is ongoing, two species (*Phylloscopus inornatus* and *P. humei*) are currently distinguished in the Yellow-browed Warbler complex, five (*P. proregulus, P. kansuensis, P. chloronotus, P. forresti* and *P. yunnanensis*) in the Pallas's Warbler complex, four (*P. davisoni, P. xanthoschistos, P. hainanus* and *P. ogilviegranti*) in the White-tailed Leaf Warbler complex, and four (*P. occipitalis, P. claudiae, P. goodsoni* and *P. reguloides*) in the Blyth's Leaf Warbler complex. The Mountain Leaf Warbler complex is likely to contain a number of species previously lumped as *P. trivirgatus*, including many island endemics. The Golden-spectacled Warbler complex currently contains at least eight species (*Seicercus valentini, S. whistleri, S. soror, S. omeiensis, S. tephrocephalus, S. burkii, S. poliogenys and S. affinis*). In addition, the Greenish Warbler (*P. trochiloides*) is a ring species, with two co-existent subspecies (*P. t. viridanus* and *P.t. plumbeitarsus*) to the north in the Altai Region linked, to the south, along a chain of intergrading populations. The findings demonstrate the importance of careful integrated taxonomic and ecological study to biodiversity conservation.

Source: Rheindt FE, 2006. Splits galore: the revolution in Asian leaf warbler systematics. *BirdingASIA* 5: 25-39. And references therein.

How people learn (or not) about science in an age of climate-change

Recent surveys expose constraints on how the public can understand science, at a time when greater understanding is crucial. Most people (91%) in China get their information about science and technology from television, according to a survey by the China Research Institute for Science Popularization; by comparison 45% obtain their information from books and magazines, and just 7% from the Internet. Meanwhile a recent survey of journalists in four developing countries by UK-based NGO Panos Institute found that public debate on climate change is held back by the poor understanding of journalists. Jia Hepeng of China Daily noted the Chinese media also rarely reported on local climate change issues.

The Panos report authors called on policymakers and scientists to promote the flow of jargon-free information. At a 2006 meeting of the International Network on Public Communication of Science and Technology, scientists were urged to be more proactive in informing and stimulating public debate.

Sources: Science and Development Network articles: http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2818&language=1; http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2818&language=1; http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2848&language=1

Changes in the 2006 Red List

The latest IUCN Red List includes over 16,000 Threatened species worldwide, with one in three amphibians, one in four conifers and mammals, and one in eight birds now at risk of extinction. Relatively few of South China's non-marine species have changed their status, reflecting in part the shortage of active field biologists. The fern *Aleuritopteris squamosa* is now considered Endangered (EN) due to habitat loss and degradation in Yunnan; the Hainan-endemic fern *Oleandra hainanensis* is uplisted from Vulnerable (VU) to EN. The status of the conifer *Glyptostrobus pensilis* (the Chinese Water Fir) is changed from Data Deficient (DD) to EN.

The dragonfly *Orthetrum poecilops* (Mangrove Skimmer), confirmed recently only from northeast Hong Kong SAR, is VU. Two recently described Hainan-endemic frogs *Philautus hainanus* (known only from Diaoluoshan) and *Rhacophorus hainanus* (from Diaoluoshan, Jianfengling and Bawangling) are currently considered DD, as are newly-described amphibians in Tibet, Hunan and Anhui.

The Black-tailed Godwit *Limosa limosa*, and the Hainan-endemic ferns *Asplenium cardiophyllum* and *Dryopteris cyclopeltidiformis*, are now considered Near Threatened (NT). Falcated Duck *Anas falcat*a too is uplisted to Near Threatened due to inferred hunting impact in China. Hume's Pheasant *Syrmaticus humiae*, which occurs in Yunnan, is downlisted from Vulnerable to Near Threatened, as recent information suggests it is more resilient to exploitation and habitat degradation than previously thought. Its population remains quite small and fragmented.

Sources: www.redlist.org/; www.iucn.org/en/news/archive/2006/05/02_pr_red_list_en.htm

Asian river management lacks a scientific rationale

A review of the status of Asian rivers concludes that river science in Asia has had little influence on policymakers or how water development projects are implemented. Water allocation policies are dominated by human demands from agriculture and industry, and for most ecosystems the in-stream flow needs have not been addressed.

While restoration of Asian rivers to their original state is impractical, degraded rivers still retain some biodiversity, such that some rehabilitation is possible if relevant legislation and scientific information are promptly applied. To strengthen such efforts, it is important to identify which ecological features enhance biodiversity, and which make rivers more vulnerable to human impacts.

Source: Dudgeon D, 2005. River rehabilitation for conservation of fish biodiversity in monsoonal Asia. *Ecology and Society 10:* U112-U131. www.ecologyandsociety.org/vol10/iss2/art15/

FSC in China

The Forest Stewardship Council (FSC) has launched a China National Initiative. FSC, an independent NGO aimed at promoting environmentally appropriate, socially beneficial and economically viable forest management, formed the China initiative after a working group was set up by World Wide Fund for Nature (WWF) China and the Chinese Academy of Forestry. FSC's Policy Working Group is currently undertaking a full review of its policies and standards for plantations worldwide.

Sources: *WWF, via forests.org/articles/reader.asp?linkid=55004; FSC at www.fsc.org/plantations/*

New International Tropical Timber Agreement

The 1994 International Tropical Timber Agreement (ITTA) was updated in January 2006, by 180 negotiators. The International Tropical Timber Organization (ITTO)'s key objectives are not only "to promote the expansion and diversification of international trade in tropical timber from sustainably managed and legally harvested forests" but also "to promote the sustainable management of tropical timber producing forests". ITTO will boost the marketing of tropical timber from sustainably managed and legally harvested sources, and share information on certification. In pursuit of sustainable forest management (SFM) it will help countries to improve forest law enforcement and governance, address illegal logging and related trade, and undertake SFM and forest restoration. It will also strengthen the capacity of countries to gather and report data on the tropical timber trade and forest management. "ITTA, 2006," is expected to come into force in 2008 when it replaces the current agreement.

Source: *ITTO Tropical Forest Update* 15(4): 3.

High-quality city parks treasured by Guangzhou residents

Based on willingness-to-pay interviews of 340 people, urban parks are highly valued by Guangzhou families, who favour attributes such as accessibility, high green coverage and quality of the ambience. Parks are an important source of privacy and solitude in the city. 96% of respondents were willing to pay to use urban greenspaces. The average amount they would pay (at least RMB 17 per month) exceeds actual entrance fees, and is correlated with income. Results suggested the city's urban greenspaces were worth over RMB 500 million per year — six times the expenditure on them — and would appear to justify much greater attention to greenspaces in South China's cities.

Source: Jim CY and Chen WY, 2006. Recreation-amenity use and contingent valuation of urban greenspaces in Guangzhou, China. *Landscape and Urban Planning* 75(1-2): 81-96.

资讯及新闻
Notices and News

Yunnan offers hope for Myanmar forests

The Yunnan Government has ordered a clampdown on the illegal trade in timber from northern Myanmar, ordering Chinese workers to leave the country. By May the volume of logs crossing the border was greatly reduced. The Myanmar Government itself imposed a logging ban in the north in late 2005, but enforcement has been variable.

Source: http://www.globalwitness.org/press_releases/display2.php?id=358

Declining fish fauna at Fanjingshan

Surveys of the fish fauna in the vicinity of Fanjingshan National Nature Reserve, Guizhou, found species richness of native species has declined, especially among Cypriniformes, probably due to over-harvesting and habitat damage. The surveys found 85 species, including some (*Pseudohemiculter hainanensis, Metahomaloptera omeiensis omeiensis and Glyptothorax fukiensis fukiensis*) newly recorded from the area.

Source: Dai YG and Li M, 2006. Fish resources around Fanjing Mountain, Guizhou. *Biodiversity Science 14 (1): 55-64.*

Fending off tropical-forest fire in Guangdong

A project of the Research Institute of Forest Resources Information Techniques, Chinese Academy of Forestry, is intended to help reduce the frequency of fire in China's tropical forests. It will improve forest fire monitoring and fire danger forecasting in an experimental and demonstration area in Guangdong. It will also promote forest fire management at the provincial, district and county levels by establishing a satellite-based tropical forest fire monitoring and management system, along with demonstrations and technical training.

Source: *ITTO Tropical Forest Update* 15(4): 20.

White Paper highlights achievements amid deteriorating environment

A new White Paper outlines China's current environmental protection legislation and system, and its achievements in environmental protection. While the Paper does not attempt a critical evaluation of effectiveness, it concludes that due to accelerated industrialisation and urbanisation, water, air and soil pollution, and growth in population and economy, environmental protection faces unprecedented pressure. Under the 11th Five-Year Plan (2006-2010) there are several major goals: to maintain stable and rapid growth whilst improving environmental quality of key regions and cities, and curbing the trend toward ecological deterioration; to reduce energy consumption per unit of GDP by 20%; to reduce discharge of major pollutants by 10%; and to increase forest from 18.2% to 20%. Besides increasing emphasis on environmental protection in relation to economic growth, the government proposes to combine legal, economic and technical measures with administrative ones to address environmental problems. SEPA Deputy Director Zhu Guangyao, announcing the publication, said the environmental situation is worsening and "allows for no optimism". In 2005 pollution was estimated to cost the country almost 10% of GDP. Only 1.3% of GDP was spent on environmental protection.

Sources: http://news.xinhuanet.com/english/2006-06/05/content_4647221.htm ; http://www.chinanews.cn/news/2005/2006-06-06/23475.html

森林与生物多样性保育相关的近期出版物
A SELECTION OF RECENT PUBLICATIONS OF RELEVANCE TO FOREST AND BIODIVERSITY CONSERVATION IN SOUTHERN CHINA

- An SQ, Zhu FM, Zhang JH, Chen XL, Liu M and Huang C, 2006. Alternative methods for sustainably managing coastal forests as silvo-pastoral systems. *Ecological Engineering* 26 (3) : 195-205. (英文)
- An W, Hu JY and Yao F, 2006. A method of assessing ecological risk to night heron, *Nycticorax nycticorax*, population persistence from dichlorodiphenyltrichloroethane exposure. *Environmental Toxicology and Chemistry* 25(1): 281-286. (英文)
- Au AYY, Corlett RT and Hau BCH, 2006. Seed rain into upland plant communities in Hong Kong, China. *Plant Ecology* 186: 13-22. (英文)
- Chan CSM and Shek CT, 2006. Survey on the Short-nosed Fruit Bat (*Cynopterus sphinx*) in the urban areas of Hong Kong. *Hong Kong Biodiversity* 11: 8-11. (英文)
- Chen ZQ, Peng SL, Ni GY and Wei XY, 2006. Effects of *Pinus massoniana* on germination of trees spp. in forest succession in South China. *Allelopathy Journal* 17: 287-295. (英文)
- Collar NJ, 2006. A partial revision of the Asian babblers (Timaliidae). *Forktail* 22: 85-112. (英文)
- Corlett RT, 2006. Figs (*Ficus, Moraceae*) in urban Hong Kong, South China. *Biotropica* 38 (1) : 116-121. (英文)

  在香港岛市区发现的14种榕树中，有7-8个属本土树种，主要可分为两大类。聚果榕亚属的水同木、对叶榕和杂色榕，都是由蝙蝠散播种子，是裸地先驱树种，结下的果大而多子，呈黄色或绿色。 榕亚属的榕树、笔管榕和黄葛树多生长在岩石上，多由鸟类代为播种，所结的果细小，呈深紫色，种子也不多。在两公顷的研究范围内，榕树数量跟热带天然林相近，栖于城市的食果动物都会取食。研究反映了榕树对寄居于城市的野生动物的重要性，也道出栽培种有可能成为入侵种的危机。

  Of 14 *Ficus* (fig) species in urban Hong Kong Island seven to eight are native, with two main guilds. Those in the subgenus *Sycomorus* (*F. fistulosa, F. hispida, F. variegata*) are pioneers on exposed soil, dispersed by bats, with large, many-seeded, green or yellow figs. Those in subgenus *Urostigma* (*F. microcarpa, F. subpisocarpa, F. virens*) tend to grow on rock, and their small, few-seeded, dark purple figs are largely dispersed by birds. The density of potentially-fruiting fig plants in a 2-ha study area was within the range reported for tropical forests, and all urban frugivores visited them. The study shows the importance of the urban fig flora to urban wildlife. It also warns that cultivated fig species may become invasive.
- Ding T-S, Yuan H-W, Geng S, Koh C-N and Lee P-F, 2006. Macro-scale bird species richness patterns of the East Asian mainland and islands: energy, area and isolation. *Journal of Biogeography* 33: 683-693. (英文)

  于东亚样地(100 x100公里)繁殖的2,406种鸟类的物种多样性原来与初级生产力有关，似乎是当地生物承载力的上限。地域阻隔与地区面积的大小都会抑制物种丰富度，尤其是对岛屿或半岛上的物种。

  Species richness of 2,406 breeding birds in 100 x 100 km quadrats of eastern Asia was found to be related to primary productivity, which appears to set the upper limits of carrying capacity. Isolation and area size also limit species richness, particularly on islands and peninsulas.
- Fellowes JR, 2006. Ant (Hymenoptera: Formicidae) genera in southern China: observations on the Oriental-Palaearctic boundary. *Myrmecologische Nachrichten* 8: 239-249.
- Global Witness, 2005. A Choice for China: *Ending the Destruction of Burma's Northern Frontier Forests*. Global Witness, Washington DC, USA. ISBN 0 9772364 1 2. (英文)

一项对缅甸东北部克钦族的伐林机制与规模以及相关的中国跨境贸易报告指出很多跨境贸易都是非法的，并探讨伐林对当地倚赖森林为生的居民的生活影响。

A report on the mechanisms and scale of logging in Kachin State, northeast Myanmar, and the associated cross-border trade with China, alleges that the cross-border trade is mostly illegal, and looks at the impact of logging on the livelihoods of Kachin's forest-dependent communities.

- Guo Y, Zhang L and Dong Y, 2006. Foraging behavior of Asian elephants in Xishuangbanna, Yunnan, China. *Acta Theriologica Sinica* 26(1): 54-58. (In Chinese)
  国艳莉、张立、董永华，2006。西双版纳野生亚洲象的觅食行为。*兽类学报*26(1): 54-58
- Jim CY, 2005. Outstanding remnants of nature in compact cities: patterns and preservation of heritage trees in Guangzhou City (China). *Geoforum* 36(3): 371-386. (英文)
- Lee KS, Lau MWN, Fellowes JR and Chan BPL, 2006. Forest bird fauna of South China: notes on current distribution and status. *Forktail* 22: 23-38. (英文)
  嘉道理农场暨植物园过往于54个林区进行的快速生物多样性评估中共录得372种鸟类，其中有232种(62%)只在少于5个林区内出现，而别具保育关注的物种包括：海南鹰、黄腹角雉、海南山鹛鸫、白眉山鹛鸫、仙八色鸫、紫林鸽、白喉林鹟、金额雀鹛、海南孔雀雉、竹啄木鸟、蓝背八色鸫、小灰山椒鸟及棕腹大仙鹟。

  A compilation of bird data from KFBG's rapid surveys in 54 forest areas.372 species were recorded, of which 232 (62%) were found at five sites or fewer. Of these several are of particular conservation concern: White-eared Night Heron *Gorsachius magnificus*, Cabot's Tragopan *Tragopan caboti*, Hainan Partridge *Arborophila ardens*, White-necklaced Partridge *Arborophila gingica*, Fairy Pitta *Pitta nympha*, Pale-capped Pigeon *Columba punicea*, Brown-chested Jungle Flycatcher *Rhinomyias brunneata*, Gold-fronted Fulvetta *Alcippe variegaticeps*, Hainan Peacock Pheasant *Polyplectron katsumatae*, Pale-headed Woodpecker *Gecinulus grantia*, Blue-rumped Pitta *Pitta soror*, Swinhoe's Minivet *Pericrocotus cantonensis* and Fujian Niltava *Niltava davidi*.
- Liang W, Wong LC and Wong JYP, 2006. Ardeid nesting colony survey in Hainan, China. *Waterbirds* 29(1): 69-75. (英文)
- Li WJ, 2006. Community decisionmaking: participation in development. *Annals of Tourism Research* 33(1): 132-143. (英文)
  四川九寨沟生物圈的研究发现即使村民在决策过程中参与不多，他们仍能从生态旅游中得益。

  A study at Jiuzhaigou Biosphere Reserve, Sichuan, found that the local community could benefit from tourism even with weak participation in decision-making processes.
- Liu S-R, Lin Y, Sun P-S, Li C-W and Hu Y-Z, 2006. Forest landscape ecology and its applications in China. *Forestry Studies in China* 8(1): 53-58. (英文)
- Melville DS and Shortridge KF, 2006. Spread of H5N1 avian influenza virus: an ecological conundrum. *Letters in Applied Microbiology* 42: 435-437. (英文)
- Robbins MB, Peterson AT, Nyari A, Chen GJ and Davis TJ, 2006. Ornithological surveys of two reserves in Guangxi province, China, 2004-2005. *Forktail* 22: 140-151. (英文)
  底定水源林自然保护区(2004年秋季)及十万大山国家级自然保护区(2005年春季)调查分别发现90及113种鸟。调查结果与嘉道理农场暨植物园于1999及2001-01年的成果相若，队员发现树洞筑巢的犀鸟、鹦鹉和咬鹃和啄木鸟等需要大树和枯木的鸟类稀少。

  Surveys of Diding Headwater Forest Nature Reserve (autumn 2004) and Shiwandashan National Nature Reserve (spring 2005) found 90 and 113 species respectively. Like KFBG in 1999 and 2000-01, the team found the forests depleted in hole-nesting hornbills, parrots, trogons and woodpeckers which need large and dead trees.
- Shek CT, 2006. *A Field Guide to the Terrestrial Mammals of Hong Kong*. Agriculture, Fisheries & Conservation Department, Hong Kong.
  石仲堂，2006。*香港陆上哺乳类动物图鉴*。渔农自然护理署，香港。
- Shek CT and Chan CSM, 2006. Mist net survey of bats with three new bat species records for Hong Kong. *Hong Kong Biodiversity* 11: 1-7. (英文)
  随著前期对洞穴蝙蝠的研究，针对非洞栖物种进行了为期两年的研究，发现香港分布著10个非洞栖物种，其中小伏翼(*Pipistrellus tenuis*)及喜山鼠耳蝠(*Myotis muricola*)更是首度于香港录得；而后者与灰伏翼(*Hypsugo pulveratus*)、褐扁颅蝠(*Tylonycteris robustula*)及一种未鉴定的家蝠均属香港罕见。

  Following an earlier survey of cave roosts, a two-year survey of non-cave-dwelling species revealed the Hong Kong distributions of ten species. Least Pipistrelle *Pipistrellus tenuis* and Whiskered Myotis *Myotis muricola* were recorded in Hong Kong SAR for the first time. Whiskered Myotis, Chinese Pipistrelle *Hypsugo pulveratus*, Greater Bamboo Bat *Tylonycteris robustula* and an unidentified pipistrelle were found to be rare in the SAR.
- Song YC, Zhang LX and Vernooy R, 2006. Empowering women farmers and strengthening the local seed system — action research in Guangxi, China. Pp. 129-154 in Vernooy R (ed) , *Social and Gender Analysis in Natural Resource Management Learning Studies and Lessons from Asia*. Sage Publications, New Delhi, India. (英文)
  广西的社会及性别分析(SAGA)小组的研究工作指出透过协作过程，有助认识、保护及强化边缘农村妇女及其知识技能，因为当中农民、研究者及推广人员以至决策者可于一个更公平的基础上共同合作。该项分析对于制定开明、对性别敏感的政策及法规，及落实管理的相关策略极为重要，可避免加深边缘化及偏见。

  Work by a social and gender analysis (SAGA) team in Guangxi showed that marginalised women farmers and their knowledge could be easily recognised, protected and strengthened through a collaborative process in which farmers, researchers, extension workers and policy makers work together on a more equal basis. SAGA was considered essential to formulate responsive and gender-sensitive policies and regulations, and related strategies for implementation and management, to avoid further marginalisation and biases.
- Tang AMC, Jeewon R and Hyde KD, 2005. Succession of microfungal communities on decaying leaves of *Castanopsis fissa*. *Canadian Journal of Microbiology* 51: 967-974. (英文)
- Wang DP, Ji SY, Chen FP, Xing FW and Peng SL, 2006. Diversity and relationship with succession of naturally regenerated southern subtropical forests in Shenzhen, China and its comparison with the zonal climax of Hong Kong. *Forest Ecology and Management* 222(1-3): 384-390. (英文)
- Wang Q, Ruan X, Pan CD, Xu NY, Luo X and Huang MM, 2006. Need for sustainability policy — a case study of the Natural Forest Conservation Program (NFCP) in the western region of Tianshan Mountain, China. *Forestry Chronicle* 82(1): 31-39. (英文)
  天山地区的森林、土壤、水文及生物多样性研究总括全面禁伐并不能取代可持续的林木经营，促请有关方面制定更具弹性的政策，以解决由禁伐衍生的技术、社会与经济问题。

  A study on forest, soil, water and biodiversity in the Tianshan area concludes a complete logging ban cannot replace sustainable forest management, and urges a flexible policy resolving the technical, social and economic problems associated with the ban.
- Wang ZM, Zhang B, Zhang SQ, Li XY, Liu DW, Song KS, Li JP, Li F and Duan HT, 2006. Changes of land use and of ecosystem service values in Sanjiang Plain, northeast China. *Environmental Monitoring and Assessment* 112(1-3): 69-91. (英文)
  1980至2000年间，三江平原开展了大规模填土工程，令湿地面积减少53%，使生态服务全年总值下降约四成。废物处理、水源供应及自动调节是三项最具经济效益的湿地功能。

  An evaluation of large-scale land reclamation found the total annual ecosystem service values in the Sanjiang Plain declined by about 40% between 1980 and 2000, due to the 53% loss of wetlands. Waste treatment, water supply and disturbance regulation were the most economically important

wetland services.

- Wei H and G Wall, 2005. Environmental management, environmental image and the competitive tourist attraction. *Journal of Sustainable Tourism* 13 (6): 617-636. (英文)

  研究指海南私营的南山文化旅游区的环境管理及营销有助于短期内成功打造环境友好的形象，并节省成本，使旅客数字及利润迅速增长，带来良好的公共关系及商机。

  A study on Hainan's privately-owned Nanshan Cultural Tourism Zone (NCTZ) found its environmental management and marketing had resulted in fast and successful acquisition of an environmentally friendly image, as well as cost savings, rapidly growing visitor numbers and profitability, good public relations and subsequent investment.

- Wei SG, Xie MC and Chen JW, 2006. A new genus and five new species of Eriophyidae from Mt. Shiwanda of Guangxi, China (Acari, Eriophyidae). *Acta Zootaxonomica Sinica* 31(1): 130-136. (In Chinese)

  韦绥概、谢满超、陈健文，2006。广西十万大山瘿一新螨五新种(蜱螨并纲，瘿螨科)。*动物分类学报* 31(1): 130-136。

  广西十万大山国家森林公园发现五个新种，其中包括一个未描述的叶螨属。

  Surveys at Guangxi's Shiwandashan National Forest Park have found five new species including a previously undescribed genus of leaf mite.

- Willis M, Zerbe S and Breitung W, 2006. Habitat survey, mapping, and assessment in the Mai Po Nature Reserve, Hong Kong (China). *Archiv fur Naturschutz und Landschaftsforschung* 45: 53-68. (英文)

- Winstanley T, 2006. HKSAR's nature conservation policy — a new formulation for an old problem? *Property Management* 24: 322-341. (英文)

- Wong LC and Young L, 2006. Nest numbers of five ardeids in Hong Kong, South China, 1989-2004: Does weather affect the trend? *Waterbirds* 29: 61-68. (英文版)

  15年来的鹭鸟侦测数据显示，除大白鹭的营巢数有上升迹象以外，其他的鸟巢整体数字均没有显著变动，华南已知的大白鹭鸟巢中，有半数都是在香港发现的，大部分鹭鸟林的鸟巢数字自1990年代末期已是下降趋势，可能是欠缺合适的摄食及营巢生境所致。冬天的降雨量及气温对当年的鸟巢数字都没有显著影响。

  Fifteen years of data detected no overall trend in nest numbers except for an increase in Great Egret *Ardea alba*, of which half the known south China nests are in Hong Kong. Colony size has decreased in most species since the late 1990s, apparently due to loss of feeding and nesting habitats. Rainfall and temperature during the winter had no discernible influence on nest number the same year.

- Xin K, Tam NFY, Wong YS, Sun JF and Lan CY, 2006. Valuation of ecologic services of Mai Po marsh in Hong Kong. *Acta Ecologica Sinica* 26: 2020-2026. (In Chinese)

  辛琨、谭凤仪、黄玉山、孙娟、蓝崇钰，2006。香港米埔湿地生态功能价值估算。*生态学报*26: 2020-2026。

- Xing FW, 2005. *Rare Plants of China*. Hunan Education Press, Changsha. (In Chinese)

  邢福武，2005。*中国的珍稀植物*。湖南教育出版社，长沙。

- Xing FW, 2005. *Flora de Macau: Flora of Macao. Volume 1*. Dept. of Gardens and Green Areas, Civic and Municipal Affairs Bureau, Macao, and the South China Botanical Garden, Chinese Academy of Sciences. (In Chinese)

  邢福武，2005。*澳门植物志*。澳门民政总署园林绿化部及中国科学院华南植物园。

- Xu FL, Hao JY, Tao S, Dawson RW, Lam KC and Chen YQD, 2006. Restoration of marine coastal ecosystem health as a new goal for integrated catchment management in Tolo Harbor, Hong Kong, China. *Environmental Management* 37: 540-552. (英文)

- Zang RG, Tao JP and Li CY, 2005. Within community patch dynamics in a tropical montane rain forest of Hainan Island, South China. *Acta Oecologica* 28 (1): 39-48. (英文)

  作者识别出海南热带山地雨林的四个生长阶段：林窗期、建群期、成熟期和衰退期，衰退期在样地中最为罕见。物种多样性在中期两阶段中最为丰富，林窗期的日照及表土温差的变动波幅最大。

  Authors recognised four growth phases or patch types of tropical montane rainforest in Hainan Island: gap phase, building phase, mature phase and degenerate phase, with the last of these rarest in the sampled area. Species diversity peaked at intermediate growth phases, while light intensity and soil surface temperature were most variable in the gap phase.

- Zeng ZG, Song YL, Li JS, Teng LW, Zhang Q and Guo F, 2005. Distribution, status and conservation of Hainan Eld's deer (*Cervus eldi hainanus*) in China. *Folia Zoologica* 54(3): 249-257. (英文版)

- Zhang E, Teng L and Wu Y, 2006. Habitat selection of the Chinese water deer (*Hydropotes inermis*) in Yancheng Reserve, Jiangsu Province. *Acta Theriologica Sinica* 26(1): 49-53.

  张恩迪、滕丽微、吴咏蓓，2006。江苏盐城保护区獐的栖息地选择。*兽类学报*26(1): 49-53.

  一项对獐的栖息地研究指出，在123个獐利用样方和300个随机样方中，测定了它们倾向于选择高度在90-110公分的植被，及距离水源200-600米之间的栖息地。它们对植被成分的偏好会随著春、夏及秋季而有所转变。

  From a study of 123 sites used by Chinese Water Deer, and 300 random plots, the deer was found to prefer vegetation 90-110 cm high, and some 200-600 m from water. The favoured vegetation composition varied between spring, summer and autumn.

- Zhang H and Zhang G-L, 2005. Landscape-scale soil quality change under different farming systems of a tropical farm in Hainan, China. *Soil Use and Management* 21(1): 58-65. (英文)

  长期种植橡胶会使土壤过度挤压及酸化，损耗养分和有机物。在人工咖啡林中应用的保育措施能有效改善或保护有机物浓度、土壤结构及质量。

  Found that long-term rubber farming caused acidification and compaction of soil, and depletion of nutrients and organic matter. Conservation measures applied in coffee plantations improved or protected organic matter concentration, soil structure and hence soil quality.

- Zheng Z, Shanmughavel P, Sha LQ, Cao M and Warren M, 2006. Litter decomposition and nutrient release in a tropical seasonal rain forest of Xishuangbanna, Southwest China. *Biotropica* 38: 342-347. (英文)

- Zheng ZM and Jiang GF, 2006. Four new species of Tetrigoidea from Zuojiang, Guangxi (Orthoptera). *Acta Zootaxomonica Sinica* 31(1): 141-145. (In Chinese)

  郑哲民及蒋国芳，2006。广西左江地区蚱总科四新种记述(直翅目)。*动物分类学报* 31(1): 141-145.

- Zhou J, Wei FW, Li M, Zhang JF, Wang DL and Pan RL, 2005. Hainan Black-crested Gibbon is headed for extinction. *International Journal of Primatology* 26(2): 453-465. (英文)

- Zhou ZQ, 2006. Taxonomy, geographic distribution and ecological habitats of tree peonies. *Genetic Resources and Crop Evolution* 53(1): 11-22. (英文)

香港米埔自然保护区发展过程中对生态旅游的一些体验

Ecotourism in the development of Mai Po Nature Reserve, Hong Kong

杨路年
Lew YOUNG

背景

米埔自然保护区坐落香港西北部一隅，面积约380公顷，是占地1,500公顷的米埔后海湾内湾拉姆萨尔湿地的一部分。自1800年代末，这片沿海湿地便有渡冬水鸟天堂的美誉，特别在较寒冷的日子，都会吸引不少港岛区以至澳门的居民远道而来，欣赏该地的景色及野生动植物。

1900年代初至中期，米埔的湿地经历了不少农业用地的转变。大片沿海沼泽曾先后被转作咸水稻田、潮间带基围虾塘及深水鱼塘。纵然湿地经过多番改造，其特质及原有的野生动植物都得到保存。然而，1970年代中期开始，私营公司开始收购湿地作住宅及其他发展用途。最早实施的工程始于1975年，当时有发展商拟于米埔自然保护区现址毗邻发展大型屋苑项目。纵有少数的保育人仕抗议，但当时大部分港人都不知米埔的重要性或自然保育之价值，因此香港政府遂批准此发展。不过，保育人士同时也赢了漂亮一仗，港府于1975年把米埔划为限制区，并于翌年将之确认为具特殊科学价值地点(SSSI)。此后，只有持有政府签发的许可证的人士方可进出保护区，时至今日该项措施也有效减低对米埔的滋扰。

世界自然(香港)基金会(WWF)于1983年开始与政府合力管理米埔自然保护区，1985-1986年间，更开始举办学生及公众自然导赏团。这些活动不仅有助宣扬环境教育，亦可以为日后的保育发展争取更广泛的公众支援。由于米埔已被列为限制地区，为解决游客的进区问题，政府发出了一批团体许可证。由那时起，保护区每年访客数字最高峰多达40,000人次。当中有四分一来自平日参与环境教育导赏团的中小学生，其馀的都是在周末或公众假期前来参观的普罗大众。

WWF的中小学环境教育项目得到香港政府教育统筹局的资助(因此学生的入场费得以豁免)，若公众人士参与同类形活动，则每位收费70港元，这些收益都全拨归作保护区管理经费。

提供与别不同的旅游体验

WWF举办的自然导赏活动向来都不以「生态旅游」自居，可是它们都符合生态旅游的大部份准则，特别是各类型的活动都带有浓厚的教育意味，藉此向旅客提供高质量的旅游新体验，从中提高他们对湿地，特别是米埔自然保护区的重要价值和生物多样性的认识。

保护区多年来印制了一系列形形式式的双语刊物，小册

Background

The 380-ha Mai Po Nature Reserve lies in the northwestern corner of Hong Kong and forms part of the 1,500-ha Mai Po Inner Deep Bay Ramsar Site. Since the late 1800s, this coastal wetland area has been known as a haven for wintering waterbirds, and people from Hong Kong Island and as far as Macau used to visit, especially in the cooler months, to see the area and its wildlife.

During the early and mid-1900s, the wetlands went through a series of agricultural land-use changes. Large areas of the original coastal mangroves were first converted to brackish-water rice-fields, then inter-tidal shrimp ponds and finally deep water fish ponds. Throughout this process however, the wetland character of the site was maintained and so too the associated wildlife. From the mid-1970s however, private companies began buying up the wetland to fill in, for housing and other developments. The earliest was 1975, when a developer proposed a large housing development adjacent to the present Mai Po Nature Reserve. Despite protests by a small number of conservationists at the time, the proposal was approved by the Hong Kong Government amid little opposition from the public, most of whom were not aware of the importance of Mai Po or of nature conservation in general. Despite this result, the conservationists did win a concession from Government which designated Mai Po as a restricted area in 1975 and a Site of Special Scientific Interest (SSSI) the following year. This helped reduce disturbance to Mai Po by restricting access to people with special entry permits, issued by the Government, and this system continues until today.

In 1983, the World Wide Fund for Nature (WWF) Hong Kong began working with the Government to manage the Mai Po Nature Reserve and in 1985-1986, began organising visits for students and the public to the Reserve. This was to use the site not only to promote environmental education but also to gain public support for its future conservation. To overcome the problem of bringing groups of students and the public into Mai Po even though the site was a restricted area, the Government granted WWF a number of group entry

蔡培侨摄 Photo by Rubin CHUA

图一：学生们参观米埔的情景
Fig 1: School students visiting Mai Po

子、资料单张、录像、幻灯片及海报都一应俱全。这些资料原本只有繁体中文和英文版，随著香港主权于1997年回归中华人民共和国，为迎合国内游客的需要，部分资料也增印了简体中文版，虽然整体印刷成本因此而增加，但也是必须的。

作为非营利组织，WWF时刻都承受著经济压力，那就是要开设更多导赏团来确保保护区运作经费。然而，在政府愿意资助的数额范围内，每年的中小学生自然导赏活动数目只能以400团为上限，所以保护区近日作出了一个短期试验，把周末两天的公众自然导赏团由六团增至八团。虽未有研究显示客量增多对野生动植物造成任何影响，但部分旅客却反映保护区的经营手法略嫌商业化，亦使区内过于挤迫。有见及此，本会立即终止该项新尝试，团数于是再次回落至六团。

导赏员的素质

自导赏团开办初期，我们便已邀请大学本科生担任义务自然生态导赏员，他们会获得小额交通补贴。导赏员在受训后才可带团，全年也会有不少其他课程供他们辅修。这种运作方式很理想，因可让自然导赏员对保护区不期然产生兴趣。他们很多从大学毕业后会继续在生态学方面深造、有的选择能推动香港环境保护的工作，像当教师、公务员或顾问环境，有的更成为WWF的一员呢！

图二：浮桥上的学生们
Fig 2 : A student group on the floating boardwalk

permits. From that time on, the number of visitors to the reserve has increased up to a peak of around 40,000 visitors per year. One quarter of these would be primary and secondary students on specially guided visits during weekdays, and the remainder public visitors coming mainly on weekends and public holidays. WWF receives financial support from the Hong Kong Government's Education and Manpower Bureau for organising and guiding the student visits (meaning that the students can come for free), whilst people on the public visits pay HK$70 per head for their tours. The income from such tours is put back into the management of the reserve.

Providing a unique visitor experience

While WWF does not use the term "ecotours" for the visits they organise, they do meet most ecotourism criteria. In particular there is a strong

图三：汇丰银行职工投身米埔义工行列
Fig 3 : HSBC staff carry out volunteer work at Mai Po

educational element in the different types of tours that aims to provide a high-quality and unique experience to visitors that can increase their awareness of the importance and biodiversity of wetlands, and of the Mai Po Nature Reserve in particular.

A range of bilingual materials, such as leaflets, booklets, videos, slide kits and posters about the reserve, have been produced over the years. Initially these were in English and traditional Chinese characters, but following the return of sovereignty of Hong Kong back to the People's Republic of China in 1997, a number of these materials are now also produced in simplified Chinese characters to cater for the audience from Mainland China. This has an impact on the overall cost of production but is needed.

As WWF is a non-profit making organisation, there is often a pressure to organise more tours in order to raise more money for the management of the reserve. Whilst the number of school tours has been fixed at 400 per year because that is the number the Government will financially support, there was recently a short trial to increase the number of public tours from six to eight each Saturday and Sunday. Whilst no study was conducted on the impact this increase in visitor number had on the wildlife, feedback from some visitors indicated that they felt the reserve was too crowded and was becoming operated too commercially. As a result of this negative feedback, the trial was quickly stopped and the number of public tours each Saturday and Sunday was dropped back to six again.

Quality of the guides

From the beginning, undergraduate university students have been invited to volunteer to guide the public visit tours into Mai Po, for which they are paid a small amount to cover travelling costs. The guides are given training before they are allowed to lead tours, supplemented by further courses throughout the year. This system has worked very well because it has made the guides themselves interested in the reserve. As the guides have graduated from

图四：轮椅服务可供行动不便的游客使用
Fig 4 : Visitors make use of Mai Po's wheelchair access

惠泽渔民

WWF开始接掌管理米埔自然保护区之初，保护区便聘任当地居民执行维护的职务。但除此以外，保护区与周边社群的接触可说是少之又少。因此，村民对于有「外人」(即本会) 闯入并接受他们的土地，却从没有回馈他们分毫利益愤然不满。这种不快萦扰多年，直至1990年代中期，当地渔民开始到保护区入口抗议，声称渡冬水鸟到渔塘取食影响他们的收入。事件唤起WWF对当地社区需要之关注，并采取相关行动回应。

自此，双方关系得到大幅改善，现在保护区更会聘请渔民带领参观团，由他们讲解鱼塘历史、营运之道以及现时本港养殖渔业所面对的问题。渔民藉此亦会获发酬劳，以补助生计。

社区参与

WWF一直都以怎样使米埔惠及整体香港市民为念。保护区已为伤残人士提供不少方便他们出入的设施。这包括在大楼入口 (如教育及游客中心、观鸟屋) 及其他设施 (如桥、小径) 都适合轮椅进出，我们亦计划筹办专为失明人士而设的特别团。

交通便捷且旅费成本较低亦吸引不少海外人士纷纷前来米埔观鸟，保护区亦因而得益不少。其一当然是额外的经济收益，此外也提高了米埔在国际上的知名度，与此同时亦意味著每当保护区面临威胁，也可得到国际力量支持，如野生动植物专家去信港府，以示他们对保育的支援。他们也协助记录个别物种的现况与分布，这也是保护区职工无暇或没能力全面应付的。

本会在米埔自然保护区举办的自然导赏活动，都是希望让更多不同阶层的人士接触及认识区内以至那些区外湿地的价值。它之所以受欢迎，也由于我们把保育和游客与大自然的关系置于商业考虑之上。调查显示访客当中约30%都是旧地重游的人士。对于其他更大型的湿地观光点，如港府于2006年于拉姆萨尔湿地边陲落成、耗资数百万港元的湿地公园，我们深表支持，相信此举将会令更多人欣赏到香港的湿地美景，但同时亦意味著米埔自然保护区需要提高旅游体验的质量，才能挽住游客的心，这将是我们的下一个挑战。

university, many of them have continued to conduct higher studies in ecology, or found jobs that can have a positive influence on environmental conservation in Hong Kong, becoming teachers, government officials, consultants etc. Some even became WWF staff!

Benefits to local people

When WWF began taking over responsibility for the management of Mai Po, there was a policy to hire local people to carry out maintenance work in the reserve. But apart from that, there was little contact between WWF and the local community. As a result, there was some resentment amongst the villagers that "outsiders" (i.e. WWF) were coming in, taking over their land and not providing any benefit back to them. This ill-feeling simmered for many years until the mid-1990s, when local pond-fish farmers began protesting at the entrance to the reserve about wintering waterbirds taking fish from their ponds and so affecting the fishermen's income. This prompted WWF to understand and take action about the concerns of the local community.

From that time, the relationship has greatly improved to the extent that WWF now even organise special tours to the fishponds guided by the fishermen themselves who explain the history, management and problems facing the pond-fish farming industry in Hong Kong today. In return for leading these tours, the fishermen receive a payment from WWF that helps supplement their income.

Involving the broader community

WWF continually works to see how Mai Po can benefit the broad spectrum of people across the community in Hong Kong. In particular, the reserve has been trying to make itself accessible for people of limited mobility. This includes ensuring that the entrances to the buildings (e.g. education and visitor centres, hides) and other facilities (e.g. boardwalks, footpaths) are suitable for wheelchair users and in future, the reserve is aiming to organise special tours for the blind.

The ease and relatively low cost for overseas birdwatchers wishing to visit Mai Po has brought a number of benefits to the reserve. One of these of course is additional income but also, it has raised the profile of the reserve worldwide. This has meant that when there have been threats facing the reserve, it could count on international support to resolve them, e.g. overseas wildlife experts writing letters to the Hong Kong Government to show support for conservation. These overseas wildlife experts have also helped to collect records on the occurrence and distribution of particular species that the reserve staff may not otherwise have had the time or skill to collect.

The tours that WWF runs from the Mai Po Nature Reserve have been organised with the aim of allowing a greater number and variety of people to understand the value of wetlands, including those outside the reserve. These tours have been successful because they placed conservation and the visitors' experience of nature firmly above commercial considerations. Surveys have shown that some 30% of our visitors are repeat visitors. We welcome the construction of other larger wetland attractions in Hong Kong, such as the multi-million-Hong-Kong-dollar "Wetland Park" that the Government has opened in 2006 on the edge of the Ramsar Site. This will allow an even greater number of people to appreciate Hong Kong's wetlands but it also means that the Mai Po tours will have to concentrate on the quality of experience if they are to continue to attract people. This will be our next challenge.

※**杨路年**—世界自然 (香港) 基金会米埔自然保护区经理。

***Lew Young** is the WWF (HK) Manager of Mai Po Marshes Nature Reserve.

基于保护的小规模生态旅游实践 —
四川王朗国家级自然保护区生态旅游发展案例
Promoting conservation through small-scale ecotourism –
a case study of Wanglang National Nature Reserve, Sichuan

蒋仕伟
JIANG Shiwei

平武县拥有王朗保护区风光秀美的自然景观，国家级重点文物保护单位报恩寺，文化风俗独特的白马藏族。同时，平武县位于九寨沟黄金旅游路线上，与世界自然遗产九寨沟和黄龙风景区构成金三角，具有开展生态旅游的良好条件。

1996年，在四川省林业厅与世界自然基金会合作开展的平武综合保护与发展项目的资助下，王朗自然保护区进行了综合本底调查和管理状况评估，通过「SWOT」和「问题树」分析发现，影响王朗保护管理有效性的主要矛盾是：在保护区内和周边大熊猫栖息地上，偷猎野生动物；非法采集野生药材、森林蔬菜、食用菌类；社区群众放牧和烧牧场等现象的存在。加上王朗保护区工作经费缺乏、管理制度不健全、科研合作不足，以及员工能力需加强等因素，对王朗保护区的自然资源及保护管理有效性都造成影响。生态旅游作为森林产业的一种替代方式，成为示范如何平衡保护与发展需要的一个重要内容。王朗保护区的生态旅游项目就是基于以上背景从1998年开始进行的。

王朗生态旅游的概念

「王朗生态旅游即在自然、文化特色区开展的负责任的旅游，它保护自然环境并提高当地人民的生活水平。」

- 到自然、文化景点负责任的旅游是指旅游业发展对当地自然环境和当地人生活地区文化整体性的负面影响降低到最小，并且得到妥善管理。
- 支援自然环境和文化遗产的保护意味著生态旅游产生的经济收入中相当部分将用于保护，通过生态旅游提高游客和当地社区保护当地环境和文化方面的意识、态度和行动。
- 为当地带来经济效益，促进环境保护和可持续发展意味著生态旅游带来的经济效益、当地人的技能提高和责任感的增强，同时也能够改善当地人的生计，在可持续利用自然资源的前提下，建立一个比较坚实的地方经济基础。

原则

王朗自然保护区开展生态旅游坚持的原则是使王朗生态旅游不背离保护目标而长期经营。在资源与保护之间，可以通过生态旅游建立关联，形成良性回圈的机制，最终促进对自然资源和文化资源的保护。

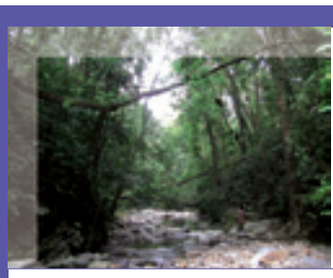
Famed for its fascinating natural wonders, Wanglang National Nature Reserve (NNR), Pingwu County is also rich in its cultural heritage, such as the nationally protected Buddhist Baoen Temple (Temple of Thanks Giving), and, the ancient and unique Baima-Zang (Tibetan) culture. Forming the popular "Golden Triangle" tourist circuit, Pingwu, together with Jiuzhaigou, the UNESCO World Heritage site, and Huanglong, a famous scenic spot, the region is highly suited to ecotourism.

In partnership with Sichuan Provincial Forestry Department and the World Wide Fund for Nature (WWF China), an Integrated Conservation and Development Project was instigated at Wanglang in 1996. Wanglang NNR carried out a baseline study and management assessment through SWOT (Strength-Weakness-Opportunity-Threat) and problem tree analyses, through which some problems were revealed that weakened the effectiveness of reserve management. Poaching, illegal harvesting of medicinal herbs, forest vegetables and edible fungi, grazing and pasture burning are still ongoing both within and the reserve, and in the surrounding habitat of the Giant Panda *Ailuropoda melanoleuca*. Moreover, a shortage of operational capital, an insecure management system, weak collaboration in scientific research and a lack of training have been detrimental to the natural resources and conservation management effectiveness of the reserve. Ecotourism is an alternative to forestry enterprise, and a key example to demonstrate a win-win approach to deal with conservation and development needs. These factors drove the launch of an ecotourism project in Wanglang NNR in 1998.

Notions of ecotourism in Wanglang

Ecotourism, as defined by Wanglang Nature Reserve, "is responsible visit to natural and cultural areas that conserves the environment and sustains the well-being of the local community."

- Responsible tour to natural and cultural areas refers to well-managed ecotourism that minimises negative impacts on the natural environment and cultural integrity.
- Ecotourism should support conservation of the natural environment and cultural heritage. A large part of the income generated should be reserved for conservation. By increasing the visitors' and local community's awareness of environmental and cultural conservation, we can help them to develop a better understanding of such concepts.
- Ecotourism should generate economic benefits for local communities, and enhance environmental protection and sustainable development. Ecotourism can lead to an increased level of economic benefits, and, raise the capability and responsibility of the locals. Under the framework of sustainable natural resource management, a more secure financial foundation can be established in the reserve.



「王朗生态旅游是小规模、负责任的旅游，它促进周边社区、游客、公司与企业、政府与非政府部门参与大熊猫栖息地保护机制的建立。」

保护区所采取的生态旅游方式：

- 使对自然景观和文化的消极影响减到最小，保护当地的生物多样性和文化多样性；
- 为保护工作提供资金和技术(如装备、设备等，提高工作人员的工作条件)；
- 努力使当地居民经济上受益，并促进社区公益事业和能力建设；
- 通过解说教育游客，促进外界对大熊猫保护的参与；
- 强调有责任的商业活动，充分与当地居民合作以满足当地需要并促进生态保护；
- 为生态旅游目的区域制订区划和游客管理计划,有好的自然资源，游客能充分参与到自然中去，并能感受到当地的文化传统；
- 利用科研资讯，进行生态旅游的监测评估，以减少对环境的影响；
- 与当地村民合作，确保旅游业的发展不超过社会和环境的承受极限；
- 依赖与环境相适宜的基础设施。

开发过程

项目从1998年确立开始，到2000年正式开始接待游客，到目前发挥出示范作用，大致经历了这样的过程。

- **首先引入生态旅游概念**

  和很多保护区一样，生态旅游对于1998年的王朗管理者来讲，依然是一个很陌生的事物。在四川省林业厅与世界自然基金会合作开展的平武综合保护与发展项目背景下，两位国际生态旅游谘询专家在平武和王朗，举办各种生态旅游培训班、研讨会、座谈等，为王朗和相关利益群体引入及培养对于生态旅游的共识。

- **用参与式方式制定生态旅游规划**

  在项目的开发过程中，特别注重「参与式」，充分让不同的群体参与进来，让利益相关者参与具体的生态旅游规划。强调有责任的商业活动，与当地村民合作，确保旅游业的发展不超过社会和环境的承受极限。王朗保护区在生态旅游规划中，先后有当地政府、交通、税务、旅游、林业、民族宗教、建设及社区群众等参与，在规划的同时也是重要的培养理念和能力建设的过程。

- **按照规划进行生态旅游适宜的基础设施建设**

  在基础设施改建中坚持的理念是：强调以舒适为基本要求，最大程度利用原有建筑，改造与新建相结合，突出地方特色和民族风格，在色彩搭配上尽量与周围环境协调，使用乡土技术和当地材料，充分考虑环保和可持续性，注重细节处理。

- **生态旅游解说**

  王朗保护区生态旅游最大的特点就是解说(包括景点解说和晚间讲座)。王朗保护区并没有专门的导游，通常情况下由监测巡护队员或者使用在王朗工作的科研人员承担。它的解说有别于很多千篇一律的神话妖魔传说、男女恋爱故事等，而是在确定了向游客详实地介绍大熊猫栖息地(包括伴生动物)的主题后，将王

Principles

Wanglang NNR has insisted on simultaneous long-term development of ecotourism and adhering to the principles of conservation. Resource utilisation and conservation are interlinked by ecotourism, forming an affirmative cycle to enhance conservation of natural and cultural resources.

The small-scale and responsible ecotourism in Wanglang helps facilitate the development of a mechanism to protect Giant Panda habitats through active participation of the local community, tourists, companies and business enterprises, government departments and NGOs.

The reserve's ecotourism approach:

- poses minimal impact on natural landscapes and local culture, conserving biological and cultural diversity;
- provides financial and technical inputs (equipment, facilities and staff training) for conservation;
- ensures appropriate sharing of benefits among the local community, and enhances community services and capacity building;
- educates visitors through interpretation and gets outsiders involved in Giant Panda conservation;
- stresses responsible commercial tourism activities, fully cooperate with local communites to cater for their needs and enhance biodiversity conservation;
- formulates zonal planning of designated tourist attractions/areas and visitor management plans; well-managed natural resources can draw visitors to experience nature and cultural heritage;
- draws on research data for monitoring and evaluating ecotourism, in turn reducing its environmental impact;
- joins hands with villagers to ensure that ecotourism will be within the carrying capacity of the local community and environment; and
- uses environment-friendly infrastructure.

The development process

Planned since 1998 and opened to the public in 2000, the Reserve now serves as a demonstration site. Ecotourism at Wanglang has gone through the following processes:

- **Introduction to the concepts of ecotourism**

  As in other nature reserves, ecotourism was new to managers of Wanglang NNR at the onset. With the joint efforts of Sichuan Provincial Forestry Department and WWF China, an Integrated Conservation and Development Project (ICDP) was embarked upon. Two international ecotourism experts helped organise a series of training courses, seminars and forums, to introduce the concepts of ecotourism and gradually gain a consensus between the reserve staff and other stakeholders on the course of implementation.

相片由作者提供 Photo by author

图一：外国生态游客在专业人员带领下，感受大熊猫生存环境
Fig 1 : Led by professional guides, foreign tourists visit the Giant Pandas' habitat

朗保护区历年来以及最新的科研成果，加上白马社区的村民或相关领域科学家与保护区老职工的长期经验以适宜游客接受的方式组织起来解说给游客。

- **生态旅游的监测评估**

  利用科研资讯，进行生态旅游的监测评估，使对自然景观和文化的消极影响减到最小，保护当地的生物多样性和文化多样性。王朗自然保护区从1997年以来建立了成熟的监测巡护体系，建立了GIS（地理资讯系统）系统，因此充分利用监测成果，采取了根据动物活动规律适时调整旅游线路，适当关闭大熊猫发情季节的敏感区域等保护策略。同时，在游客集中的景点，设置两栖爬行类和小型兽类（以啮齿类啮主）固定样地、随机样线，以种群变化、数量消长为指标，长期监测游客数量变化对生物多样性保护的影响。

接待操作过程

王朗自然保护区生态旅游从2000年8月开始正式接待游客以来，在接待操作体系上从无到有，再逐渐完善，积累了一些实际的经验：

调查、了解旅游市场

生态旅游的游客有著与大众游客不同的特点，因此王朗首先通过旅行社、网路、游客问卷调查等方式了解游客的需求，以制定相应的产品。目前，王朗将来的游客分为8种类型，从科研考察、国际团队、学生实习、夏令营到国际散客等。

制定针对性的营销计划，进行生态旅游市场营销

王朗制定了针对性的营销策略，在门票、住宿、餐饮、线路限制、有无解说服务等方面对每类游客类型采取不同的制度，以筛选符合王朗生态旅游要求的游客类型。

与旅行社或通过电子邮件、网站预定生态游客

为接待生态旅游游客，王朗保护区建立了自己的网站，并通过网站建立了预定系统；保持与游客、专家、环保人士的邮件联系渠道；通过举办研讨会、旅游推介会等与省内外旅行社保持著密切联系。

根据团队兴趣和时间共同制定详细的生态旅游活动

作为王朗的生态旅游联络人员，需要不厌其烦的通过电话、邮件、传真等方式与准备来区的游客进行讨论，根据游客的专业、兴趣、时间和身体状况共同商议行程、价格、活动、注意事项等，以尽力保证每批游客达到其期望。

在王朗生态旅游接待中，其他服务还包括在机场、平武

图二：参观社区养蜂，利益分享予社区
Fig 2 : Benefits generated from bee keeping will be shared among local communities

- **Participatory planning for ecotourism**

  From the start a "participatory" approach was strongly emphasised as it could draw the attention of different parties and let the stakeholders get involved in the planning process. By co-operating with local communities, Wanglang NNR emphasised responsible tourism, and ensured its development would be within the carrying capacity of the society as well as the environment. The reserve staff, local government, and representatives from sectors including transport, taxation, tourism, forestry, ethnic religion and construction, as well as local communities, discussed issues when devising ecotourism plans, from which they could gain a clearer understanding and build their capacity.

- **Provision of appropriate infrastructure for ecotourism**

  In adapting the infrastructure various principles were followed: consideration of visitor comfort and attention to detail; optimal utilisation of original structure; integration of renovation and construction; highlighting the social and ethnic features; use colour compatible with the surroundings; wise use of local techniques and materials; and deliberation on environmental protection and sustainability.

- **Interpretation service for ecotourism**

  Ecotourism at Wanglang NNR is primarily characterised by its interpretation (including on site interpretation and evening seminars). As there are no full-time tour guides in the reserve, wardens and reserve-based researchers conduct these. Rather than rehashing legends or love stories, their interpretations emphasise detailed description of Giant Panda habitats (including associated animals) and successive research findings. Moreover, the accumulated experiences of Baima villagers, scientists as well as reserve veterans are recapped and delivered in a visitor-friendly way.

- **Monitoring of ecotourism**

  To minimise the adverse impact of ecotourism on natural landscapes and culture, and protect Wanglang's biological and cultural diversity, scientific research data is used in monitoring. A well-developed monitoring system and a GIS system have been established at Wanglang since 1997. With optimum use of the monitoring data, conservation-oriented ecotourism is planned by referring to the activity patterns of wildlife and closure of sensitive zones during the mating season of Giant Pandas. Meanwhile, permanent quadrats and random line transects are set up in tourist attractions for long-term monitoring of herpetofauna as well as small mammals (mainly rodents) to measure the impact of changes in tourist number on biodiversity conservation, by indicators like changes in their population size.

Visitor reception

Ecotourism at Wanglang has been open to the public since August 2000. The visitor reception system started from scratch and has improved gradually. The reserve has gained some practical experience:

Market research

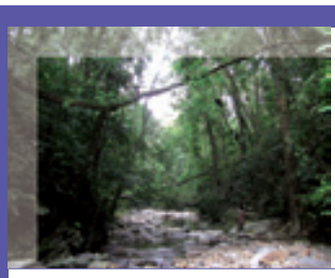
Visitors joining ecotourism are somewhat different to general tourists. Wanglang has become acquainted with their needs through interviews with travel agencies, Internet search and questionnaire surveys, so as to provide custom-made services. Currently, visitors at Wanglang are divided into eight categories, including scientific researchers, international groups, students, summer camps and individual foreign visitors.

Target-oriented marketing plans

Wanglang has formulated a number of marketing strategies. Each category of visitors will be provided with the appropriate level of service, such as ticketing, accommodation, catering, route planning and interpretation. Visitors suited to Wanglang are selected through these marketing processes.

Reservations

To serve ecotourists, Wanglang reserve has established its own website, and has an electronic reservation system. Sending emails is another



或王朗保护区入口处接团，保护区专门有人在团队来区时介入接待过程等。提供周到、细致、热情的人性化服务。

发展现状

目前有关方面取得了几项工作成果。

- **筹措资金，弥补了保护工作资金缺口**

  王朗自然保护区在开展生态旅游以前，在财务管理上面临很大的压力。最直接的问题是除了当地财政按人头工资定额预算的经费外，保护区可支配的资金来源极少。自然保护区虽然为公益性的全额拨款事业单位，但是由于县级财政在天然林停伐后一时没有找到新的税源，王朗保护区自身几乎没有其他的可支配收入，造成正常的保护活动如监测巡护、能力建设、差旅办公费用等没有资金保障，这是很多保护区都面临的。因此，开展生态旅游等活动，增强了王朗自然保护区的财务管理能力和保护管理有效性，帮助建设与环境协调的生态旅游接待设施。

- **提高了职工积极性和工作能力**

  旅游的收入可以使这些每个月有20天以上时间远离家人在高寒山区艰苦工作的人员每月增加一定的野外工作补助，并且用旅游收入的钱解决了职工在保护区内的吃饭问题。除了报酬增加外，王朗职工在与游客的交流中、在回答游客向他们提出的关于大熊猫或其他野生动物的各种问题中感受到了自身工作的重要性与价值，激发了对工作的兴趣和保护区的热爱，增强了王朗职工团队的凝聚力，保护区职工在平武县有相当高的自豪感。

- **扩大了对外交流渠道，建立了外部技术支援体系**

  随著生态旅游的开展，各种类型的游客来到保护区和社区，使保护区积累了更多的社会及人力资源。这些访客将各种资讯带给了保护区，也结合他们自身的优势，无偿或优惠地为王朗保护区提供了诸如印刷、宣传、培训、夏令营组织等非常实际的帮助。特别是科研人员的到来，在合作和参与过程大大地提高了职工的能力，弥补了王朗保护区自身人力资源的不足。

- **生态旅游市场初步打开，经营模式得到外界认同**

  通过几年的发展，小规模、高品味的经营模式得到了专家、旅游界、生态游客的肯定。游客的比例逐年增加，他们是支撑王朗按照真正意义上的生态旅游经营的理想目标群体。

- **促进了国际认证的开展**

  王朗的案例，被澳大利亚「自然与生态旅游认证项目」(NEAP) 做为发展中国家生态旅游基准并在2002年5月世界生态旅游大会推荐。还有望成为国内首家通过绿色环球21[1]生态旅游标准认证的自然保护区。

- **扩大了知名度，提升了王朗形象**

  王朗保护区生态旅游的成功案例，引起了媒体的极大关注。先后有多间国际及国内媒体来区采访报道，王朗生态旅游项目发展中的经验教训也作为培训交流案例，向省内外保护区和国际保护组织交流，提高了保护区的影响力。

- **促进了环境教育项目的开展**

  以生态旅游为载体，王朗自然保护区开发了完整的「参与式夏令营」操作手册，又与成都大熊猫繁育中心合

channel to keep in touch with visitors, experts and environmentalists, whilst travel agencies are kept abreast of the latest developments at Wanglang through workshops and tourism promotions.

Detailed planning

Wanglang liaison staff keep in close contact with the forthcoming visitors by phone, email or fax. The visitors' expertise, interests, time schedule and health conditions will be considered for setting the schedule, price, activities and visitor information upon mutual agreement, and the reserve strives information to meet the expectations of all visitors.

Wanglang also provides a pick-up service from the airport, Pingwu or the reserve entrance, providing a reliable, meticulous and thoughtful reception service.

Achievements and development

A number of benefits and achievements have been made so far.

- **Tourism income helps fill the capital gap**

  Before the launch of ecotourism, Wanglang NNR was in financial straits. Apart from a total sum of fixed service salary, other sources of funding that the reserve can tap into are very limited. Being a public institution, the reserve should receive full financial support. However the county government has no alternative source of tax after the logging ban was imposed, leaving the reserve without any disposable income. Many nature reserves are subject to similar financial constraints such that normal operations like monitoring and patrolling, capacity building and study trips are obstructed. Nevertheless, promotion of ecotourism activities can increase the management effectiveness in both self-financing and conservation and help construct an environmentally friendly infrastructure.

- **Building impetus and capacity for reserve staff**

  For field staff spending over 20 days each month in alpine areas away from home, ecotourism can provide extra field allowance and improve their livelihood. Besides this, the reserve staff recognise their own importance and value when interacting with tourists and responding to their queries on Giant Pandas and other wild animals. The daily operations stimulate their interest and enthusiasm for conservation as well as the reserve. Cohesion among reserve staff is thus strengthened, and the staff are very proud of their work.

- **Expansion of external communication channels and development of an external technical support system**

  As ecotourism activities have attracted different kinds of visitors to the reserve and the community, the reserve has accumulated social and human resources. Visitors are willing to introduce updated information to the reserve, that takes advantage of the network to provide hands-on support in printing, publicity, training and organisation of summer camps at little or no cost. The reserve staff also gains skills through collaboration and participation with researchers, which relieves the labour and skill shortage in the reserve.

- **Pilot scheme for ecotourism gains recognition from outsiders**

  Following years of ecotourism development, experts, tourism business professionals and tourists have given recognition to such small-scale but high-quality operation Wanglang has experienced a yearly increase in the number of tourists, which provide backing to the ideal of achieving genuine ecotourism.

- **International ecotourism accreditation and certification**

  Certified by Australia's "Nature and Ecotourism Accreditation Programme" (NEAP), Wanglang was recommended in the World Ecotourism Congress in May 2002, as a benchmark for ecotourism development in developing countries. The reserve is under consideration to be the first in China to achieve the prestigious Green Globe 21[1] Benchmark Certificate.

[1] Green Globe 21. http://www.greenglobe21.cn/

作开发环保或生物夏令营等项目。

- **王朗成为了生态旅游培训基地，担当培训者的角色**

  生态旅游的成功开展成为王朗展示保护与发展协调进行的窗口。王朗已经成为生态旅游的培训基地。

面对的挑战

推行整个生态旅游项目也不是完全没有困难的。

1) 真正具意义的生态旅游目前还处于发展阶段，国内生态游客市场薄弱，生态旅游管理还需要规范，还需要全面性的积极培育和引导；

2) 站在保护区的角度，发展生态旅游需要慎重。特别是在经济快速发展的时期，如何与当地经济发展的期望接轨，影响著保护区开展生态旅游项目的成败和目标的实现；在目前，有很多保护区，因为开展旅游而削弱了保护的职能。随著大众旅游市场的推动，游客数量不断攀升，导致了对保护本身的威胁。

3) 生态旅游虽然是保护区所积极推动的基于保护的发展活动，但是在实际操作中必须遵循市场规律，发挥市场的作用，生态旅游才会成为可持续的保护活动；

4) 社区旅游受益不平衡，富裕户多，相对贫困的农户受益较少，加大了贫富差距，因此需要尝试建立一种社区基金，通过其他的项目途径来减少贫富差距；

5) 旅游活动产生的负面影响不容忽视。如对传统文化的冲击，柴薪利用量的增加、价格恶性竞争等；因此需要加以规范和引导，建立各种可操作性的制度，应对高速发展的大众旅游的冲击。

- **Increasing profile and image of Wanglang**

  The successful launch of ecotourism at Wanglang has gained great media coverage, both nationally and internationally. The lessons gained from ecotourism are a resource for training and interflow with other reserves and international conservation institutions, resulting in increased influence of the Wanglang reserve.

- **Instigation of a number of environmental education projects**

  Ecotourism is a medium for delivering messages and information. Through it Wanglang NNR has developed a comprehensive operational manual for "Participatory Summer Camps". It also joins hands with the joins Chengdu Giant Panda Breeding Centre in organising summer camps to promote environmental and biological conservation.

- **Wanglang becomes a leading training base for ecotourism**

  Successful ecotourism development is a key to the synergy of conservation and development. The ability to share the lessons gained has made Wanglang a training base for ecotourism.

Challenges

The ecotourism programme is not without challenges.

1) While development of genuine ecotourism is ongoing, at present the market potential is still weak in China, and current management is in need of proper overall training and guidance.

2) From the standpoint of a nature reserve, ecotourism development should be treated with caution. Particularly at times of rapid economic development, a link with economic expectations can affect the efficacy and target accomplishment of ecotourism projects in the reserve. Currently, many nature reserves malfunction because of tourism development. Following the promotion of mass tourism, the ever-increasing number of tourists poses a threat to conservation in the reserves.

3) Though ecotourism is an activity driven by the conservation concern of the nature reserve, it will be sustainable in practice only if market trends and potential are understood and realised.

4) While the tourism business has improved the livelihood of the well-off, other farmer households have not benefited much. The income gap between rich and poor is hence further enlarged, and the setting-up of a community foundation is needed to bridge the gap through the launch of various projects.

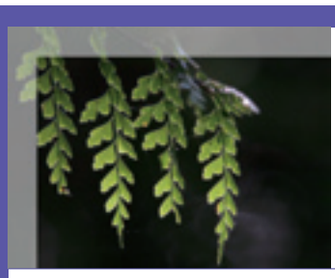
5) Adverse impacts on traditional culture, increased consumption of firewood and the emergence of "price wars" should not be overlooked. With proper regulation and guidance, operational systems must be established to counteract the impacts of tourism.

※**蒋仕伟**—四川王朗国家级自然保护区管理处副处长。1991年开始在王朗自然保护区负责自然保护区管理工作，在社区发展、生态管理及保护区有效管理等方面有实际的操作经验。

***Jiang Shiwei** is Deputy Director of the Management Office of Wanglang National Nature Reserve. Having worked for the reserve since 1991, Jiang has a wealth of hands-on experience in community development, ecotourism and reserve management.

王朗舒适的生态小道
An eco-trail at Wanglang

相片由作者提供 Photo by author



大明山保护区开展自然旅游的经验初探

A preliminary evaluation of nature tourism at Damingshan, Guangxi

梁家善
LIANG Jiashan

广西大明山国家级自然保护区位于广西中南部，地处东经108°20′～108°24′北纬23°24″～23°30″，北回归线横贯保护区中部。保护区居于广西南宁市武鸣县、马山县、上林县、宾阳县四县交界处，总面积为16,994公顷，森林覆盖率达93%。大明山主峰龙头峰海拔为1,760米，是广西中南部最高峰。大明山生物资源丰富，种类繁多，大明山有2,023种植物，有294种脊椎动物，有531种昆虫，有大型真菌202种，是一个巨大的生物宝库。

相片由作者提供 Photo by author

图一：冰雪雾凇美景
Fig 1 : Frost-covered tree at Damingshan

大明山保护区管理局的前身是1958年成立的大明山林场，于1981年改建为省级自然保护区，于2002年7月跃升为国家级自然保护区，是目前广西省内国家级保护区中职工人数量多的单位。

大明山旅游业始于1984年，但从1984年至2001年，大明山的旅游开展实质上是处于自然发展状态，没有进行投入，没有设立专门机构进行管理，因而旅游基础设施也很差。旅游收入只是收取一点森林资源保护费，所以旅游年收入很低，还不够保护区资源保护设施的开支。而且保护区内部管理很乱，常有乱掉垃圾，在林区乱走乱鈷，偷挖草木等现象，甚至常出现安全事故的发生。

自2002年以来，大明山国家级自然保护区管理局开始把旅游作为重点行业来抓，举办了「广西第三届森林旅游登山节暨大明山首届杜鹃花节」，并且在原有的旅游路线的基础上，加强对旅游基础设施的配套，旅游服务设施及旅游产品宣传等各方面的投入，从而把大明山旅游业推上一个新台阶，呈现出突飞猛进的好势头。旅游业的旅游人数由原来的年均一万人发展到2005年的六万人。

在过程中我们总结了以下几方面经验。第一，保护区开发旅游必须是以保护区管理部门为主，以「保护」为前提条件。很多的保护区由于当地政府的介入，由旅游部门直接管理，或承包给个体老板开发，造成了泛滥开发，破坏森林的严重后果。第二，着重抓住景区的独有特色。

Damingshan National Nature Reserve is situated in south-central Guangxi, at 23°24”~23°30”N by 108°20”-108°24”E. With a total area of 170 km^2, Damingshan is endowed with high forest cover (93%) and lies at the borders of Wuming, Mashan, Shanglin and Binyang counties. Longtoufeng (1,760m), the summit of Damingshan, is the highest peak of south-central Guangxi. Rich in biodiversity, Damingshan is home to 2,023 known plant species, 294 vertebrates, 531 invertebrates and 202 macrofungi.

Established in 1981, Damingshan Provincial Nature Reserve Management Bureau was formerly a forest farm set up in 1958; it was upgraded to a national nature reserve (NNR) in July 2002. The reserve has the biggest staff force among the NNRs in Guangxi.

Tourism development at Damingshan was given a free hand from 1984, when the business began, to 2001. There was no input and no special tourism management structure from the reserve. Basic facilities for tourists were also poor. The limited gate fee from tourism was far from sufficient to cover the expenses in resource protection. Inadequate tourism management led to problems of littering, trespassing and plant collection, as well as many accidents. From 2002 the reserve looked to tourism as a major operation. The “*Third Guangxi Mountaineering Festival*” and “*First Damingshan Azalea Festival*” were organised. The facilities along the existing access route was also upgraded. With improvements in services, facilities and promotion, tourism at Damingshan stepped into a new phase, and visitor numbers rose from 10,000 in previous years to 60,000 in 2005.

Several lessons have been learned from our experience so far. First, tourism should be governed by the reserve itself, with conservation as a strict pre-requisite. Many reserves in China are subject to intervention by local governments, with tourism managed by either the tourism department or contracted to independent businessmen, leading to over-exploitation and forest destruction. Second, development should be focused on the distinctive features of scenic spots within the reserve. Tourism in nature reserves is far different from general tourist attractions, being ecologically-minded and making no room for thoughtless exploitation. Third, the main theme and attractions should be underscored by launching publicity campaigns to arouse external awareness, so as to establish a brand for the reserve. The theme should be around nature or

保护区开展旅游区别于一般景区就是要以「生态旅游」为目的，避免盲目性开发。第三，突出主题，抓住主要亮点，侧重对外宣传，扩大景区品牌影响力。以自然生态为主题，抓住景区四季特色这些主要亮点，做好专题的对外宣传。

除了为人们提供一处良好的认识自然保护的机会，旅游也为保护区带来了其他好处。旅游可带动第三产业，解决保护区人员的就业及周边社区的群众就业，以促进社区共管。此外，还可以增加保护区的造血功能，提高自身的自养能力，达到「以开发促保护」的目的。

相反，如管理不当，会造成开发与保护的冲突，在保护区内开发旅游，车辆及人为活动等影响，会令环境受到污染。野生动植物生活受到干扰，森林受一定的破坏。这些负面影响因而促成了一些对策的产生，包括严格控制在实验区内开展旅游活动；建立健全的管理队伍，严格完善管理制度；在建设上做好「三废」处理系统工程建设。订立旅游详规，在管理上，最好用环保型观光车，同时控制外来车辆进入，特别是污染大的车类，并进行动态环境监测。还有推出政策，促进社区经济，达到共同发展。

※**梁家善**—大明山国家级自然保护区管理局任旅游科科长，现为北京林业大学在读农业推广硕士研究生。

***Liang Jiashan,** Officer-in-charge of Tourism Section of Damingshan National Nature Reserve. He is now studying his MSc Degree in Agriculture Extension in Beijing Forestry University.

相片由作者提供 Photo by author

图二：2005 年元旦与当地报社媒体联合举办的徒步登山大型活动。
Fig 2 : A mountaineering activity co-organised with the news media on New Year's Day in 2005.

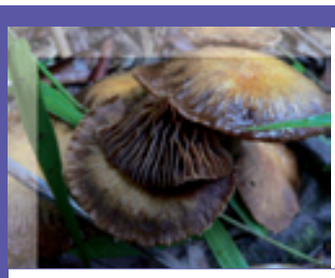
the reserve should make use of seasonal features as main tourism ecology and attractions.

Besides increasing public awareness of nature conservation, tourism has brought other benefits to the reserve. The service industry has helped provide more employment opportunities for redundant reserve staff and members of the local community, enhancing community co-management. The reserve has also gained new ways for generating income, and can now be self-sustaining, as required by "development for conservation".

Conversely, improper management can lead to conflicts between development and conservation. For example increased traffic flow and human activities as a result of tourism will pollute the reserve environment. The natural landscape, the forests and their wildlife are vulnerable to various disturbances. Such negative impacts of tourism have prompted a number of countermeasures at Damingshan. They include strict controls on tourism activities in the experimental zones, a sound operating system by a team of competent staff, and construction of systems to treat the "three wastes" (exhaust gas, sewage and solid waste). Tourism regulations include environmentally-friendly transportation services, control of pollution-prone vehicles, and environmental monitoring. In addition, policies promoting the economy of local communities are also formulated to achieve mutual development.

相片由作者提 Photo by author

图三：长在海拔 800 米左右的天然的千顷吊钟花
Fig.3 : Flower sea of *Enkianthus quinqueflorus* at an altitude of 800m



空降而来的观光化 —「发现」镇西堡

Tourism development out of the blue: the "discovery" of Cinsibu

黄国超
HUANG Guo Chao

台湾新竹县尖石乡镇西堡意为：「太阳最先照到的地方」，海拔高约1,800公尺，住家约有25户，人口200人左右。目前镇西堡仍维持日出而作、日落而息的传统务农生活。镇西堡离最近的城镇竹东车程约三个小时，当地至今仍无公共运输系统及医疗设施，每年台风、梅雨季节经常塌崩，严重时甚至须仰赖政府空投食物救援。

早期在林务局大举砍伐桧木外销日本的威权年代，镇西堡部落的居民在土地意识及祖先财产的观念下，表示不惜与林务局武力冲突。在强大的民气压力下，保住了现在这片林务单位还在觊觎的原始森林。可是，1998年12月18日，这个位在尖石乡中央山脉最后的一个偏远部落，被中国时报旅游版记者「发现」，而正式走入台湾休闲活动旅游的舞台。

相片由作者提供 Photo by author

图一：镇西堡部落
Fig 1 : Cinsibu

镇西堡发现了甚么?

十年前，部落的青年告诉我不排除放火烧掉森林，以换取政府对原住民生存权的重视。十年后，部落的青年告诉我，不排除放火烧掉森林以换回过去原本的生活。以前整个部落的家庭从来都没有人锁门，也不怕别人偷，现在却是出门必挂一大串钥匙，到处上锁，老人家还要清点鸡鸭数目后才能安心去田里工作。我们试著从下列三个面向来讨论观光发展与发展后衍生的问题。

1. 桧木林旅游

该记者以「发现」、「神木※」、「单纯、慷慨天性」的原始桧木林为整篇报导重点，将族人创造或强化为快乐原始人的形象，将部落传统领域贬谪为一种没有时间限制的神秘世界，部落化为一种可爱的，却具有危险的秘境。新闻曝光当天，全台湾各地游客如同时中了魔咒一般，相关询问电话疯狂地涌进原本宁静的部落，一天不到的时间，镇西堡教会招待所的客房，已经被游客预订到隔年一月底。

由于媒体对「神木」旅游的过度强调，在民众集体性盲从的消费风气下，对桧木的原始生态环境造成严重的人为破坏。需要千百年才能成林的红桧、扁柏、红豆杉等珍贵树苗，几乎全数被游客连根带走。更甚者，还有带工具入山盗采红桧树瘤，做成奇木茶几贩售。而可食的原住民野菜，只要见诸报章杂志者，森林内甚至住家前亦无一幸免。由于观光客前来消费的主要动机不在泰雅族文化、历史与人民，加上匆忙的行程安排，以致于在部落内停留时间短暂，部落居民也因而丧失文化教育与环境解说的机会。

Located in Jianshih Township of Hsinchu, Taiwan, Cinsibu means a the place where the first sunbeam is cast". With a population of 200 aborigines in 25 households, Cinsibu is 1,800 m above sea level, and a place where traditional farming is still practised. Even today it takes about three hours to travel from Cinsibu to the nearest town, Chutung. It lacks a public transport system or medical facilities. During typhoon and heavy rains it is subject to frequent landslides and residents even have to rely on airborne food supplies at critical times.

In earlier years when Taiwan was under authoritarian rule, extensive logging was advocated by Taiwan Forestry Bureau to meet Japan's soaring demand for timber. The Atayal's consciousness of land and of ancestral property meant local tribes were ready to resort to armed conflict with officialdom. The virgin cypress forest was hence preserved through strong civil resistance, though the Forestry Bureau continued to covet it.

Unfortunately, the presence of this last remote tribe dwelling in the central mountainous area of Jianshih was made known by a travel journalist of the "*China Widely Times*" on 18 December 1998. This prompted a tourism industry in Cinsibu.

What has Cinsibu discovered about tourism?

Ten years ago, a young man of the tribe told me he would draw the Government's attention to their survival rights by burning the forest. Now, he is outraged by what has been done in Cinsibu and willing to burn the forests to regain the traditional life he has lost. In the past the households left their doors unlocked, as they enjoyed a strong sense of security; now people have to keep a chain of keys to lock all the doors, and the elderly must do a poultry headcount before going to work. We will discuss tourism development and its problems in three main aspects.

1. A commercial walk in the cypress forests

Using words like "discovery", "sacred woods※", and "simple and generous nature" to draw readers' attention, the journalist depicted the aborigines as happy primitives and devalued their traditional territory as a mysterious world lost in time, whilst the tribe itself was portrayed as lovely but dangerous. From the day the news was released, people in Taiwan were spellbound by Cinsibu and kept calling for more information; the church guesthouse was soon fully reserved until the end of January 2000. Once surrounded by peace and tranquility, the Atayal tribe was swamped by visitors.

Since the emphasis on "sacred woods" tourism by the media drove outsiders to flock to Cinsibu, relentless human activities have devastated the natural environment. Most saplings of valuable trees including Taiwan Red Cypress *(Chamaecyparis formosensis)*, Taiwan Yellow Cypress *(Chamaecyparis obtusa),* and Chinese Yew (*Taxus cuspidate*), which take

※泰雅族人并没有「神木」的信仰，因此将桧木称「神」呈现的是记者汉人信仰观念。相同逻辑下，时有汉人游客携带香烛对桧木林祭拜，祈求保佑。

※ *There is no common belief in "sacred woods" among Atayal communities; hence the Han Chinese journalist was the one to "deify" the cypress trees. Faith in these spirits has driven some Han Chinese visitors to bring along a stack of incense sticks to seek blessing.*

2. 河川保育

镇西堡溪位于石门水库的上游，是当地泰雅族人的传统猎场，过去族人会集体前往捕鱼、分享并教育孩子游泳与保育观念，溪中的鱼就像掉落的树叶一样的密。自1995年起，在当地牧师的推动及带领下，居民召开多次护溪，护鱼的社区公共会议，凝聚部落的共识，并制作「部落公约」的告示牌，禁止非法猎鱼行为。多年来，已经防止了很多外来游客毒鱼、钓鱼等破坏。但是这些行使社区主权的行为与生态永续的保育却受到一波波的挑战，最主要徵结来自于「于法无据」。因此对于强行进入保育河段的游客，居民只能够好意地给予「道德劝说」，请求配合。过去发生几次没收钓具事件却引发了游客的激烈反弹，当这些挟著强大经济、文化优势来到异族生活空间消费的「文明」游客主张「消费者权益」的霸权时，却也反映出「文明世界」对处于政经弱势的原住民土地、文化的再次掠夺。

3. 民宿产业

传统的泰雅族竹屋建筑，传承著祖先与环境共存的工艺与智慧，施工迅速、竹子材料量多且成本低廉。在兴建过程中，不仅可以学习工法，更重要的是整套的相关知识、仪式与禁忌。平地的汉人游客，虽向往桧木林与部落的自然原始，却又需要现代化的生活设备栖身。在平地人「有钱为大」的现实教诲下，族人努力整地，盖起一座座的钢骨民宿，作为平地人前来消费的基础。但由此民宿产业成本便大大上升，光是偏远高山运费就比平地贵了一倍。农民将多年辛苦的农业收入所得，投注于一场不知未来会是输赢的游客争夺战。但是大家普遍同意一座像样的新房子是发展观光旅游的入场。

然而几年经营下来，由于族人存有农业社会好客的天性，对于第二次来的游客便以朋友招待而常不收费，使得民宿成本回收无日，甚至负债于客家材料商。民宿的收入上，平地商人也经营民宿，由于他们拥有成功策略、老板的个性「在商言商」、及比部落居民广阔人脉，加上使出流血价格战，刻意压低民宿价格，并夥同旅游业者任司机分红抽头，形成一套商业共利的结构。又他们大量引入平地工厂所制作的廉价原住民工艺品并以平价贩售，对平地游客来说，所购买的纪念品是否为当地所制作无人在乎，价格战也因此排挤了部落族人手工制作的工艺品销路。

在餐饮服务上，为满足平地人「比较卫生」的饮食习惯，部落妇女也开始下山学习烹饪非部落特色的餐饮菜色。因为部落不生产这些菜，所以她们要到山下买菜，饮食的产值越来越靠平地的菜市场来支撑，资金外流而不在部落。而且到最近的城镇竹东采买路途遥远（往返需6-7个小时），交通成本高数量又不好掌控。另一方面是从事餐饮业并非泰雅族文化上所认同的价值，泰雅族崇尚「勤劳」的德行，这样的德行必须展现在土地关系上，也就是农业或打猎，因此男性族人宁愿当向导可以爬山、看陷阱又可以赚钱，同时还可以对游客展现自己山林的知识取得优越感。而一个会种田的妇女比一个会卖面的女性来得容易受社会肯


相片由作者提供 Photo by author

图二：为迎接游客，部落投资农业所得建造钢骨民宿，却也常常因为好客的天性而导致所投资建筑成本血本无归。

Fig 2 : Building steel and concrete homestay inns took up all the tribe's agricultural income. Making a profit was not so easy for a naturally hospitable people.

hundreds of years to grow into forest, were removed by visitors. Some visitors even brought tools to collect burrs of Red Cypress, to make fancy coffee tables. Once publicised by the media, edible wild vegetables were collected, whether they were growing in forests or in private courtyards. Since the major attraction was not about Atayal history, their culture or the people, and the tours were rushed, visitors only spent a short amount of time in the village. The local tribe hence lost the opportunity to conduct cultural education or environmental interpretation.

2. River conservation

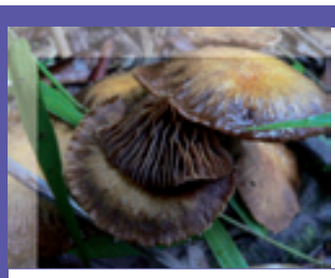
The Cinsibu River above Shihmen Reservoir was a traditional hunting ground among the Atayal people. They used to gather here for fishing, teaching children about conservation or swimming. Elders recall that the fish population was once as dense as the number of fallen leaves. Since 1995, the local priest has recognised the critical role of ecological conservation for the future. Under his prompting and leadership, tribal meetings were held to reach a consensus on fish and river conservation. With a ban on illegal fishing stated on the tribal agreement signs, success was gained as most cases of fishing or poison-fishing by outsiders were prevented. Nevertheless, exercising community rights to balance exploitation with ecological sustainability has been difficult, primarily due to the absence of legal support. When visitors insist on entering the conserved parts of the river courses, the local tribes can use only "moral persuasion" to convince them to cooperate. Seizures of fishing tools in the past stirred up great resentment among the visitors. When these "civilised" visitors, with their economic and cultural advantages, declare their "consumer rights" in exotic places like Cinsibu, "civilised society" once again deprives disadvantaged aboriginal people of their culture and land.

3. Development of bed & breakfast inns

The Atayal's traditional bamboo dwellings come from the craftsmanship and conventional wisdom accompanying the co-existence of man and nature. Bamboo is cheap and easily accessible, and the sophisticated Atayal people can complete construction within a short time. In the course of construction, they reinforce their skills, and more importantly, gain first-hand knowledge of related rituals and taboos. The Han Chinese visitors (a.k.a. "plains people", as they are the immigrants living on the plains or foothills of Taiwan) are enchanted by the cypress forests and the primitive tribe in harmony with nature. But they cannot live without the trappings of modernisation. Taught by the visitors to listen to money, the aborigines endeavoured to construct as many steel and concrete homestays as possible to accommodate the visitors. This prompted an upsurge of construction costs, as delivery of construction materials uphill doubled the carriage expenses. Farming households bet all their savings to compete for the local tourism market, despite the uncertainty that they could capture more visitors in future, and it was generally accepted that a well-furnished house was an entry ticket to the tourism business.

As it turned out, the inns were not as lucrative as expected. The hospitable aboriginal hosts often treated repeat visitors as friends and did not accept any payment. The construction costs could not be recovered and some Atayal people ran into massive debts with the Hakka suppliers. Meanwhile outside merchants also constructed their own inns. Their superior marketing strategies, profit-making mindsets and wider networks helped them capture the lion's share of the tourism business. They even used price wars to exclude rivals. They partnered with tour operators as drivers and shared of a certain percentage of the profits gained. In addition, they brought in mass-produced handicrafts manufactured in factories elsewhere and sold them at a low price. Since the visitors did not really care whether these souvenirs were made locally, the price war drove out the aboriginal competitors.

For catering services, women were required to go downhill to learn how to cook non-tribal dishes to cater for visitors' "hygienic" dietary habits. Since the ingredients used were unavailable locally, the tribe could only purchase them in the markets near the foothills, resulting in an outflow of capital from the tribe. The long distance to the nearest town,Chutung, forced the aborigines to travel for 6-7 hours. The transportation cost was high and it was difficult to predict the demand. On the other hand, provision of catering services was not in line with the values



定，所以妇女们宁愿多些时间在自己的田地工作上。族群文化的因素导致部落餐饮发展与民宿家数不成比例，同样也落败于平地商人之手。

族人本梦想著发展观光而来游客的住宿费、导游解说费商机无限，实际发展后却是反方向走。因为道路交通的改善，因此很快地有平地商人的旅行社专营「雪霸泰雅」小巴士，招揽一天来回镇西堡的「神木之旅」。而更多的游客是自行开车上山，自己带帐棚食物享受露营烤肉的乐趣，剩下没带走的，就是部落居民时常发动青年捡拾的沿途垃圾与啤酒、汽水罐。原先预期赚取的向导费，在无数登山队沿途绑上一堆塑胶布条后，喜爱探险的游客沿著垃圾自己找路走，居民仅有的向导工作被平地巴士司机所取代，短短五年时间族人再度面临失业危机。

部落的能动性与解决策略

为了解决部落因应观光所带来的种种环境破坏的问题，特别是部落主权的维护与泰雅文化精神的延续，以及凝聚部落观光的共识。在酝酿多年之后，教会与居民于1999年底成立了「泰雅尔族部落永续发展协会」，积极介入部落营造及人才培育的工作。这些工作以下列三者最具代表性：

相片由作者提供 Photo by author

图三：部落积极重建传统谷仓，作为部落独特文化的象徵。

Fig 3 : The tribe builds traditional granaries as symbols of their distinctive culture.

1. 空间规划与意象营造

单一景点的观光模式，让居民意识到如果游客只去「神木区」的话，那么留下他们来食宿的机率便不大。于是族人开始思考「进入部落即是观光开始」的可能性。首先，居民开始整理社区道路二旁的植物美化，并达成家户分段认养管护的共识。其次，藉外来观光客的刺激，居民也开始思考以展现文化来维生，并藉以强化我群的认同。因此2000年开始，部落藉著劳委会永续就业工程的协助，开始在自家旁边重建一座座的传统谷仓、绘制泰雅图腾，并在重要路口兴建了望台作为入口意向。族人们讨论不要盖水泥房，让现有的木板平房成为特色。未来期望可逐步将游客和自己住家区分开来，以改善目前主客相互干扰的尴尬情况※。

2. 文化产业技能培训－男、女传统编织

泰雅族人物质文化与工艺技术的特色在于「编织」而非「雕

相片由作者提供 Photo by author

图四：购买纪念品是多数游客的习惯。（图左）编织品因为实用而成功商品化，（图右）传统手工艺品却被市场淘汰。

Fig 4 : Most visitors are in the habit of buying souvenirs, “Pragmatic” weaving handicrafts are readily commercialised. The original handicrafts have been reduced due to shrinking market demand.

of Atayal people, who believe the virtue of “diligence” they uphold should be realised in the human-land relationship through farming or hunting practices. Hence men preferred to work as guides, allowing them to hike, search for animal traps and earn money, and at the same time derived satisfaction from presenting their knowledge of nature to visitors. For women, meanwhile, farming is considered more respectable than service provision; hence they preferred to spend most of their lives on farmland. Atayal culture thus contributed to a disparity between catering and accommodation, and Han Chinese merchants soon moved to fill the gap.

Tourism, then, has not turned out as expected for the Atayal. The improvement in road traffic has prompted travel agencies to organise day-trips to Cinsibu’s “sacred woods”, and they specialise in providing visitors with uphill shuttle bus services. Most visitors drive themselves, with food and tents, prepared to enjoy a barbecue in the mountains, leaving drink cans and other garbage to be collected by teenagers organised by the tribe. Adventurers have tied plastic ribbons as route markers while exploring the mountain, and many subsequent tourists just follow them. What job opportunities were left, as tourist guides, have been taken by the shuttle-bus drivers, and five years on, the tribe faces an unemployment crisis.

Social mobility of the Atayal people and ways forward

Tourism development has prompted various problems related to environmental deterioration, particularly preserving the autonomy and culture of the Atayal, and agreeing on the direction of tourism development. After years of deliberation, in 1999 a local church and the tribe formed an “Association for Sustainable Development of the Atayal Tribe”, with proactive participation in tribal development and capacity building. The most representative work includes:

1. Spatial planning and image creation

The tribe recognised that a single tourist attraction (the “sacred woods”) would not be effective in creating a demand for their catering and accommodation. They started to ponder on the viability of “A tour that starts right at the village”. First the tribe has tried to improve landscaping on both sides of the village road, agreeing that each household will look after a particular section. Secondly, because of the outside tourists, the Atayal considered displaying their unique culture to earn a living and to improve self recognition. With the aid of the “Sustainable Employment Programme” run by the Council of Labour Affairs, in 2000 the tribe started to construct traditional granaries and draw their distinctive totems, and construct observation towers at important junctions as entrance signs. The tribe agreed to retain the culturally distinctive wooden bungalows, rather than constructing new cement houses. They are planning to provide separate areas for visitors and the tribe, to avoid the embarrassment of mutual disturbance.*

2. Capacity building in cultural enterprises: traditional craftsmanship

Weaving, rather than carving, best reflects the material culture and craftsmanship of Atayal people, whose emphasis is on pragmatism rather than embellishment. As all easily accessible materials like bamboo, rattan and ramie rot easily, century-old “antiques” are seldom encountered. Craftsmanship entails knowledge and skills accumulated from past experiences, and “weaving” is a reflection of the whole set of Atayal beliefs, initiation ceremony and values. Following the rapid changes in traditional society, the Atayal’s prevailing practice has been modernised in terms of tools and materials, and the craftsmanship is now considered an alternative income source. Such handicrafts as mobile-phone holders, pencil cases and coin bags are readily commercialised, as they are practical souvenirs highly favoured by visitors.

3. Capacity building for tour guides

As the employment opportunities did not respond well to the existing number of visitors, the Association tried to intervene. Training courses were provided, and it has been proposed that if visitors refuse to hire a

※居住空间的开放性是泰雅建筑观念的特色，过去传统建筑并无「间隔」的观念，现在即使每户家庭有「间隔」，但却不是密封式的，多仍声息相闻。

* “Openness” is of symbolic significance in traditional Atayal architecture; even though households are now separated by partitions, you can still hear what others are doing.

刻」，其族群性格重视「实用」而非「装饰」，因为素材竹、藤、苎麻质性容易腐烂，所以泰雅社会里很少有超过一百年以上的「古董」。手工艺是一个民族知识累积的成品，「编织」在泰雅族社会里，涉及泰雅人整套的信仰、成年礼与价值观。伴随著泰雅族传统社会的急遽变迁，目前所推动的妇女编织，在工具及材料上已经现代化，意义也转化为较单纯的利益「补贴家用」。妇女的作品手机袋、笔袋、零钱包等，因为很实用、又符合平地游客喜欢购买「纪念品」以证明到此一游的心理，而得以迅速商品化。

3. 部落解说员培训

由于部落的就业机会与观光人潮未成正比，为创造实质「就业机会」，协会试图透过解说员的培训课创造「就地就业」的可能。构想中，观光客若未雇用当地解说员者，即不给予入山，或警告游客发生事故时将不给予救助，以增加就业机会及文化互动。然而由于涉及个人学习风气、就业机会无法保证，加上一日游类型观光量增，市场需求的萎缩让许多居民对于接受解说员培训仍持观望状态。

结语

若「部落」观光是为原住民经济边缘战斗的不二选择，那么我们有必要回到背后所包含的知识体系来思考。我们面对著一种发展主义的意识型态，认为经济增长是社会进步先决条件的信念。这种将「发展」等同于「经济增长」又再等同「美好生活」的信念，本身是特定历史的产物，却被看成是普世的真理，支撑著整套发展主义的论述。也因此将丰富多元的人类需求和自然生态，约化为简单的一面向，仅以经济指标来衡量[2,3]。著名的人类学者M. Sahlins[4]指出，所谓「资产」是「财富」，越多便越好，这种观点是资本主义社会的产物，并不适用于部落民族。

所以在思索结合自然景观资源与原住民族多元文化资产的永续观光上，我们主张放弃躁进式的资本主义消费逻辑，回归部落主体性的确立。由部落居民参与主导与管理，结合著祖先文化与生态保育，寻找传统族群知识在生态营造过程中的「再生产」性，并重建社群意识、文化认同与瓦解的共同体性格，积极思考以「部落」作为一个具备法人人格的团体以发展观光事业，保护土地并共享利益。换言之，以部落所拥有的资源、技术、人力为依恃，「内发性」的振兴地方观光相关产业，藉由振兴原住民传统文化与知识体系到地方经济自立，进而建设出部落个别文化特色，这样的产业也许在规模上不及资本工业，但却是个亲切而能持续将成果累积在部落社会的手法，也才能建立兼具人文与生态关怀的部落永续旅游模式。

guide they will not be entertained, nor rescued in the event of an accident. These ideas may give rise to more employment opportunities and cultural interaction. As yet the variable learning atmosphere, the lack of guaranteed employment opportunities, the drastic increase of day-trippers and shrinking market demand have caused villagers to hold a wait-and-see attitude towards tour guide training.


相片由作者提供 Photo by author

图五：部落青年为游客进行生态解说。部落规定游客每15人应雇用当地一名响导以维护安全，然而因缺乏法律效力而无人遵守。

Fig 5 : A young man leads an ecological interpretation tour. For safety the Atayal stipulate a guide must be hired for every 15 visitors, though this is not easy to enforce.

Conclusion

If "tribal" tourism is an indispensable way to save indigenous people in financial crisis, it is high time to think about the implications of development. In the ideology of developmentalism, economic growth is generally accepted as the prerequisite of social progress. Such a conception treats "development", "economic growth" and "quality of life" as the same thing. They are in fact products of particular history rather than universal truths, and yet such concepts are now used to support the whole set of theoretical principles of developmentalism. The diversified needs of people and ecology are oversimplified, and are measured merely by economic indicators[2,3]. Marshall Sahlins, the famous anthropologist, pointed out that the perspective "assets are wealth; the more the assets, the greater the wealth" was derived from capitalist societies and may not be suited to tribal societies.[4]

To develop sustainable tourism that incorporates natural landscapes and multi-cultural indigenous culture, we should give up the logic of consumption advocated by aggressive capitalism and instead identify what empowers the tribe to control and manage its own assets. The inherited culture, and local ecology, throw light on how to reproduce traditional wisdom in the course of ecological development. It will be essential to re-develop a community character that shapes community awareness, cultural recognition and change, proactively develops the "tribe" as the legal entity of tourism, and ensures land conservation and an equitable sharing of benefits. The tribe's resources, techniques and manpower will be the main support for spontaneous development of related businesses. With advocacy of the traditional indigenous culture and knowledge system as well as local economic independence, unique cultural features will be recognised. The scale of such enterprises may not be as large as those of capitalist industries. But they will be sustainable if they help ensure the accumulation of benefits to the tribal society, and support a tourism that is caring with respect to humanity and ecology.

※**黄国超**—台湾清华大学人类学硕士，成功大学台湾文学博士候选人，从事原住民部落工作近二十年，专攻泰雅族研究，目前任静宜、中国医药大学兼职讲师。

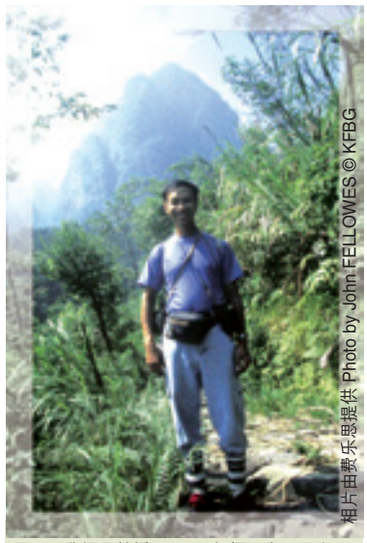
***Prof Huang Guo Chao,** dedicated to the study of the indigenous Atayal Tribe for almost 20 years, is a part-time lecturer at Providence University and China Medical University, Taiwan. He has a Master's Degree in Anthropology at the National Tsing Hua University and is now pursuing his PhD in Literature at National Cheng Kong University.

参考文献

References

1. 廖守仁，1984。*泰雅族的文化—部落迁徙与拓展*。世界新闻专科学校观光宣导科，台北。
Liao SZ, 1984. *Atayal Culture — Tribal Migration and Development.* Department of Tourism, Shih Hsin Unversity, Taipei.
2. 许宝强，1999。*前言：发展、知识、权力。发展主义的迷失*。牛津出版社，香港，vii-xxxiii页。
Hui PK, 1999. *Preface: Development, Knowledge, Power. Loss in Developmentalism.* Oxford University Press, Hong Kong. vii-xxxiii.
3. 华勒斯坦，黄燕昆译，1999。*发展，是指路明灯还是幻象？发展主义的迷失*。牛津出版社，香港，1-20页。
Wallerstein I, 1999. *"Development: Lodestar or Illusion?" Loss in Developmentalism.* Oxford University Press. Hong Kong. Pp. 1-20.
4. 萨灵士，丘延亮译，1999。*原初丰裕社会。发展主义的迷失*。牛津出版社，香港，21-40页。
Sahlins M, 1999. *"The Original Affluent Society", Loss in Developmentalism.* Oxford University Press, Hong Kong. Pp.21-40.

黎振昌教授
Professor Li Zhenchang



相片由费乐思提供 Photo by John FELLOWES © KFBG

图一：黎振昌教授—1998年摄于广西圣堂山
Fig 1 : Li Zhenchang in the field : Shengtangshan, Guangxi, 1998

由吴狄姬访问
Interviewed by Norris Ng

黎振昌教授是广东省两栖爬行动物方面的专家，1939年出生，客家梅县人，从小生活在肇庆至中学毕业，62年于华南师范大学毕业，后被政府分配到农村中学教学及从事有关养殖、生物防治、水稻、作物栽培等农业研究。自1978年被调回到华南师范大学任教及主力研究鱼类及脊椎动物，2000年因病申请提前退休，现与家人住在华南师范大学提供的宿舍。

Professor Li Zhenchang is a Hakka born in Meixian County (northeast Guangdong) in 1939, with a profound knowledge of the amphibians and reptiles of Guangdong. Living in Zhaoqing since childhood, he left after college to pursue his studies at South China Normal University (SCNU). In 1962 he was assigned by Central Government to teach in a rural middle school, after which he conducted a variety of studies in animal husbandry, pest control and crop cultivation. He returned to teaching at SCNU in 1978, focusing mainly on fish and other vertebrates. Retiring early due to illness in 2000, he now lives with his family in the hall of residence of SCNU.

1. 得知您自2000年始得患肾病，现身体情况还好吗？是否仍有继续工作？

我因为患上肾衰竭自2003年起便没有出野外了，患病最初三几年还可以，还去罗坑海南，但现在便不太方便。倒是去年应袁喜才教授邀请去了华南濒危动物研究所一次，为他接办的一个两栖爬行动物项目帮忙。其馀时间我都因为颈痛不出外，基本都要在家休息及做腹膜透析。

2. 您本是从事鱼类研究的，但后期却专注于两栖爬行类，为何有这样的转变呢？

我读书的时候主要研究鱼，四人帮倒台后[1976]，我曾向现已过世的导师潘炯华教授要求回他的研究室工作，但很可惜当时高等院校陆续有人回来充实科研教学队伍，配备的人已基本足够，如要再做有关鱼类的课题便要重读研究生，但那时我已30多岁，不想再读；刚巧潘教授接了一个广东省海岸大调查任务，其中两栖爬行类动物收了很多标本，但有些标本鉴定不全不齐，所以我专注帮他在实验室内重新整理标本。那时关注两栖爬行类的人实在太少，以往虽然有暨南大学的梁启燊老师及唐大由老师，但两位老先生都80及90多岁，身体不好，一直没人研究，所以我觉得有必要，便开始集中研究两栖爬行动物。

3. 在两栖爬行类及鱼类之间，您对那一样比较有浓厚的兴趣？

鱼较感兴趣吧，因我一直都是研究鱼。原来工作的学校在西江河边附近，我的导师即这间学校的校长潘炯华教授，他写的《广东鱼类志》有关西江河河段及广东部份的标本都是我帮忙收集，每逢周末假期或定期都会到渔塘问渔民拿些鱼作标本，那时向他们拿几条是免费的，即使是大一点的都只是几毛钱。那时农村中学不只一个寒暑假，农忙季节都会放假，我有时跟学生回他们乡下，带齐工具由他们引路去山区山边捉小鱼。那时年青才20多岁，和学生一起游水、捉鱼很开心。

1. You have suffered from kidney problems since 2000 - how's your health been recently? Are you still working despite your illness?

I was forced to discontinue my fieldwork in 2003 due to kidney failure. When my kidney disease was not that serious, I could still make trips to Luokeng and Hainan, but now I can't go far. Last year I made an exception to visit the South China Institute of Endangered Animals at Professor Yuan Xicai's request, to help with a study of amphibians and reptiles. But my neck problem and peritoneal dialysis treatment keep me at home most days.

2. For a long time you studied fish; how did you come to specialise on amphibians and reptiles later on?

I was a keen researcher on fish when I was at school. After the Gang of Four period [1976], I checked with my ex-supervisor, the late Prof. Pan Jionghua, whether there were any vacancies in his research laboratory at SCNU; but they were filled up by graduates from senior colleges, and I'd have had to take the postgraduate course again, if I wanted to return. But I was in my thirties by that time, and didn't want to do further study. By chance, Prof. Pan was helping out on a study in coastal Guangdong, and a number of amphibian and reptile specimens remained unidentified; as expertise was limited, I volunteered to identify them. Though Profs. Liang Qisang and Tang Dayou of Jinan University were the masters in this field, they were getting old and their health was declining. I started to devote myself to this field as I thought it was necessary to pay attention to amphibians and reptiles.

3. Are fish or amphibians and reptiles more special to you?

I must say I am fonder of studying fish, as this is what I have been doing for so long. The school where I served was near the Xijiang [West River], and at the request of Prof. Pan Jionghua, then the school principal, I helped collect fish specimens from there and other Guangdong rivers for his book "Freshwater fishes of Guangdong". Fish collection soon became part of my life; the fishermen seldom charged us as only a small quantity of fish was needed, and even the larger ones cost just tens of cents. As school holidays fell not only in summer and winter, but also during the busy farming seasons, I might visit my students' hometowns, and they would take me to fish in mountain streams with simple gear. These happy memories date

4. 自1997年开始，您经常和我们中国项目队员往不同的野外地点考察，期间有没有特别的经验？

相片由刘惠宁提供

图二：突肛拟角蟾
Fig 2 : *Ophryophryne pachyproctus*

我和你们合作得非常愉快。那时国家对自然保护区的环境不十分重视，人的陋习例如沿途丢垃圾等对环境产生很大的影响，但你们沿途都会将一些垃圾水罐拾起放在自己的包内，我觉得很惭愧。以后我带学生或队员出时野外考察都强调注意自己吃过的东西都要放在自己背包内带回来才丢掉，或翻开石头及搬开一块废木视察有没有动物藏身后都要放回原位，这些都是我和你们一同接触过程中学到的，这方面我觉得你们比我们做得好。

作为研究人员，最有趣的莫过于在调查期间不时发现新种。那次在百涌当时是4月下旬繁殖期，我在小瀑布下翻开石头，发现一只很小的突肛拟角蟾在石隙鸣叫，我觉得可能是新属记录，因我眼老花看不清，叫刘惠宁赶快过来帮忙，我搬开那块石头后，它便跳出来，他一捉到，拿回去鉴定后证实是广东新属记录。

5. 2001年时，您在罗坑自然保护区调查时，发现广东省尚未有文字记载的国家一级野生保护动物—鳄蜥。那次的过程是怎么样？

那时广东省林业局要准备将建设罗坑成为省级自然保护区，将资源调查任务交省林业设计院，而林业设计院邀请我和萧智老师往罗坑考察。那时是八月，我们一边上山一边和引路的当地人倾谈，他们说那里有一种像「五爪金龙」的动物，像巨蜥但个子较小，我觉得奇怪所以叫他们找来给我看一下，他们找来一部摩托车，不到一小时，捉了三条回来，两条雄，一条雌，后来证明了是鳄蜥。我们即时报告省林业局，他们开车来，连局长自己也到。那条雌的更怀了胎，那时是八月，保护区造了一个水池把它养起来，第二年五月份便产子了。

带路的人说这些东西如果要捉来买，一年可捉最少一千条，主要当地分布于大竹园，300-700公尺的山溪。其实现在广东可发现鳄蜥的地方不止罗坑一处，而且有人在粤西信宜通过网上查到我的资料，并送来一条给我鉴定。信宜靠近广西，和罗坑接近的龙龟，乳源也可能有。因为在我发现前一年，唐大由老师在乳源考察时在集市上看见有一小朋友拿三条鳄蜥出来卖，所以估计那时已经有。

当在罗坑发现从未报导过的鳄蜥后，本来是一件非常高兴的事情。但发现后令这种动物被人捉清光使我觉得自己犯了罪一样。2002年我第二次和你们嘉道理的同事一同去罗坑的时候，访问当地农民，他们说是会一麻包一麻包的把鳄蜥背出去卖。现在保护站的人也很负责，逢墟日也有设卡，好几次亦有捉过几个偷猎的人，但若不在墟日的日子，也有机会混淆过关。

6. 一般人提起广东只会想到城市发展，您认为广东省的生物多样性仍丰富么？

其实以动物地理学分布来说，广东位于古北界和东洋界交界之间，属南亚热带气候，所以我认为生物多样性应该比

back to my early adulthood; it was enjoyable to swim and fish with them.

4. You've often worked with members of the KFBG China Team since 1997. Any memorable experiences to share?

It was a pleasure working with your guys. At that time people paid little attention to nature reserves. Their bad habits tended to impose enormous strain on the environment. I felt ashamed when I saw your team members collect garbage along the way and put it in their own bags. After that whenever I made trips with my students, I would remind them to take away their own rubbish and also to put rocks and fallen logs back in their original position after searching for wildlife. These are some of the valuable lessons I gained during our collaboration and I must say you have a stronger sense of environmental protection than us.

As a researcher, discovering new species is the most interesting thing for me. Once when we were in Baiyong in late April, in the frog breeding season, a tiny toad was murmuring under a rock next to a small waterfall. I thought, intuitively, it was new to Guangdong, but my old eyes prevented me from identifying it clearly. I asked Michael Lau for help, and he caught it right as it jumped, when I moved the rock aside. The toad was later confirmed as a new Guangdong record, *Ophryophryne pachyproctus*.

5. In 2001, during a study in Luokeng Nature Reserve, you discovered the Crocodile Lizard, a Class I Nationally Protected species previously not known from Guangdong. How was this wonderful discovery made?

This was the year Guangdong Forestry Department intended to upgrade Luokeng into a provincial nature reserve. Guangdong Institute of Forestry Design was assigned to conduct baseline surveys of natural resources, and Prof. Xiao Zhi and I were carrying out a field survey at Luokeng upon their invitation. One August day, escorted by local guides, we were chatting on the way to the study sites but when somebody mentioned a smaller lizard resembling a Water Monitor, I was intrigued and wanted to take a look. The guides found a motorbike, and within an hour two males and a female were collected; these reptiles soon proved to be crocodile lizards. We reported to the Provincial Forestry Department at once; envoys from the department including the Director then drove to our place. The female lizard was found to be pregnant. It was given a new pool in captivity and gave birth to live young the following May.

The guides said the crocodile lizards were distributed mainly in mountain streams at 300-700m in an area called "Dazhuyuan", and that at least a thousand could be caught each year if needed. Actually, Luokeng is not the only place where crocodile lizards can be found in Guangdong, but also Xinyi in the west, where some local people contacted me and sent me one for identification. I wouldn't be surprised if Longgui and Ruyuan adjoining Luokeng have them too, as a year before my discovery, Prof. Tang Dayou had come across a child selling three crocodile lizards in a market at Ruyuan.

When the discovery was made known, it should have been a very exciting experience to me. Instead I felt guilty that such a discovery would be its downfall. In 2002, I paid a second visit to Luokeng with your guys, and the villagers admitted collecting the lizards in large hemp bags for sale. Now the reserve staff are very responsible. There are checkpoints on market days, and several poachers have been arrested. But on non-market days, the poachers may still escape justice.

6. People associate Guangdong with urban development. Is the local biodiversity still rich?

Guangdong lies between the Palaearctic and Oriental Realms, and enjoys a southern subtropical climate, so should have rich biodiversity. Since 1997, when we first joined with KFBG to conduct collaborative biodiversity surveys, we've had a chance to collect more comprehensive data. Guangdong is now home to 65 amphibian species and 110 snake species. So Guangdong is still rich in species,

其他地方都要多。97年开始和你们队员组织生物多样性调查有较多机会出野外，并收集了比较完整的资料。就已公开发表的来说，广东肯定的两栖类65种、蛇约达110多种，证明广东的生物多样性物很丰富，不过虽然种类多，但种群少。我认为广东的自然保育应要做得更好。

7. 但野生动物贸易不是已经受到控制吗？

在广州和深圳仍然有野生动物销售市场，那些不法的人千方百计钻空子来卖。自然保护是一个综合工程，但是现在我们国家实施的多头管理—水生生物由广东省水生厅、渔政处来管，林业内有野生动物保护站，市场上的野生动物则由商业部门管，那些被偷的动物一旦被运到市场上卖的时间，林业站便没有权执法；水生生物及林业又有冲突，举例蛙类，可以属于林业，也可以属于水生生物类，虽然广东有定期作联合执法，到市场调查，但如果不能长期维持有这样的执法行动，只能收一时之效，过后市场又很快再次兴旺。

8. 广东省的自然保护区一般面对甚么困难？

《森林脉搏》内曾有一篇名为「哭泣的森林」的文章[第四期第24-25页]，内容有关广东车八岭大面积砍树的情况，砍树无疑会破坏森林，但应考虑到当地经济发展的情况。广东省自然保护区很多人半年工资未发，人的生存本身与自然保育产生矛盾，基本生计不能维持，直到95年开始省人大才通过所有省级自然保护区职工工资全部由省财政包，才能解决这个问题。

另一个问题是保护目标不明确。进行本底调查可帮助订立优先次序，并应考虑到每一面。自然保护区对植物的保护比动物较好，每一个保护区都有一个木材检查站，抓一些非法砍树或木头的人，带木材一定要有通行证，所以现在锯树的人很少。但动物便无法设立检查站，如那些偷猎者把捉到的蛇或龟放在背包内偷运出去，检查站无权搜查，很容易便被带出保护区外。我和一些保护站核心区护林员曾经在山上一些较安静的地方看见一堆堆柴火，而山溪边有很多装龟的笼，农民晚上在山上住，保护站的人根本不能控制。加上有些自然保育工作人员对有关知识有限，捉到一些动物都不知是甚么动物或是否国家保护，如果能将它们鉴定出来，保护区才懂得怎样重点保护及培训保护站护林员或义工。

9. 您认为建水坝对于保护区是一种威胁吗？

我不是不赞成有些自然保护区建小水电。《森林脉搏》内亦有一篇关于山区小水电的文章符[第八期第20-21页]，作者指出了山区发展小水电的问题，但他不了解山区发展小水电其实是用作解决经济困难，为乡镇带来收入的特点。当然问题是有的，但并不是像文章内写那些，而是发展小水电时，尤其在农村乡镇，将山区的水完全截断，然后在山里整一条导水槽，通到几公里几十公里以外的地方发电，大坝一截，这条山溪几公里的水全部乾了，你可以想像原来在溪里生活的鱼，依赖溪的水源的两栖爬行动物几乎都没法再生存下去。但截大坝时若能容许一定水量流向这条山溪里面，它就得以保存。像长江这样的大坝也会建一条鱼道让鱼上上游产卵，可惜山区这样的小工程国家便没有注意到。

10. 那您认为保护区管理的改善空间如何？

我98年去美国佛蒙特州考察时，发现她们的保育条例很具体，市民在湿地河沟钓鱼要先申请钓鱼证，钓到细条的要放回，不能带回家；不像我们无论大小通吃。他们又允许

but their populations are small. Personally I think Guangdong needs stronger effort in nature conservation.

7. Isn't the wildlife trade coming under control?

There are still wildlife markets in Guangzhou and Shenzhen, and illegal wildlife dealers will try every means to continue their trade. Nature conservation is an integrated undertaking, but in China it falls under the jurisdiction of several departments. Aquatic organisms are managed by the Department of Hydrobiology Marine Fisheries Office has Forestry Department; wildlife protection stations; while wildlife in markets are controlled by Commerce Department. If smuggled animals are on sale in the wildlife markets, the forestry stations have no enforcement power. Conflicts may arise between different departments, as in the case of frogs, which are both aquatic and terrestrial. Though these departments do join forces to check wildlife markets, their effectiveness is short-term, and the trade resumes soon afterwards unless such actions are sustained.

8. What impedes the effectiveness of nature reserves in Guangdong?

An article entitled "The Crying Forest" in *Living Forests* [pp. 24-25 of issue no. 4] reported widespread logging at Chebaling, Guangdong. Such problems have arisen before, but we have to consider the local economic situation. In many cases, local reserves owed their staff six months' salary, and conservation remained unrealistic as people could not sustain a living. The basic financial problem was not resolved until 1995 when Guangdong People's Congress decreed that the salary of the reserve staff was to be covered by the provincial government.

Another issue is conservation targets. Baseline studies should help identify conservation priorities, which should take every aspect into account. Nature reserves tend to make more intense efforts to conserve trees than animals. Each reserve is equipped with an inspection station to arrest illegal loggers, such that only licensed persons are permitted to take the timber away. A decline in the number of loggers has been observed in recent years. But animals are not protected in the same way. If poachers hide snakes or turtles in their backpacks, they will pass freely as the inspectors are not entitled to check their personal belongings. Along with reserve wardens I have noticed signs of campfires deep in core areas, and many turtle traps are found along mountain streams, but the wardens cannot stop people from staying there at night. Meanwhile, reserve staff are often unable to distinguish whether the animals caught are protected or not. Only if the species can be identified, the reserve can provide appropriate protection and build the capacity of wardens and volunteers.

9. Do you see dams as a serious threat to nature reserves?

I have to say I agree with constructing them to a certain extent. There was an article criticising hydropower dams in mountainous areas in *Living Forests* [pp. 20-21 in issue no. 8], but the problems mentioned weren't entirely representative. Hydropower dams tend to be an income source for villages and towns. Dams do gave rise to certain problems, but not necessarily those reported in the article. The main hitch lies in the capture of water supply in mountainous areas, where water is diverted several kilometres away, drying up the mountain streams such that none of the stream-dependent species of fish, amphibians and reptiles can survive. If interception had allowed a basal flow to continue, the animals could have been sustained. These days some large dams have ecological mitigation measure. For instance, large dams in the upper Yangtze have fish spawning channels. But small-scale dam projects in mountainous areas generally do not draw attention from the State.

10. So you see scope for improved reserve management?

When I was on a trip in Vermont (USA) in 1998, I was impressed by its specific conservation regulations. For example, fishing permits must be granted in advance, and permit-holders must return small fish to the streams unlike in China. They also allow hunting, but

申请打猎，但规定只可以打公，不准打母，另进入自然保护区，要到相关职能部门申请进入证，又例如那时正是响尾蛇繁殖季节，便绝对禁止进入保护区；如果万一你由于擅自未经政府批准打猎，吃过未经过检疫的野兽肉后染病，后果便需由自己负责。相比我们国家在自然保育上很多细节也未有考虑很周到。举例广东以前有很多种鱼，湛江惠州有几百平方公里的产卵场，八月中旬到九月上旬会到产卵场产卵，但在进入产卵场之前刚好是6、7月休渔期结束，机虾艇已经在惠州岛外围用网把卵全部捉清。应该规定某种鱼或某种动物在何时产卵、产子这段时间应该全面禁止捕杀这些动物。

保护区必须在周边社区做一点宣传教育，让当地人认识到这些动物在世界上已经所馀无几，不能再捉。因为他们认为能够抓到去卖钱便能解决问题，宣传教育及把保护区周边社区经济发展起来是很重要的。

11. 您认为内地的自然环境教育应从那方面入手？

国内很少宣传教育动物与环境之间的关系，尤其是怎样教育保护区内部或保护区周边社区的人重视及爱护动物。例如带路的人看见一条蛇便打死它，我觉得很可惜，人不犯它，它自然不会犯人；说它吃青蛙么？但你又为何不想想它会吃老鼠帮助防止森林的鼠害？动物与人类是平等的关系，互相依存，自然环境　有一种调节，去弱留强，我们应容许它存在。人与人之间有一种竞争，动物之间也有一种竞争，但人若参与在动物间的竞争之中，便破坏了自然，令他们失去了生存的空间及平衡，对人本身亦无好处。

12. 您认为经济发展可帮助自然保育吗？

自然保育工作如果没有一定程度的经济发展配合是很困难的。我曾到枰架自然保护区一个瑶寨，住在一个老百姓瑶包的家，那个60多岁的老人跟我说，以前不准打水鹿，农民很纯朴所以不打，山区很少田，水鹿吃了他们的禾，国家会补助几十斤谷，但现在几年都没有补了，水鹿虽然多了，但他们的禾都差不多给吃光了。电鱼所面对的情况也一样，好像属于南岭自然保护区一部份的秤架自然保护区的农民，长年没肉食，所以时常电鱼，两三小时可电到一斤山溪鱼，狩猎到的都自给自足，不会拿去卖，因为来回秤架镇便要7-8个小时。但山溪鱼数量很少，整个南岭只是有20多种鱼，而且他们电鱼无分季节，一电大小都死。所以社区经济若能发展，农民一小时付出的劳动比爬山落岭去电鱼的价值还要高时，他们肯定不会再电鱼，所以把保护区周边社区经济发展起来对保护野生动物是很重要的。

13. 那是否表示您赞成在保护区进行旅游项目？

要考虑进行甚么旅游项目，有些成立了自然保护区后，慢慢发展成游游区的形式，但逐渐破坏了保护区原有的功能。在保护区内设几间宾馆，几间娱乐场所等娱乐设施以吸引人来是可以的，但不可以破坏原来的自然生态环境，人来到应该是享受自然环境生态的美，而非只是来旅游渡假，唱唱歌，跳跳舞。

14. 您认为内地的保育有甚么前景？

我对中国的保育前景不悲观也不乐观，政府其实重视自然保育，投入也不少，但僧多粥少。大熊猫便是一个很成功出色的例子。所以国家并不是无希望，只是怎样协调发展经济和自然保育。

only males can be hunted as the capture of females would affect the breeding potential of the population. Access permits, issued by relevant authorities, must be submitted before admission to nature reserves, and admission is strictly prohibited during the rattlesnake breeding season. If visitors insist on hunting without prior consent of the government, they are liable for any consequences.

In China fishing regulations are rather vague. Guangdong used to be famous for its fishing industry, and an area covering hundreds of square kilometres in Zhanjiang, Huizhou is a fish spawning ground. The spawning season usually fell in mid-August to early September, but before this, when the fishing moratorium was almost over, motorised fishing boats would rush into the grounds to trawl as many fish as they could. The ban needs to be imposed throughout the spawning and breeding season.

For nature reserves to succeed, publicity needs to be channeled in adjacent areas to let the general public know the plight of wildlife, many of which are on the verge of extinction. Since many local people regard collection of wildlife resources as their means of livelihood, promoting public education and the local economy in adjacent areas of nature reserves is critical for nature conservation.

11. Which aspects should environmental education start with?

Publicity campaigns in China put little emphasis on the relationship between animals and their habitats, or on showing respect and care to animals. When field guides encounter snakes, they often kill them. This saddens me. Snakes won't bite us if we don't bother them. You might say they will prey on the frogs, but don't they also control rats, preventing pest outbreaks? Animals and humans are equal; they are inter-reliant in the world. We should let natural selection continue to take its course. If we disrupt it, imbalance will result, and it will surely do us no good.

12. Do you think economic development can complement nature conservation?

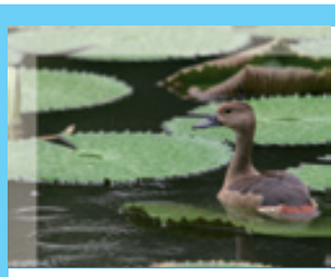
Nature conservation can't stand alone without the aid of economic development. I was in a Yao ethnic minority village at Chengjia in Nanling National Nature Reserve (NNR), and stayed with a man in his sixties. He recalled that the ban on hunting Sambar deer was well followed by the farmer households, who were law-abiding and co-operative. The State promised to subsidise them with tens of kilograms of grain as compensation for crops eaten by the deer. But now, this subsidy had been halted, and the deer were destroying the crops as their population continued to increase. The lack of meat prompted households from Chengjia to electro-fish for their own consumption in the mountain streams of Nanling NNR. It takes 2 to 3 hours to harvest a kilogram of fish, and a round trip to Chengjia town takes 7 to 8 hours. Nanling's rivers support only 20-odd species, which are indiscriminately killed by electro-fishing, and it's done irrespective of season, so there are very few fish left. The farmers would rather find a job than do such exhausting exercise. Hence promoting economic development in adjacent areas is a key to conservation.

13. Does that imply you are in favour of developing eco-tourism in nature reserves?

It depends on the choice of tourism activities, as some nature reserves soon become tourism attractions that detract from their real functions. It is acceptable to furnish the reserves with a few guesthouses and leisure facilities to cater for tourists' needs, providing the natural environment is well preserved. The nature reserves should emphasise displaying the splendour of the natural environment, instead of using hotel-like facilities such as karaoke to lure visitors.

14. Do you have hope for conservation in China for the future?

I'm neither pessimistic nor optimistic. Our government is putting much more effort into conservation but it will be insufficient to benefit all species. The Giant Panda is one successful case. Conservation in China is not a lost cause, but all depends on how economic development and nature conservation can be coordinated.



人与自然的协调管理 —
南岭国家级自然保护区个案研究

Work in harmony with nature —
management possibilities for Nanling National Nature Reserve

张璐及苏志尧
ZHANG Lu and SU Zhiyao

在嘉道理农场暨植物园的资助下，我们从2003年起开展了广东第一峰石坑崆森林群落物种多样性的垂直格局研究，探讨南岭山地森林群落物种多样性的垂直格局，以期提出保育意见、建议及对策。在此我们谈及了对一般威胁与解决方案的初步印象。

南岭国家级自然保护区是广东省面积最大的自然保护区，区内森林覆盖率达97%，至今仍保存著大面积的原生林和原生性较强的天然常绿阔叶林[1]。有维管束植物2,000多种，陆生脊椎动物300多种，其中列入国家一、二级重点保护的珍稀濒危野生动植物有60多种。初步的研究结果表明，南岭国家级自然保护区维持著较为完好的植被垂直梯度连续性。

然而，我们发现南岭国家级自然保护区存在一些有待解决的问题，直接影响著这一粤北明珠的保护。其中，人为干扰，如在保护区内修公路、建电站，会引起生态系统的能量流动受阻和物质回圈中断，导致生态

With KFBG's sponsorship, we recently instigated a study on the altitudinal zonation of the forest community and plant biodiversity of Shikengkong, the highest peak in Guangdong, at Nanling National Nature Reserve (NNR). The results of this study will shed light on strategies for biodiversity conservation in the reserve. Here we discuss our initial impressions of general threats and solutions.

Nanling NNR is the largest protected area in Guangdong. Some 97% of the region is forested, preserving a large area of relatively primary evergreen broadleaf forest, making it currently a major centre of forest biodiversity[1]. The reserve supports over 2,000 vascular plant species, and some 300 terrestrial vertebrates; of these over 60 species are under Class I or II national protection. Preliminary results show that the reserve preserves relatively high continuity in terms of the vertical vegetation

相片由作者提供 Photo by author

图一. 南岭国家级自然保护区地带性叙绿阔叶林　Fig.1 Evergreen broadleaf forest, the main zonal vegetation of Nanling National Nature Reserve

中断，导致生态系统重要功能失调[2,3]。而且，保护区生态系统中能量与物质的流动，与保护区周边环境有著密切的联系。要实现自然保护区管理的最佳效果，必须综合运用自然、社会、经济等手段。其中，保护区与周边地区的协调发展是自然保护区管理的核心，也是维持保护区生态系统稳定性的重要途径。

水电发展与生态保护的矛盾统一

国内外对于小水电是否是可再生绿色能源的争议由来已久。有研究认为小水电生产完全符合绿色GDP标准，而且小水电技术比较成熟、造价低，非常适合分散的农村供电及电气化建设[4]。在当前全国用电紧张的形势下，小水电不失为一种补充国家电网电力不足的有效选择。对中国多数自然保护区而言，小水电业是当地林业部门的主要经济来源产业，南岭国家级自然保护区也不例外。但是，经济产出总量增加的过程，无可避免的会导致环境和生态一定程度的破坏。欧洲小水电协会（ESHA）认为环保是制约欧洲小水电开发的主要因素[5]。在调查中发现，由于修建电站所需的小水库与导漕，对保护区地表植被和自然景观造成了一定的破坏，同时也对河流水质、水量及水温造成重大改变。梯级式开发电站还造成了局

表一：比较南岭国家级自然保护区周边地区所在县与增城的主要经济指标。按照广东 68 个县市的指标排名。（2003 年）

指标 / 县市	本地生产总值		人均生产总值	
	绝对值（万元）	排名	绝对值（元）	排名
增城	2,079,878	1	24,939	1
乳源	125,273	64	7,187	31
阳山	215,838	51	5,260	52
连州	244,809	48	5,923	44

摘自南方日报 2004 年 6 月 7 日报道

preserves relatively high continuity in terms of the vertical vegetation gradient.

Nanling NNR faces some unsolved problems, which hinder conservation. Human activities, such as construction of roads or hydropower stations and catchwaters, inevitably damage and fragment existing vegetation, impair the movement and dispersal of flora and fauna, and can interrupt energy and material cycles, leading to malfunction of the ecosystem[2,3]. In addition, energy and material flows are affected by activity in the reserve periphery. To optimise effectiveness of nature reserve management, we need to integrate environmental, social and financial considerations. Harmonising the relationship between conservation and development needs of adjacent areas is a key part of nature reserve management.

Conflict and integration of hydro-electricity with conservation

There has long been a dispute over the sustainability of small-scale hydropower. Several studies have indicated that hydropower generation is in line with the national Green GDP standard, and can cater for the electricity demand of scattered villages at reasonable cost[4]. In view of the pressing need for electricity, small-scale hydropower is quite an effective solution to replenish power supply. For most China nature reserves, small-scale hydropower stations are a major source of income for local forestry departments, and Nanling is no exception. However,

Table 1. Conventional economic indicators of counties within the adjacent areas of Nanling NNR, compared with Zengcheng in south Guangdong (2003). Ranks refer to 68 counties in guangdong.

Indicator / City/ county	GDP		Per capita GDP	
	Value ('000 RMB)	Rank	Value (RMB)	Rank
Zengcheng	2,079,878	1	24,939	1
Ruyuan	125,273	64	7,187	31
Yangshan	215,838	51	5,260	52
Lianzhou	244,809	48	5,923	44

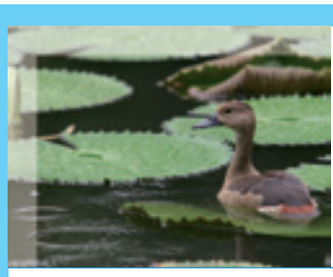
Extracted from "Major economic indicators in 68 Guangdong cities / counties", *Nanfang Daily* 7 June 2004

相片由作者提供 Photo by author

图二：广东乳源大桥镇上谢村农民居住的土屋
Fig 2 : Earth houses in Daqiao Town, Shangxie Village, Ruyuan

相片由作者提供 Photo by author

图三：当地主要的农耕手段
Fig 3 : Farmers employ traditional methods



部河段脱水、乾枯，对生物多样性，特别是对鱼类保护尤为不利。

小水电站对生态环境的影响是一个长期的过程，而我国小水电建设从20世纪80年代开展至今只有20多年的历史，而且一直缺乏有关其影响之研究，因此小水电对于区域环境、水生生物以及河岸植被到底会产生怎样的影响还很难预测，也未引起足够的重视。如何以最小的环境成本获得最大的经济发展是我们必须思考的一个重要问题。因此，我们建议南岭保护区应建立与生态环境友好的小水电工程，树立环保可开发的概念，普查核算保护区小水电可开发资源，使规划开始就建立在与环境结合的可持续发展的基础上。在规划设计阶段就平行开展环境评估，而不是在设计完成后再解决环保问题。其次，尽量减少地表植被的破坏和水土流失，注重小水电开发以后的植被恢复工作；再次，设计最适的引水建筑物高度和最佳的下游生态流量，重点研究河床乾涸对动植物究竟产生怎样的影响以及如何进行有效保护。

保护区与周边地区的协调发展

周边地区通常指保护区边界外延3-5公里，在资源管理和利用上与保护区有密切关系和相互影响，以自然村以上规模聚集的原住民的生产生活地区。南岭国家级自然保护区地跨韶关、清远两市的乳源、阳山、连州三县(市)，从其主要经济指标(表一)可以看出，南岭保护区周边地区经济发展落后，各项2003年经济指标均为广东68县市中等偏低水平，乳源县的本地生产总值更是排在68县市中的倒数第5位。保护区周边地区农业以种植水稻、玉米、番薯等为主，农副产品有松香、冬菇、茶叶、竹制品等。山多田少、交通不发达、大部分是石灰岩地区，农民经济收入不高，与广东其他地区相比明显落后。

自然保护与周边地区社会经济发展密切相关，保护区管理为了保护资源，需要兼顾生态、经济、社会、政治。只着重保护区的内部管理而忽视对周边地区的管理是不全面的。作为广东省面积最大的自然保护区—南岭国家级自然保护区，区内丰富的自然资源为生活在周边地区的人们提供了生存的物质基础。由于文化落后、交通不便、资讯闭塞等，习惯于「靠山吃山」的农民对自然资源及环境保护的重要性认识不足，同时亦缺乏其他发展经济的途径。村民把在保护区采药和采集其他林副产品，例如草药、冬菇、灵芝以至芒鼠等，作为补充其经济收入的主要来源的情况普遍存在，有的则进入保护区放牧、采集薪材等。由于保护区部分山林权属不清楚，争议较大，如乳阳管理站有近一半面积权属不清楚，挖矿、滥砍滥伐现象时有发生，给保护区建设和管理带来很多问题和困难。如何能有效控制以至禁止这些与自然保护区目的有所冲突的活动需要当地群众的合作。另外，随著保护区工作的进一步加强，野生动物种群数量明显增多，野生动物侵害周边农民农作物而要求保护区赔偿损失的案例时有发生。但如何赔偿、由谁来赔偿、赔偿资金的来源等等问题，现存的《自然保护区条例》乏陈可操作性的条款，靠保护区自身是难以解决的。

保护与发展是一对矛盾的共同体，一方面是发展经济，解决实际问题，另一方面是加强环境保护，维持保护区

environment and conservation. The European Small Hydropower Association (ESHA) considers environmental conservation a key constraint on hydropower development in Europe[5]. Studies have revealed that construction of hydropower stations can impact vegetation and natural landscapes, and adversely affect the quality, flow and temperature of water. Cascaded hydropower stations can lead to flow reduction and even drying-out of some river courses, jeopardising biodiversity, especially that of fish and other freshwater biota.

Small-scale hydropower stations can thus exert a long-term impact on the natural environment. Since small-scale hydropower only began to be developed about 20 years ago in China, and its effects are rarely studied, the actual impact on aquatic organisms as well as the surrounding vegetation is not fully known, and has attracted little attention. Nonetheless, it is crucial to explore ways to optimise economic development at the least environmental cost before the problems get worse. We believe the reserve should develop only environmentally-friendly small-scale hydropower, based on the principles of sustainable development. Hydropower resources in the region have to be surveyed comprehensively, and development planned in harmony with the surrounding environment and the conservation objectives of the NNR. Environmental Impact Assessment (EIA) should be conducted in parallel with the early planning and design stages of projects. Destruction of vegetation and soil erosion should be minimised; vegetation restored after construction; appropriate devices (e.g. catchwater channels, pressure-adjusting well etc.) designed and environmental flow maintained downstream. The impact of changes in hydrology on downstream wildlife should be evaluated, and effective conservation measures implemented.

Nanling NNR and communities in the adjacent area

Adjacent areas — the production and living area of villages (or higher administrative levels) within 3-5 km of the nature reserve — are closely related to the reserve with respect to resource management and utilisation. Nanling NNR spans the boundaries of Ruyuan, Yangshan and Lianzhou counties of Shaoguan and Qingyuan districts. All lag far behind other counties or districts in Guangdong in conventional economic indicators (Table 1), and the GDP of Ruyuan ranked 64th among 68 counties in Guangdong in 2003. Mainly farming paddy rice, corn and sweet potatoes, indigenous people in the adjacent area also collect pine resin, mushrooms, tea-leaves and bamboo products. Being dominated by mountains and limestone areas, the region is remote, and local farmers earn far less than those in other parts of Guangdong.

Nature conservation is closely related economic development of the adjacent area. Nature reserve management is not merely preserving biodiversity and resources, but should also integrate ecological, economic, social and political considerations. The management is incomplete if it focuses only on the nature reserve itself. As the largest nature reserve in Guangdong, the rich natural resources in Nanling NNR are a major source of livelihoods for adjacent areas. Low educational levels, inaccessibility and information blockages have made the communities reliant on local resources, but inattentive to the importance of conservation. Practices ranging from collecting medicinal herbs and products, such as mushrooms, lingzhi and bamboo rats, to grazing and firewood collection in the reserve still play a vital role in supplementing their income.

Disputes over the ownership and user-rights of land and forest add further difficulties to management and improvement of the reserve. For instance, Ruyang management station, where half the land has unclear ownership, has been occasionally disturbed by illegal mining and logging activities.

Community co-operation is the key to effectively controlling and even stopping these conflicting activities in the reserve. Implementation of

生态资源完整性。当二者冲突时，如何在协调矛盾和发展中探索出一条切实可行的可持续发展之路呢？加强环境保护，兼顾经济发展的可持续思路已经成为当地政府与保护区管理部门的共识。为了缓和保护区与周边地区在保护与资源利用中的矛盾， 如果有条件，应该鼓励周边地区参与到自然资源保护和可持续利用中来，共同探究利用「村社方法」和「周边地区方法」等开展参与式规划[6,7]，实施保护区与周边地区的社区共管的可能性[8]。另一方面，提高地方政府与周边地区对保护区的认识和理解，也为周边地区的经济发展提供机遇和新思路，探索各种兼顾自然保护与可持续发展的可能方案。在矛盾中不断完善、不断发展，积极倡导「人与自然和谐相处」的理念，统筹保护与开发、协调生态与发展是我们必然的选择。

better protection in the reserve has led to increased wildlife populations and more nuisance to crops, leading farmers to make frequent compensation requests. However, there are no clear terms in the existing "Nature Reserve Ordinance" to define the procedures, and the nature reserve is incapable of tackling these problems by itself.

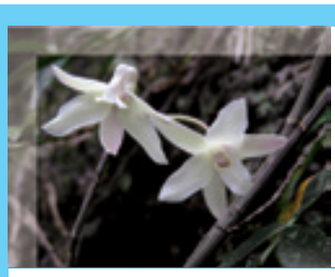
Though often in conflict, conservation and development must co-exist. Economic development is a way to ease livelihood problems, while environmental conservation should be reinforced to maintain the integrity of ecological resources. When they are in conflict, how can we reconcile them and work out a feasible way to achieve sustainable development? Local governments in the Nanling area and nature reserve managers have reached a consensus to strengthen nature reserve management yet at the same time develop a long-term sustainable economy. To reduce conflicts between conservation and resource utilisation of the nature reserve and adjacent areas, we suggest encouraging communities to participate in natural-resource management and sustainable utilisation, and exploring the possibility of using a "village approach" and "adjacent-area approach" in participatory planning[6, 7], to implement co-management of the nature reserve and adjacent areas[8]. Raising the awareness and understanding of local governments and adjacent-area residents towards nature reserves will also provide new opportunities to make economic development of the adjacent areas compatible with the conservation aims of Nanling NNR. Nature reserves should reconcile conservation and development by incorporating concepts of "co-existing in harmony between man and nature" in the reserve in order to meet both aims.

※两位作者均是华南农业大学林学院教授，广东省广州市天河区五山， 510642 。

*Both authors are professors at South China Agricultural University, Guangzhou 510642, Guangdong.

参考文献 References

1. 广东省科学家南岭森林生态考察团。1993。广东省南岭森林生态考察报告。*生态科学*(1) ：3-13。
Nanling Forest Ecology Expedition, 1993. Survey report of forest ecology in Nanning. *Ecological Science* (1): 3-13.
2. Geneletti D, 2003. Biodiversity Impact Assessment of roads: an approach based on ecosystem rarity. *Environmental Impact Assessment Review* 23: 343-365
3. Verbunt M, Zwaaftink MG and Gurtz J. 2005. The hydrologic impact of land cover changes and hydropower stations in the Alpine Rhine basin. *Ecological Modelling* 187: 71-84.
4. 姜富华和杜孝忠。2004。我国小水电发展现状及存在的问题。*中国农村水利水电*(3) ，3,82-83,86。
Jiang Fuhua and Du Xiaozhong, 2004. Current status and problems of hydroelectric development in China. *China Rural Water and Hydropower* 3: 82-83,96.
5. 朱效章，赵建达。2005。欧洲小水电发展现状、制约因素和对策。*小水电*(3) ：11-16。
Zhu Xiaozhang and Zhao Jianda, 2005. Current status, constraints and counter-measures of small hydro plants in Europe. *Small Hydro Power News* (3): 11-16.
6. 徐昀，吴训锋，Ten Hoonte M and Bartsch H，2003。从村社方法到周边地区方法：云南森林保护与社区发展。*森林脉搏*#6，8-13。
Ten Hoonte M and Bartsch H, 2003. From village approach to buffer-zone approach: forest conservation and community development in Yunnan. *Living Forests* 6: 8-13.
7. Wollenberg E, Edmunds D and Buck L,2000. Using scenarios to make decisions about the future: anticipatory learning for the adaptive co-management of community forests. *Landscape and Urban Planning* 47: 65-77.
8. Klooster D, 2000. Institutional choice, community, and struggle: a case study of forest co-management in Mexico. *World Development* 28 : 1-20.



广东南岭国家级自然保护区的兰花

Orchids of Nanling National Nature Reserve, Guangdong

田怀珍 胡爱群 邢福武

TIAN Huaizhen, HU Aiqun and XING Fuwu

兰科是单子叶植物最大、被子植物中的第2大科，主要分布在热带地区。全世界约有700属近20,000种[1]。兰科植物在植物界的系统演化上是属于最进化、最高级的类群，且具有很高的观赏和药用价值。全世界所有野生兰花均被列入《野生动植物濒危物种国际贸易公约》的保护范围，占该公约应保护植物的90%以上，是植物保护中的「旗舰」类群。

广东省南岭国家级自然保护区于1994年建立，位处广东省北部，乳源、连州、阳山三县境内，位于北纬24°39′~25°08′，东经112°41′~113°15′，面积为584平方公里。保护区的年平均气温19.5-20.3℃,气候属于中亚热带湿润性季风型气候，处于地势较高而兼有山地气候特色。在保护区内，核心区分为5片，乳阳片（65平方千米），大东山片（15平方千米），秤架片（20平方千米），龙潭角－天井山（125平方千米），龙潭角北片（10平方千米），总面积235平方千米。最高峰是乳源县和阳山县交界的石坑崆，海拔1,902米[2]。随着海拔高度的升高，相应地分布着不同的森林类型。

该地区蕴育了丰富的兰花资源。2003年9月至2006年4月我们查阅了收藏于中国科学院华南植物研究所标本馆和中国科学院植物研究所标本馆的采自该保护区的兰科植物标本，并进行了7次野外调查研究。

南岭国家级自然保护区的兰花物种多样性

通过查阅标本、实地调查和参考前人调查资料[3,4,5,6,7]，目前记录到南岭有兰科植物约34属70种。其中5个管理站的兰花种类数目分别为：乳阳片 64种、天井山片31种、龙潭角30种、称架片29种、大东山16种。

南岭兰花的种类主要集中在虾脊兰属*Calanthe*（7种）、斑叶兰属*Goodyera*（7种）、兰属*Cymbidium*（6种）、石豆兰属*Bulbophyllum*（5种）、石斛属*Dendrobium*（4种）、玉凤花属*Habenaria*（3种）。数量最为丰富的种类主要有橙黄玉凤花（*Habenaria rhodocheila*）、苞舌兰（*Spathoglottis pubescens*）、绶草（*Spiranthes sinensis*）、石仙桃（*Pholidota chinensis*）、建兰（*Cymbidium ensifolium*）、寒兰（*Cymbidium kanran*）、多花兰（*Cymbidium floribundum*）等。有些种类的数量相当稀少，如：小叶白点兰（*Thrixspermum japonicum*）、广东异型兰（*Chiloschista guangdongensis*）、短茎萼脊兰（*Sedirea subparishii*）等，基本上在保护区内分布点仅两处。还有部分种类有文献和标本记录，但是在我们野外考察中目前还没有发现，例如虎舌兰（*Epipogium roseum*）、直立山珊瑚（*Galeola matsudai*）、短距苞叶兰（*Brachycorythis galeandra*）等，可想这些种类的数量更加稀少。

在已发现的种类中地生兰43种，占61%，附生兰25种，占36%，腐生兰2种，占3%。保护区内兰花属的区系成分为：主要以热带性质成分为主，约占71%，例如石豆兰属、隔距兰属*Cleisostoma*、石斛属等的种类，其次为温带分布的种类，约占15%，如绶草属、舌唇兰属

With approximately 700 genera and 20,000 species around the world, the Orchidaceae is the largest Monocotyledoneae family and the second largest family of Angiospermae[1]. Mostly distributed in the tropics, Orchidaceae is considered the most highly evolved taxon in the plant kingdom. Orchids are renowned for their high ornamental and medicinal value. Wild orchids worldwide have been listed under the "Convention on International Trade in Endangered Species of Wild Fauna and Flora" (CITES), and comprise over 90% of the plants listed in its Appendices. Orchids are thus a "flagship" taxon in plant conservation.

Established in 1994, Nanling National Nature Reserve (NNR), is situated in the counties of Ruyuan, Lianzhou and Yangshan, northern Guangdong, at 24°39'—25°08'N and 112°41'—113°15'E. The reserve is 584 km^2 in size, mountainous, and enjoys a mid-subtropical humid monsoon climate with average temperature 19.5-20.3°C. The core area of 235 km^2 comprises five sections: Ruyang (65 km^2), Dadongshan (15 km^2), Chengjia (20 km^2), Longtanjiao-Tianjingshan (125 km^2) and North Longtanjiao (10 km^2). Shikengkong (1,902 m) is the highest peak, lying at the boundary of Ruyuan and Yangshan Counties[2]. The forest types vary with altitude.

Nanning NNR is rich in orchids. During our study from September 2003 to April 2006, we checked specimens in herbaria of the South China Institute of Botany (SCIB) and the Institute of Botany, CAS (Beijing), and made seven field surveys within the reserve.

Species diversity of orchids in Nanling NNR

The reserve is home to 34 genera and 70 orchid species, as revealed by herbarium specimen checks, and data collected by present and previous surveys[3,4,5,6,7]. The number of species recorded at the five management stations was as follows: 64 at Ruyang, 31 at Tianjingshan, 30 at Longtanjiao, 29 at Chengjia and 16 at Dadongshan.

The most speciose genera were *Calanthe* (7 spp.), *Goodyera* (7 spp.), *Cymbidium* (6 spp.), *Bulbophyllum* (5 spp.), *Dendrobium* (4 spp.) and *Habenaria* (3 spp.). Most abundant were *Habenaria rhodocheila*, *Spathoglottis pubescens*, *Spiranthes sinensis*, *Pholidota chinensis*, *Cymbidium ensifolium*, *C. kanran* and *C. floribundum*. Some rare species like *Thrixspermum japonicum*, *Chiloschista guangdongensis*, *Goodyera viridiflora*, and *Sedirea subparishii* were restricted to two localities within the reserve. Moreover, *Epipogium roseum*, *Galeola matsudai* and *Brachycorythis galeandra*, all reported and collected in the past, were not encountered during our fieldwork, suggesting they are even rarer.

Among the recorded orchids, 43 (61%) were terrestrial species, 25 (36%) epiphytic, and two (3%) saprophytic. Floristic composition was dominated by tropical

翅距虾脊兰 *Calanthe aristulifera*

相片由作者提供 Photo by author

Platanthera、头蕊兰属*Cephalanthera*等的种类；东亚成分的种类，如无柱兰属*Amitostigma*、萼脊兰属*Sedirea*等仅占9%；保护区内的最少的分布类型是世界分布型，仅斑叶兰属与羊耳蒜属*Liparis*。保护区兰花中的广东异型兰*Chiloschista guangdongensis*是中国特有种，并且仅记录分布于南岭保护区内。这样区系的特徵反映了南岭的亚热带区系特徵，与其地理位置相一致。

南岭自然保护区兰科植物的保育

婀娜的绿叶和美丽的花朵让兰花倍受人们的喜爱，但是同时也使她们遭受到肆意的采挖。调查发现那些「婀娜多姿碧叶长」「空谷幽香」的国兰，许多家庭都摆放；还有黄花鹤顶兰也深受人们的眷顾而珍藏于家中庭院。而虾脊兰属*Calanthe*和橙黄玉凤花*Habenaria rhodocheila*，都是游人和村民上山时信手拈来赏玩的物件。有些兰花除了美丽之外，还是极其珍贵的药材，也自然逃不了被人类利用的命运，采摘最为严重的便是石斛属的种类和石仙桃了，其次是金线兰，他们被人们不分老幼的统统从

图一：出售野生寒兰的集市
Fig 1: Market with *Cymbidium kanran* for sale

树上采下，送到药材收购商的手中，成袋的送出保护区，被收购入药了；具有秀丽绿叶的兰属植物和具有药用价值的石斛属植物成为商品在集市上买卖。

正是上个世纪90年代对兰花的涸泽而渔，让她们的家族骤然缩减，让那些昔日常见的现在都要躲藏到丛林的深处。例如兔耳兰和石斛属的种类，据当地村民反映以前在山上随处可见,可是在我们的调查中却数量不多，有可能因为野外采集太凶，所以现在在南岭已经比较稀有。在保护区内不断的有水电工程上马，建造电站的同时，其实也就意味着林子被砍伐、河谷乾涸了，这些兰花的重要栖息地的破坏对当地种群必定造成毁灭性的影响。建造电站后下游的河谷两岸原本湿润的环境变得乾燥，这样使得原本长在两岸的喜阴湿的兰花种类便很可能无法适应这样小生境的改变而减少或死亡。

这些都是兰花数量减少的原因。当然随着近几年兰花热的降温，兰花的人为采集量有所减少，加之森林管理的不断完善，如严令禁止砍伐活动和对珍稀植物的采集，使得生境得到一些改善，部分兰花种类的数量得到一定程度的恢复，

苞舌兰 *Spathoglottis pubescens*

图二：药商收购的细茎石斛
Fig 1: *Dendrobium monili forme* collected by TCM dealers

图三：大序隔距兰
Fig 3: *Cleisostoma paniculatum*

genera (71 %), such as *Bulbophyllum*, *Cleisostoma*, and *Dendrobium*, followed by temperate species (15%), including *Spiranthes*, *Platanthera* and *Cephalanthera*, with a smaller number (9%) centred in East Asia, e.g. *Amitostigma* and *Sedirea* Cosmopolitan genera were few, only *Goodyera* and *Liparis* being noted, whereas the China-endemic *Chiloschista guangdongensis* is known only from the reserve. The orchid composition of Nanling thus reflects its subtropical nature as expected from its climate and geographical location.

Orchid conservation in Nanling NNR

Orchids are the aristocrats of the world of flowers, their graceful appearance commanding attention, but this attraction has led to extensive exploitation in Nanling NNR. *Cymbidium* spp., famous for their delicate fragrance and elegance, are popular among the Chinese as a lovely accent to highlight the living room, and *Phaius flavus* are treasured in courtyards elsewhere. Tourists and villagers are used to gathering handfuls of *Calanthe* and *Habenaria rhodocheila* in bloom on hillsides. Some orchids, apart from their splendour, can provide invaluable remedial effects, and do not escape collection in the wild, particularly the *Dendrobium* spp. and *Pholidota chinensis*. *Anoectochilus formosanus* is another target. Collectors will pluck and deliver them to Traditional Chinese medicine dealers who will transport them out of the nature reserve in bags. These graceful and valuable plants thus become commodities for sale in markets.

In the 1990s orchid collection diminished species diversity and abundance, and even common species only found refuge deep inside the forests.

例如多花兰的数量据当地经常上山的村民说就比上个世纪90年代有所增加，我们也的确发现到处都可见她的芳踪。人民素质的提高和自然保护观念的增强都让我们看到了兰花恢复的希望。但是，兰花保护的工作仍然需要我们不断的努力。我们建议保护区继续加强森林管理，增强森林巡护工作，规范经济林的采伐，维护该地区的生态环境，对于兰花种类集中的地点以及一些极度稀少的种类的分布点需要格外的保护；同时需要加强旅游管理，尤其是对游客采栽兰花的行为要予以制止，在教育的同时进行一定的惩罚，让人民增强植物保护的意识。此外合理的建设水电工程，以减少对兰花生境的破坏；同时开展对保护区内工作人员的专业知识培训，提高保护意识和管理能力。相信通过我们的携手努力，若干年后会在保护区内看到「十步之内见芳草」的欣欣景象。

相片由作者提供 Photo by author

多花兰 *Cymbidium floribundum*

致谢

感谢香港嘉道理农场暨植物园奖学金的资助，及广东南岭国家级自然保护区五个管理站的领导和向导们的热心帮助；同时感谢陪同调查的研究组人员。

※**田怀珍**—中科院华南植物园在读博士，
电邮：THZ0102@126.com
※**胡爱群**—中科院华南植物园在读硕士，
电邮：chongchong2013@163.com
※**邢福武**—中科院华南植物园教授，电邮: Xinfw@scib.ac.cn
通讯地址—中国科学院华南植物研究所科研办公楼409，广州，510650。

Widespread in the past, *Cymbidium lancifolium* and *Dendrobium* spp. are on the decline as noted from our surveys, probably due to deliberate collection. Continual construction of hydro dams has led to logging and drying of ravine forests which are important habitats for orchids. Hydroelectric stations have dried up the riverbanks and altered microhabitats, damaging or killing those orchids that prefer moist conditions.

The above factors help explain the dramatic decline of orchid populations. With the slight decline of "orchid fever" in recent years and better forest management, collection of orchids has decreased and the population of certain orchids has recovered to some extent. For example, according to local villagers, there has been an increase of *Cymbidium floribundum* since the 1990s, as proven by its abundance observed in our recent surveys. While rising civic virtues and awareness of nature conservation among local villagers and visiting tourists gives a ray of hope for species recovery, our perseverance remains vital to orchid conservation. So we suggest strengthening forest management by means of intensive patrolling, setting norms for the selective logging of economic forests, and protection of habitats, with special care in areas of high orchid concentration and sites of critically rare orchids. Besides these measures, tourism management needs to be strengthened, collection of orchids by tourists has to be strictly prohibited and proper penalties need to be imposed along with education, so as to increase awareness about plant conservation. Rational construction of hydro dams to minimise their impacts on orchid habitats, and capacity building for professional management and conservation by reserve staff, are important elements. With our concerted efforts, the reserve will be well adorned by orchids in the coming years.

Acknowledgements

This study was sponsored by KFBG. We would like to extend our gratitude to the directors of the five management stations of Nanling National Nature Reserve, Guangdong, and also to the accompanying researchers.

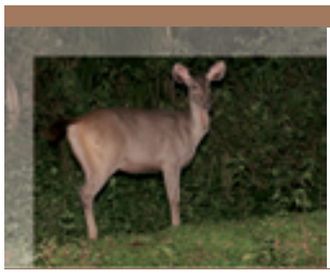
*__Tian Huaizhen__ is a postgraduate student (PhD) at South China Botanical Garden, email: THZ0102@126.com
*__Hu Aiqun__ is a postgraduate (MSc) at South China Botanical Garden, email: chongchong2013@163.com
*__Xing Fuwu__ is a professor at South China Botanical Garden, email: Xinfw@scib.ac.cn
Address for correspondence
Rm 409, Scientific Research Office Building, South China Botanical Garden, Guangzhou, 510650.

参考文献 References

1. Dressler RL, 1993. *Phylogeny and Classification of the Orchid Family*. Timber Press, Portland, Oregon.
2. 庞雄飞，2003. *广东南岭国家级自然保护区生物多样性研究*。广州：广东科技出版社。1～474。
Pang SF, 2003. *Studies on Biodiversity of the Guangdong Nanling National Nature Reserve*. Guangdong Science and Technology Press, Guangzhou, 1 – 474. (In Chinese.)
3. 陈心启，郎楷永，罗毅波，朱光华，1999。 *中国植物志17卷*。 北京：科学出版社。 1～551。
Chen X Q et al, 1999a. *Flora Reipublicae Popularis Sinicae*, *Tomus 17*. Science Press, Beijing, 551pp. (In Chinese.)
4. 陈心启，吉占和，郎楷永，罗毅波，1999。*中国植物志18卷*。北京：科学出版社。 1～463。
Chen X Q et al, 1999b. *Flora Reipublicae Popularis Sinicae*, *Tomus 18*. Science Press, Beijing, 463pp. (In Chinese.)
5. 陈心启，吉占和，郎楷永，朱光华，1999。 *中国植物志19卷*。 北京：科学出版社。1～485。
Chen X. Q. et al 1999c. *Flora Reipublicae Popularis Sinicae*, *Tomus 19*. Science Press, Beijing, 485pp. (In Chinese.)
6. 郎楷永，萧丽萍，2002。植物分类学报40 *国产开唇兰属(兰科)一新种*(2) ：164～166。
Lang, K Y and Xiao, L. P. 2002. *Acta Phytotaxonomica Sinica. A new species of Anocciochilus Blume (Orchidaceae) from China* 40(2): 164~166. (In Chinese with English abstract.)
7. Kadoorie Farm and Botanic Garden, 2003. *Report of a Rapid Biodiversity Assessment at Nanling National Nature Reserve, Northwest Guangdong, China, June-July 2000*. South China Forest Biodiversity Survey Report Series No. 29. KFBG, Hong Kong SAR, ii + 49 pp.

相片由作者提供 Photo by author

竹叶兰 *Arundina graminifolia*



珍稀物种小档案
Species in the Spotlight

油丹 *Alseodaphne hainanensis* Merr.

分布： 海南。也分布于越南北部[1]。

特徵： 乔木高达25米，胸径达1米。树皮平滑，白中带浅棕色至近白色，较年轻的树干有绅棕色垂直排列的皮孔，年老树干有垂直而浅裂的裂纹。树冠球形，茂密，并且树叶叙斜展向上。树叶无毛，长椭圆形，硬革质，下面白绿色，叶缘平滑而向外反卷。 果柄肿胀，常带红色。果实肉质，圆形，直径2.5—3厘米，成熟时黑色，内有种子一棵，是多种动物包括黑熊喜欢的食物。

生态： 常见于海南岛的热带山地雨林，海拔700至1,300米处，是当地主要的林冠树种。

现状： 本种在中国只有在海南岛有分布，并且是其世界分布的主要分布区。过去曾经是海南山地雨林大量分布的优势树种。本种木材坚硬耐用，但容易加工，琢磨后有天然光泽，因此广泛用于各种用材，尤其多作为家具、门框等。由于需求过度，本种近数十年种群大幅下降。近年除非在数个管理较为完善的保护区核心区，在海南大部分山地雨林只能找到树苗与砍伐后的树桩。我们近年在鹦哥岭保护区的调查中，发现的最大一株油丹也不足30公分胸径。虽然油丹自1999年已经是国家II级保护植物，海南的油丹砍伐尚未停止。为了追求利润，当地部分村民仍然有非法上山砍树，并售卖与小商人，继而以非法途径转移至小型木材加工厂制作家具。

油丹现时被评为国际易危 (VU：A1cd)[2]。在中国则被评为易危 (VU：A2cd)[3]，但根据我们在野外观察的种群下降与现时面对的威胁，以为应该定为中国濒危 (EN：A2abd) 较为恰当。

(吴世捷著)

Alseodaphne hainanensis Merr.

Distribution: Hainan. Also recorded in Northern Vietnam[1].

Identification: Tree up to 25 m tall and 1 m diameter. Characterised by brownish white to off-white smooth bark with vertical alignment of dark brown lenticels (Fig. 3) when young. Bark of older tree develops shallow fissures that deepen with age (Fig. 2). Canopy is round and characterised by dense leaves that often point upward. Leaves are smooth, elliptical, tough and leathery, whitish on the underside; margin smooth and convex. Fruit with a swollen reddish stalk. The fruit is fleshy, round, 2.5 to 3 cm in diameter, turning black when ripe, with a single large seed. The fruit is a favourite food of various animals including Black Bear.

Ecology: One of the major tree species in the tropical montane rainforest of Hainan between 700 and 1,300 m.

Status: In China, it is found only in Hainan, which is also its major distribution area globally. It used to be an abundant and dominant tree species in the canopy in the montane rainforest of Hainan. This highly valuable tree has hard, durable yet easily processed timber; well-polished timber has a natural gloss. As a result the species is highly prized for various purposes, especially making furniture and doorframes. Because of the high demand, the species has experienced a drastic decline in recent decades. Nowadays, with the exception of the core areas of a few well-managed nature reserves, only tree stumps or small saplings can be seen. During a recent survey of Yinggeling Nature Reserve, the largest tree seen was no more than 30 cm diameter. Although under Class II National Protection in China since 1999, exploitation for its timber in Hainan has not ceased. Eager for income, villagers are still extracting the remaining large trees, which are then purchased by merchants who pass the timber to small scale processing mills illegally.

The species has been classed as Vulnerable globally (A1cd)[2] and Vulnerable (A2cd) in China[3]. But based on our observations of severe past declines and ongoing exploitation, we believe it should be classed as Endangered (A2abd) in China.

(by NG Sai-Chit)

参考文献 References

1. 李锡文，白佩瑜，1984。*中国植物志*，31：72，图版18：7。
   Li HW and Pai PY, 1984. *Flora Reipublicae Popularis Sinicae* 31: 72, pl. 18: 7. (In Chinese.)
2. IUCN SSC, 2006. *2006 IUCN Red List of Threatened Species.* http://www.iucnredlist.org/ [Accessed on 2 October 2006.]
3. 汪松，解焱 (主编)，2004。*中国物种红色名录*。高等教育出版社，北京。
   Wang S and Xie Y (eds.), 2004. *China Species Red List*. Higher Education Press, Beijing.

图一：未成熟果实与枝条
Fig. 1: Leaves and young fruit

图二：老树树干与开裂的树皮。
Fig. 2: Older tree trunk with fissured bark.

图三：幼树树干与直线排列的皮孔。
Fig. 3: Young tree trunk with straight alignment of dark brown lenticels.

珍稀物种小档案
Species in the Spotlight

三线拟鲿 *Pseudobagrus trilineatus* (Zheng)

分布： 为广东特有种，全球只局限分布于东江流域和香港的小部分地区。

特徵： 小型鲇科鱼类，全长不过10公分。头大、较圆钝，须4对，身体逐渐侧扁，脂鳍较长。体色美丽，身体褐色，沿侧线和其上、下方各有一条平行的黄线。头背至鳃裂亦具一条黄斑。

生态： 生活于山区小溪流及有流动水、水质清澈的沼泽。爱在水草、枯叶多的水体出没，白天很少见其活动，可能跟大部分鲇科鱼类为夜行性鱼类。其详细生态资料至今仍缺乏研究。

现状： 被中国物种红色名录列作易危 (A1a; B1ab(v)c(iv); C1; D2) 物种，大部分生境亦未受保护。跟很多中国的淡水鱼一样，本种的国际濒危状况仍未被评估。

（陈辈乐著）

East River Striped Catfish *Pseudobagrus trilineatus* (Zheng)

Distribution: Globally restricted to scattered localities in the Dong Jiang basin and Hong Kong.

Identification: A beautiful small catfish measuring no more than 10 cm in total length. Has a broad, blunt head with four pairs of barbels and a somewhat laterally compressed body. The adipose fin is elongated. Has three distinctive parallel orange-yellow stripes running laterally from head to tail on a brownish body; an orange-yellow band runs around the top of head to the opercular slit.

Ecology: Lives in small hillstreams and marshes with clean, flowing water. Prefers habitats with dense vegetation and/or fallen leaves. Inactive during the day and may be nocturnal like many catfishes. Detailed ecology of this species is still not known.

Status: Listed as Vulnerable (A1a; B1ab(v)c(iv); C1; D2) in the China Species Red List, and the majority of its habitat is not protected. Like many freshwater fish in China, its global status has not been assessed.

(by Bosco CHAN)

照片由李国诚及陈辈乐提供 Photo by LEE Kwok Shing and Bosco CHAN

发展戏法

The Development Hoax

『若要开发拉达克，便得想法子令当地人变成更贪得无厌。否则，你根本无从鞭策他们。』— 拉达克发展专员 [印度]，1981年。

当我首次来到印度的拉达克，当地民风在我的心中留下了深刻印象，如上述的开发专员所言，我发现他们并不看重物质利益，更不会为此舍弃自在闲适的生活。早些年前，任凭旅客们怎么利诱，当地人亦不为所动，拒绝售卖某些东西，直教旅客们莫名奇妙。开发数年后的今天，他们对挣钱趋之若鹜，这片净土生出了新的需要。

那些发展的使者—旅客、广告及电影影象，都有意无意地向拉达克人灌输一种意识：当地传统习惯已经落伍，而现代科学却可以帮助他们善用天然资源增加产量。发展能够衍生欲望与贪念，与此同时，它正在摧毁一个已沿用上千年的经济体系。拉达克人以往会利用他们非凡的智慧与技能，善用最就近的资源，谋求舒适惬意和安稳的生活。只是，昔日知足的拉达克人如今已不再安于现状。

自拉达克开始被发展的约十六年后，我察觉到许多事物正在改变：贫富悬殊加剧、妇女既有的自信与权力荡然无存、失业和通货膨胀相继出现、罪案数字上升、人口因各式各样的经济与心理压力而激增，家庭分裂和社区瓦解，以及当地人与土地关系疏离，人们逐渐脱离自给自足的生活模式，而改为需依赖外界的经济支撑。

旧式的铜壶已不复存在，取而代之的是一个个粉红胶桶，廉宜时髦的皮鞋款式也淘汰了一双双牦牛鞋子，看到他们这样做时，我不由得捏一把冷汗。可是，我不久便意识到自己根本并没有权利强加他人认同一己的审美喜好，也没有资格告诉他们什么是于他们有益。摩登世界的入侵可能是丑陋和不适切的，不过它们肯定能带来物质上的好处。数年后我开始把这些片段连在一起，当作一个单一过程来分析，得出的结论是：拉达克文化瓦解。由那时起，我意识到日常生活正被有系统地、逐小逐小的改变—一双新皮鞋、一栋新混凝土房子—其实都是转为经济依赖、文化排斥及环境退化大趋势的一些具体事例。

当这些千丝万缕的关系变得越见清晰，我益发怀疑「发展」的本义。「发展」是一个有计划地改变的过程，理应是透过科技进步与经济增长来提升人们的生活水平，但这似乎弊多利少。我明白贪念的产生是更广泛转变的一部份。如同世界各地一样，要发展拉达克，都要经历巨大且有系统的社会重组，这意味著庞大及不断的基建投资：筑路、建造西式医院、学校、无线电台和机场等，及最重要的发电设施。这一切一切不仅需要非常雄厚的财力支持，也要许多人力及管理上的投入。可是从没有人质疑过耗费这么多人力物力终究能为拉达克带来什么改善。发展拉达克似是由零开始，好像当地在此以前根本不曾有过甚么医疗、教育、通讯、交通及贸易；错综复杂的道路、小径及商贸运输网络、和已存在数个世纪广泛精密的灌溉渠道系统：好像这些生活、文化与经济系统的标记被当成从不存在。西方世界模式正以沥青、钢筋和混凝土依样葫芦地改造拉达克。

*Helena Norberg-Hodge授权详录本文自*Ancient Futures: Learning from Ladakh (第二版, Rider, 2000)*。版权归作者所有。

"If Ladakh is ever going to be developed we have to figure out how to make these people more greedy. You just can't motivate them otherwise." — Development Commissioner in Ladakh [India], 1981.

When I first arrived in Ladakh the absence of greed was striking. As the Development Commissioner observed, people were not particularly interested in sacrificing their leisure or pleasure simply for material gain. In those early years, tourists were perplexed when people refused to sell them things, no matter how much money they offered. Now, after several years of development, making money has become a major preoccupation. New needs have been created.

The messengers of development — tourists, advertisements, and film images — have implicitly been telling the Ladakhis that their traditional practices are backward and that modern science will help them stretch natural resources to produce ever more. Development is stimulating dissatisfaction and greed; in so doing, it is destroying an economy that had served people's needs for more than a thousand years. Traditionally the Ladakhis had used the resources in their immediate vicinity with remarkable ingenuity and skill, and worked out how to live in relative comfort and enviable security. They were satisfied with what they had. But now, whatever they have is not enough.

In the sixteen or so years since development first came to Ladakh, I have watched the gap between rich and poor widen; I have watched women lose their self-confidence and power; I have watched the appearance of unemployment and inflation and a dramatic rise in crime; I have watched population levels soar, fueled by a variety of economic and psychological pressures; I have watched the disintegration of families and communities; and I have watched people become separated from the land, as self-sufficiency is gradually replaced by economic dependence on the outside world.

When I saw a brass pot replaced by a pink plastic bucket, or yak-hair shoes thrown out in favor of cheap modern ones, my initial reaction was one of horror. But I would soon find myself thinking that I had no right to impose my aesthetic preferences or tell people what was good for them. The intrusions of the modern world might seem ugly and inappropriate, but surely they brought material benefits. It was only after several years that I began to piece these individual instances together and see them as aspects of a single process: the systematic dismantling of Ladakhi culture. I began to see the minor incremental changes in everyday life — a new pair of shoes, a new concrete house — as part of the bigger picture of economic dependence, cultural rejection, and environmental degradation.

As these connections became clearer to me, I grew suspicious of what is known as "development". This process of planned change, which was supposed to raise the standard of living through technological advance and economic growth, seemed to be doing more harm than good. I realized that the creation of greed was part and parcel of much broader changes. The development of Ladakh, as everywhere else in the world, required a massive and systematic restructuring of society that presupposed enormous and continual investments in "infrastructure": paved roads, a Western-style hospital, schools, a radio station, an airport, and, most importantly, power installations. All this involved not only the expenditure of exorbitant sums of money but also massive inputs of labor and administration. At no stage was it even questioned whether or not the result of these tremendous efforts constituted an improvement on what had existed before. It was like starting from zero, as if there had been no infrastructure in Ladakh before development. It was as if there had been no medical care, no education, no communication, no transport or trade. The intricate web of roads, paths, and trade routes, the vast and sophisticated network of irrigation canals maintained over centuries: all these signs of a living, functioning culture and economic system were treated as though they simply did not exist. Ladakh was being rebuilt according to Western guidelines — in tarmac, concrete, and steel.

*Excerpted from *Ancient Futures: Learning from Ladakh* by Helena Norberg-Hodge (Revised Edition, Rider, 2000), with kind permission of the author. Copyright Helena Norberg-Hodge.

现代化：没落的空想？
Modernisation: an outdated ideal?

每当谈及该如何发展中国，我们都会毫无保留地采纳西方模式来推行现代化。可是，到底这是否可行？甚或可取，去走相同的路呢？

历史早就告诉我们，西方人实现的现代化，其实是一个长期殖民化的结果。另外一个被人容易忘记的常识是，如果把欧洲搞殖民地转移出来的人口，都计算回到欧洲，那欧洲现在应该有多少人？.....大约有10亿人口；如果再把殖民过程中欧洲人和当地人混血形成的人口，也算欧洲血统的人口计算回去的话，那恐怕就会超过中国现在的人口。那么，在主张个性充分发展的、个人利益最大化的资本主义欧洲，资源和人口之间的关系就会非亿人口；如果再把殖民过程中欧洲和当地人混血形成的人口，也算欧洲血统的人口计算回去的话，那恐怕就会超过中国现在的人口。那么，在主张个性充分发展的、个人利益最大化的资本主义欧洲，资源和人口之间的关系就会非常紧张，会导致比那两次世界大战还激烈的冲突，那还会有现代化吗？

300年的殖民化，欧洲本土总共移出1/4人口……结果就是欧洲人占领了其他的四个大洲，人口和资源的紧张关系由此彻底改善，资源环境空前宽松。

一方面殖民者占有了北美和南美丰富的资源；另一方面，因为那里的土著居民不适应奴隶劳动—土著部落本质上就是与自然和谐共处的民族，几千年的理念都是最可持续的，他们不会过度猎杀野兽，只要够自己吃就好了。当欧洲人到了新大陆时，发现这边自然条件非常好，生活在这儿的人是不破坏环境的。土著要自由，要可持续生计。他们就是不愿意到殖民者的矿山去劳动，于是土著人口在反抗中大批死亡。而殖民地新的资源开发又急需劳动力，所以就把占领的非洲大陆劳动力转移到南北美洲。这个过程中，南美大陆和北美大陆各减少了一亿土著人口。而非洲一亿人口在被抓过程中杀掉1/3，转运中死掉1/3，到美洲这边大概有几千万吧。

因此，这个殖民化过程中是伴随著美洲土著和非洲上亿人口的大量死亡，和资源环境的大规模破坏，而形成的工业化资本原始积累。这个事实演进过程，当然就产生一套资本形成、资本扩张经验，而这个经验，可能就是我们现在已经习惯接受的所谓「现代化」的实质。

假定殖民过程对于西方的现代化是不可避免的，而客观上也是形成西方话语环境中「现代化」的经验过程。那么，如果我们现在讨论中国的发展问题时，仅仅把这些话语拿过来用，却又不去考虑这一套话语是怎么形成的。这就使人不得不认真去思考，西方话语环境中「现代化」的经验是不是一个科学的东西？……如果我们把所谓「现代化」也作为一个科学的理念拿过来，那西方走过的300年殖民化，就应该被看作是一个实验的过程。这个所谓「现代化」的殖民过程可被别的国家重复吗？如果不可重覆，对于后发国家，追赶工业化的发展中国家，又怎么能够直接就把那一套东西搬过来呢？

When discussing development in China today, we often wholehcartedly adopt a Western model of modernisation. But is it feasible, or even desirable, to take the same path?

As history tells us, Western modernisation is an outcome of entrenched colonialism. It's easy to overlook the number of people who emigrated from Europe during the colonial period; if we included them, what would Europe's current population be? Around one billion, I think. If those of mixed parentage were included, I suspect the population would exceed that of China. With advocacy of individualisation and private gain in Europe's capitalist culture, the intense demand would have imposed immense pressure on the available resources, and caused conflicts more intense than World Wars I and II. Had they remained, would the modernisation we see today have been realised?

The 300-year colonisation process involved the emigration of one-quarter of Europeans. By taking over four other continents, Europe relieved the tense relationship between local communities and natural resources, allowing Europe's own natural resources to become more abundant than before.

While the European colonisers took over the rich resources of South and North America, the indigenous people found slavery unacceptable. In the pursuit of a harmonious relationship with nature, native tribes had lived sustainably for thousands of years, never over-hunting and obtaining only what they needed. When Europeans found such a new continent, they were fascinated by the rich natural resources and people's caring behaviour toward nature. Native Americans preferred freedom and sustainable livelihoods; their reluctance to work in colonial mines led to widespread death in several revolts. With the pressing need for labour to open up new resources, Africans were enslaved for transport to South and North America, while America's native populations were reduced by hundreds of millions from the time of colonization. Only a few tens of million Africans landed in the Americas, as two-thirds of them died during persecution and the long journey.

Besides causing hundreds of millions of deaths and the large-scale destruction of natural resources, colonialism also prompted the original accumulation of capital for industrialization. This true-life evolution provided experience of capital formation and expansion, which came to form the core of what the general public now recognises as "modernisation".

Assuming the process of colonization is inevitable in Western modernisation. If the term 'modernisation' is borrowed to discuss China's development, without considering its origins, then we need to think seriously how scientific is the 'modernisation' experience. If we treat 'modernisation' as a scientific concept, then the 300-year colonisation period can be regarded as an experimental process. Can this so-called 'modernisation', but actually colonisation process be repeated in other countries? If not, then how can developing countries copy the whole day in their pursuit to become a developed, industrialised country?

A second aspect of modernisation is that it has gone hand in hand with urbanisation. But we must prepare ourselves for the fact that most of the population will still be living on agricultural production, and remain in traditional farming communities, for years to come. A small-scale peasant

节录
Excerpts

现代化的现象总是离不开都市化的产生。我们必须考虑到可能会在相当长的时间内，大部份人口仍然停留在传统的农业生产领域之中，停留在传统的农村社区之中，中国仍然是以小农经济为主，不大可能随著我们憧憬的那个「墙上的画饼」－现代化，去实现西方式的城市化，不大可能把大量的农村过剩人口转移进城市。

即使我们到2020年人均4,000美元的GDP目标能够实现，真的能够让55%的人生活在城市中，即使那时候大约有8亿人生活在城市，还会有7亿多人生活在农村。也就是说，农民的人地关系并不能得到根本改变。按照现在的统计，农业人口是7亿8千万，到那个时候农村人口的数量不过减少几千万而已。而按照现在的城市化速度，平均每年耕地面积减少1,000万亩，到时候会减少2亿多亩耕地[即现时可耕土地的约12%]，那农村的人地关系不可能得到改善，反会恶化。

无论到亚非拉美国家，还是到发达国家，到处可以听到人们在说「中国威胁论」，为甚么呢？因为我们吃得太多了。2003年我们经济增长9.1%，我们消耗了世界石油市场总量的10%，钢铁消耗量占全世界的24.9%，水泥消耗量大约占全世界的50%。以钢铁为例，中国铁矿石的购买占澳大利亚铁矿石输出的一半以上，是我们推起了澳大利亚的GDP，推起了澳元汇率。但是，如果照这样下去，不用多久，世界能源和原材料市场中相当大的份额将会是向中国供给，如历史上记载的殖民主义势力，你说这个世界会答应吗？

过去我们已经有过教训了。比如说1995年到1996年我们连续18个月进口了3,000万吨小麦。导致国际小麦市场价格上涨大约100%，这引起很多发展中国家的不满：「你们中国有钱了，可我们买不起，我们没钱，难道就该饿肚子吗？」

我们在国内的人，自己当然不认为这样的指责有道理，但你到世界各地去看看，人家都觉得咱们这样有问题。于是，要么是「中国崩溃论」，要么是「中国威胁论」，崩溃论是认为「你没有足够的资源，也不可能永远这样消耗世界资源」，而威胁论的出发点差不多，就是认为你这样下去会把世界市场抢光。

.....这么一讨论，就需要对过去接受的、约定俗成的东西重新认识。不能搬过来一套话语，就成为我们的指导思想，以往在很多书本上、会议上去讨论那个「现代化」，而本来形成这些东西的人家的那个经验过程，我们客观上又实在是不可重覆的。因此，咱们必须视乎自身的实际环境状况，制定一套合适发展规划。

※温铁军授权辑录《*自文化反思与乡村建设研讨会参考论文集*》「反思现代化」一文。

economy may remain dominant in China; it is simply not feasible to realise the "modernisation" we have long dream of, and to drain off the excess population to cities. Even if we can hit the per capita GDP target of USD $4,000 in 2020, and make 0.8 billion people (i.e. 55%) urban, another 0.7 billion will remain rural. The relationship between local communities and land resources will not improve. The current rural population is around 0.78 billion, and by 2020 this can be reduced by no more than 10%. Given the rapid pace of China's urbanisation - arable land will be decreased by 10 million mu [7,000 km^2] per annum, i.e. a total loss of 0.2 billion mu [140,000 km^2, 12% of the current amount] of arable land to urban encroachment by 2020 - the relationship will be even worse.

In Asian, African and Latin American countries, or other developed countries, the "China Threat theory" lingers on. This is due to China's shocking consumption of the world's resources. With 9.1% economic growth in 2003, China consumed 10% and 25% of the world's overall petroleum and steel production respectively, and half of the cement. China purchased more than 50% of Australia's iron ore, and it is we, the Chinese, who have increased Australia's GDP as well as the exchange rate of the Australian Dollar. If the situation continues, China will take the lion's share of the world's resources and raw materials, like the colonial powers of old. But will other countries accept this?

There were past lessons. During 18 consecutive months in 1995-1996, China imported 30 million tons of wheat, doubling the international wheat price, and triggering the contention of other developing countries: "China is wealthy enough to pay the high price, but we aren't, does that mean we have to starve? "

We Chinese would not think that this kind of accusation has reasons. But if you travel abroad, you will know other people do not agree. The "China Collapse" and "China Threat" theories hence emerge, indicating that China's consumption will either destroy itself, through environmental collapse, or that China will plunder all resources someday at the expense of others.

Such discussions provoke us to re-examine our deeply entrenched social beliefs. It is impossible to apply an imported set of terms as our guiding principles. 'Modernisation' has been a hot topic in books and discussions, but in reality we are unable to replicate others' previous experience. We must chart our own course based on the realities of our own environment and situations.

*Adapted with kind permission from Wen Tiejun: "Reflections on modernization" from *Proceedings of the Symposium on Cultural Reflections and Rural Development.*

投稿须知
Author Guidelines

《森林脉搏》投稿须知

范畴

《森林脉搏》由嘉道理农场暨植物园中国项目出版，每年两期，为致力从事华南地区自然保育人士报导环保资讯，提供讨论及交流渠道，藉以启发读者。《森林脉搏》的内容题材包罗森林和生物多样性各个保育范畴，尤以改善资源管理与减少威胁为报导主题。凡从事相关保育的工作者、森林管理人员、科研人员及顾问等都欢迎投稿。

稿件类别

1. 特稿及短文
稿件须连同相片一并递交，特稿及短文分别以1,500及500字为限，题材务必与华南地区的保育事项有关 。

2. 来函
回应前期刊登文章之稿件以少于500字为宜。

3. 短讯及新闻
以报导最新保育动态或重要消息并且未经刊载为合，亦欢迎提供关于经费来源信息与相关会议、培训班等资料。来稿以少于500字为宜。

4. 近期出版刊物
简单介绍近期出版的书籍、报告与书评。诚邀作者及出版社投寄书刊供编辑评述，亦欢迎投寄对近期出版书籍的书评，建议进行书评前先谘询本刊编辑的意见。

稿件格式

来稿中、英文皆可，双语版更佳。除可递交打印稿外，作者亦可把文件储存作WORD或 RTF档案以电邮形式提交。封页须标明题目、作者之邮政及电邮地址全写，及其他共同撰稿的作者姓名和地址。此外，稿件须顺序编码，图表应力求简洁易懂，标题恰当。首次提及的物种，应按其科学名称书写，并在调查方法内注明分类命名法之采用准则。

递交方法

作者可透过邮寄或电邮方式递交文稿〈地址如下〉。付寄邮件必须声明 (1) 文稿并未公开发表或投寄他处〈获准翻印的文章除外〉，及 (2) 投寄稿件前经已取得所有作者同意。如文稿内容与其他已文付印刷或正在整理的刊物内容有重迭，应注明并有关稿件一并递交。随特稿及短文应附上不少于两张JPEG格式的照片〈彩照更佳〉，标题则须附注于文稿内。另欢迎作者投寄一幅或多幅高素质的彩色幻灯片或照片，以作甄选本刊封面照之用。

审阅及校对

来稿须经编辑委员会审阅，如有需要，本刊会谘询其他专家之意见。来稿一经接纳，为使内容更明确清晰，本刊或会进行修改。除非来稿经大肆修改、加插资讯或需澄清，否则本刊编辑不会就其他修改另行通知作者。

其他

文责自负。来稿一经刊登，撰稿者将获赠该期的《森林脉搏》两本，其版权即归嘉道理农场暨植物园所有。稿件请寄：

香港特别行政区新界大埔林锦公路
嘉道理农场暨植物园
中国项目
《森林脉搏》编辑委员会
或电邮：cp@kfbg.org

Author Guidelines for *Living Forests*

Scope

Living Forests magazine is published twice a year by the China Programme, Kadoorie Farm and Botanic Garden. It aims to inform, inspire and serve those dedicated to nature conservation in the South China region, providing a platform for discussion and information exchange. *Living Forests* publishes material on all aspects of forest and biodiversity conservation, particularly with the potential to improve management and reduce threats. We welcome submissions by forest managers, researchers, advisers and practitioners with related objectives.

Content

1. Articles
Feature articles (about 1,500 words) and short articles (500 words), with photographs, are invited on topics relevant to the magazine's focus in South China.

2. Letters
Contributions (generally <500 words) in response to material published in previous issues of the magazine.

3. Notices and news
Items (generally <500 words) concerning recent developments in conservation or important announcements, other than from published sources. Other items of interest include news of the availability of grants or funding opportunities, and announcements of relevant meetings, workshops and conferences.

4. Recent publications
Brief announcements of new publications and book reviews. Authors and publishers are invited to send publications to the Editor for potential review. Reviews of recent books are also welcomed; prospective reviewers are advised to consult the Editor in advance.

Preparation of manuscripts

Contributions can be in English or Chinese or (preferably) both. Electronic submissions in either Word or Rich Text format are acceptable. The cover page should contain the title, corresponding author's full postal and email address (as applicable) and names and addresses of any additional authors. All pages should be numbered consecutively. Tables should be self-explanatory and each with an appropriate caption. The first time a species is mentioned, its scientific name should follow. Where necessary, the basis used for nomenclature of taxa should be indicated in the methodology.

Submissions

Manuscripts should be sent either by post or email to the Editor (address below). A covering letter or email note must confirm that (1) submitted manuscripts have not been published or submitted for publication elsewhere (or, in exceptional circumstances, that permission for republication has been acquired), and (2) all authors have agreed to the submission of the manuscript. If there is overlap with other publications, including any in press or in preparation, this should be stated and the papers concerned sent to the Editor. For articles a minimum of two (preferably colour) photos in JPEG format and captions should be attached separately with the body text. Authors may also submit one or more high quality colour slides or photos related to their submission for consideration as a photograph for the front cover.

Review and editing

Manuscripts are subject to review by an editorial committee; if appropriate external reviewers may be consulted. After acceptance, manuscripts may be edited to enhance clarity; such editing will not be sent to the author unless substantial changes have been made or additional information and clarification is needed.

Others

Contributors will receive two free copies of the issue in which their paper is published. The copyright, upon acceptance of an article, will be transferred to the Kadoorie Farm and Botanic Garden. To contact us, please write to:

Editorial Committee, *Living Forests*
China Programme
Kadoorie Farm and Botanic Garden
Lam Kam Road, Tai Po, N.T., Hong Kong SAR
Or by email: cp@kfbg.org

地图 map

◆本期提及的主要地点均已标示
Major sites mentioned in this issue are indicated

KFBG
Kadoorie Farm & Botanic Garden
嘉道理農場暨植物園

总编辑 **Editor-in-chief:**	费乐思 John Fellowes
执行编辑 **Managing Editor:**	林芷薇 Ela Lam
编委 **Editors:**	刘惠宁、吴世捷、陈辈乐、林芷薇、周嘉旺、吴狄姬 Michael Lau, Ng Sai Chit, Bosco Chan, Ela Lam, Sharon Chow, Norris Ng
翻译 **Translator:**	林芷薇 Ela Lam
联络地址 **Correspondence address:**	香港新界大埔林锦公路嘉道理农场暨植物园中国项目 China Programme, Kadoorie Farm and Botanic Garden Lam Kam Road, Tai Po, New Territories, Hong Kong, China
网址： **URL:**	http://www.kfbg.org

以再造纸和环保油墨印制
Printed on recycled paper with environmental friendly ink
ISSN 1680 - 0494