

出國報告書 (出國類別：其他)

出席「第九屆國際生態學大會」

服務機關：行政院農業委員會林業試驗所

姓名職稱：金恒鏞 所長

派赴國家：加拿大與美國

出國期間：94 年 8 月 5 日~15 日

報告日期：94 年 8 月 16 日

提 要 表

系統識別號：	C09404828					
計畫名稱：	出席第九屆國際生態學大會					
報告名稱：	出席第九屆國際生態學大會					
計畫主辦機關：	行政院農業委員會林業試驗所					
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參訪機關：	華盛頓大學					
出國類別：	其他					
出國期間：	民國 94 年 08 月 05 日至民國 94 年 08 月 15 日					
報告日期：	民國 94 年 08 月 16 日					
關鍵詞：	國際長期生態研究網，ILTER，國際生態學大會					
報告書頁數：	25 頁					
報告內容摘要：	<p>目的： 1. 與新任之「國際長期生態研究網 (ILTERN)」之執行召集人 (Holly Kaufman) 會談。內容為有關 ILTERN 網之重要議題 (如策略規畫、基金募集及合作研究)。 2. 出席在加拿大蒙特婁舉行之「第九屆國際生態學大會」： (1) 主持「利用特定試驗地，執行全球多尺度、整合型環境管理與研究之研討會」。(2)宣讀論文 (兩篇)。 (3) 出席美國長期生態研究之「國際委員會會議」。(4) 尋求國際學術研究合作的可能性。3. 赴華盛頓大學收集生態學資料。成果： 1. 順利建立與國際長期生態研究網之新任執行總召集人 (Holly Kaufman) 之互信與良好合作夥伴關係。2. 順利主持「利用特定試驗地，執行全球多尺度、整合型環境管理與研究之研討會」。3. 發表擾動生態學論文，深受與會科學家之肯定，並希望我們在台舉行相關大氣污染、地震及擾動研究會，整合這方面的生態學。4. 與美國百明翰大學的 Kent Hatch 教授達成合作研究協議。Hatch 教授將於明年 (2006) 春來台做更深入的了解。5. 韓國教授金恩植 (Eun-Shik KIM) 自願協助報告人推動「國際長期生態研究」之工作。</p>					
電子全文檔：	C09404828-01.pdf					
附件檔：						
限閱與否：	否					
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出國報告書

出席「第九屆國際生態學大會」

一、目的：

1. 與新任之「國際長期生態研究網 (ILTERN)」之執行召集人 (Holly Kaufman) 會談。內容為有關 ILTER 網之重要議題 (如策略規畫、基金募集及合作研究)。
2. 出席在加拿大蒙特婁舉行之「第九屆國際生態學大會」：
 - (1) 主持「利用特定試驗地，執行全球多尺度、整合型環境管理與研究之研討會」。
 - (2) 宣讀論文 (兩篇)。
 - (3) 出席美國長期生態研究之「國際委員會會議」。
 - (4) 尋求國際學術研究合作的可能性。
3. 赴華盛頓大學收集生態學資料。

二、行程：94 年 8 月 5 日至 8 月 15 日

日期	行程地點	工作內容
8 月 5 日 (星期五)	台北→舊金山	啓程
8 月 6 日 (星期六)	舊金山	會見 ILTER 網執行召集人
8 月 7 日 (星期日)	舊金山→蒙特婁	啓程、抵達、報到
8 月 8-11 日	蒙特婁	出席「第九屆國際生態學大會」
8 月 12 日 (星期五)	蒙特婁→西雅圖	出席「第九屆國際生態學大會」、啓程
8 月 13 日 (星期六)	西雅圖	華盛頓大學收集資料
8 月 14 日 (星期日)	西雅圖→台北	返程 (抵台北 8 月 15 日)

三、工作要點及會議內容

1. 於 8 月 6 日與「國際長期生態研究網」之執行總召集人 (Holly Kaufmann) 見面，主要商談有關 ILTER 網之重要議題 (如策略規畫、基金募集及合作研究) 及今年 (2005) 十月在墨西哥舉行的年會事宜 (會議記錄見附件一)。並協商於 2005 年 10 月底在墨西哥召開國際學術會議之內容 (完成議程及策略草案：附件一)。
2. 於 8 月 8-12 日出席「第九屆國際生態學大會」，主要內容為：
 - (1) 主持「利用特定試驗地，執行全球多尺度、整合型環境管理與研究之研討會」 (附件二之第一頁)。

- (2) 發表論文 (有關颱風擾動學及森林動態學之論文兩篇)。
 - a. Networking of large long term forest dynamics plots in subtropical and tropical sites (附件二).
 - b. Tropical Cyclone disturbance and forest dynamics at multiple temporal scales: results from five long-term studies in the new and old world (附件三).
 - (3) 出席美國國際長期生態研究之「國際委員會會議」(議程見附件四)。
 - (4) 了解全球對森林生態學若干領域之最新研究成果與尖端科技之應用。
 - (5) 尋求學術科學研究合作之機會並收錄一名 Brigham Young University 的動物學博士研究生到台灣做博士論文(來往信件見附件五)。
 - (6) 協商於 2005 年 10 月底在墨西哥召開國際學術會議之內容(完成議程及策略草案：附件一)。
 - (7) 商談國外學者協助推動長期生態研究網之事務工作(已有一位教授 Dr. Eun-Shik KIM 志願協助：附件六)。
3. 於 8 月 13 日在華盛頓大學收集資料 (附件七：書籍 15 本)。

四、成果

1. 順利建立與國際長期生態研究網之新任執行總召集人 (Holly Kaufman) 之互信與良好合作夥伴關係。
2. 順利主持「利用特定試驗地，執行全球多尺度、整合型環境管理與研究之研討會」。
3. 發表擾動生態學論文，深受與會科學家之肯定，並希望我們在台舉行相關大氣污染、地震及擾動研究會，整合這方面的生態學。
4. 與美國百明翰大學的 Kent Hatch 教授達成合作研究協議。Hatch 教授將於明年 (2006) 春來台做更深入的了解。
5. 韓國教授金恩植 (Eun-Shik KIM) 自願協助報告人推動「國際長期生態研究」之工作。

五、結論

1. 宜更加重視「擾動生態學」的研究(在台灣便是地震、颱風與土石流之生態衝擊)。
2. 重視採用新工具(如穩定同位素)來研究生態問題(已有美國大學教授表示強烈與我國合作之意願)。
3. 採用尖端科技(如無線偵測器)擴大研究網(network)之資料與數據之即時與長程傳輸與交換。

4. 此大會有許多新生代生態科學家參與（中國大陸約有 60 人與會，我國有 6 人與會），我國這方面有待加強。

六、建議

1. 鞏固我國之在某特定領域之學術主導地位，鼓勵國人出席大型國際會議，並發表論文、學習新知與建立科學界之交流管道。
2. 若為大型、多功能之國際會議，宜用代表團之方式（團員之旅費不必全部來自一個補助機構）參與。要事先分派團員的學習任務，俾使有更大收穫。
3. 提供短期（3-6 個月）之補助，派人到各國做特定主題之研究，返國後持續進行與該主題有相關之研究，並予追蹤與考核。
4. 強化生態系之功能，生物多樣性、入侵外來種等之研究。
5. 注重都市（如淡水河流域內的台北市）之生態問題與維持都市生態系統的健康、社會永續性等課題之研究。
6. 加強中外科學家與科學家、機構與機構間的積極合作，並追蹤與評量合作成效，做為經費補助之重要參考。

附件一：8/6 於舊金山與 Holly Kaufman 會面之會議紀錄及策略草案

1. 會議紀錄

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NOTES FROM MEETING ON MEXICO AGM HEN & HOLLY August 6, 2005

MEXICO ANNUAL GENERAL MEETING (AGM)

Purpose of Mexico Meeting

Hen said that three key issues to deal with at the meeting have to do with ILTERN being a “network of networks”:

- 1) Need for data compatibility among networks – an ILTERN-wide need
- 2) Research collaborations
- 3) Cross-site comparisons of ecological processes

He envisions a workshop to deal with #1, and discussions on #2 and 3. He thought that Holly would also talk about fundraising.

We talked about the distinction between scientific needs and organizational ones, and the reasons why ILTERN is embarking on strategic planning process. We agreed that **ILTERN is facing a major transition, from “child to adult,”** owing to the fact that NSF will no longer be its sole funder – ILTERN has to completely change the way it functions in order to support itself. It will **have to diversify funding sources**, which means people in the organization around the world will have to become involved in fundraising. Also, the organization **cannot run on volunteer labor forever**. Once certain key people leave, there has to be a structure in place so that the organization can continue.

So, in addition to the scientific issues, we agreed that we **need to use Mexico to get the membership to understand where the organization is now, what the key organizational issues are, and to engage member participation in the strategic planning process.**

HK: How do we **get people in Mexico involved** in the project and committed to working on it?

HB: We need to ask people what issues are most important to them, such as funding, data management, human capacity building or cyber-infrastructure. The **regional reps should be responsible** for dealing with these issues; we need to ask them how they will contend with them.

Fundraising

- ✓ Hen will talk to Patrick & Steve in Montreal about the lead with Libby Lyons at NSF on getting **funding for ELTOSA members to travel to Mexico**. They will all coordinate with Laura Sands (Holly’s team) who will be working on ILTERN fundraising.

Hen is also looking for **other funding to help other regional reps get to Mexico**. He is not sure what the funding gap is. He asked for 10K to fund 4 people.

- ✓ In addition, Hen offered that if we have made good progress on the **strategic planning** project in January, he can look for **additional funding** for it.

Other

- ✓ Hen will send out an invitation letter from himself and Manuel.

2a. 策略草案

STRATEGIC PLANNING INTERVIEW QUESTIONS

Hen Biau-King, with Holly Kaufman

August 6, 2005

What niche does ILTERN fill?

ILTERN's contribution to the global scientific community is **providing ground-tested, high quality, easily accessible data**. This is why we have networks. We have long-term data, so we really see global change. We can provide a **biological legacy** – people will be able to use our data 50 years from now.

This is why we **need good data management**. We have to figure out who will help **build this capacity** among our members and networks.

Why to you belong to ILTERN?

Few countries in East Asia/the Pacific paid attention to the environment. He tried to get government money to study ecosystems, and eventually got US funding (NSF) for LTER. He organized both a regional and an international meeting in Taiwan.

He will retire in 2 years, and wants ILTERN on the right track by then. He wants it to be able to contribute to both the scientific and the policymaking communities – to have more give and take with governments.

Why does ILTERN need a strategic plan?

If we don't do it at this stage, what else could we do to move ahead? It will help our international organization have a future. Otherwise we'll still have the East Asia network.

What are the non-scientific issues at ILTERN?

We should deal more with education, so outreach is important. We need public awareness of the importance of the environment and biodiversity, and governments need to understand that, too, and the need for conservation and protection. We are working on education in Taiwan. For example, we are using a site to help form a university curriculum, and encourage students to use their data. We want to influence government policy more, and have governments come to us more.

Whom do you recommend we interview outside of ILTERN?

- Jim Gosz, Hen's predecessor for eight years. He will also have other suggestions.
- Jerry Franklin at U of Washington. Was in Hen's job 2 years, not a member now.
- Bill Chung at NSF. Was in the East Asia/Pacific program.

(HK note to strategic planning team: Hen said that resumes of the regional reps that we'll be interviewing are available on line if we want to see them before interviewing people.)

附件一：8/6 於舊金山與 Holly Kaufman 會面之會議紀錄及策略草案
2b.議程草案

DRAFT REVISED AGENDA
August 6, 2005

We developed the following proposed agenda pertaining to the strategic planning parts of the Mexico AGM:

Thursday, Oct 27 – full ILTERN membership present
9 am to 1 pm

- 9 – 9:15 Welcome & Logistics – Manuel
- 9:15 – 9:30 Welcome & Agenda review - Hen
- 9:30 – 9:50 Inaugural Speeches
- 9:50 – 10 Podium Changes
- 10 – 11:30 Keynote Speakers – 3
- 11:30 – 11:45 Break
- 11:45 – 1 **Organizational Issues & Strategic Plan**
Hen, Holly, Steve, Patrick*
- 1-3 Lunch
- 3-5 Poster Sessions & Regional Meetings
- 5-8 Schedule **Executive Comm. Mtg** during this time (5-6?);break*
- 8-10 Dinner

- ✓ * Hen and Holly to work on Hen's talking points
- ✓ * **We should discuss whether we need to use any time during the Exec Comm. meeting to discuss the strategic plan.** (The Exec Comm. is composed of the 6 regional reps, plus Hen, Steve, Patrick. (Holly & associate would attend as appropriate.)

Friday, Oct 28 – ILTER Coordinating Committee (Exec Comm. +country reps)

- 9 – 9:15 Hen – annual progress report*
- 9:15 – 1 Strategic Plan Working Session**
Include Michel's fundraising report and break
- 1-3 Lunch
- Afternoon Regional reports and workshops

- ✓ *Holly to review Hen's talking points. (e.g., "In the past year, ILTERN has accomplished...Now we are in transition...and therefore doing strategic plan...Holly here to help us with our work on that...")

Saturday, Oct 29

Schedule additional time if needed for strategic plan, e.g., a committee might want to meet, etc.

附件二：「第九屆國際生態學大會」研討會之部分議程、研討會之說明及論文摘要

1. 第九屆國際生態學大會研討會之部份議程

Organized Oral Session 3: Mutualists as parasites: How mutualistic are mutualists, and why?

Organized by: J.R. Powell, B.E. Wolfe and J.N. Klironomos.

Monday, August 8, 8:00 AM - 11:30 AM, Meeting Room 511a, Level 5, Palais des congrès de Montréal

- 8:00 DENISON, R.F.* and E.T. KIERS. The evolutionary persistence of diversity in rhizobium lifestyles.
- 8:20 HEIL, M.* Coevolutionary adaptations stabilizing obligate ant-plant mutualism.
- 8:40 NESS, J. and J. BRONSTEIN. Indirect costs of a mutualism: The most aggressive plant bodyguards also deter pollinators.
- 9:00 BILLICK, I.*, J.S. REITHEL, K. TONKEL, R. BROWN and M. RELYEA. Understanding the role of different trophic levels in generating variability in the strength of an ant-membracid mutualism.
- 9:20 BRONSTEIN, J.L.*, G. DAVIDOWITZ and T.E. HUXMAN. For better or worse: Benefits and costs in a linked pollination/herbivory interaction.
- 9:40 BREAK.
- 9:50 UMBANHOWAR, J.*, J. HOEKSEMA and M. SCHWARTZ. The dynamics of market mutualisms.
- 10:10 HOLLAND, J.N.*, J. NESS, A. BOYLE and J. BRONSTEIN. Mutualisms as consumer-resource interactions.
- 10:30 SACHS, J.L.* and E. SIMMS. Mutualism breakdown in the legume-rhizobium symbiosis.

Organized Oral Session 4: Tropical cyclone disturbance and forest dynamics at multiple temporal scales: Results from long-term studies in the new and old worlds.

Organized by: T. Lin, H. King and S.P. Hamburg.

Monday, August 8, 8:00 AM - 11:30 AM, Meeting Room 511b, Level 5, Palais des congrès de Montréal

- 8:00 LIN, T.*, S.P. HAMBURG, L. WANG, H. KING, Y. HSIA and K. LIN. Impact of annual typhoon disturbance on forest dynamics on a subtropical.
- 8:20 SATO, T., S. SAITO, Y. KOMINAMI, K. NIYAMA, H. TANOUCHI and D. NAGAMATSU. Comparison of litterfall dynamics resulting from severe typhoon disturbances in lucidophyllous forests, southwestern Japan.
- 8:40 VANDERMEER, J.H.* Tropical cyclone disturbance and forest dynamics at multiple temporal scales: Results from long-term studies in the new and old worlds.
- 9:00 SCHOWALTER, T.D.*, W. WU, H. LUH and J. CHAO. Forest canopy arthropod responses to cyclone disturbance in Taiwan and Puerto Rico.
- 9:20 LI, J.H., T.J. SEILER, T.L. POWELL, H.P. ANDERSON, C.R. HINKLE and B.G. DRAKE. Hurricane-caused defoliation and post-hurricane refoliation at elevated CO₂ in a scrub-oak ecosystem.
- 9:40 BREAK.
- 9:50 MACKENZIE, R.A.*, N. CORMIER, J.B. KAUFFMAN, K.C. EWEL, A.W.J. DEMOPOULOS and M. IWOMOTO. An ecological pulse to quantify the effects of Typhoon Sudal on coastal ecosystems of Yap, Federated States of Micronesia.
- 10:10 POWELL, T.L.*, R. BRACHO, C.R. HINKLE and B.G. DRAKE. The impact of hurricanes Charley, Frances, and Jeanne on net ecosystem carbon exchange of a scrub oak ecosystem in central Florida.
- 10:30 BOOSE, E.R.* Temporal patterns of hurricane disturbance at Harvard Forest and Luquillo LTER sites.
- 10:50 BROKAW, N. Variable forest response to hurricanes.

2. 研討會之說明

**Tropical Cyclone disturbance and forest dynamics at multiple temporal scales:
results from five long-term studies in the new and old worlds**

Organizers: Teng-Chiu Lin, Hen-biau King, and Steve P. Hamburg

Description and justification of the symposium:

Strong tropical cyclones are known to affect forest dynamics in both tropic and temperate regions. Our understanding of cyclone (typhoon and hurricane) effects on forest dynamics disproportionately comes from studies of forests in the New World. Yet, New World hurricanes occur with frequencies an order of magnitude lower than typhoons in the Northwest Pacific and the land areas affected are only one third as large. Intensities of tropical cyclones do not differ among regions but frequencies do. Patterns of forest damage and recovery from tropical cyclones are of major importance to forest management and the global carbon cycle. Yet, impact patterns can only be fully and unbiasedly understood if we include data from regions in which tropical cyclone disturb ecosystems at differing frequencies. In the proposed symposium, five ecologists working on a variety of forests (natural forests and plantation, conifer and hardwood forests, temperate, subtropical and tropical forests) that are affected by tropical cyclones at different temporal scales, 1.5 typhoons/y to 1/100 y, will present data on tropical cyclone impact on forest structure and function. The fact that tropical cyclones in different regions affect forests at multiple temporal scales meshes nicely with the theme of this meeting. The sharing of data on the impact of tropical cyclone on forest dynamics is of particular importance to forest management as many models suggest that extreme weathers will occur more frequently over the next century. For example, our understanding of typhoon disturbance on East Asia could help to predict the consequence of more frequent hurricanes on Caribbean forests. Each speaker has worked extensively on the effects cyclonic events on forests: Dr. Walker has been working on hurricane impact on Luquillo Experimental Forest, a US Long-Term Ecological Research site, for more than a decade, Dr. Yamamoto has been leading the study of typhoon impact on Japanese forests for more than two decades, Dr. Rebertus's work on hurricane impact on South America is well recognized, and Dr. Lin has been working on typhoon disturbance at Taiwan Long-term Ecological Research network for more than a decade. Dr. Boose has published extensively on modeling the impacts of cyclonic events in both northeastern US and Puerto Rico. Dr. Hamburg has been associated with sites that span the range of storm frequency and will try to outline the common ground and open questions. This symposium provides a unique opportunity for disturbance ecologists to think about our current understanding of the role wind disturbance on forest dynamics as developed at five long-term study sites spread across the globe.

附件二：「第九屆國際生態學大會」研討會之部分議程、研討會之說明及論文摘要

3. 報告人之論文摘要

ity, organically bound aluminum, and effective pK_a of the exchange complex will be analyzed by pedogenic horizon to fully characterize the pH and cation exchange properties of the soils. Limed and control samples will be compared to illustrate the factors responsible for induced differences, and control samples from different sites will be compared to illustrate the factors responsible for naturally occurring differences.

LIMBURG, KARIN E.,^{1,*} NINA F. CARACO,² RODGER HARVEY,³ SE-JONG JU³ and ROBERT E. SCHMIDT,^{4,1} SUNY Coll. Environmental Science & Forestry, Syracuse, NY, USA; ² Institute of Ecosystem Studies, Millbrook, NY; ³ Chesapeake Biological Laboratory, Solomons, MD; ⁴ Hudsonia Ltd., Annandale-on-Hudson, NY. **Blueback herring trophic responses to zebra mussels and range expansion in the Hudson River watershed, New York.**

Blueback herring (*Alosa aestivalis*), an anadromous herring native to the Hudson River estuary, is a key intermediate member of the food web. In the 1980s its diet was quantified and found to be heavily dependent on pelagic organisms, primarily the cladoceran *Bosmina freyi*. With the invasion of zebra mussels (*Dreissena polymorpha*) in this system, and subsequent dramatic declines in phytoplankton and microzooplankton, we hypothesized that trophic flows to blueback herring would have altered considerably, with changes in growth and condition as fish would be forced to consume less favorable prey. However, blueback herring have also expanded their range into the Hudson's major tributary, the Mohawk River, where food web relationships were unknown. We quantified diet and food web relations (via stable isotope and fatty acid analyses) in 1999, with additional sampling through 2003. Blueback herring growth and relative condition declined dramatically in the tidal freshwater Hudson in 1999 compared to 1987. In 1987, *B. freyi* composed 16.7 to 92.5% of the diet by weight, but in 1999 this had fallen to 0 to 33.3% over the period July - September. The pelagic-based diet was replaced by a taxonomically broader diet dominated by littoral-epibenthic organisms, with the exception of early season dominance of daphnid cladocerans in the Mohawk. Stable isotopic ratios of N and C reflected the broad diets. Fatty acid profiles showed strong linkages between phytoplankton-copepods-Hudson herring (especially herring larvae) on the one hand, and seston-*Bosmina* and seston-invertebrates-Mohawk herring on the other. We hypothesize that the zebra mussel invasion caused a trophic shift in Hudson herring toward prey more enriched in highly unsaturated fatty acids than in the past, but not in the Mohawk River. These results represent some of the clearest impacts of zebra mussels on fish in this watershed documented to date.

LIN, BIN-LE,* AKIHIRO TOKAI and JUNKO NAKANISHI. Ecological Risk Analysis Team, Research Center for Chemical Risk Management, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan. **Approaches for establishing predicted-no-effect concentrations for population-level ecological risk assessment in the context of chemical substances management.**

The establishment of rational frameworks for population-level ecological risk assessment (PLERA) in the context of chemical substances management is an important issue. We illustrate two feasible approaches for establishing predicted-no-effect concentrations (PNEC) for PLERA through a case study of 4-nonylphenol (4-NP) using life-cycle toxicity data for medaka (*Oryzias latipes*). We first quantified the potential impacts of 4-NP on medaka in terms of reduction of population growth rate (λ). An age-classified population matrix model (daily time-step) was developed and used to combine life-cycle survivorship and fecundity data obtained from individual-level responses of medaka exposed to 4-NP into population-level responses defined by the parameter λ . Thereafter, from the resulting λ s, two approaches for establishing population-level PNEC values were proposed and examined. The PNEC values for population-level impacts, based on a) the threshold concentration defined as the chemical concentration at which $\lambda = 1$, and b) the no-observed-effect concentration (NOEC) and the maximum-acceptable-toxic concentration (MATC), were then derived. The results suggest that PNEC values of 4-NP ranging between 0.82 and 2.10 $\mu\text{g/L}$ affect medaka population growth. Although these approaches still have their limitations, current knowledge indicates that they are reasonable and practical for evaluating population-level impacts of chemicals, thereby serving as the case study for establishing PNEC values for PLERA in the context of chemical substances management and decision making.

LIN, BRENDA B.* University of Michigan, Ann Arbor, MI, USA. **Coffee Transpiration Response to Microclimates Created by Shade Level Gradients in Southern Mexico.**

Diminishing annual precipitation rates in Southern Mexico have led to concern over the availability of water for coffee plants in rainfed coffee agroecosystems. Because coffee represents the primary livelihood for many small farmers in the region, more careful consideration should be taken to prevent water loss from these agricultural systems. One such way is to reduce the amount of water lost through transpiration. Coffee agriculture in Southern Mexico is grown under a wide variety of agroforestry systems ranging from single monoculture shade cover to traditional diverse forest canopy cover. This range of shade cover also allows one to examine the ability of shade canopies to control microclimates in the coffee understory, which thereby control transpiration rates of coffee plants. In this project, 3 coffee farms of varying shade cover were chosen to examine the effect of shade cover on coffee transpiration. Transpiration rates were measured via the simple potometer method once a month for 12 months. These measurements consisted of 12 randomly chosen branches over 6 sites within each farm. Data were analyzed among farms using an ANOVA, showing that farms with greater than 45% shade cover had significantly better transpiration rates than farms with 10-30% shade cover. Data were further compared, using linear regression, to examine site transpiration rates to % shade cover, light (Exposure Value), temperature, humidity, and solar radiation. These data show that light values correspond most highly to transpiration rates. Differences among transpiration rates during the wet season and dry season are also discussed.

LIN, CHIA-HUA* and PETER E. SCOTT. Indiana State University, Terre Haute, IN. **Is pollination success of spring beauty related to amount of forest cover in local landscapes?**

Spring beauty (*Claytonia virginica*) is an abundant native spring ephemeral in Indiana's deciduous forests. Its ubiquity in forest patches of all sizes makes it useful for studying how forest loss affects pollination systems, but also suggests that individual's reproductive success in this species is not affected by variation in forest cover. I tested the hypothesis that *Claytonia* seed set is limited by inadequate pollinator service, and that such limitation becomes more pronounced as the amount of forest cover declines. Plants in three sites received one of three treatments: natural visitation only, supplemental outcross pollination of 35% of flowers, or supplemental outcrossing of 70% of flowers. There was a weak but significant effect of treatment in the expected direction, with seed set 13-16% higher in the 70% supplemented treatment than in the other two. Site differences were more pronounced, with the most heavily forested site having approximately 50% higher seed set than two other sites. The largest source of variance in seed set was a flower's position in a plant's flowering sequence. Seed set declined steadily, in all treatments, from week 1 to week 3 of flowering.

LIN, TENG-CHIU,^{1,*} STEVEN P. HAMBURG,² LIH-JIH WANG,³ HEN-CHIAU KING,⁴ YUE-JOE HSIA⁵ and KUO-CHUAN LIN.⁴ ¹ National Changhua University of Education, Changhua, Taiwan; ² Brown University, Providence, Rhode Island, USA; ³ National Taiwan University, Taipei, Taiwan; ⁴ Taiwan Forestry Research Institute, Taipei, Taiwan; ⁵ National Donghwa University, Shou-Feng, Hualien, Taiwan. **Impact of annual typhoon disturbance on forest dynamics on a subtropical.**

Approximately 1.4 typhoons/y with hurricane level intensities impact Fushan Experimental forest (FEF) on average over the past 100 y. Typhoons result in limited stand damage at FEF, even the six typhoons of 1994 caused only 1.4% of canopy trees to fall. The most common and important type of typhoon damage is defoliation. Frequent canopy defoliation maintains high understory light levels, allowing for the establishment of pioneer and late successional species, thereby maintaining species diversity in the absence of large canopy gaps, in contrast to that seen in the New World. At FEF typhoons contribute 20% of the flux of ions in precipitation, and depleted in anthropogenically enriched ions such as sulfate and nitrate, as typhoons do not pass over any industrialized land masses prior to arriving in Taiwan. The contribution of typhoon to the output of seawater constituents was approximately 20% but the contribution to sulfate (16%) and

nitrate (36%) was greatly increased. Although typhoons contribute very little to P input (below detection limits) the stream export of total P during typhoon storms could reach 50% of total outputs in typhoon years. The P limitations of the FEF forest suggest that the high levels of P lost during typhoons may impact overall net ecosystem productivity. Stream water concentrations of total P, nitrate and ammonium increase dramatically during typhoon disturbance and lasted for several days in contrast to the one to several years observed in Puerto Rico following hurricane Hugo. Our results indicate that tropical cyclone effects on forest dynamics differ significantly between the New World and the FEF. Assumptions of the similarity of forest responses to cyclonic events in the new and old world are suspect.

LINDO, ZOE.* University of Victoria, Department of Biology, Victoria, British Columbia, Canada. **Islands in the sky: Oribatid mite communities in suspended soils of Western redcedar as model systems of island biogeography and metacommunity dynamics.**

This research examines oribatid mite communities in the forest canopy (suspended soils) and forest floors associated with ancient Western redcedar trees on the southwest coast of Vancouver Island, British Columbia, Canada. These suspended soils are thought to be interconnected islands through which random movement actively disperses individuals; however, the initial source pool of these resident arboreal fauna assemblages is unknown and theorized to be the forest floor. A series of observations and experiments based on island biogeography and metacommunity dynamics test whether the forest floor is a colonizing source for canopy oribatid assemblages and explore habitat availability as a limiting resource in oribatid mite community structure. Factors affecting the diversity and abundance of arboreal microarthropods are likely to be related to tree species, elevation and suspended soil island size. Suspended soil island size and tree species are also shown to have distinct effects on a range of soil properties and processes such as C and N fluxes within these soils. These factors suggest that tree age and development stage of suspended soils are important in sustaining and supporting large, diverse communities of microarthropods in forest canopies. Well-developed suspended soils in ancient Western redcedar are unique in that they are natural model systems that lend themselves to testing resource limitations, island biogeography and metacommunity dynamics. This study provides information pertaining to the species diversity of oribatid mites in ancient temperate rainforests, and tests ecological theories to expand our understanding of patterns of biodiversity. Special emphasis is placed on the oribatid mite community as they are the dominant fauna group in these systems and new species descriptions are anticipated.

LINGFENG, ZHENG.* Administration of forest, Conservation biology, Yong'an, Fujian, China. **A harmony world of man and nature in ancient China: In the case of protective steles in Tianbaoyan National Nature Reserve of Fujian.**

Abstract: Fujian Tianbaoyan National Nature Reserve of Fujian lies in the eastern part of Yong'an City, Fujian Province, covering an area of 11,015.38 hm². Three protective steles have been uncovered in the Nature Reserve, which were erected by local residents from 1782 to 1864. They defined the scope and objects of protection, indicated the government censoring and filing system, stipulated specific objects for protection and protective measures, contained related penalty measures, reflected local folks' concerted efforts in protection, and gave rise to the embryonic form of a nature reserve. The erection of these steles has allowed the rich biodiversity to be preserved to the present day; it shows that the early history of China's nature preservation dates back to 1575 in the 16th century, providing a good indication of the harmonious coexistence between residents in the local community and nature in history, and demonstrating that the regional ecological civilization contains the awareness of biodiversity protection and is an embodiment of operational laws and regulations and the traditional Confucian culture, and therefore carrying tremendous significance in terms of biodiversity protection and the harmonious coexistence of man and nature.

LINK-PEREZ, MELANIE A.* and M. HENRY H. STEVENS. Miami University, Oxford, Ohio, USA. **Neutral ecological drift, more than environmental factors, explains changes in plant community composition.**

Neutral community models recognize the potential importance of dispersal limitation in structuring plant communities. According to neutral theory,

geographic distance is a good predictor of plant community composition, since dispersal limitation is a mechanism of neutral ecological drift. On the other hand, classical niche theory suggests that soil characteristics determine community composition. We describe the change in species composition with distance in two prairie communities—one relict, one reconstructed—and compare the observed patterns of diversity with theoretical predictions derived from neutral theory. We sampled vegetation and soil characteristics in 2.5 m² plots separated by 0–166 m. The relict prairie is a natural community; neutral theory predicts that dispersal limitation will affect community composition and similarity will decrease with distance. The 7-year-old reconstructed prairie offers, in contrast, a site where dispersal limitation at time of initial planting was absent: neutral theory predicts little change in similarity with distance. Simple and partial Mantel tests were performed on distance matrices of the cover class data for vegetation, the standardized data for thirteen environmental variables, and geographic coordinates. We found that in both prairies geographic distance was a better predictor of community dissimilarity than were environmental variables. In addition, geographic distance explained more variability in community dissimilarity in the older relict prairie than in the younger reconstructed prairie. These findings indicate that dispersal limitation and neutral ecological drift play a stronger role than environmental variables in structuring plant communities at these spatial scales.

LIPTZIN, DANIEL and TIMOTHY R. SEASTEDT. University of Colorado, Boulder, CO, USA. **Heterogeneity in soil nutrients in the forest-alpine tundra ecotone.**

The landscape continuum concept predicts a distinct pattern of soil resources should occur in the forest-alpine tundra ecotone in Colorado. In these high elevation ecosystems, there are consistently high wind speeds predominantly from a single direction. These winds are known to redistribute materials such as snow, dust, organic matter. It is likely that anthropogenic nitrogen deposition will be transported as well. The landscape continuum concept predicts that materials should be transported out of the drier portions of the tundra into the upper subalpine forest. The greatest deposition rates should be at the uppermost extent of trees and should be greater downwind than upwind of trees. Because of the uneven pattern of snow and nitrogen inputs, we hypothesize that nitrogen availability and losses should be greatest downwind of individual trees at the uppermost extent of trees. We also predict that because nitrogen may be deposited in excess of demand, that this portion of the landscape should show signs of nitrogen saturation first. Two transects were established on Niwot Ridge, Colorado to test these predictions. Maximum snow depth, litter decomposition, and plant cover all tended to be greater downwind of trees. However, resin bag available nitrogen in and below the rooting zone did not follow the predicted pattern in either summer or winter. Although the landscape continuum concept provides an adequate model for deposition patterns, the heterogeneity in nitrogen cycling is much more difficult to predict.

LITTLE, AMANDA M.^{1,2,*} ¹ University of Wisconsin-Madison, Madison, WI; ² US Geological Survey Patuxent Wildlife Research Center, Laurel, MD. **The influence of multiple levels of organization upon predictability in beaver-impacted wetland plant communities.**

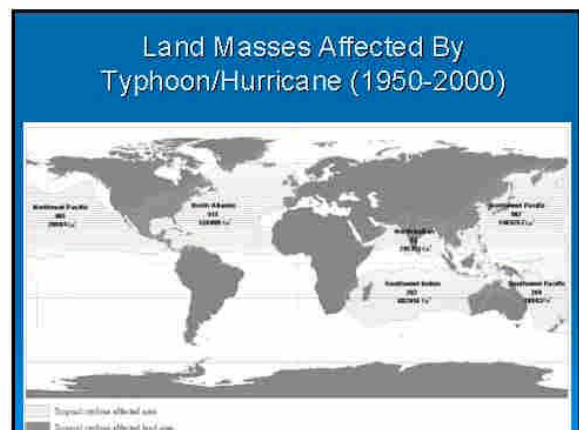
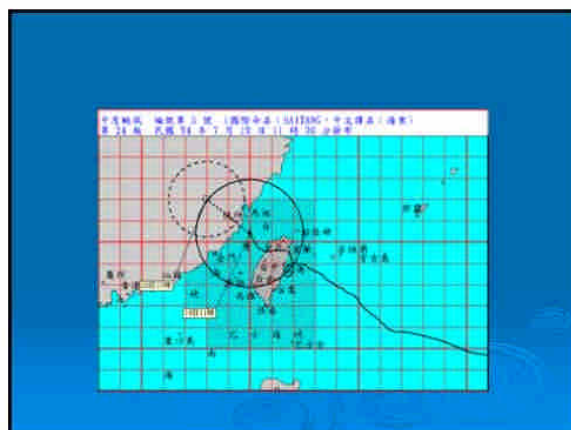
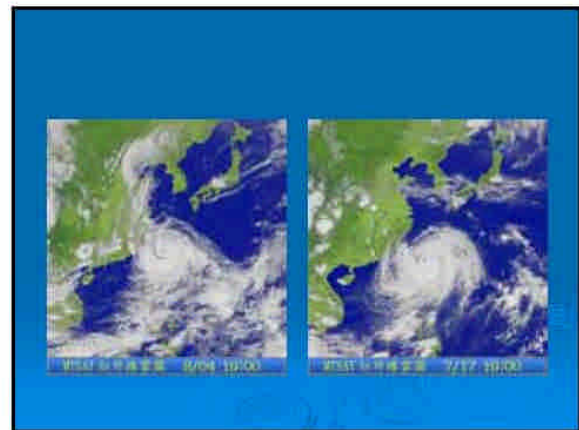
Wetland vegetation composition can be highly unpredictable due to the strong influence of multiple factors operating at disparate scales. I developed a hierarchical model describing relationships between environmental gradients and wetland plant community structure in a system of small, isolated wetlands on Mount Desert Island, Maine. In order to establish cross-scale relationships, I adopted a multi-scale sampling and analysis strategy, first classifying different wetlands into groups and then quadrats into intrawetland associations based upon plant community composition. Then, I identified environmental and biological factors strongly related to the plant community composition at the two different scales. Wetlands fell into five groups: marshes, mineral sedge meadows, *Sphagnum* sedge fens, shrub fens, and forested fens. The gradients that organized emergent palustrine wetland plant community structure at the interwetland scale in the MDI wetland system were 1) wetland size, 2) *Sphagnum* cover and water chemistry, and 3) quadrat-level microtopography indicative of small-scale hydrology. In general, intrawetland association types mirrored the larger-scale wetland groups, indicating that intrawetland plant communities were

附件二：「第九屆國際生態學大會」研討會之部分議程、研討會之說明及論文摘要

4. 報告人之論文宣讀簡報資料

Typhoon Disturbance and Forest Dynamics in a Subtropical Rainforest

Results from a subtropical forest with annual typhoon disturbance in NE Taiwan



Tropical Cyclones in Three Locations

Location	FEF	Puerto Rico	NE America
Period	1949-2005	1899-2000	1635-1944
# of Hurricanes			
Category 1	20	4	5
2	19	0	0
3	24	1	1
4	11	1	0
5	4	0	0
Average #/yr	1.4	0.06?	0.02?

Typhoon-Forest Interaction Publication (SCI-electronic)

Typhoon 13 (9 from Japan 4 from Taiwan)
Hurricane 61
Tropical Cyclone 3

→Do we have a biased sampling?
→Can we use the response of New World forests to hurricanes to characterize the response of Old World forests to typhoons?

Hypothesis

- Responses of forests to tropical cyclones do not differ between the Old World and the New World → knowledge derived from studies in the New World could be applied to the Old World

Fushan Experimental Forest

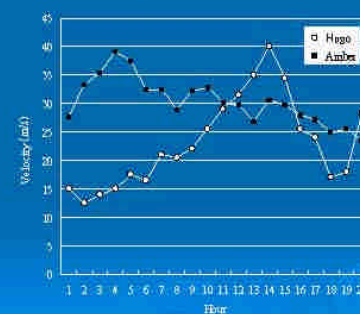


- 1000 ha subtropical broad-leaf rain forest
- Altitude 670-1200 m
- Mean slope 38%
- Temp. 18.2°C (Jan. 11.4°C, Jul. 24.1°C)
- Precip. 2800-6700 mm

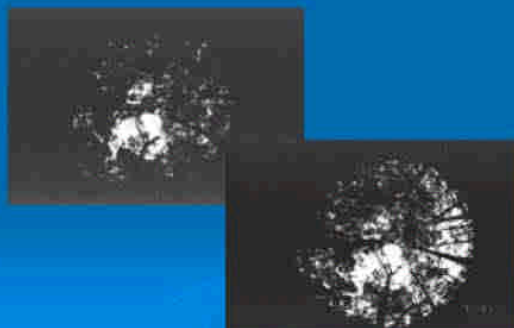
Stand Damage

- Puerto Rico (Hurricane Hugo, category 3)
9% uprooting, 11% bole snapping
- NE America (1938 Hurricane, category 3)
> 70% of the forest suffered from 25-75% uprooting, snapping or severe leaning
- NE Taiwan (6 typhoons with 3 of category 3 hurricane levels in 1994)
1.4% of the surveyed area is located in gaps caused by uprooting or snapping

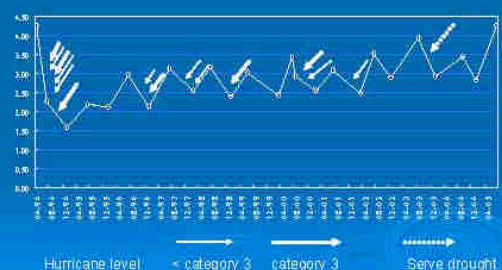
1989 Hugo Vs. 2001 Amber



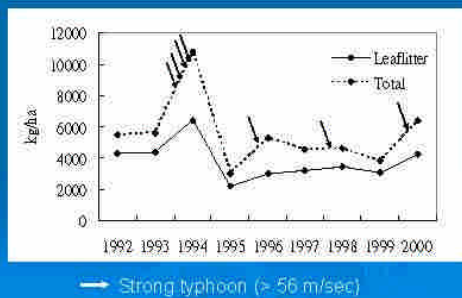
Before and After Typhoon Herb 1996



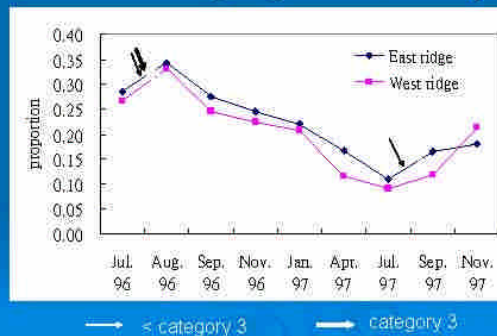
Canopy Leaf Area Index



Litterfall



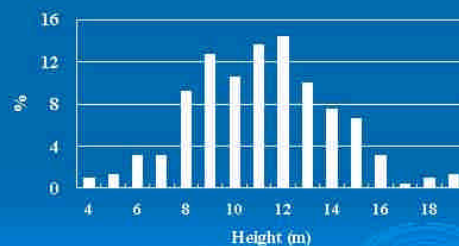
Understory Light Availability



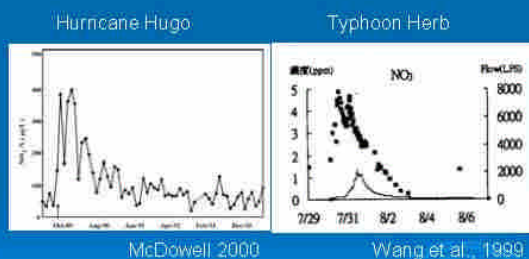
Typhoon Disturbance and Forest Gaps, Regeneration and Species Diversity

- Frequent canopy defoliation maintains high understory light levels, allowing for the establishment of pioneer and late successional species, thereby maintaining species diversity in the absence of large canopy gaps, in contrast to that seen in the New World tropics or New England.

Typhoon and forest structure: tree height at FEF



NO_3^- Concentration in Streamwater



Conclusions

- Influences of tropical cyclones on forest dynamics differ significantly between New World forests and the FEF.
- Assumptions of the similarity of forest responses to cyclonic events in the new and old world are suspect and there needs to be a major research effort to characterize the effects of the majority of such events which occur in the Pacific region.

Research Team

- Hamburg, Steven
- Horng, Fu-Wen
- Hsia, Yue-Joe
- King, Hen-Biau
- Lin, Kuo-Chuan
- Wang, Lih-Jih

附件三：主持之研討會名稱與會議中論文發表之資料

1. 報告人主持之研討會名稱

- 1:50 VON WETTBERG, E.J.*, D.L. REMINGTON and J. SCHMITT. Landscape genetics of shade avoidance responses in *Impatiens capensis*, a North American annual.
- 2:10 REW, L.J.*, B.D. MAXWELL, E. LEHNHOFF and C.F. REPATH. Detecting spatial change in non-indigenous plant populations.
- 2:30 ASPINALL, R., L.J. REW and B.D. MAXWELL. Modelling contagion of non-indigenous plant species at the landscape level: An example from the northern range of Yellowstone National Park.
- 2:50 MAESTRE, F.T.*, A. ESCUDERO and J.F. REYNOLDS. Linking the spatial patterns of organisms to ecosystem function and management: Insights from semi-arid environments.
- 3:10 BREAK.
- 3:20 CASTELLAZZI, M.S.* and J.N. PERRY. Modelling agricultural landscapes: The importance of spatial pattern and temporal variation.
- 3:40 GRIFFITHS, G.J.K.*, L. WINDER, J. PERRY, C.J. ALEXANDER and J.M. HOLLAND. Spatio-temporal dynamics of individually marked beetles in relation to aphid distributions at different spatial scales.
- 4:00 CONRAD, K.F.*, J.N. PERRY and I.P. WOIWOD. Spatial pattern complements unusual changes in abundance and occupancy during the national population decline of a common Arctiid moth.
- 4:20 SMITH, R.*, J. READ and J. RIDSDILL-SMITH. Spatial dynamics of Red-Legged Earth Mite in western Australia.
- 4:40 MCGEOCH, M.*, R. VELDTMAN and C. HUI. The contribution of spatially explicit analysis to understanding aggregation and density dependence.

Organized Oral Session 24: Conducting global multi-scale integrated environmental management and research using site-specific research: Lessons learned from the ILTER.

Organized by: H. King and P. Bourgeron.

Tuesday, August 9, 1:30 PM - 5:00 PM, Meeting Room 516a, Level 5, Palais des congrès de Montréal

- 1:30 HARMON, M.E.* Searching the wonderful world of rot for global patterns.
- 1:50 VAN DER LEEUW, S.E.* Comparative long term ecological research: A European experience.
- 2:50 SUN, I-FANG.* Networking of large long term forest dynamics plots in subtropical and tropical sites.
- 3:10 BREAK.
- 3:20 HAMBURG, S.P.* and T. LIN. Using long-term data from the New and Old World to understand the influence of typhoon/hurricane frequency on forest structure.
- 3:40 BOURGERON, P.S.* What have we learned from 10 years of ILTER research?
- 4:00 BAUDRY, J., H. HABERL and T. PARR. Rationale for a network of long term socio-ecological research sites in European cultural landscapes.

Organized Oral Session 25: Dynamics of invasive plants: Individuals to ecosystems.

Organized by: T.M. Knight and J.M. Drake.

Tuesday, August 9, 1:30 PM - 5:00 PM, Meeting Room 516c, Level 5, Palais des congrès de Montréal

- 1:30 CAPPUCCINO, N.* Herbivory, secondary chemistry and invasiveness of exotic plants.
- 1:50 EMERY, S.M.* and K.L. GROSS. Dominant species regulate invasion in oldfield plant communities.
- 2:10 BUCKLEY, Y.M.*, B. BOLKER and M. REES. Facilitation of ecosystem disturbance by invasive plants can cause an Allee effect.
- 2:30 DAVIS, M.A.*, D. UNGIER and B. KUJALA. Non-native grasses impede oak establishment by altering soil conditions.

Conducting global multi-scale integrated environmental management and research using site-specific research: Lessons learned from the ILTER

Principal Organizer

Hen-biao King,

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Three broad themes are central to environmental management and research: (1) key environmental questions require larger spatial and temporal scales of study in order to provide useful answers; (2) environmental issues increasingly require integrating basic information from the biological, physical, and socio-economic domains to be socially relevant; (3) cross-site comparisons among differing ecosystem types is critical to building both conceptual and mathematical models that can be used to answer basic and applied questions. These themes are being explicitly addressed as part of the International Long Term Ecological Research (ILTER) network established in 1993.

The specific objectives of the session are to explore (1) how different national research networks can best be linked and (2) the kind of process that can best promote effective collaboration among sites and national networks in order to promote multi-scale integrated ecological analysis and modeling. Through specific case studies, the session addresses: (1) the challenges and potential contributions of ILTER collaboration to the integration of information and knowledge across disciplines, spatio-temporal scales, ecosystem types, and geographic locations; (2) the principles of integration of information that are best suited to the ILTER network; (3) some of the research and management themes common to the ILTER environmental research networks.

While many international programs have successfully addressed specific questions and/or issues, the ILTER network is unique because it does not focus solely on the study of *a priori* defined research themes, but on specific questions pertaining to understanding the functioning of the site-specific and study ecosystems. Another distinguishing feature of the ILTER is its goal of developing networks of long-term research projects that, although studying varied aspects of widely different ecosystems, interact and collaborate on shared areas of interest, in contrast to portfolios of independent projects working on similar topics.

Results and recommendations from the session will highlight the best possible scales of linkages among national network members of the ILTER. Challenges, contributions, principles of integration, and the added value of ILTER collaboration will also be discussed.

附件三：主持之研討會名稱與會議中論文發表之資料

2. 此研討會由本人主持，因孫義方 (I Fang Sun) 教授不克出席，由本人代為發表。該計畫是在福山試驗地進行。

Networking of large long term forest dynamics plots in subtropical and tropical sites

I Fang Sun

Center for Tropical Ecology and Biodiversity,

Tunghai University, Taichung, Taiwan 40704

Email: sunif@mail.thu.edu.tw

The Center for Tropical Forest Science (CTFS) is a program within the Smithsonian Tropical Research Institute (STRI) that joint together a voluntary association of natural and social scientists and institutions around the world. The CTFS network currently has 17 plots in 13 countries and is tracking more than 3,000,000 individuals of approximately 6000 tree species throughout the world's tropics. Over three dozen research institutions from around the world are involved in the network.

The consortium of tropical forest ecologists coordinated by CTFS has been conducting pioneering research on the structure, dynamics, and functioning of tropical forests for more than two decades. A unifying research tool shared by all CTFS research sites is the Forest Dynamics Plot (FDP). These are large (up to 52 ha), permanent forest demographic plots that are situated in natural forests. All free standing woody trees with a diameter of one centimeter or greater are mapped, tagged, identified and monitored. An initial census and periodic recensuses yield long-term information on species growth, mortality, regeneration, distribution, and productivity in relation to topography, hydrology, soils, climate, and biotic factors. These data have yielded globally significant developments in our understanding of the ecology to tropical forests.

Despite the enormous success of the CTFS network, there are quite a number of major challenges laid ahead. The first is the long-term security of financial support. Most expenses for establishment and recensus of FDP plots came from NSF grants or other private foundations. Therefore, a long-term financial solution is crucial to the success of the network. Second is the building up of human resource capacity, this includes attracting more PIs from host institutions who would like to be involved with the network, training of younger generation of scientists and improve the database management skills among network partners. The third is the maintenance of high-quality research and the dissemination of information that came out from the research. In addition, how to use the understanding gained from FDP to improve techniques of forest conservation and management is another important goal for CTFS in coming years.

Networking of large long term forest dynamics plots in subtropical and tropical sites

J. Fang Sun

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Email: sunif@thu.edu.tw

Center for Tropical Forest Science



CTFS Program Sites

- PANAMA - Barro Colorado Nature Monument
- COLOMBIA - La Planada Nature Reserve
- ECUADOR - Yasuni National Park
- PUERTO RICO - Luquillo Experimental Forest
- INDIA - Mudumalai Wildlife Sanctuary
- MALAYSIA - Pasoh Forest Reserve, Lambir Hills National Park
- PHILIPPINES - Palanan Wilderness Area
- SINGAPORE - Bukit Timah Nature Reserve
- SRI LANKA - Sinharaja World Heritage Site
- TAIWAN - Nanjenshan Nature Reserve, Fushan Nature Reserve
- THAILAND - Huai Kha Khaeng Wildlife Sanctuary, Doi Inthanon National Park, Khao Ban Tat Wildlife Sanctuary
- CAMEROON - Korup National Park
- DEM. REP. CONGO - Ituri Forest/Okapi Faunal Reserve

CTFS Partners

- PANAMA - Smithsonian Tropical Research Institute, University of Georgia (USA)
- COLOMBIA - Instituto de Biodiversidad Humboldt*
- ECUADOR - La Universidad Catolica de Ecuador, University of Aarhus (Denmark), Field Museum (USA)
- PUERTO RICO - University of Puerto Rico, USDA Forest Service
- INDIA - Indian Institute of Science
- MALAYSIA - Forest Research Institute of Malaysia, Sarawak Forest Department, Osaka City University (Japan), Kyoto University (Japan), National Institute of Environmental Studies (Japan), Harvard University (USA)
- PHILIPPINES - Isabela State University, PLAN International, Conservation International-Philippines, Harvard University (USA)
- SINGAPORE - Nanyang Technological University, Singapore Parks Board
- SRI LANKA - Sri Lanka Forest Department, University of Peradeniya, University of Sri Jayawardenepura
- TAIWAN - Taiwan Forestry Research Institute, Tunghai University
- THAILAND - Royal Forest Department, Harvard University (USA)
- CAMEROON - Bioresources Development and Conservation Program, Oregon State University
- DEM. REP. CONGO - CEFRECOF, Wildlife Conservation Society

CTFS MISSION STATEMENT

To promote and coordinate long-term biological and socio-economic research within tropical forests and forest-dependent communities, and translate this information into results relevant to forest management, conservation, and natural resource policies.

FOREST DYNAMICS PLOT

Large scale (up to 52 hectares)
All stems ≥ 1 cm DBH mapped, measured, tagged, and identified
Entire plot recensused every 5 years
Unifying tool for all CTFS research programs

Major contributions

The CTFS network currently has 17 plots in 13 countries and is tracking more than 3,000,000 individuals of approximately 6,000 tree species throughout the world's tropics.

An initial census and periodic recensuses yield long-term information on species growth, mortality, regeneration, distribution, and productivity in relation to topography, hydrology, soils, climate, and biotic factors.

These data have yielded globally significant developments in our understanding on the ecology of tropical forests.

Major activities of the network

- *Inside CTFS* – Newsletter published quarterly
- Annual symposium – Held in conjunction with analytical workshop since 2001
- Analytical workshop – Funded by NSF since 2001
- Regional workshop – Held periodically
- International Field Biology course – Held annually since 2001
- CTFS research fellowship – provide small (<US\$5,000) to median (< 30,000) grant to encourage people carried out study in any CTFS FDP plots. Annual total budget is US\$100,000.

Current problems

- Many PIs in host institutions are retiring
- Some sites have adequate financial support but others don't
- Data sharing and authorships
- Lack of strong interests from host countries

Future challenges

- Long-term security of financial support
- Building up human resource capacity
- Maintenance of high-quality research and dissemination of information
- Translate basic knowledge to forest management policy

附件四：美國國際長期生態研究之「國際委員會會議」議程

Agenda US LTER International Committee meeting, August 9-10, 2005 ESA Annual Meeting, Montreal, Canada

Location: Room 512C, Level 5, Palais des Congrès

1. Review of previous action items
 - a. Brian/Patrick: follow-up regarding needs of European Network
 - b. Follow-up with Hen-Biau regarding status of Latin American network
 - c. Who is going to Mexico meeting in October – critical meeting
 - d. Point Contacts chart (sent out by Laura)
2. Committee Membership – we have empty slots (see attached list of members)
 - a. Election of co-chair (Patrick's term ends in 2005)
 - b. When is someone not insufficiently active?
 1. How do other committees handle this issue?
 - c. How do we identify new members?
 - i. Committee reaches out?
 - ii. Open invitation to the LTER community?
3. Role of U.S. Committee in ILTER
 - a. Review of mission of Committee
 - b. How do we help nurture ILTER without dominating it
 - c. How to ensure open flow of information (planning effort – joint ESA meeting in January), without bogging everyone down
4. Executive Coordinator update
 - a. Introduce Holly Kaufman (phone)
 - b. Her ILTER role
 - c. Strategic planning process for ILTER
 - d. Organizational issues – what type of organization is it, should it be?
 - e. Funding plan for ILTER – timing, needs
 - f. What should the link be between US LTER and ILTER planning processes
5. Upcoming meetings
 - a. ELTOSA/Malawi (Vanderbilt, Kaufman,
 - b. Mexico, October 2005 (Madden, Bourgeron, Hamburg, others?)
 - c. Spain, Fall 2005 (Waide)
 - d. Joint US-Mexico ESA Meeting- LTER Symposium (January 2006)
 - e. Information Management System Workshop in East Asia-Pacific Region (King, Spring, 2006)
 - f. East Asia Regional in Japan, March 2006 (Hamburg, ???)
 - g. South Africa, August 2006 (Hamburg, Bourgeron, ???)
 - h. All scientists meeting – committee meeting there (???)

附件五：尋求學術科學研究合作之往來信函以及收錄一名 Brigham Young University 的動物學博士研究生到台灣做博士論文

-----Original Message-----

From: Kent Hatch [mailto:kent_hatch@byu.edu]

Sent: Tuesday, August 16, 2005 2:10 AM

To: hbking@tfri.gov.tw

Cc: Yuan-Mou Chang

Subject: Bird study in Taiwan

Dear Dr. King,

Meeting you and the other Taiwanese ecologists at ESA was a real pleasure. I had a wonderful time at the dinner Wed. night and I felt the discussion was quite profitable. I've asked Yuan-Mou to double check the literature, but as we all suspected, there appears to have been very little done on how typhoons or hurricanes affect the diets and movements of birds. I think this is a wonderful opportunity for some interesting and important research.

As I recall, we discussed two possibilities for funding this research. The first (I can't remember the program's name exactly) was something like the US-Taiwan Binational Science Foundation. You offered to check with your contacts at NSF to see if the program still exists. You also said that you would suggest the name of someone in Taiwan with whom I could collaborate. Yuan-Mou and I would like to get started on this soon and would greatly appreciate your help with this at your earliest convenience.

The second funding possibility we discussed was a program to which Yuan-Mou would apply directly. As I recall, you said that he would first need to pass his qualifying exam before he could apply. It sounds similar to the American NSF Dissertation Improvement Grants, which are specifically to help fund the research of Ph.D. candidates. Obviously, this is not as pressing, but if you know of a website we can go to so that Yuan-Mou can prepare to apply to this when the time comes, that would be appreciated as well.

If I'm missing anything or have forgotten anything of importance, please let me know. I'm quite excited about this, as is Yuan-Mou. I'll be out of town until Friday morning, but I'll check my email then. I look forward to your reply.

Sincerely,

Kent Hatch
Assistant Professor
Dept. of Integrative Biology
WIDB 151
Brigham Young University
Provo, UT 84602
Phone: 801-422-9210 fax: 801-422-0090
email: khatch@byu.edu

附件六：Dr. Eun-Shik KIM 的志願協助函

-----Original Message-----

From: Kim, Eun-Shik [mailto:Eun-Shik_Kim@brown.edu]

Sent: Wednesday, June 01, 2005 9:09 AM

To: HBKing

Cc: kimeuns@kookmin.ac.kr

Subject: This is Eun-Shik

Dear Hen-biau,

It is very good to hear from you. I hope that you and your family are all doing well and you are in an excellent shape with the TFRI. While it is already three months since I and my family visited here at Brown University with Steve and in Providence, all of us are enjoying the lives here in Providence, USA.

I am very glad to have your kind invitation to the Executive Committee of ILTER Network! As you know, I would be much honored to work with you and to help you out in continuing and strengthening our join efforts in promoting ecological research on ecosystems of the world.

Would it be acceptable for you to name me the Coordinator of the Executive Committee of ILTER Network? It seems to be better for me to be named as 'Coordinator' better than 'Secretary' because I am already working as the Secretary General of INTECOL. I look forward to hearing from you on any further suggestions.

With best wishes to you and your family,

Cheers!

Eun-Shik

p.s. My cell phone number here is +1-401-588-1073. If you would let me know the time of your convenience, I would like to give you a call, soon. ESK

From: HBKing [<mailto:hbking@tfri.gov.tw>]
Sent: 2005-05-29 (일) 오후 8:40
To: Kim, Eun-Shik
Subject: RE: : MICHEL lettermail received from NY

Dear Eun-Shik

To continue and strengthen our join efforts to promote ecological research, I would like you to participate actively in the ILTER Network' activities.
As suggested by Steve would you like to be the secretary of the executive committee of the ITLER Network?
Or you have any other position?
After I receive your acceptance I will make an announcement in the 2005 ILTER annual meeting in Mexico.
Now this request is between us.

Cheers
Hen-biau

-----Original Message-----

From: Steven Hamburg [mailto:Steven_Hamburg@brown.edu]
Sent: Thursday, May 26, 2005 9:39 PM
To: HBKing
Cc: Michel Gutelman; holly@environmentstrategies.com; Patrick Bourgeron
Subject: : MICHEL lettermail received from NY

Hen

I agree to help and would be happy to go to NY with Michel. I am copying Holly and Patrick on this note to close the loop.
As you might have seen I am also speaking with Eun-Shik later today about taking on a formal roll in ILTER so he can help support you administratively, maybe as secretary of the executive committee, arranging meetings, assembling agendas etc. I will keep you informed
on our conversations.
Cheers

Steve

附件七：收集資料明細

- Bioethics and the New Embryology: Springboards for Debate.* By Scott F. Gilbert, Anna L. Tyler, and Emily J. Zackin. Sinauer Associates. 2005.
- Climate Variability and Ecosystem Response at Long-Term Ecological Research Sites.* By David Greenland, Douglas G. Goodin, and Raymond C. Smith. Oxford University Press. 2003.
- Essential Atlas of Physical Geography.* Barron's Press. 2003.
- For Love of Insects.* By Thomas Eisner. Belknap Harvard Press. 2003.
- Guides to the Gardens of Quebec: Montreal Botanical Garden.* Quebec Gardens' Association. 2001.
- Invasive Alien Species: A New Synthesis.* By Harold A. Mooney, Richard N. Mack, Jeffrey A. McNeely, Laurie E. Neville, Peter Johan Schei and Jeffrey K. Waage. Island Press. 2005.
- Lovelock & Gaia: Signs of Life.* By Jon Turney. Columbia University Press. 2003.
- Nature's Economy: A History of Ecological Ideas.* By Donald Worster. Cambridge University Press. Second Edition 1994.
- One World: the Ethics of Globalization.* By Peter Singer. Yale University Press. Second Edition. 2004.
- Paper or Plastic: Searching for Solutions to an Overpackaged World.* By Daniel Imhoff. Sierra Club Books. 2005.
- The Global Carbon Cycle: Integrating Humans, Climate, and the Natural World.* By Christopher B. Field and Michael R. Raupach. Island Press. 2004.
- The Journey of Man: A Genetic Odyssey.* By Spencer Wells. Princeton University Press. 2002.
- The Little Book of Science.* By John Gribbin. Barnes & Noble Press. 1999
- Trees: Their Natural History.* By Peter Thomas. Cambridge University Press. 2000.
- Wild Solutions.* By Andrew Beattie, and Paul R. Ehrlich. Yale University Press. Second Edition. 2004.