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2008

**The National Urban and Community Forestry Advisory Council**
**2008 Challenge Cost-Share Grant Program**

# Full Proposal Cover Sheet

CONTROL NO. 103-R5-C5-22 (Previously assigned to your proposal by this office)

PROJECT TITLE: Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban Forest.

NAME OF ORGANIZATION: University of Hawaii

MAILING ADDRESS: 3190 Maile Way Rm. 102 University of Hawaii, Manoa
Honolulu, HI 96822

PROJECT CONTACT: Dr. Andy Kaufman

PROJECT CONTACT'S: PHONE NO. (808) 956-7958 FAX NO. _(808) 956-3894

E-MAIL kaufmana@hawaii.edu

Is this project being developed to reach a minority or underserved population? X_ Yes _ No

Is this project being submitted by a minority or underserved population?
(owned/operated/direct) business, organization, or college/university? X_ Yes _ No

Pre-Proposal Request: $120,240.00 + MATCHING: $139,723.00 = TOTAL PROJECT: $259,963.00

Full Proposal Request: $112,577.00 + MATCHING: $116,308.00 = TOTAL PROJECT: $228,885.00

**Summarize the proposed project in 100 words or less.**

One of the most important and least recognized benefits of the urban forest is its power to improve physical and mental health of people. Although research has documented benefits that plants have to societies and individuals, minorities and underserved populations do not always benefit from the urban forest. This project's purpose is to increase our understanding of the psychological benefits of trees using psychophysiological measures to reveal positive and negative relationships between people and the urban forest. Results will be targeted for educational programs, and assisting in changing policy makers and developers attitudes about the importance of the urban forest.

**REMINDER: Submit thirty (30) copies of your full proposal and E-mail an electronic version to nstremple@fs.fed.us**

**National Urban and Community Forestry Advisory Council**
**2008 Challenge Cost-Share Grant Program**

***Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban Forest***

***Rating Committee's identified points addressed:*** *(The responses below have also been integrated into the proposal)*

1). **Evaluation: please strengthen your evaluation process and how one measures and tracks.** *The criteria that will be used to judge the success of this project heightening the public's awareness of the importance of the urban and community forest is by the following:*

- *Post evaluation questionnaires will be given to all attendees for public presentations given by the PI.*
- *The acceptance of presentations at national meetings*
- *The acceptance of articles submitted to peer review journals, newspapers, and popular magazines.*
- *Feedback from presentations given at national meetings.*
- *Policy changes or acceptance from public or governmental administrators as result of projects findings.*

***2). There was a question about subcontracting. Please clarify what is the subcontracting role? Are you contracting them to take measurements of other sites?*** *The purpose of the subcontract with the PRIME Lab Missouri School of Journalism Subcontract run by Dr. Paul Bolls, is to collect physiological and preference data on different population demographics. Specifically, to try and address underserved and minority populations such as African-American, Hispanic/Latino since Hawaii does not have a large representation of these populations. In addition, the PRIME lab is one of the few labs in the country that can collect physiological and preference landscape data. Lastly, the principle investigators underlying purpose to broaden the breadth of diversity by trying to look across cultural and State populations for the benefits of the urban forest.*

***3). Indirect cost rates: General Note- any indirect cost rates are expected to be either reasonable, cost shared (split between Federal funds and match), or used as match. The council understands how entities base their indirect cost rate; however with limited funds they feel that most of the funds should focus going to the project. The council reviews the indirect cost rate as one of the significant factors in their decision to recommend a grant for an award.*** *To address this, the University of Hawaii indirect cost rate of 38.4% has been split between the direct Federal funding (20%) and a match with the University (18.4%). Additionally, a subcontract was worked out with the PRIME Lab Missouri School of Journalism which has removed the University's rate.*

## National Urban and Community Forestry Advisory Council
## 2008 Challenge Cost-Share Grant Program

### *Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban Forest*

**1. Scope and Applicability/Justification**

The urban forest is a dynamic entity providing an array of environmental, economic, and social benefits at micro and macro levels to people and communities. The National Urban and Community Forestry Research and Technology Transfer Assessment identified that Social Benefits and Human Health Benefits were priority areas of research that are needed to help build human capital and strengthen communities. In addition, one of the most important but least recognized benefits of the urban forest is its power to improve physical and mental health. In order to maximize potential psychological benefits, these health impacts need to be more fully understood, quantified, documented, and communicated for a better quality of life.

This project's purpose is to extend and increase our understanding of the psychological benefits of trees as revealed through powerful psychophysiological measures. Psychophysiological measures including heart rate (EKG), galvanic skin conductance response (GSR), and facial muscle activity (EMG) are valid and reliable real time indicators of cognitive and emotional processes engaged by the human brain as it processes stimuli in an individual's environment. Cognitive/emotional processes related to attention and emotional responses are the foundation from which stress and the expression of positive/negative emotion emerge, having powerful effects on individuals' well being. Work by Roger Ulrich, Francis Kuo, William Sullivan, Rachael and Steven Kaplan among many others in the field of environmental psychology, have revealed positive relationships between the experience of the natural landscape and human health and healing. This project advances that work by attempting to uncover specific cognitive and emotional processes evoked through trees in an urban forest environment. Surprisingly, little actual research on the effects of nature and human psychological states as revealed through physiological responses has been done.

Recognizing the need to explore, document, and understand these complex relationships in order to address perceptions, values and practices of America's growing multi-cultural, diverse ethnic minority populations within urban forests, parks, wildlife and their management (NUCFAC Action Plan), this study will investigate landscape preference and the psychophysiological impact of urban trees and vegetation characteristics among 5 population subgroups – Four ethnic minority communities (Native Hawaiian, African-American, Hispanic/Latino, Asian) and Anglo/White – in two urban and community centers in the South Pacific and Mid-Western United States. This research project intends to extend related research, as well as narrow the focus by concentrating on how aesthetics and cultural meanings affect psychophysiological states such as stress by viewing nature within the urban environment.

With the increase of urban populations which now exceeds those of rural areas, along with the impacts of climate change brought about from modern development, this is a crucial time to quantify and qualify the importance of trees and vegetation in our urban environments. This is paramount to be able to promote, install and maintain healthier urban environments.

By identifying and understanding people's psychophysiological responses to trees and vegetation, lack of vegetation, and trees that have been severely pruned (heading cuts, or

topping) within two distinct environmental and demographic urban regions of the U.S., development of specific recommendations of the importance of trees and vegetation within urban environments. This information will help strengthen what has already been documented about the positive economic, social, and environmental benefits that accrue from the urban forest. More importantly, it will add compelling data for policy makers at the local, State, and national levels, along with green industry sectors as: ASLA (American Society of Landscape Architects, APA (American Planning Association), PLANET (Professional Landscape Network), ULI (Urban Land Institute), and ISA (International Society of Arboriculture) as well as the many environmental educational groups involved with the design, installation, and maintenance of the urban forest..

The objective of this study is to assist the Urban and Community Forestry Program in improving the health and viability of trees in communities through educational awareness by providing practical information for local, State, public and private stakeholders in the importance of human cost and benefits of trees and proper tree care techniques. In addition, this will be an effective tool with Tree City goals across the nation. The priorities of this study are:

**1.** Determine people's preference and physiological responses to vegetation, and lack of vegetation in urban environments.

**2.** Characterize the differences in people's preference and physiological response to proper and improper tree care practices in urban environments.

**3.** Identify minority and underserved populations preference and physiological responses to vegetation, and lack of vegetation in urban environments.

**4.** Characterize the differences in minority and underserved populations preference and physiological response to proper and improper tree care practices in urban environments.

Results generated will assist policy makers, green industry representatives, and educators in providing specific information to help create green and sustainable urban forest structure across the country. These objectives directly reflect one of the NUCFAC's priorities in developing new knowledge about, and communicate understanding of the human dimension benefits of urban and community forest ecosystems.

## 2. Literature Review

This project will specifically record baseline preference data that people have for urban landscape scenes with and without trees and vegetation, and trees that have been properly and drastically improperly pruned. Next, using psychophysiological measures: EKG, EMG, and GSR, peoples' responses to the same stimuli as presented in the preference study will be recorded. Previous studies have not been this comprehensive to include preference ratings and psychophysiological measures for the same landscape color stimulus. This type of research method goes beyond surveys and other qualitative methods because it records human responses before a cognitive or thinking level (Stemmler, 2003; Stemmler and Fahrenberg, 1989; Stern, Ray, and Quigley, 2001). It has been shown to be more effective in educating, as well as policy level changes because it is based on medial technologies (Ulrich, 1981,; Ulrich, 1984; Ulrich, and Simons, 1986).

Plants are a vital component of the social and economic health of our cities. As development progresses across the country, more interest in landscapes for the purposes of enjoyment and safety is expected, and a healthy and sustainable landscape is at the core (Appleton, 1975; Hull, 1992; Kuo, Bacaicoa, & Sullivan, 1998; Wolf, 1997). Even though

research has added to the body of knowledge regarding the economic, technical, and social benefits of the urban forest, there is a limited amount of research relating to the physiological responses that people have in the urban forest.

Essentially, trees and plants provide many positive functions within the urban environment. Viewing nature, for example is associated with reductions in stress, improvements in mental alertness, greater productivity, and in areas of commerce, increased spending (Kaplan, 1995; Lohr et al., 1996; Ulrich, 1986; Wolf, 1997). Additionally, improved health affects from plants have been documented (Lohr and Pearson-Mims, 2000; Ulrich, 1984). In addition, plant–people research has begun to document human responses to vegetation (Appleton, 1975; Orians, 1986; Orians and Heerwagen, 1992; Ulrich, 1993; Wilson, 1993). Specific findings are revealing people's preference to tree form Lohr and Pearson-Mims (1996); Sommer and Summit, (1995) and physiological benefits from different tree colors Kaufman and Lohr (2004). The urban forest also contributes to people's mental restoration and relief from fatigue, Kaplan, 1995; Kaplan and Kaplan (1984, 1992); Kuo, (1992) as well as perception of being safe in landscaped areas (Kuo, Bacaicoa, & Sullivan, 1998). Even when people have brief encounters within the urban forest, a variety of benefits are acquired (Hull, 1992).

In other research, people's cognitive and emotional responses to vegetation in street scenes (as depicted in line drawings) with and without vegetation was examined (Sheets and Manzer, 1991). Subjects reported higher levels of positive affect when they viewed tree lined streets as opposed to no trees in the setting. Also, vegetation had positive effects on subjects' perception of the quality of life as well as on emotions. This study suggested that people prefer and have positive emotional responses to urban streets that incorporate vegetation, specifically trees.

Research techniques have been developing to move beyond people's preferences for landscapes and landscape components such as trees and their characteristics. For example, in the evaluation of arousal and calmness levels of natural versus urban scenes, Ulrich (1981) incorporated the use of electrocardiograph (EKG) and electroencephalograph (EEG) instruments to measure heart rate and alpha amplitude levels. This research began to reveal that there were more beneficial influences on psychological conditions from scenes with vegetation than from scenes with urban environments. Specifically, alpha amplitudes were higher when subjects viewed slides with vegetation rather than urban scenes. This is significant since alpha waves are a valid indicator of brain activation and is associated with wakeful relaxation (Ulrich, 1981). Furthermore, a trend for higher heart rate activity when subjects viewed slides of water or vegetation was noted. This is important because heart rate is an objective indicator of states of psychophysiological arousal or activation. These results illustrated the beneficial influences that nature versus urban elements have on people's psychological states

Ulrich and Simons (1986) reported that individuals recovered faster and more completely from stress when they were exposed to natural settings versus urban environments. Chang (2004) indicated that different types of landscapes influence people's psychophysiological reactions. Similar to Ulrich's 1981 study, Chang incorporated EEG, EKG and EMG (electromyography) which measures facial muscle response in the form of arousal levels. The study showed cultural differences in reactions to different natural landscape types such as water, mountains and parks, but overall people had higher psychological benefits after viewing these natural scenes.

Additionally, Kaufman and Lohr (2004) using skin conductance (GSR) which measures arousing and calmness levels a person is experiencing towards a stimulus and is mainly sensitive to the general arousal associated with emotions Manber, et al., (2000), suggest that people

respond physiologically different to trees of different canopy colors. Results indicated that all canopy colors were calming, but green colored canopy trees were the most calming vs reds, yellows, oranges, and brown tree canopy colors. This research supports earlier plant-people findings that plants generally reduce people's stress and suggests that particular tree colors evoke various physiological responses (Lewis, 1996; Orians and Heerwagen, 1992; Ulrich, 1993; Wilson, 1993).

Researchers who study emotion focus on two major dimensions: valence and arousal (Lang et al., 1993). Valence is the pleasurable or displeasurable aspect of feelings, such as glad versus upset (Morgan and Heise, 1988). Arousal indicates the degree of energy evoked or engagement in the experience, such as excited or tense versus relaxed or sleepy. Media researchers have adopted certain psychophysiological measures to explain responses to the properties of a stimuli. Heart rate (EKG), skin conductance (GSR), and facial electromyography (EMG) are frequently used to assess the valence and arousal of emotions (Bolls et al., 2001). These measurements are pre-cognitive readings that indicate a more universal human reaction such at the "fight or flight" syndrome.

Although research has been documenting the benefits that plants have to societies and individuals Ulrich, (1993); Westphal, (2003); Wilson, (1993), there exists a large number of minorities and underserved populations that are not benefiting from the urban forest and its components. For instance, the Hawaiian Islands are one of the world's most popular vacation destinations with approximately 7 million visitors a year. Along with the many visitors to Hawaii the state has a permanent population of around 1.2 million; of which 240 thousand are native Hawaiian's. Of these native Hawaiians, many are displaced to remote and degraded areas of the islands or to "Hawaiian Home Lands" which have despoiled characteristics of many Native American reservations across the country. Hawaii, with 77.1 percent, has the highest proportion of minority populations in the country and in Missouri, the minority population increased from 13.0 percent of total state population in 1990 to 16.2 percent in 2000 (ODESA, 2000). Missouri's minority population mainly consists of African American and Hispanic/Latino demographics.

In many parts of the country there is an inequitable distribution of urban canopy cover, and since urban trees affect quality of life, the spatially inequitable distribution of urban trees in relation to race and ethnicity is an example urban forest benefits that do not extend to everyone (Heynen, Perkins, and Roy, 2006). Programs and research have begun to address these inadequacies, by sharing information from various public and private governing bodies, as well as scientific communities to help identify lands under threat of conversion with high ecological, social, and economic value (USDAFS, 2007). However, much more work is needed, and this project is intended to help identify the barriers and opportunities in order to improve the urban forest for minority and underserved populations.

**3. Organization/Methodology**

Dr. Kaufman will be the managing the project providing oversight and management in addition to data collection in Hawaii. This two phase project will begin with a baseline preference study to capture people's preference for color urban landscape scenes with and without trees and vegetation, and trees that have been properly and improperly pruned.

Respondents will view color photographs of urban scenes with varying tree and vegetation along with trees that have been pruned and asked to rate them for preference for Phase 1, and Phase 2 psychophysiology data will be collected in the Tropical Landscape Human Interaction Lab (TLHIL) and Psychological Research on Information and Media Effects Lab (PRIME) Labs

respectively. These data will be collected in Hawaii and Missouri and will include minority and underserved population areas of each State.

Next, using psychophysiological measures: EKG, EMG, and GSR, peoples' responses to the same stimuli as presented in the preference study, Phase 1, will be recorded. In Hawaii, the preference and physiological data will be collected in separate phases. Phase one will be field collected throughout the Island of Oahu with specific target areas to encompass underserved Native Hawaiian communities. This will consist of having respondents view prepared photos in an randomized order set, and asked to rate them on a Likert scale rating system. In addition, demographic information will b collected at this time.

In Phase two, collection of psychophysiological data will be conducted at the University of Hawaii's Manoa campus in the Tropical Landscape & Human Interaction Lab (TLHIL) run by Dr. Andy Kaufman. Data collection will utilize Biopac MP-150 psychophysiology measuring system which will be processed by Acqknowlege software with Superlab 4.0 stimulus presentation software. Physiological readings will be sampled 20 times per second during a 6 second exposure to each image (Bolls, et al., 2001; Lang et al., 1993). Respondents will be viewing landscape and tree stimulus on a 63.5cm flat screen video monitor. The video monitor will be placed approximately 1.2 meters from the seated respondent. Images will be shown for a 6-second viewing time with a 6-second rest period between images while psychophysiology measures are being recorded in real time (Kaufman and Lohr, In Press; Kaufman and Lohr, 2004; Ulrich and Simons, 1986; Ulrich, 1981). When image viewing is completed, sensors will be removed and respondents will be asked to complete a brief questionnaire regarding the images they just viewed. Basic demographic information will also be asked, but participant's confidentiality will be maintained as no personal identifying information will be asked.

Data will be analyzed using Superlab 4.0 and Acqknowlege 3.91 software. In addition, data will be analyzed using ANOVA statistical analysis. In Missouri, physiological and preference data will be collected in the same manner as data collection sessions in Hawaii, and will be collected at the University of Missouri campus in the PRIME Lab Missouri School of Journalism run by Dr. Paul Bolls. Similar to participants in Hawaii, participants in Missouri, will view the photographs of urban scenes for Phase 1 and for Phase 2 their physiological responses recorded.

- Stages: Selecting and pre-testing stimulus; Setting up and calibrating psychophysiology instruments; Respondent sampling; Analyzing data; Writing up results; Publication and dissemination of findings.

**Estimated Timeline:**

| 10/1/08-12/31/11 | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acquiring Phase1&2 materials | x | x | | | | | | | | | | |
| Developing Phase1 questionnaire & photo stimulus | | x | x | x | x | | | | | | | |
| Pre-Testing Phase 1 components | | | | | x | x | | | | | | |
| Phase 1 Respondent sampling | x | | | | | | x | x | x | x | x | x |
| Analyzing Phase1 data | | x | x | | | | | | | | | |
| Setting up and calibrating psycho-physiology instruments: UHM & UM | | o | o | o | o | | | | | | | |
| Developing Phase 2 stimulus | | | o | o | o | | | | | | | |
| Testing stimulus | | | | | o | o | | | | | | |
| Phase2 Respondent sampling | | | | | | o | o | o | o | o | o | o |
| Analyzing Phase2 data | c | c | c | c | | | | | | | | |
| Writing up results | | | | | c | c | c | | | | | |
| Conference Presentation | | | | | | | | | c | c | c | |
| Publication and dissemination of findings | c | c | c | | | | | | | | c | c |

X=2008-09; O=2010; C=2011

**4. Product**

Results from identifying and quantifying the differences in people's preference and physiological response to proper and improper tree care practices in Hawaii will be disseminated by:

- Final results written report form for publication for NUCFAC; University of Hawaii Extension, Urban and community Forestry coordinators and national and local non-profit groups and TLHIL Lab websites.
- Journal articles prepared for at least 2 peer reviewed journals: (Environment & Behavior, Journal of Arboriculture, Landscape Research, Horticulture Technology, Landscape Journal, Environmental Psychology, Urban Planning).
- Extension publications from the University of Hawaii Cooperative Extension Service will be made available for free by hard copy (500 copies) and website download.
- Developing a PowerPoint educational presentation based on people's psychophysiological responses of proper and improper tree care practices for State, public, and private stakeholders. This will be made available through download from: NUCFAC; University of Hawaii Extension, TLHIL Lab, Kauluani, and Outdoor Circle's websites, as well as 100 CD copies for urban forest coordinators and educators request.
- Presentation of results to at least two national meetings such as: EDRA (Environmental Design Research Association; ISA (International Society of Arboriculture; ASLA (American Society of Landscape Architects; and all local Hawaii meetings such as: LICH (Landscape Industry Council of Hawaii; AAA (Aloha Arborist Association); UHM CTAHR (College of Tropical Agriculture and Human Resources Research Symposium, University of Hawaii Manoa).
- Working with NUCFAC and the U&CF program, to develop new standards for tree care professionals in communication and education of their clientele to encourage best management practice on social and environmental levels. This could be a combination of or a hybrid of the university extension publication and PowerPoint presentation in order to provide a useful too for tree care professionals.

**5. National Distribution/Technology Transfer of Your Findings**

Information from this project will be distributed in the form of formal presentations by the PI at national meetings such as: EDRA (Environmental Design Research Association; ISA (International Society of Arboriculture; ASLA (American Society of Landscape Architects; and local venues such as: LICH (Landscape Industry Council of Hawaii; AAA (Aloha Arborist Association); UHM CTAHR (College of Tropical Agriculture and Human Resources Research Symposium, University of Hawaii Manoa);

In addition, at least two peer reviewed journal articles will be produced for submission such as: (Environment & Behavior, Journal of Arboriculture, Landscape Research, Horticulture Technology, Landscape Journal, Environmental Psychology, Urban Planning; UH Manoa Extension publications; and submission for publication in popular media magazines such as Landscape Architecture magazine and Sunset Garden Magazine;

A mailing of the projects results in report form and/or as a PowerPoint presentation will be mailed to State Urban Forest Coordinators;

Lastly, information will be disseminated through various websites such as NUCFAC, State of Hawaii, local Non-Profit, and other groups such as, ASLA, PLANET, and ISA.

Through dissemination at national and local meetings; publication in scientific journals, extension publications, and popular garden magazines, as well as local and national websites, the findings of these results should be able to reach the target audiences of landscape designers, installation and maintenance personnel, arborists, academic professionals, other green industry related professionals, as well as the general public.

**6. Project Evaluation**

Dr. Roger Ulrich has stated that going beyond research that is based in preference ratings by incorporating medical measures is the best way to affect and educate policy makers, as well as the general public of the importance of vegetation within people's lives such as in the urban environment. This research is inspired by Dr. Ulrich, and the PI has a passion to find new approaches to educate professionals and the general public of the importance of the urban forest. It seems that over time, society has been drifting away from nature due to development, poor policy and planning, but probably most of all, the lack of people's time spent in nature. These factors stem from a multitude of social and cultural beliefs, as well as the lack in education of the importance of plants and trees in the urban forest in order to have happy and healthy people, society and environments to work, rest and play in.

The dissemination of presentations, publications, media reports, and educational materials that are based on the scientific data generated from this proposed study will be powerful tool which can be used to educate stakeholders about the importance of the urban forest. Ultimately, the intent of this studies results are to lend a tool that can be used in developing sustainable urban forestry programs through the understanding of the people's perception and physiological responses to the urban forest, or lack of, as well as the result of proper/improper tree care. This seems to be addressed in a more holistic and aggressive manner in underserved communities and minority populations, as these populations could benefit even more from the beneficial qualities of the urban forest. It is also the intent of this project's results to lend information in community forestry planning efforts of National, State and city administrators, county tree departments and tree boards, by directly enhancing the technical skills through social adoption and diffusion from study results and recommendations.

**Project outcome goals:**

- Generate a new understanding of people's attitudes of vegetation within the urban forest.
- Provide an informational tool in the development of educational programs based on people's psychophysiological responses of trees and vegetation and proper and improper tree care practices in the urban forest.
- To help develop new standards for the design, installation and maintenance of trees and vegetation in the urban forest, with emphasis to underserved communities and minority populations.
- Assist in educating policy makers and developers attitudes about the importance of the urban forest.
- Improving the condition of America's urban forest for its diverse stakeholders.

**Criteria to judge project's success:**

The criteria that will be used to judge the success of this project heightening the public's awareness of the importance of the urban and community forest is by the following methods:

- Post evaluation questionnaires will be given to all attendees for public presentations given by the PI.
- The acceptance of presentations at national meetings
- The acceptance of articles submitted to peer review journals, newspapers, and popular magazines.
- Feedback from presentations given at national meetings.
- Policy changes or acceptance from public or governmental administrators as result of projects findings

**7. Experience/Personnel/Adequacy of Resources**

Physical Resources for this project exist with psychophysiology labs at the University of Hawaii: Tropical Landscape & Human Interaction Lab (TLHIL), and at the University of Missouri: Psychological Research on Information and Media Effects Lab (PRIME). Each lab is equipped to gather the following physiological measures:

**1.** EKG: Heart Rate: physiological indicator of attention allocated to processing a message.
**2.** GSR: Skin Conductance: physiological indicator of emotional arousal during message exposure.
**3.** EMG: Facial Electromyography: physiological indicator of emotional valence (positive/negative) during message exposure.

Additional measurement capabilities include self-report measures of landscape attitudes, preference and emotional data.

Personnel roles for this project are: Dr. Kaufman is the lead PI and will be managing the project providing oversight and management; in addition to project methodology development and collecting psychophysiology and qualitative data in Hawaii. Dr. Cox, will be assisting in qualitative data collection methods and statistical analysis. Dr. Bolls will be collecting psychophysiology and qualitative data in Missouri, as well as statistical analysis. Ms. Adams will be providing assistance in qualitative and quantitative data collection within Native Hawaiian communities.

**Dr. Andy Kaufman** Teaches landscape architecture and horticulture courses in the Tropical Plant & Soil Sciences Department at the University of Hawaii at Manoa. He conducts research on the social, psychological and physiological effects that landscapes and landscape amenities have on people and the implications to the design, installation and maintenance of the built landscape. His other research focuses on Green Roof technologies for tropical and subtropical environments. Dr. Kaufman also has an extensive background over the past twenty years in landscape and irrigation design, installation and maintenance industry. His academic background consists of **B.S.** in Ornamental Horticulture from Cal Poly San Luis Obispo; **M.L.A.** from the University of Arizona; **M.S.** in Sociology from Iowa State University; and **Ph.D.** in Horticulture from Washington State University.

**Dr. Paul Bolls'** Teaches in the Missouri School of Journalism and co-directs the PRIME Lab Missouri School of Journalism at the University of Missouri. His research agenda is focused on cognitive/emotional processing of media. His work has been published in Communication Research, Journal of Broadcasting and Electronic Media, Journal of Marketing Communications and Media Psychology. He completed his **PH.D.** at Indiana University, **M.S.** Washington State University, and **B.S.** Montana State University.

**Dr. Linda Cox** is the Community Economic Development Specialist in the Department of Natural Resources and Environmental Management at the University of Hawaii Manoa. She teaches courses in Quantitative Methods for Management, Life Science, Human Resources, Agricultural and Resource Economics and Marketing & Management in Agribusiness. Dr. Cox's research has produced nearly 200 articles and publications on the economic relationships between agriculture and tourism; landscape services; agricultural product marketing; business, human and natural resource management; and other related topics. She has organized and taught short courses, workshops and seminars on a variety of issues including business management, entrepreneurship, and sustainable development across the State of Hawaii. She was also accepted on the Fulbright Senior Specialists Roster. Her academic background consists of: **Ph.D.** Texas A&M University, **M.S.** Montana State University, **B.S**. Montana State University

**Ms. Roxanne Adams** specializes in tropical landscape maintenance, and native Hawaiian plants. She is the Landscape Manager at the University of Hawaii Manoa Campus where she is responsible for the maintenance of 350 acres of historical tropical landscape collection. Roxanne is the president of Native Pathfinders Institute, Inc. a non-profit environmental education organization whose mission is to promote and enhance understanding of the Hawaiian environment and its need for protection through traditional methodology. Ms. Adams also has an extensive background working in botanical gardens, as well as in landscape maintenance and installation and operating her own native plant nursery.

**Project Advisor: Sandy Macias,** USFS Region 5, Urban and Community Forestry Program.

**Project Advisor: Teresa Trueman-Madriaga,** Coordinator, Kaulunani Urban and Community Forestry Program.

**8. Budget and Funding**
Please refer to budget page

**BUDGET**

**Itemized Budget for 3-year Project**

**Applicant:** Dr. Andy Kaufman **Project:** Beyond the Tropical and the Quaint People's Psychophysiological Responses to the Urban Forest

**Total Project:** $228,885.00 **Project Duration:** 3 years

| Cost Item | Federal Requested | Non-Federal Match | | Total Cost | Source of Match |
|---|---|---|---|---|---|
| | | Cash | In-kind | | |
| **SALARIES*** PI .2 FTE | - | | $30,499.00 | $30,499.00 | University of Hawaii |
| Co-PI 1 .1 FTE | - | | $22,564.00 | $22,564.00 | University of Hawaii |
| Co-PI 2 (Weekly rate including fringe) | - | | $1,763.00 | $1,763.00 | University of Missouri |
| Graduate student | $55,005.00 | | - | $55,005.00 | |
| Graduate student Tuition Waiver | - | | $28,404.00 | $28,404.00 | University of Hawaii |
| Pre-baccalaureate Student | $6,637.00 | | - | $6,637.00 | |
| Minority Sampling Assistant | - | | $7,800.00 | $7,800.00 | Native Pathfinders |
| Volunteer Labor | - | | $8,016.00 | $8,016.00 | Local Volunteers |
| Respondent honorarium | $2,000.00 | | - | $2,000.00 | |
| **Total Salaries:** | | | | **$162,688.00** | |
| **TRAVEL*** PI National meeting | $2,530.00 | | - | $2,530.00 | |
| PI UM Lab Stimulus Set-up | $1,375.00 | | - | $1,375.00 | |
| Survey Data Mileage | $225.00 | | - | $225.00 | |
| **EQUIPMENT*** Field laptop computer | $2,600.00 | | - | $2,600.00 | |
| **SUPPLIES*** Psychophysiology Supplies. | $1,400.00 | | - | $1,400.00 | |
| Duplicating CD's, paper, printer ink, clipboards, memory keys. | $1,100.00 | | - | $1,100.00 | |
| CD copying & mailing. | $2,500.00 | | - | $2,500.00 | |
| **PUBLICATION* (Page charges)** | $2,400.00 | | - | $2,400.00 | |
| **CONTRACTUAL*** PRIME Lab Missouri School of Journalism | $16,042.00 | | - | $16,042.00 | |
| **TOTAL DIRECT:** | $93,814.00 | | $99,046.00 | $192,860.00 | |
| **TOTAL INDIRECT (20%):** | $18,763.00 | | - | $18,763.00 | |
| Indirect Costs Forgone (38.4%-20%=18.4%) | - | | $17,262.00 | - | University of Hawaii |
| **GRAND TOTAL** | **$112,577.00** | | - | **$228,885.00** | |
| **Total Match** | - | | **$116,308.00** | - | |

***Please refer to attached Budget Summary for explanation of budget categories.**

## Budget Summary:

### Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban Forest

**Personnel:**

PI 0.2 FTE (Including fringe benefit)
Co-PI 1 0.1 FTE (Including fringe benefit)
Co-PI 2 (weekly rate including fringe)
Graduate Research Assistantship UHM 0.5 FTE
Pre-baccalaureate student UH 10 hrs/wk/sem
Minority sampling assistance 120hrs @ $65.00
Volunteer labor: Respondents 300hrs @ $26.72
Respondent honorarium 100@ $20.00
Project Advisor: Sandy Macias, USFS Region 5, Urban and Community Forestry Program.
Project Advisor: Teresa Trueman-Madriaga, Coordinator, Kaulunani Urban and Community Forestry Program.

**UHM** Salaries and Wages (Fringe benefit rate of 8.93%)
One graduate student with an 11-month appointment:
Year 1- step 2, $16,176.00
Year 2- step 3, $16,824.00
Year 3, step 4, $17,496.00

One Pre-baccalaureate student @ 8hrs/wk/sem (Fringe benefit rate of 1.08%)
Year 1- step 1, $2,135.00
Year 2- step 2, $2,212.00
Year 3, step 3, $2,290.00

**Travel**

*PI Presentation at National Meeting*

| | |
|---|---|
| Airfare: | $925.00 |
| Hotel 5 days@ | $150.00 |
| M&IE 5 days@ | $65.00 |
| Conference fee: | $450.00 |
| Transport to/from airport: | $80.00 |
| Survey Data collection mileage: | $225.00 |

*Lab Stimulus set-up & calibration: UofM*

| | |
|---|---|
| Airfare: | $820.00 |
| Car rental 3 days @ | $20.00 |
| Hotel 3 days @ | $100.00 |
| Per diem 3days @ | $65.00 |

**Equipment**

No major equipment is needed as both labs (UHM & UofM) are equipped to collect ECG, GSR, & EMG Psychophysiological data.
Year 1- Laptop computer for field surveys: $2,600.00
Year 2- $0.00
Year 3- $0.00

**Supplies**

| | |
|---|---|
| Year 1-3 Psychophysiology Supplies (electrodes, gels, wipes, etc.) | $1,400.00 |
| Year 1-3 Duplicating costs (minimum of 500 copies produced), paper, printer ink, clip boards, memory keys. | $1,100.00 |
| Year 3 CD development and mailing to Urban Forest Coordinators, & stakeholders (minimum 100 copies produced). | $2,500.00 |

**Publication/Page Charges**

Journal Page charges (Submission for publication in a minimum of two per reviewed journals such as: (Environment & Behavior, Journal of Arboriculture, Landscape Research, Horticulture Technology, Landscape Journal, Environmental Psychology, Urban Planning).

Year 1- $0.00
Year 2- $0.00
Year 3- $2,400.00

**University of Hawaii rate of 20% of total direct costs**

$18,763.00 (UH ID cost 20%)
$17,262.00 (UH Match 18.4%)

(NUCFAC limited to 20% ID cost. 18.4% of UH ID rate of 38.4% is included as match)

**PRIME Lab Missouri School of Journalism Subcontract:**

| | |
|---|---|
| **Salaries & Wages** | |
| Paul Bolls, Project Director, summer salary | $7,050.00 |
| Student Hourly Assistance (200 hours @ $10/hour) | $2,000.00 |
| Participant honorarium (100 participants @ $20/participant) | $2,000.00 |
| **Fringe Benefits** | |
| Bolls summer fringe | $2,307.00 |
| **Supplies** | |
| Psychophysiology Supplies (electrodes, gels, wipes, etc.) | $1,200.00 |
| **Travel:** *Lab Stimulus set-up & calibration: UH TLHI Lab* | |
| Airfare: | $810.00 |
| Car rental 3 days @ | $40.00 |
| Hotel 3 days @ | $120.00 |
| Per diem 3 days @ | $65.00 |

**Total Overall Project Funds Requested** **$112,577.00**

**Works Cited:**

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# Supporting Documents

(Letters of Participation, Project Personnel Bios, Letters of Support, etc.)

# A PROPOSAL

# SUBMITTED BY

# UNIVERSITY OF HAWAII

| | |
|---|---|
| TO: | National Urban and Community Forestry Advisory Council |
| PROJECT TITLE: | "Beyond the Tropical and the Quaint: People's Pyschophysiological Responses to the Urban Forest" |
| PRINCIPAL INVESTIGATOR: | Dr. Andy Kaufman |
| DEPARTMENT: | Tropical Plant and Soil Sciences |
| PROJECT PERIOD: | 1/25/2008 – 12/31/2011 |
| AMOUNT REQUESTED: | $112,577.00 |

AUTHORIZING UNIVERSITY OFFICIAL: P Kakugawa DATE: 1/18/08

Paul Kakugawa
Administrative Officer

ADDRESS: University of Hawaii
Office of Research Services
Sakamaki D200
2530 Dole Street
Honolulu, HI 96822

Please ensure that all correspondence regarding this application and project are addressed to the Office of Research Services.

# Kaulunani Urban and Community Forestry Program



January 14, 2008

Ms. Nancy Stremple, RLA
USDA Forest Service
Executive Staff to NUCFAC /
U&CF Program Specialist
1400 Independence Ave SW,
Yates building (1 Central)
Washington, DC 20250-1151

Dear Ms. Stremple,

The Kaulunani Urban and Community Forestry program in Hawai`i supports Dr. Andrew Kaufman's project, *Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban Forest*, currently under consideration by NUCFAC.

Dr. Kaufman has a unique understanding and concern about how people react to urban forests and I believe that this information will be quite valuable to all urban foresters across the country.

I look forward to being an Advisor on the project and to provide any assistance needed for the project.

Best Regards,

Teresa Trueman Madriaga

Teresa Trueman-Madriaga
Kaulunani U&CF Coordinator

Date: Wed, 03 Oct 2007 16:16:15 -0700
From: Sandra Macias <smacias@fs.fed.us>
Subject: Re: NUCFAC Question
To: Andy Kaufman <kaufmana@hawaii.edu>
X-Mailer: Lotus Notes Release 6.0.2CF2 July 23, 2003
X-MIMETrack: Serialize by Router on ENTR5A/E/USDAFS(Release 6.5.4FP1HF140 | September 14, 2005) at 10/03/2007 16:26:44
X-PMX-Version: 5.3.3.310218, Antispam-Engine: 2.5.2.313940, Antispam-Data: 2007.10.3.160229
Original-recipient: rfc822;kaufmana@hawaii.edu
X-Perlmx-Spam: Gauge=IIIIIII, Probability=7%, Report='JPG_HAS_COMMENT 0, JPG_PIXPERBYTE_HIGH 0, JPG_SPAMMY_Y_RESOLUTION 0, SINGLE_IMG_ATTACH 0, __C230066_P5 0, __CD 0, __CP_MEDIA_BODY 0, __CT 0, __CTYPE_HAS_BOUNDARY 0, __CTYPE_MULTIPART 0, __HAS_MSGID 0, __HAS_X_MAILER 0, __JPG_HEIGHT_100 0, __JPG_SPAMMY_Y_RESOLUTION_2 0, __JPG_WIDTH_100 0, __MIME_VERSION 0, __SANE_MSGID 0'

Yes I would love to be involved. Thanks for asking Andy
(Embedded image moved to file: pic05551.jpg)

Andy Kaufman
<kaufmana@hawaii.edu>
10/03/2007 02:17 PM

To: smacias@fs.fed.us
cc:
Subject: NUCFAC Question

Aloha Sandy,
I realize you are very busy, but I wanted to see if you would you be willing to be an advisor for our project: Beyond the Tropical and the Quaint: Peopleâ€™s Psychophysiological Responses to the Urban Forest ? If you have the time, it would be greatly appreciated.
Once again, it was great speaking with you and looking forward to further communication.
Have a super day!
Sincerely,
-Andy

--
Andy Kaufman, ASLA, MLA, Ph.D.
Assist. Prof../Landscape Specialist
Dept.Tropical Plant and Soil Sciences
College of Tropical Ag & Human Resources
University of Hawaii at Manoa
3190 Maile Way, Room #102
Honolulu, HI 96822-2279, USA

(808) 956-7958

NATIVE
pathfinders

January 15, 2008

Andy Kaufman, ASLA, MLA, Ph.D.
Assist. Prof../Landscape Specialist
Dept.Tropical Plant and Soil Sciences
College of Tropical Ag & Human Resources
University of Hawaii at Manoa
3190 Maile Way, Room #102
Honolulu, HI 96822-2279, USA

Aloha Dr. Kaufman,

We look forward to participating in your research project, "***Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban Forest".*** We believe this project is imperative in developing the needs of the people of Hawaii and the quality of our Urban Forests throughout this beautiful, tropical State.

Mahalo nui loa,

Roxanne M. Adams
President
Native Pathfinders Institute, Inc.

UNIVERSITY OF HAWAI'I AT MĀNOA

College of Tropical Agriculture and Human Resources
**Department of Natural Resources and Environmental Management**

January 9, 2008

To Dr. Andrew Kaufman

FROM: Dr. Linda J. Cox

SUBJECT: Participation in NUFAC Grant

This memo is to confirm my willingness to participate in the NUFAC Grant entitled *Beyond the Tropical and the Quaint: People's Psychophysiological Responses to the Urban* Forest. I am happy to be part of the group.

1910 East-West Road, Sherman Laboratory 101, Honolulu, Hawai'i 96822
Telephone: (808) 956-8708, Facsimile: (808) 956-6539, E-mail: nrem@ctahr.hawaii.edu, Web: www2.ctahr.hawaii.edu

## Missouri School of Journalism PRIME Lab Scope of Work

This document outlines a proposed scope of work conducted under a research agreement between the PRIME Lab and Dr. Andy Kaufman. This contract will be under the direction of Dr. Paul Bolls, co-director of the PRIME Lab in the Missouri School of Journalism at the University of Missouri-Columbia. Funds will be used for the collection of psychophysiological data as part of the "Beyond Tropical & Quaint: People's Psychophysiological Urban Forest Responses" submitted by Dr. Andy Kaufman, University of Hawaii at Manoa. If Dr. Kaufman's proposal is funded, the PRIME Lab agrees to the following scope of work.

### Participants

Participants will be 100, adults, participants will be recruited from the African American, Latino, Asian, and Caucasian communities. Participants will be recruited from the Columbia, Missouri area.

### Data Collection and Analysis

The PRIME Lab agrees to collect and conduct statistical analyses for the following psychophysiological measures:

1. Heart rate: physiological indicator of attention
2. Skin conductance: physiological indicator of arousal
3. Facial EMG: physiological indicator of emotional valence

Data collection and reporting of results will take place in the summer following awarding of funds to Dr. Kaufman and the University of Hawaii.

### About the PRIME Lab

The PRIME Lab, located in the Missouri School of Journalism has been established to measure the impact of media message content and production features on cognitive/emotional processing during real-time message exposure. This sets PRIME Lab research apart from traditional media message research that is exclusively dependent on post-exposure measurement of message effects. The capability for measuring cognitive/emotional processing during message exposure comes through tested and reliable psychophysiological measures. The PRIME lab is currently equipped to gather the following psychophysiological measures:

1. Heart Rate: physiological indicator of attention allocated to processing a message
2. Skin Conductance: physiological indicator of emotional arousal during message exposure
3. Facial Electromyography: physiological indicator of emotional valence (positive/negative) during message exposure

Additional measurement capabilities in the PRIME Lab include self-report measures of attitudes, message thought-listing, tests of memory for message content, and implicit

measures of cognitive processes such as secondary task reaction time and response latency measures. Overall, measurement capability in the PRIME Lab is designed to provide a thorough understanding of the effectiveness of different message strategies. Research conducted in the PRIME Lab is directed at providing practical insight into the design of media messages to evoke cognitive/emotional processes that will lay the foundation for maximally effective messages.

Signed,

*Paul D. Bolls*
Associate Professor Strategic Communication Faculty
Co-director, PRIME Lab
Missouri School of Journalism
176A Gannett Hall
University of Missouri-Columbia
Columbia, MO 65211
bollsp@missouri.edu

# *ANDREW JAY KAUFMAN*

Dept. Tropical Plant and Soil Sciences, College of Tropical Ag. & Human Resources
University of Hawai'i at Manoa,
3190 Maile Way, Room #102 Honolulu, HI 96822-2279, USA
(808) 956-7958

**E mail:** kaufmana@hawaii.edu **Web:** http://www.ctahr.hawaii.edu/kaufmana/

## Summary of Qualifications

Dr. Kaufman is an Assistant Professor and Landscape Specialist at the University of Hawai'i at Manoa Department of Tropical Plant & Soil Sciences. He teaches landscape architecture and horticulture courses specifically, Fundamentals of Landscape & Planting Design; History & Theory of Landscape Architecture; Human issues in Horticulture, and Tropical Landscape Practices.

His research interests are on the social, psychological and physiological effects that landscapes and landscape amenities have on people and implications to the design, installation and maintenance of the built landscape. His other research focuses on Green Roof technologies for tropical environments, Environment-Behavior Studies and Environmental Psychology.

Andy also has an extensive background over the past twenty-two years in landscape and irrigation design, installation, maintenance and arboriculture. He is an award winning landscape designer with experiences in commercial and residential projects in Arizona, California, Hawai'i, Iowa, and Washington State. His international experience includes landscape design, installation and maintenance in Japan and Peru. In addition, he has worked with the U.S.D.A. Forest Service in California, Utah, and Arizona doing recreation benefit research.

## Education

- B.S. in Ornamental Horticulture. Cal Poly San Luis Obispo.
- M.L.A. in Landscape Architecture. The University of Arizona.
- M.S. in Sociology. Iowa State University.
- Ph.D. in Horticulture. Washington State University.

## Partial List of Honors and Awards

- Betty Crocker Landscape Award: Scenic Hawai'i, Inc. *Award of Honor* in the Community Garden category for HIG Gathering Garden. 2007.
- *Volunteer of the Year Award from* Scenic Hawai'i, Inc. 2006
- B*eautification Award* in Government Landscaping from The Outdoor Circle, Hawai'i Chapter for The Sherman Courtyard. 2006
- *Award of Excellence* in the Community Garden Category. Betty Crocker Landscape Awards from Scenic Hawai'i, Inc. 2005

## Partial List of Publications

- Kaufman, A., Adams, R., Cox, L. (In Press). *A Tropical Paradise: Native Hawaiians and Visitors to Hawaii Landscape Perception of Aesthetic Qualities of the Urban Forest and Natural Landscapes of Hawai'i* In: C. A. Shoemaker, (Editor), Horticultural Practices and Therapy for Human Well-being. Acta Horticulturae xxx International Society for Horticultural Science. Pp. xxx
- Kaufman, A. J. and Lohr. V. I. (In Press). *Does it Matter What Color Tree You Plant?* In: E. Matsuo., (Editor), Acta Horticulturae . International Society for Horticultural Science. Pp.xxx
- Cabugos, L., Kaufman, A.J., Cox, L.J., Miura, T., and Easterday, D. 2007. *Feasibility of Rooftop Landscaping with Native Hawaiian Plants in Urban Districts of Hawai`i.* Fifth Annual International Greening Rooftops for Sustainable Communities Conference Proceedings. GRHC. Minneapolis, MN.
- Kobayashi, K.D., Kaufman, A.J., Grifis, J. & McConnel, J. 2007. *Houseplants Clean Indoor Air.* Cooperative Extension Service, University of Hawai'i at Manoa.OF-39
- Kaufman, A.; Cox, L. J.; Miura, T.; Easterday, D. 2006. *Feasibility of Green Roofs in Hawaii: A Source of Private and Public Benefits.* University of Hawai`i at Manoa. Report for the Hawaii State Legislature 2007 Session.
- Kaufman, A. J. and Lohr. V. I. 2004. *Does Plant Color Affect Emotional and Physiological Responses to Landscapes?* In: D. Relf, (Editor), Expanding Roles for Horticulture in Improving Human Well-Being and Life Quality. Acta Horticulturae 639. International Society for Horticultural Science. Pp. 229-233.

## Partial List of Activities

- Member at Large (A.S.L.A.) American Society of Landscape Architects, Hawai'i Chapter. 2007-Present
- A.S.L.A. National, Committee on Education Member. 2007-Present
- (AAA) Aloha Arborist Association. 2007-Present
- (HSUFP) The Hawai`i Society of Urban Forestry Professionals. 2006-Present
- International People-Plant Council Communication Officer. 2005-Present
- DLNR Coastal Readiness Advisory Committee. 2007-Present.
- Honolulu Arborist Advisory Committee. 2006-Present

# Dr. Linda J. Cox

www.ctahr.hawaii.edu/CoxL
University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources
1920 Edmonson Road, FT 62, Honolulu, Hawaii 96822
Business: (808) 956-7602, FAX (808) 956-2811, lcox@hawaii.edu, Home: (808) 247-5571


## EDUCATION

Ph.D., Agricultural Economics, Texas A&M University, 1982
M.S., Economics, Montana State University, 1978
B.S., Magna Cum Laude, Business, Montana State University, 1976

## PROFESSIONAL ACADEMIC EXPERIENCE

Community Economic Development Specialist, 1983 – Present
University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources

Develop curriculum and provide formal and informal education; conduct and deliver applied research to the community. Subjects are entrepreneurship, resource management, business management, sustainable development, and human resource development, including strategic planning, leadership, capacity building and personal financial management. Accomplishments include:

- Authored or co-authored, produced, and edited more than 200 journal articles, books, book chapters, workbooks, fact sheets and other publications, as well as videos and websites. Awarded a *Keep It Hawaii* certificate of merit for *Ke Ala Moa'e -The Tradewind Trail* project. AgCamp-Strival Training was accepted into the Governor's Turn-of-the-Year Innovations Conference.

- Organized or co-organized, and/or spoke at more than 170 conferences, short courses, workshops, meetings, and seminars on a variety of community economic development issues in locations across Hawaii; clients include government agencies, businesses, community associations and non-profit organizations. Awarded the Hung Wo and Elizabeth Lau Ching Foundation Award for Faculty Service to the Community

- Taught undergraduate and graduate courses. Served as Department Chair and graduate Chair, winning the Ka Pouhana (mentoring) Award. Serve as affiliate faculty in Department of Urban and Regional Planning, College of Social Science. Certified Trainer of Mini-Society, an experienced-based system to teach 8-12 year-olds about entrepreneurship.

- Secured over $1.6 million in grants as principal investigator, co-principal investigator, or collaborator on a variety of extension and research projects.

- Provided professional assistance to government agencies, professional associations, community groups, businesses, non-profit organizations and university faculty in Hawaii, throughout the rest of the nation and in countries around the world. Approved for the Fulbright Senior Specialists Roster and received Fulbright grant to be a visiting scholar at the National School of Agriculture in Meknes Morrocco. Served as Agribusiness Development Specialist for the USDA in South Africa.

## OTHER PROFESSIONAL EXPERIENCE

Co-own and manage a Montana-based real estate management and development firm, Served as a consultant on several projects.

Biographical Sketch
Paul D. Bolls

## Education

| | | | |
|---|---|---|---|
| Montana State University | Communication Studies | BA | 1993 |
| Washington State University | Communication Research | MA | 1995 |
| Indiana University | Mass Communication | PhD | 1999 |

## Current Academic Employment

Co-director, PRIME Lab, Missouri School of Journalism, University of Missouri, 2004-present

Assistant Professor, Missouri School of Journalism, University of Missouri, 2004-present

## External Grants Received

*National Cancer Institute, Center for Excellence in Cancer Communication Research, September, 2005.*
One year pilot grant to study cognitive/emotional responses to breast cancer survivor narratives ($56,932)

*Alcoholic Beverage Medical Research Foundation, November, 2003*
Two year grant to evaluate effectiveness of interactive media at teaching youth about dangers of substance abuse ($100,000)

## Recent Professional Activities

Consultant, Pfizer Pharmaceutical, Clear Health Initiative (July, 2006)

Editorial board member, Media Psychology (November, 2006 to present)
Vice Chair, Information Systems Division, International Communication Association (June, 2005 – present)

## Recent Refereed Publications

Bolls, P.D. (in press), It's just your imagination: The effect of imagery on product versus non-product information in radio advertisements. *Journal of Radio Studies.*

Bolls, P.D. & Muehling, D. (in press), The effects of dual-task processing on consumers' responses to high- and low-imagery radio advertisements. *Journal of Advertising.*

National Urban and Community Forestry Advisory Council
*Advisory Council to the Secretary of Agriculture*

December 14, 2007
**Control No. 103- R5-C5-22**



Dr. Andy Kaufman
University of Hawaii at Manoa
3190 Maile Way Rm. 102
Honolulu, HI 96822

Dear Dr. Andy Kaufman:

We are pleased to inform you that **the University of Hawaii at Manoa** has been selected to submit a full proposal for the 2008 Challenge Cost-Share Grant program based on your pre-proposal entitled: **Beyond Tropical & Quaint: People's Psychophysiological Urban Forest Responses.** The rating committee was impressed with your pre-proposal and looks forward to your full proposal.

In your full proposal, the following items identified by the rating committee should be given particular attention.

*Evaluation-please strengthen your evaluation process and how one measures and tracks.*

*There was a question about subcontracting, please clarify what is the subcontracting role? Are you contracting them to take measurements of other sites?*

*General Note- any indirect cost rates are expected to be either reasonable, cost shared (split between Federal funds and match), or used as match. The council understands how entities base their indirect cost rate; however with limited funds they feel that most of the funds should focus going to the project. The council reviews the indirect cost rate as one of the significant factors in their decision to recommend a grant for an award.*

December 14, 2007
**Control No. 103- R5-C5-22**

Refer to the enclosed Selection Criteria for information on what your full proposal should cover. Following are some general suggestions. If you are naming a partner (or partners) that will be working with you on your project or will be contributing funds (in-kind or monetary) to your project, include a brief letter from your partner confirming their willingness to do so.

Be specific about the final outcome or product of your proposal. If the final product is a written document, will it be copyrighted or will it be available for others to copy? How many copies will be produced as part of the project? Will copies be available for others to use? . . . locally? nationally? What is your plan for distribution? Will there be a fee for receiving a copy? . . .
multiple copies? Will there be a fee if someone else wants to reprint the material in whole or in part?

Include a clear budget to help the rating committee understand how you expect to use the grant funds and where you expect to get funds for the 50 percent non-federal match. Do not request that the Federal funding be used to buy trees nor tree planting material, the purchase of equipment over $5,000, capital improvements to private property of any ownership, or land acquisition.

Include a time line to help the rating committee understand the proposed progress of your project.

There is no requirement or restriction governing the length of your full proposal (including attachments). It is important to make your proposal long enough to cover the relevant information but equally important to be concise. Send only information you think the reviewers will read. In other words, there is no "extra credit" for using up great quantities of our natural resources.

I have enclosed five documents: a Full Proposal Cover Sheet to complete and submit with all 30 copies of your full proposal, the Selection Criteria, a Sample Itemized Budget, a Full Proposal Check-off List, and Information Regarding Awards that will assist you in completing your proposal

To qualify for further consideration, your full proposal must be **received** in this office (not just postmarked) by close of business on **FRIDAY JANUARY 25.** Send 30 copies and an electronic version (can be emailed) of your entire proposal (each copy including the Full Proposal Cover Sheet and any/all attachments) to the address below. **Please do not enclose your proposals in folders or binders.** A staple in the top, left hand corner is preferred. We look forward to receiving your full proposal.

Sincerely,

Nancy Stremple, RLA
Executive Staff

CC:
Sandra Macias
State Forester HI
State UF Coordinator HI

Enclosures