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Directions for Hawai'i's Forest Industry for the Next Century

From wood and fiber to recreation and ecosystems services

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Koa remains the king of Hawai'i's forest industry at the start of the new century; however, new developments will likely take the industry in expanding directions in the decades to come. Other Hawai'i-grown woods are becoming increasingly popular. The industrial forestry sector will begin harvesting significant volumes of plantation-grown timber trees. Payments for ecosystem services, such as watershed protection, carbon sequestration, biodiversity protection, and ecotourism, may some day become more valuable than timber for some forest landowners.

The last two surveys estimated a total value of the Hawai'i forest industry of $28.9 million in 1991 and $30.7 million in 2001 (Yanagida et al. 1993, 2004). The 2001 survey, taken after the burst of the internet bubble and before the current boom in the housing market, showed that the forest industry as a whole held steady despite the decline of most agricultural industries during the 1990s. Retail sales of Hawai'i-grown wood products accounted for 78% of the industry in 2001, with koa products accounting for 75% of the value of retail sales (Friday *et al.* 2006). Other woods such as mango, milo, kou, 'ōhi'a, mahogany and eucalyptus are becoming increasingly popular. The Hawai'i Forest Industry Association has been instrumental in promoting the use

THIS MAGNIFICENT HANDCRAFTED TABLE ENTITLED "TOUCH ME" BY MATS FOGELVIK WAS FEATURED IN THE 2006 HFIA WOODSHOW. THE TOP IS MADE OF BOOKMATCHED MONKEYPOD WOOD, INLAYS PHEASANT WOOD, AND THE BASE OF MILO WOOD. PHOTO BY MATS A. FOGELVIK

REFERENCES:

Dudley, N. S. and J. E. Quinn. 2004. Hardwood lumber and wood product analysis for Hawai'i. www.state.hi.us/dlnr/dofaw/pubs/Hawaii%20Hardwood%20Market%20Study.pdf [accessed November 22nd, 2006].

Friday, J. B., J. F. Yanagida, P. Illukiptiya, R. J. Mamiit, and Q. A. Edwards. 2006. Characteristics of Hawai'i's Retail Forest Industry 2001. Economic Issues 8, CTAHR, University of Hawai'i at Mānoa, http://www.ctahr.hawaii.edu/oc/freepubs/pdf/EI-8.pdf [accessed November 22nd, 2006].

Goldstein, J. H., G. C. Daily, J. B. Friday, P. A. Matson, R. L. Naylor, and P. Vitousek. 2006. Business strategies for conservation on private lands: Koa forestry as a case study. Proceedings of the National Academy of Sciences 103(26): 10140-10145.

Yanagida, J.F., J.M. Halloran, U. Chakravorty, and D.J. Lee. 1993. Hawai'i's forest: An inventory and analysis of economic potential. Report to the Governor's Agricultural Coordinating Committee. CTAHR, University of Hawai'i at Mānoa.

Yanagida, J. F., J. B. Friday, P. Illukpitiya, R. J. Mamiit, and Q. Edwards. 2004. Economic value of Hawai'i's forest industry in 2001. Economic Issues 7, CTAHR, University of Hawai'i at Mānoa, http://www.ctahr.hawaii.edu/oc/freepubs/pdf/EI-7.pdf [accessed November 22nd, 2006].

of other Hawaiian grown woods through exhibits during the annual Woodshow. Over 1,000 retail establishments sell local wood products.

The current housing boom has no doubt fueled increased demand for high-end wood products for interiors, particularly koa. A market study conducted by the Hawai'i Agriculture Research Center and the J. Quinn Company predicted a growing market for Hawai'i-grown hardwoods, limited only by a consistent supply and quality (Dudley and Quinn 2004). The authors estimated that high-quality local hardwoods have the potential to supply 20 to 30% of the local hardwood market. The growth of the koa industry is limited by the current supply of koa. Serious reforestation of koa did not begin until the 1980s and early 1990s, so supply will be short until these young stands reach harvestable age 20 to 30 years from now. Landowners are currently experimenting with many other high-end plantation hardwoods such as mahogany, teak, toon, and tallowwood. However, the supply of these woods is not enough for architects and builders to specify them in projects and they remain specialty products.

Industrial forestry began a new phase in the mid 1990s with the establishment of tens of thousands of acres of eucalyptus plantations on the Big Island by PruTimber and on Kaua'i by the Hawaiian Mahogany Company. When harvests of these plantations commence, the total value of the timber will dwarf today's harvests and could likely double the value of the forest industry. If the proposed veneer mill for the Big Island is constructed, it will add greatly to the value of Hawai'i forest products.

It is important that future directions of the industry consider forest management and silviculture practices that sustain growth of Hawai'i's forests over time. It is equally important that Hawai'i's leaders recognize and support the future of healthy forests in Hawai'i.

While today's forest landowners rely on the traditional sources of timber and cattle for income, there are increasing opportunities to realize income from "ecosystem services". Natural resource economists are investigating ways for society to repay forest landowners for the services of keeping the water clean, protecting wildlife, and reducing the effects of global warming by sequestering atmospheric CO_2 in forest biomass. A recent study found that Kona landowners could maximize the value of their mauka pastures by planting koa and receiving payments through a proposed USDA conservation program (Goldstein et al. 2006). The program would pay landowners as an incentive to conserve native

biodiversity on their land. The payments for this ecosystem service outweighed the value of the likely timber harvests alone. Growers of plantation forests as well as growers of native forests could benefit from payments for carbon sequestration. Carbon sequestration payments in the US, however, are much lower than those in Europe, because the US government has not signed the Kyoto protocol. Nor is it known whether landowners receiving carbon payments could ever harvest any trees, even sustainably. The role of forests in protecting watersheds has long been known in Hawai'i. Both agricultural and urban areas depend on fresh water aquifers recharged by rainfall in mauka forested areas. In the future, forest landowners might be offered incentives to protect the forests and thus the water supply.

Hawai'i's forests will continue to be critically important to the state's economy, its environment, and the people and their culture. Benefits of Hawai'i's forests go well beyond wood and fiber products and include aesthetic value, recreational enjoyment, specialty forest products, water conservation, improved air quality, and many other amenities. Increased economic and development pressures to alter land use and management will continue to be challenges for the state's forest industry. It is important that future directions of the industry consider forest management and silviculture practices that sustain growth of Hawai'i's forests over time. It is equally important that Hawai'i's leaders recognize and support the future of healthy, productive forests in Hawai'i.

MAKING CONSERVATION PAY

ALIGNING CONSERVATION AND ECONOMIC REWARDS THROUGH KOA REFORESTATION

EXECUTIVE SUMMARY OF GOLDSTEIN ET AL. (2006) PNAS PAPER

Private, working lands, in complement with public lands, have an important role to play in achieving conservation goals throughout Hawai'i. A key step towards encouraging greater adoption of conservation practices on private lands is identifying ways to align conservation and economic incentives in land management, in short, to identify business strategies that make conservation pay. According to a recent study from the June 27, 2006 edition of the Proceedings of the National Academy of Sciences, ranchers on the Big Island and throughout Hawai'i could increase their cash flow—and hold onto their land—by reforesting pasture with native koa trees.

"In Hawai'i, many ranchers are trying to find ways to keep their land and maintain their way of life," said Joshua H. Goldstein, lead author of the study and a doctoral candidate in Stanford University's Interdisciplinary Graduate Program in Environment and Resources. "Our research shows that ranchers could earn a net present value of $1,661 per acre (14.7% internal rate of return) by combining timber harvest with federal payments to plant native trees. This high return creates a strong economic incentive for investment in pasture reforestation."

In the study, Goldstein and his colleagues focused on private ranchlands in the Kona region that once held large stands of koa trees, a species that grows up to 100 feet tall and is found only in Hawai'i. Koa forests began disappearing in the 18th century with the introduction of livestock and logging on the islands. Studies have shown that the disappearance of koa has had a major impact on ecological services, particularly for native wildlife.

From a business perspective, three financial barriers of converting pasture to koa forest must be addressed: high upfront costs of restoring forest cover; a 35 to 45 year wait before timber revenue would be available; and uncertainties about the future that could change the value of koa. Using financial models, the research team compared several business strategies designed to make koa reforestation economically attractive to Kona's cattle ranchers.

The most financially attractive strategy for ranchers, which earned a net present value of $1,661 per acre (14.7% internal rate of return) over a 50-year time horizon, involved combining timber harvest with federal incentives through

the U.S. Department of Agriculture's Conservation Reserve Enhancement Program (CREP). This program is advancing conservation in 24 states on millions of acres of land, and the proposed program for Hawai'i is currently under evaluation by DLNR. Hawaiian landowners participating in the program would receive cost-share and rental payments to protect and restore environmentally sensitive lands.

"Without government incentives, ranchers restoring koa could earn $453 per acre (8.8% internal rate of return), but they would have to wait at least 35 years to harvest their first tree after spending $1 million in total project costs for a 500-acre parcel," Goldstein said. "With CREP payments for reforestation, habitat maintenance, and land rental, ranchers make money from year one."

In addition to the scenario combining timber harvest with CREP payments, the researchers examined strategies combining koa reforestation and limited cattle grazing on the same acres, participating in the Hawai'i Forest Stewardship Program, and paying ranchers for the carbon that koa trees store, which helps mitigate climate change. All strategies, except one based solely upon selling carbon credits, have positive projected net present values, creating a menu of options available to landowners with diverse interests and situations.

"How we approach environmental problems has changed a lot over the past decade," said co-author Gretchen Daily, professor of biological sciences at Stanford University. "A new vision unites people who would never have dreamed of working together in

the past. It is a vision of making conservation economically attractive and commonplace—by finding ways to align short-term best interest with long-term public benefits."

"A large fraction of native Hawaiian biota is associated with koa forests, including endangered birds and some rare native plants," the researchers noted. "Finding economically viable means of reforesting degraded pastureland helps landowners and Hawai'i's unique plants and animals."

Other co-authors of the study are James B. Friday, forestry specialist at the University of Hawai'i-Mānoa College of Tropical Agriculture and Human Resources; Pamela A. Matson, the Chester Naramore Dean of the Stanford School of Earth Sciences; Rosamond L. Naylor, senior fellow at Stanford's Freeman Spogli Institute for International Studies; and Peter Vitousek, the Clifford G. Morrison Professor of Population and Resource Studies at Stanford. Financial support for the research was provided through an Environmental Ventures Project grant from the Woods Institute for the Environment at Stanford and a National Science Foundation Graduate Research Fellowship.

REFERENCES:

Goldstein, J.H.; Daily, G.C.; Friday, J.B.; Matson, P.A.; Naylor, R.L.; and Vitousek, P. 2006. Business strategies for conservation on private lands: koa forestry as a case study. *Proceedings of the National Academy of Sciences*, 103(26): 10140-10145.

Koa Mills of Hawai'i

BY TED GOMES, HONOMALINO WOOD MILL

If we could all pull together, imagine the vibrant native koa forests we could bring back throughout the islands for future generations.

Here in Hawai'i, there are three basic givens of sawmills that primarily mill koa wood: 1) they are all small, averaging between two to five people; 2) they all engage in logging to provide koa logs for their mills; and 3) most logging/sawmills operate on a monthly rollover timber license lease with the landowners on which they do their harvesting. The combination of high costs and uncertain timber supply makes logging and milling difficult businesses to run.

Even when landowners offer a yearly or five-year koa timber license, they will have a termination clause included to cease logging within one week or 60 days (which has nothing to do with terminations due to violations). This, in effect, makes the long-term timber license meaningless for the sawmill operator to arrange financing to purchase equipment. This uncertainty is the main reason most operators start small and stay small.

To harvest koa logs, the operator must lease or purchase a bulldozer and an all-wheel drive truck equipped with a self-loading crane to skid logs and to make and repair roads in the harvesting terrain. Even small items such as chainsaws cost about $1,000 each. Add on insurance, fuel, tires, labor, equipment parts, and stumpage fees and there is a significant investment before the logs have even reached the mill.

The very essence of a scarce and precious commodity, such as koa, requires that it be

sawn on a mill that provides the highest yield possible. Again the operator is confronted with investing in better milling equipment to avoid waste; at the same time he needs a machine that can mill quickly to help lower labor costs. Naturally, such mills cost more and the mill operator needs forklifts, edgers, working and storage sheds, saw sharpeners, and welding equipment - the list goes on. Each logging /milling operator buys and finances all this equipment and operating costs through some kind of loaning institution (unless born with that silver spoon).

Considering the very small number of the Hawai'i Forest Industry Association's over 200 members that are in the actual logging and milling business (~30), this small engine pulls a lot of freight. Of all the business ventures available, harvesting and milling timber ranks as one of the most dangerous and hardest, as well as one of the most expensive. Some small mills operate primarily for their own wood working shop, taking their wood to a higher end use. This certainly helps offset the logging and milling operating costs.

Stumpage fees (the price that loggers pay landowners per board foot for the right to harvest) vary depending on location, terrain, amount of harvestable koa, and other stipulations set by the landowner/manager. Usually good homework and realistic expectations by both parties will conclude in a verbal or written contract within a couple of months. While most contracts are short term, once the landowner becomes comfortable that the logger is conducting his harvesting with the landowner's best interest at heart, it is not unusual for the logger to remain on the property until the harvesting is complete, at times even when the property changes ownership.

Gone are the days of "pick and choose" when a logger entered a forest with a tract of prime trees available to be harvested. With most koa logging operations restricted to scavenging for windfalls, dying or dead standing trees, it is to be expected that the harvesting costs increase. Some landowners and managers recognize the fact that trying to "salvage as much as possible" puts extra costs on the logging operation and offer the logger a tier stumpage fee. Good quality logs command a premium stumpage price and low yield, short, small, or crooked logs command lesser stumpage fees. This creates an incentive to utilize as much of each salvageable tree as possible. Not only is it costly and time consuming to be chain sawing low-yield logs and small branches, hauling them to a landing and out to a mill adds more to the whole operation.

Gone are the days of "pick and choose" when a logger entered a forest with a tract of prime trees available to be harvested.

In the last ten years, the two biggest happenings that have made me feel

optimistic are The Nature Conservancy's reforestation and forest management program in South Kona and Kamehameha Schools'/ Bishop Estate's reforestation program. TNC is showing the way to do it right, although whether they ever do become a working showcase on sustainable harvesting remains to be seen. Kamehameha Schools' Hōnaunau Forest is one example of a working model that other large landowners and the state can follow.

Up-front costs, as well as the need to persevere for the long term, are the biggest obstacles. If we could all pull together, imagine the vibrant native koa forests we could bring back throughout the islands for future generations.

ABOVE RIGHT: JOSH JOHANSEN BREAKING DOWN A LARGE KOA LOG WITH A LUCAS PORTABLE SAWMILL.

RIGHT: JOSH JOHANSEN HOLDING A SIX FOOT BAR CHAINSAW AFTER SPLITTING A KOA LOG TOO LARGE FOR SELECT BAND SAWMILL.

PHOTOS BY TED GOMES

The Value of Managing *Acacia koa* Forests

BY TRAVIS IDOL, PAUL SCOWCROFT, NICKLOS DUDLEY, PETER SIMMONS, KAMAKANI DANCIL, AND J. B. FRIDAY

...currently demand for most koa wood products well exceeds supply.

Koa forestry in Hawai'i is literally growing every year. From small timber plantations to large pasture reforestation projects, landowners are interested in growing *Acacia koa* for economic, environmental, and cultural values. Maximizing the value of koa forestry requires sound management based on site conditions and landowner objectives. Researchers at the University of Hawai'i at Manoa (UHM), US Forest Service (USFS), and Hawai'i Agriculture Research Center (HARC) have been cooperating with private and public landowners to develop and evaluate key aspects of koa management. This article provides an update on their progress.

Tree Selection for Productivity and Disease Improvement

Koa leaf, growth, and wood quality characteristics are assumed to have a strong genetic basis and thus could be used in a selective breeding program. Early outplanting trials by UHM and HARC intended for selective breeding began to fail as young trees started dying in large numbers of a vascular wilt disease. At the HARC Maunawili planting site on Oahu, outplanting survival ranged from a low of 4.0% to a high of 91.6%.

Investigation led to the identification of the supposed pathogen, the soil-borne fungus *Fusarium oxysporum* f. sp. *koae*. Current research suggests the disease may be due to a combination of pathogenic fungi working in sequence or in concert (James 2004). Genetic selection work has now shifted to identifying those seed sources that maintain tolerance after exposure to the pathogen(s). Trees from several seed sources outplanted more recently appear relatively unaffected by the disease and continue to grow vigorously. Nick Dudley from HARC is using a rapid screening protocol developed jointly by UHM and the USFS to test young koa seedlings for wilt tolerance prior to outplanting. Dr. Scott Nelson at UHM has successfully grafted koa seedlings onto the rootstock of related species (such as *Acacia confusa* or *A. mangium*) that generally grow well at low elevations where koa plantations often fail (Nelson 2006). If these efforts improve long-term outplanting survival, then attention can shift back to improving the growth characteristics of plantation koa.

Stand Management

In dense naturally regenerated koa stands, there may be a need for thinning in order to favor and select the best trees for timber production. Beyond thinning, there are

concerns about competition between trees and pasture grasses for water and nutrients, especially for phosphorus (P).

With these issues in mind, UHM, HARC, and USFS researchers partnered with landowner Kamehameha Schools to apply silvicultural treatments to a large block of 20-25 year-old koa at Keauhou Ranch on the Big Island (Scowcroft et al. 2007). Combinations of thinning, herbicide for grass control, and P fertilization were applied over several years, and the growth response of crop trees was monitored *(Fig. 1)*. Results after three years show an additive effect of the treatments *(Fig. 2)*. When thinning was combined with grass control and P fertilization, growth rates doubled compared to doing nothing. Growth responses were also positively related to crown size and fullness. Soil P levels remain high several years after the last fertilizer application. The team is now planning to test these treatments in other locations that differ in stand age, soil type, and rainfall.

FIGURE 1. A VIEW FROM BELOW OF A TYPICAL KOA CANOPY TREE SELECTED FOR "CROP TREE RELEASE" THINNING. NEIGHBORING TREES WERE THINNED BASED ON AN INSPECTION OF OVERLAPPING CROWNS.

PHOTO BY J.B. FRIDAY

REFERENCES

FRIDAY, J. B, C. CABAL, AND J.YANAGIDA. 2000. Financial analysis for tree farming in Hawai'i: A sample workbook. College of Tropical Agriculture and Human Resources, University of Hawai'i, http://www.ctahr.hawaii.edu/forestry/Data/publications.asp.

JAMES, ROBERT L. 2004. Fusarium Colonization Of Seeds, Seedpods, And Diseased Seedlings Of Acacia Koa From Hawaii. *Nursery Disease Notes* No. 159, USDA Forest Service Northern Region.

Nelson, S. C. 2006. Grafting of Acacia koa Gray onto young Acacia seedlings. *Native Plants Journal 7*(2): 137-140.

SCOWCROFT, P. G., J. B. FRIDAY, T. IDOL, N. DUDLEY, J. HARAGUCHI, AND D. MEASON. 2007. Growth Response of Acacia koa Trees to Thinning, Grass Control, and Phosphorus Fertilization in a Secondary Stand in Hawaii. *Forest Ecology and Management* 239:69-80.

Table 1. Summary of Koa Forestry Establishment Costs.

OPERATION/ MATERIALS	COST ($) PER ACRE
Mechanical Site Preparation	580
Chemical Site Preparation	200
Seedlings	350
Planting	200
Fertilizer Application	220
First Competition Spray	175
Second Competition Spray	175
Singling	65
TOTAL	**1965**

Costs and Benefits of Koa Management

The benefits of koa forestry must be balanced against the costs incurred. Typically, establishment is the most expensive part of the operation. Kamehameha Schools has recently received sustainable forestry certification for their Honaunau forestry management plan. Their calculated establishment costs for koa regenerated in open pasture are included in *Table 1*. Site preparation accounted for 40% of the total. Early management after planting was more expensive than purchasing and planting the seedlings themselves. Proper site preparation and seedling management are critical to maximize survival and early growth.

Costs associated with mid-rotation management as described in the previous section are listed in *Table 2*. Transportation to the site and labor needed to apply the treatments and conduct the follow-up inventory were the main costs. Applying the full regimen of treatments can result in a shorter rotation length to grow trees of a given diameter. For a 12-in diameter tree, projections are that the rotation age could be shortened from 42 to 31 years (Scowcroft et al. 2007). For a 16-in diameter tree, the rotation age could be shortened from 67 to 41 years. Although 30-year projections of koa wood prices are speculative at best, currently demand for most koa wood products well

Table 2. Summary of Mid-Rotation Koa Silviculture Cost Categories

Silvicultural Treatment	Person-Days	Travel-Days	Expendable Supplies
	(per acre)		
Thinning[1]	1.2	1.2	chainsaw fuel, oil
Fertilization	6.5	1.6	270 lb TSP[2]
Grass control[3]	0.72	0.36	2700 ft^2

[1]Thinning accomplished via double-ring girdling with chainsaws

[2]TSP = triple super phosphate hand-broadcast from backpack containers

[3]Herbicide = Fusilade brand applied at the recommended rate from backpack sprayers

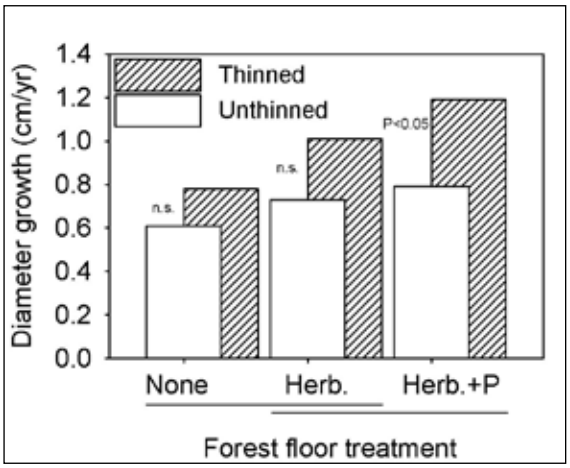

FIGURE 2. KOA CROP TREE GROWTH RESPONSE TO THINNING AND OTHER SILVICULTURAL TREATMENTS. ONE INCH = 2.54 CM.

exceeds supply. Under such market conditions, the return on investment should exceed costs. In addition, commercial thinning is an option for older stands that would help cover the cost of management. A spreadsheet can aid in financial calculations (Friday et al. 2000). Managed forests might yield 8,000 board feet per acre in 35 years and 10,000 board feet per acre in 40 years. With the costs given above, break even stumpage at a 4% discount rate would be $1,925 per thousand board feet. Break even stumpage at an 8% discount rate would be $6,100 per thousand board feet. While such values seem high today, real values of koa stumpage have increased by more than this in the last 20 years.

Summary

For koa to remain Hawaii's premier tropical hardwood, appropriate management is required from site preparation through harvest and processing. Researchers and specialists from public and private institutions, partnering with Hawaii's forest land owners and managers, are working together on several fronts to develop the tools and information needed. Although the challenges are sometimes great, results from these early studies suggest these efforts can result in higher returns on investment and a healthy, sustainable forest for generations to come.

About the Hawaii Forest Institute

IN 2003, THE HAWAII FOREST INDUSTRY ASSOCIATION (HFIA) FORMED THE HAWAI'I FOREST INSTITUTE, A 501(C)3 NONPROFIT ORGANIZATION. THE PURPOSE OF THE INSTITUTE IS TO PROMOTE THE HEALTH AND PRODUCTIVITY OF HAWAI'I FORESTS THROUGH SCIENTIFIC RESEARCH AND EDUCATIONAL PROGRAMS IN FORESTRY MANAGEMENT PRACTICES AND FORESTRY RELATED ENTERPRISES.

About the Hawaii Forest Industry Association

THE HAWAII FOREST INDUSTRY ASSOCIATION (HFIA) IS A 501(C)(6) NOT-FOR-PROFIT ORGANIZATION INCORPORATED IN HAWAI'I IN 1989. HFIA WAS FOUNDED BY AND FOR PEOPLE INTERESTED IN MANAGING AND MAINTAINING HEALTHY, SUSTAINABLE, PRODUCTIVE FORESTS. HFIA IS THE SOLE MEMBER OF THE HFI. HFIA'S MEMBERSHIP CONSISTS OF A DIVERSE GROUP OF APPROXIMATELY 200 INDIVIDUALS AND BUSINESSES INCLUDING FORESTRY PROFESSIONALS, LANDOWNERS, SAWYERS, WOODWORKERS, ECOTOURISM OPERATORS, ENVIRONMENTALISTS, NURSERYMEN, GOVERNMENT OFFICIALS, AND INTERESTED CITIZENS.

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A Message from Steve Smith, President

It is with great pleasure that the Hawai`i Forest Institute (HFI) presents this second issue of the Hawai`i Forest Journal (HFJ).

This exciting new magazine debuted in 2006 with a standout opening issue that received numerous positive comments from readers of the over 1,000 magazines that were sent out.

This second issue features articles from several different sources within the broad category of "Native Forestry and Forest Products".

I encourage everyone to read HFJ from cover to cover and reflect on the thought-provoking and invigorating articles. They provide stimulating insights into the nature and future of a portion of our forestry sector in Hawai`i.

Upcoming issues of the Journal will offer more insights into other sectors of the fascinating and expanding field of Hawai`i forestry.

The Journal would not be possible without the strong support of our sponsors who are recognized for their contribution below. Mahalo nui loa to all the sponsors from the administrator and directors of the Hawai`i Forest Institute and our HFJ readers.

In closing, I want to acknowledge the work that my predecessors put into the HFI and its projects. Past Presidents Sally Rice and the late Tommy Crabbe started the Journal and the Institute off on the right foot and got things moving in a very positive direction. We all owe them a debt of gratitude for their tireless efforts.

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Hibiscus brackenridgei

Hibiscus brackenridgei is an endangered Hawaiian endemic plant and the official state flower of Hawai'i.

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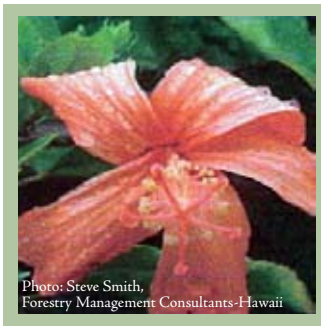

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Koki'o 'ula'ula

Hibiscus koki'o ssp. saintjohnianus

Subspecies sain johnianus is named in honor of Dr. Harold St. John of the Bishop Museum.

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