Hawaiian Rainforest Being Felled

Woodchipping operation decried by scientists as sorry model for bioenergy development

Despite pleas from biologists from around the country, a chunk of what is said to be Hawaii's last remaining lowland rainforest is being chewed up at the rate of several acres a day to supply woodchips for electric power generation.

At issue is a 3300-acre tract dominated by 'ōhi'a trees (Metrosideros), hardwoods of the myrtle family that reach a height of 100 feet. These trees, many of them several centuries old, are interspersed with lava flows of varying ages on the Campbell Estate, one of the large private holdings on the island of Hawaii, known as the Big Island.

Last year, Bio Power Corp., a Honolulu-based company, signed a contract to supply biomass to a sugar mill that produces energy for the Hawaii Electric Power Company. Bio Power arranged with the Campbell Estate to clear the tract, which the estate then intends to convert to grazing land. Bio Power has so far cleared about one-third of the area, using machines that can reduce a tree to chips in 30 seconds.

The company has ignored protests by local environmentalists who at one point tried to sabotage some of the machinery. In December, Dieter Mueller-Dombois, a University of Hawaii botanist, tried to intercede in the matter. Bio Power president Warren Ramsey responded that the company would reconsider its plans if Mueller-Dombois could prove that the wood-chipping activities would cause "irreparable damage."

There being no existing inventory of the land in question other than a rather crude forestry survey done in 1957, Mueller-Dombois prepared a report of his own, in which he argued that the Campbell Estate land encompassed "the best original or primary lowland rainforest left in Hawaii." He noted among other things that the area is of unique research value because it represents all stages of forest "from nearly barren lava flow to mature and senescing rainforest." He urged that the company transfer its operations to fast-growing and abundant eucalyptus trees, and asked it to harvest the 'ōhi'a forest in a checkerboard pattern, so that it stood a chance of regeneration, if cessation of operations was unfeasible.

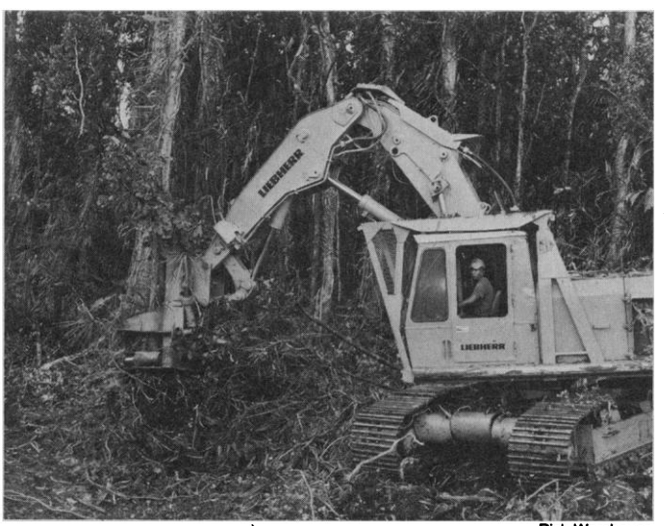
Ramsey then asked University of Hawaii botanist C. H. Lamoureux to advise the company on whether or not the area in question was "unique." Lamoureux prepared a vegetation map of the area and said the forest was unique in being part of a continuous upland to lowland native ecosystem. The company responded by demarking a 200-acre batch of trees that it said it would refrain from harvesting for 2 years.

Meanwhile, Mueller-Dombois says he was under the impression that the company planned to move its operations to a state-owned eucalyptus plantation once it obtained the proper clearances. He also thought Ramsey planned to heed his plea that a 100-meter-wide strip of native forest bordering a large 1977 lava flow be left so that the flow would eventually be recolonized by native species.

Ramsey, when called by *Science*, said he had made no such agreements. The company got permission to move in on the eucalyptus on 1 May but 'ōhi'a chipping continues apace. Trees have been felled right to the edge of the area deforested by the lava flow. Ramsey said Lamoureux had assured the company that the entire area was not unique, and that the company is "doing exactly what he has asked us to do."

Oswald Stender, chief executive officer of the Campbell Estate, says the contract was entered into on the basis of a state study which called the forest a "prime biomass resource." He says none of the area is untouched, as evidenced by the presence of nonnative species such as mangoes and kukui nuts. Furthermore, he says documents show that the American Mahogany Company harvested there in the early part of the century.

Although Stender says the 200-acre tract being preserved protects the area Lamoureux designated as the most untouched, Lamoureux says he has "no idea what 200-acre tract they're talking about," and that the suggestion that he approved the company plan is an "out and out misstatement." He says such a small area could easily find itself submerged in the lava flows that come forth from the neighboring Kilauea volcano every few years. Mueller-Dombois adds that there is no way an area containing centuries-old trees could have been harvested. (Of the age of the trees, Stender says: "That's his opinion.") Both Lamoureux and Mueller-Dombois agree that the whole tract, which supplies habitat for many native bird species, is unlikely ever to regenerate if more than half of it is destroyed.



Rick Warshauer

Tree shear

Bio Power's machine cuts trees off at the base. Wood chipper can reduce a 100-foot tree in 30 seconds.

Opponents of the project have few strings to pull since the operation is perfectly legal, being on private land. Furthermore, there are tax advantages for clearing the land, which is zoned for agricultural use (a designation made 20 years ago). None of the flora or fauna are protected under the Endangered Species Act although the 'io, a native hawk, is said to be in trouble in some areas. John Lockwood, a volcanologist on the Big Island, went to court in March to seek a suspension of the harvesting, but the judge dropped the case because of the absence of legal grounds.

Mueller-Dombois and other scientists have written to Hawaiian officials and to the state's congressional delegation, but they say that most elected officialdom is highly sensitive to the interests of developers. Lamoureux observes, for instance, that "every time a plant is proposed for endangered listing the state government has always opposed the listing" because it doesn't want to tie up land. Peter M. Vitousek, a biologist at Stanford University who has lived in Hawaii, says environmentalists and developers in the state are "tremendously polarized," so civil avenues of communication are in short supply. The Hawaii Nature Conservancy is studiously staying out of the conflict.

The islands of Hawaii are fabulous repositories of plant and animal species that exist nowhere else. Hawaiians take great pride in their natural heritage, but there is not much organized action on its behalf. Researchers are sparse, much of the land has still not been surveyed, and thousands of species still await classification.

As Mueller-Dombois points out, the significance of the conflict goes way beyond the future of Hawaii. "How can we expect developing countries to save some of their tropical rainforests if we cannot even do it in the U.S.A.?" he asks. Hawaii has been cited as potentially an ideal United States model for the successful marriage of economic development and environmental protection. Yet it is doing things that would not be condoned if it were a client of the Agency for International Development.

The 'ōhi'a chipping operation offers further irony as a case of bioenergy gone awry. The conversion of renewable biomass and wastes is touted by many scientists as the most environmentally and economically sound way to meet energy needs in the Third World. Indeed, the East-West Center at the University of Hawaii is one of the world's primary centers for bioenergy research. But the center's activities are all directed toward developing countries, and when one of its scientists wrote a newspaper to protest the destruction of nonrenewable resources on the Campbell Estate, he was chastised by a state forester for being a traitor to his profession.

Sanford Siegel, chairman of the University of Hawaii botany department, says the bright side of the dispute is in the evidence that Hawaii may be on the threshhold of a public "dialogue" over the environment. Ten years ago, he says, "anybody with an environmentalist label on them was the enemy."

—CONSTANCE HOLDEN

Environmental Leadership in State of Flux

The environmental community has been in flux lately. Several major environmental groups have appointed new leaders, and the Conservation Foundation and World Wildlife Fund may merge.

- The Sierra Club has named as its new executive director Douglas Wheeler, who is currently president of the American Farmland Trust, a nonprofit group concerned with soil conservation and the protection of farmland. He was deputy assistant secretary of Interior in charge of the National Park Service and the Fish and Wildlife Service in the Ford Administration. Wheeler, a lawyer, will take office on 1 July, succeeding J. Michael McCloskey, who has headed the organization for 16 years.
- National Audubon Society in April named Peter Berle as its new president. Berle, a lawyer and former commissioner of the New York State environment and natural resources agency, will succeed Russell Peterson, who is retiring on 1 August.
- Friends of the Earth in January appointed Karl Wendelowski as its executive director. Wendelowski comes to the post from Nutritional Management, a medical services company in Chicago. He trained in business management and engineering and has managed an Antarctic research station supported by the National Science Foundation.
- The Environmental Defense Fund is now headed by Frederic Krupp, who is a lawyer and was most recently the director of the environmental group, Connecticut Fund for the Environment.

The heads of the Conservation Foundation, William Reilly, and World Wildlife Fund, Russell Train, have proposed to combine the two groups to bring together the foundation's policy-making skills and the wildlife fund's strengths in the natural sciences. The details are to be hammered out this summer before the proposal is put before the boards of the two groups for approval.

The idea for the merger came from Reilly and Train, who have been close personal friends since the early 1970's when Train led the Council on Environmental Quality and Reilly was a member of his staff. Train was also president of the Conservation Foundation from 1965 to 1969. Reilly is said to be increasingly interested in focusing on international conservation efforts.—MARJORIE SUN

Stockman Relents on Landsat

David Stockman, director of the White House Office of Management and Budget, has apparently abandoned his opposition to the government-subsidized commercialization of Landsat. On 16 May he agreed to send Congress a supplemental budget request of $75 million for fiscal year 1985 and $50 million for fiscal year 1986.

The money will go to EOSAT, a consortium of RCA and Hughes that last year survived a bidding process for the right to take over Landsat from the National Oceanic and Atmospheric Administration (NOAA). The subsidy will ultimately total $250 million plus launch costs for the first two EOSAT satellites, and is designed to help the company develop a market for Landsat's remote sensing data.

Stockman, who has opposed the subsidy since it was agreed to last fall (*Science*, 12 October 1984, p. 152), has consistently refused to allow NOAA to request the money from Congress. Most recently, in March, he went to a group of four Republican senators and asked their help in killing the transfer, arguing that the market would never materialize, that EOSAT was putting none of its own money at risk, and that the subsidies would therefore continue indefinitely (*Science*, 19 April, p. 308).

EOSAT officials denied those assertions heatedly. But in any case Stockman's ploy seems to have backfired. One of the four senators was Paul Laxalt (R-Nevada), who chairs the appropriations subcommittee that oversees NOAA and its parent agency, the Commerce Department. After listening to Stockman he took an interest in the Landsat issue, became a strong supporter of EOSAT and the Landsat transfer, and began to press Stockman to approve it. As a close personal friend of President Reagan,