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A BIBLIOGRAPHY OF PLANT CONSERVATION IN THE PACIFIC ISLANDS: ENDANGERED SPECIES, HABITAT CONVERSION, INTRODUCED BIOTA

BY

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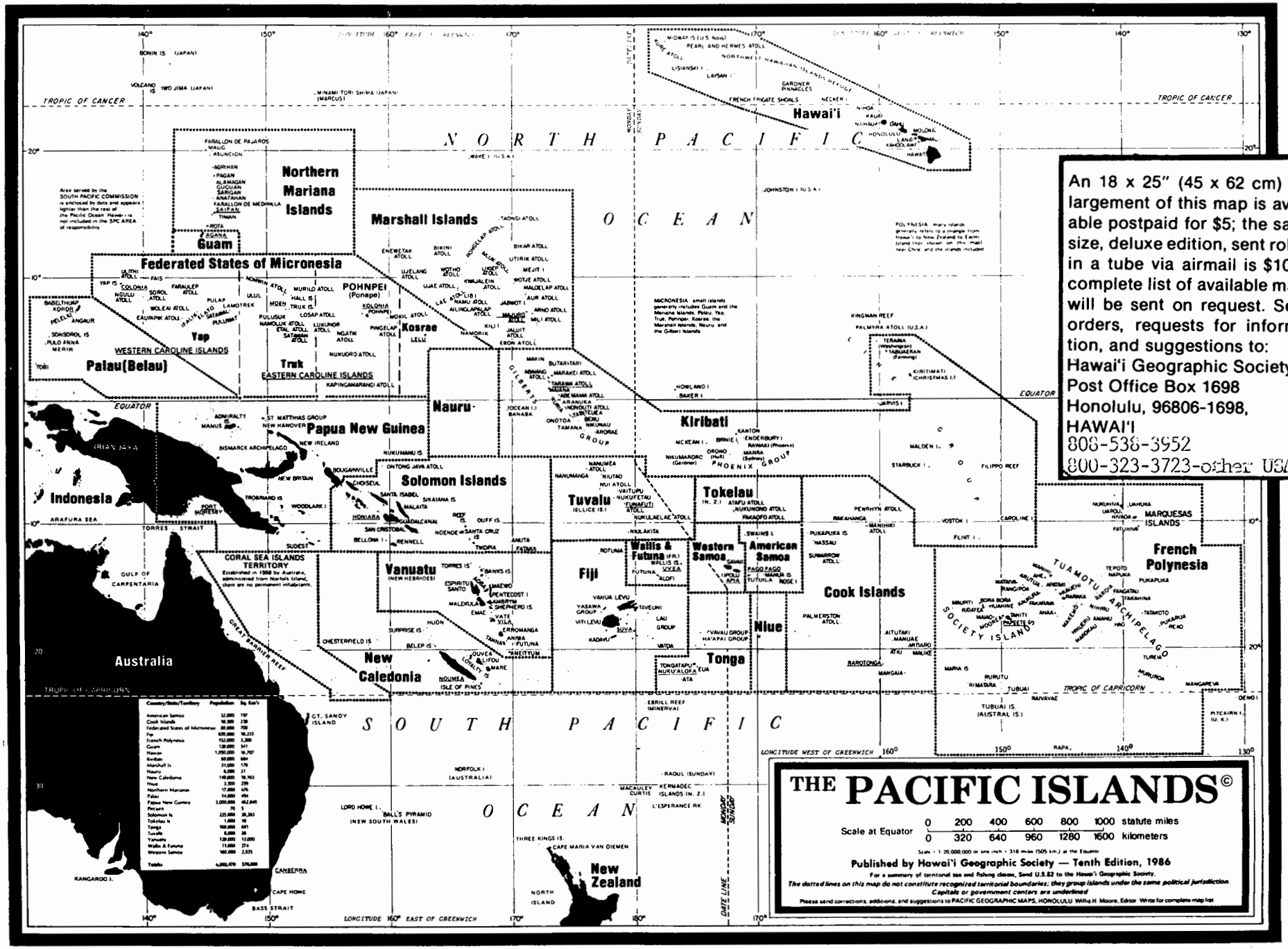

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A BIBLIOGRAPHY OF PLANT CONSERVATION IN THE PACIFIC ISLANDS: ENDANGERED SPECIES, HABITAT CONVERSION, INTRODUCED BIOTA

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Introduction

To plant conservationists who must fervently gather botanical intelligence against a time-frame of rapidly dwindling plant populations and habitats, the following statements expressed by M.-H. Sachet and F.R. Fosberg (1955, 1971) are both pertinent and self-explanatory:

> "The great unsolved problem of modern scientific methodology is that of bibliography, that of knowing what has been accomplished already. In starting any line of investigation the scientist is faced with the choice of ignoring his predecessors, possibly wasting much time on work that has already been done and missing valuable information and ideas, or of spending a large proportion of his time in study of current and past literature on the field. The latter alternative is preferable from almost any viewpoint, though the amount of time involved makes it very expensive...Any worker who, for his own investigation, explores the literature of a field with some thoroughness may do his colleagues a useful service if he presents the results of such a search in the form of an annotated bibliography. His familiarity with the contents of the papers examined may enable him to save later workers an enormous amount of time by indicating very briefly what the paper is, whether it contains original information and what aspect of the field is covered."

Plant Conservation Unit, Department of Botany, National Museum of Natural History, Smithsonian Institution, Washington, D. C. 20560

Several large regions of the world are plagued by conservation problems shaped around a particular inherent set of geographical, biological and human conditions which have been operational for varying periods of time. Typical of situations facing Latin America are the progress of economic development in Amazonia with its attendant loss of rainforest biodiversity, and the Central American "hamburger connection" involving conversion of forests to grazing land to support the export of cheap beef to the United States. Characteristic of Africa is the struggle with desertification in the Sahel and the terminally desperate fuelwood crisis there. Europe has its centuries-long history of urbanization and the deforestation of Mediterranean lands to contend with, while the similarly industrialized North American continent must deal with large-scale wetland drainage, the effects of high-technology terrain vehicles (swamp buggies, dune buggies, snowmobiles, motorcycles) on the landscape, as well as protecting the endangered cacti indigenous to the deserts from overexploitative commerce.

The 7,500 islands of the Pacific Ocean share a unifying theme in connection with environmental and ecological disturbances, for their island ecosystems are very sensitive and fragile, and easily susceptible to irreversible vegetational and erosional damage as caused by weeds, feral animals, and humankind. As noted by Arthur Dahl (1986), "The total land area of Oceania is very small, but the region has the world's highest proportions of endangered species,...and probably endemic species, per unit area or per inhabitant." In addition to the specialized and endangered flora of such isolated Pacific ecosystems, which are partly within the Cretaceous cradle of evolution of the first, primitive flowering plants, the Pacific islands usher us into their uniqueness by means of consideration of the sandalwood trade, the phenomenon of mass dieback of forests, the practice of total conversion of islands into coconut plantations for the copra trade, the impact of military operations during World War II, studies of radioactivity levels and nuclear detonations on the remote shores of selected atolls, and the serious degradation of the incomparably beautiful and productive coral reefs by crown-of-thorns starfish and silt from accelerated terrestrial erosion.

The geographical scope of this bibliography, on which research was concluded in May 1987, encompasses Micronesia, Polynesia and Melanesia, with boundaries including Clipperton, Cocos, Galapagos, Easter and Juan Fernandez Islands in the eastern Pacific; Norfolk, Lord Howe, New Hebrides, Bismarck, and Admiralty Islands in the south and western reaches of the ocean, and northwards to the Ryukyu and Bonin (Ogasawara) Islands. The coverage excludes a number of islands which are in a comparatively close proximity to

mainland, such as Japan, the Philippines, Borneo, and New Guinea, as well as the more distant and very large islands comprising New Zealand.

A number of people deserve my grateful thanks for their encouragement and assistance during this project. In the Department of Botany, Smithsonian Institution, I wish to thank Dr. F. Raymond Fosberg, Dr. Marie-Helene Sachet, Dr. Mark M. Littler, Royce Oliver; staff of the Plant Conservation Unit, S. Jane Villa-Lobos, Shirley L. Maina, and Olga Herrera-MacBryde; technical aid from Kim Barker, Karen Lee, Chris Tuccinardi and Marie Uehling; and botany interns Jeff Nekola and Orlo C. Steele for contributions to the geographical index and annotations, respectively. I would also like to acknowledge the help of Marsha Sitnik, Office of the Director, National Museum of Natural History, for supplying data on the Galapagos. I am particularly indebted to S. Jane Villa-Lobos for her critical assistance with computerization of the manuscript. Persons who also extended courtesies and supplied references include Mrs. Ruth F. Schallert (Librarian), Stephen D. Davis (IUCN Conservation Monitoring Centre, Threatened Plants Unit, Royal Botanic Gardens, Kew), Dr. Gustav Paulay (University of Washington, Seattle), and Dr. David S. Liem (Derwood, Maryland).

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Dahl, A.L. 1986. Review of the Protected Areas System in Oceania. 239 pp. Gland, Switzerland and Cambridge, England: IUCN and UNEP.

Sachet, M.-H. and F.R. Fosberg. 1955. Island Bibliographies: Micronesian Botany, Land Environment and Ecology of Coral Atolls, Vegetation of Tropical Pacific Islands. 577 pp. Washington, D.C.: National Academy of Sciences - National Research Council.

Sachet, M.-H. and F.R. Fosberg. 1971. Island Bibliographies Supplement. 427 pp. Washington, D.C.: Pacific Science Board, National Academy of Sciences.

Abbott, W. L. 1975. Ua man ke ea o ka aina i ka pono (The life of the land is perpetuated in righteousness). Defenders 50(6): 460.
A plea for non-violence to Hawaiian environment.

Acosta-Solis, M. 1963. Protection and conservation problems on the Galapagos Islands. Occasional Papers California Academy of Sciences 44: 141-146.
Suggests that all hunting, agriculture and human settlement should be prohibited on the islands or parts of islands to be declared as nature reserves.

Acosta-Solis, M. 1966. Problems of conservation and economic development of the Galapagos, pp. 282-285, in Bowman, R.I., ed., The Galapagos. Berkeley and Los Angeles: University of California Press.
General discussion of primary problems.

Adsersen, H. 1976. A botanist's notes on Pinta. Noticias de Galapagos 24: 26-28.
Analysis of goat damage to fern peat area on Pinta leads to the general conclusion that "three goats brought ashore on a tropical island may give rise to a population that in a mere 15 years can destroy an entire and unique plant community, which has taken thousands of years to become established."

Albert, H. 1986. Structure of a disturbed forest community replanted with Eucalyptus robusta on Wai'alae Ridge, Oahu, Hawaii. Newsletter Hawaiian Botanical Society 25 (2): 60-69.
Planting eucalyptus on this disturbed site effectively and rapidly regenerated forest cover, but there is evidence that the eucalyptus is spreading beyond the area originally planted.

Amerson, A. B. 1971. The natural history of French Frigate Shoals, northwestern Hawaiian Islands. Atoll Research Bulletin 150: 1-383.
Tern Island vegetation has been variously impacted by a U.S. naval air facility on the island in World War II, by the U.S. Coast Guard LORAN transmitting station, and by the subsequent arrival of weeds.

Amerson, A. B. 1973. Ecological Baseline Survey of Johnston Atoll, Central Pacific Ocean. 365 pp. Washington, D.C.: Ecology Program, Smithsonian Institution.
All original vegetation on Johnston Island was eradicated by the U.S. Navy in 1941-1942 during the building of runways.

Amerson, A. B., Clapp, R.B. and W.O. Wirtz. 1974. The natural history of Pearl and Hermes Reef, northwestern Hawaiian Islands. Atoll Research Bulletin 174: 1-306.

The atoll is part of the Hawaiian Islands National Wildlife Refuge. On Southeast Island, ironwood (Casuarina) trees were planted by the U.S. Navy in 1963 to increase the island's visibility from the ocean. As this was in violation of Refuge regulations, all trees not already dead were destroyed in 1964.

Amerson, A.B. and P.C. Shelton. 1976. The natural history of Johnston Atoll, Central Pacific Ocean. Atoll Research Bulletin 192: 1-479.
Terrestrial vegetation has been heavily disturbed by man.

Amerson, A.B., Whistler, W.A. and T.D. Schwaner. 1982a. Wildlife and Wildlife Habitat of American Samoa. I. Environment and Ecology. 119 pp. Washington, D.C.: U.S. Fish and Wildlife Service.
With the introduction of Western material culture, the only types of vegetation that were not exploited were the cloud forest, littoral scrub, littoral strand and montane scrub. Lists 15 potentially threatened or endangered plant species, 24 species requiring determination of population status, and 20 orchid species needing status studies.

Amerson, A.B., Whistler, W.A. and T.D. Schwaner. 1982b. Wildlife and Wildlife Habitat of American Samoa. II. Accounts of Flora and Fauna. 151 pp. Washington, D.C.: U.S. Fish and Wildlife Service.
Includes brief description and geographical range of potentially threatened or endangered plant species.

Anderson, A. 1979. The Blue Reef. 259 pp. New York: Alfred A. Knopf.
Contains history of detonation of nuclear devices on Enewetak Atoll. "Remarkably, he finds little apparent damage (to life forms) beyond the immediate vicinity of the blast points. Even there, he reports, the flora and fauna are not visibly different from life forms elsewhere in the atoll."

Anderson, J.A. 1972. Return to Eniwetok. Micronesian Reporter 20(3): 28-32.
Briefly describes the nature of devastation resulting from 1954 explosion of hydrogen bomb.

Animal Species Advisory Commission, State of Hawaii. 1974. Reviews of the Five-Year Forest Planting Plan for the State of Hawaii, Fiscal Years 1972-1976 and the Attendant Environmental Impact Statement, Department of Land and Natural Resources. 69 pp. Honolulu, Hawaii: Department of Land and Natural Resources.
During 1972-1976, the Department's intention was to plant in the various Hawaiian islands (Kauai, Oahu,

Maui, Molokai, Hawaii) 25,000 native trees, and the following amounts of introduced species: 119,000 Australian toon (Toona australis); 164,000 slash pine (Pinus elliottii); 816,000 rosegum (Eucalyptus grandis); and 962,000 saligna (Eucalyptus saligna).

Anonymous. 1942. Midway plants. Scientific American 167: 170.
Laysan Island vegetation was destroyed by rabbits in 1903.

Anonymous. 1954. Biological control in the Hawaiian Islands. Pacific Science Association Information Bulletin 6(2): 9-10.
Large areas of the islands are covered with exotic Lantana and Schinus terebinthifolius.

Anonymous. 1958. The Vegetation of Micronesia. 160 pp. Engineer Intelligence Study No. 257. Washington, D.C.: U.S. Geological Survey, Military Geology Branch.
Contains much data on causes of denudation and disruption of vegetation in all of the island groups.

Anonymous. 1966. Poro, a new mining and industrial centre in New Caledonia. South Pacific Bulletin 16(4): 25-26.
Regarding this nickel mine, it is ventured that "as a first step in the industrialization of the hinterland, Poro ...offers promising prospects of what New Caledonia could be like tomorrow."

Anonymous. 1967. Norfolk Island. IUCN Bulletin 2(2): 13.
Stands of native rain forest on Mt. Pitt and Mt. Bates are threatened by encroaching roads projects.

Anonymous. 1968. Chile: the Juan Fernandez Islands. IUCN Bulletin 2(8): 61.
Native plant species are declining due to introduced biota.

Anonymous. 1969a. Survey of rare and threatened plant species in the Pacific Basin. Association for Tropical Biology Newsletter 19: 12-13.
Announcement of a survey list to be prepared by Subcommittee on Nature Protection of the Standing Committee on Pacific Botany, Pacific Science Association.

Anonymous. 1969b. Phosphate prospecting begins. H.Q. Highlights 1 March 1969:4.
Palau phosphate mining could disturb vegetation.

Anonymous. 1973. Museum miscellany. Ka 'Elele 116-118:4.
Seeds of ohia (Sesbania tomentosa) and other endangered Hawaiian plants have been planted on the Bishop Museum grounds in Honolulu, in hopes of preserving the species.

Anonymous. 1977. The greening of Kauai. Marathon World 14(2): 10-13.
Concerns the Pacific Tropical Botanical Garden, whose mission is to grow endangered species.

Anonymous. 1978a. Gaining ground in Galapagos. IUCN Bulletin 9(5): 27.
Striking recovery of vegetation is seen after extermination of feral goats.

Anonymous. 1978b. Hide-and-seek orchid found. Bishop Museum News and Ka 'Elele 5(2): 3.
Rare endemic orchid, Platanthera holochila, rediscovered in Alakai Swamp bog, Kauai, in 1977.

Anonymous. 1979a. Rare and endangered species planted at Waimea Arboretum. Notes Waimea Arboretum 6(2): 7-10.
Lists names of Hawaiian endangered endemics in cultivation.

Anonymous. 1979b. Kokia cookei- extinction or survival? Notes Waimea Arboretum 6(1): 2-5.
Discusses Tokyo tissue culture attempts with this endangered Hawaiian malvaceous plant.

Anonymous. 1979c. Tree-fern logging on Hawaii. Oryx 15(2): 127.
Brief account of the activity is given.

Anonymous. 1979d. A plea for plants. IUCN Bulletin 10(2): 9,16.
Includes the endangered Hibiscus insularis, endemic to Philip Island and threatened by feral rabbits.

Anonymous. 1979e. Service lists 32 plants. Endangered Species Technical Bulletin 4(11): 1, 5-8.
Includes, from Hawaiian Islands, Lipochaeta venosa, Haplostachys haplostachya var. angustifolia, Stenogyne angustifolia var. angustifolia and Kokia cookei.

Anonymous. 1980. 'Ewa Plains 'akoko proposed as endangered. Endangered Species Technical Bulletin 5(10): 5-6.
Concerns Euphorbia skottsbergii var. kalaeloana.

Anonymous. 1981a. Serianthes nelsonii: an update. Notes Waimea Arboretum 8(1): 8-9.
New record of this plant for Rota; previously known only from four trees on Guam.

Anonymous. 1981b. Kokia cookei: progress report. Notes Waimea Arboretum 8(1): 8.
Several graftings of Kokia cookei onto K. drynarioides

have been planted at Waimea, Hawaiian Islands.

Anonymous. 1982. The Nature Conservancy in Hawaii. The Nature Conservancy News 32(3): 18-23.
Discussion of unique areas preserved in Hawaii.

Anonymous. 1983a. Les chevres et vaches de Rapa favorisent l'erosion de l'ile. Les Nouvelles (newspaper) 21 January. 3 pp.
Research of Gustav Paulay on Rapa, French Polynesia, concerning destructive action of sheep and goats on vegetation.

Anonymous. 1983b. An island at risk. Oryx 17(3): 109.
Incipient danger in proposed development of Henderson Island.

Anonymous. 1984a. IUCN Bulletin 15(7-9): 91.
Natural features of islands should preclude development.

Anonymous. 1984b. Easter enigma solved. IUCN Bulletin 15(1-3): 6.
Deforestation of Easter Island may have led to the collapse of the island's civilization. Loss of soil fertility as a result of deforestation may have undermined food production and caused out-migration of people. Sophora toromiro, the only Easter Island endemic plant, is extirpated in the wild.

Anonymous. 1985a. Koke'e logging: "maintenance"?. Elepaio 45(12): 131-132.
400 koa trees to be cut in Koke'e State Park, jeopardizing the most diverse mesic forests in Hawaii.

Anonymous. 1985b. Ohi'a woodchipping double talk. Elepaio 45(12): 132-134.
Deprecates the continuance of woodchipping in the United States' last lowland tropical forest, in Hawaii.

Anonymous. 1985c. Plan approved for three songbirds of the northwestern Hawaiian Islands. Endangered Species Technical Bulletin 10(2): 8-10.
Notes that the fragile ecosystem of Laysan Island was severely damaged early in this century after introduced rabbits multiplied and consumed virtually all the vegetation, resulting in a wasteland. As a direct result of this, several endemic terrestrial birds became extinct: the Laysan millerbird (Acrocephalus familiaris familiaris),Laysan honeycreeper (Himatione sanguinea freethi), and Laysan rail (Porzana palmeri).

Anonymous. 1985d. Kauai: the garden island. Hawaii 2(1) (Issue No. 3): 10-15.
Notes the problems of declining sugarcane acreage and

prospects of increased tourism in this relatively unspoiled environment.

Anonymous. 1985e. Northern Islands slated for preservation. Coastal Views(Saipan,Marianas) 7(2): 1,3,10; see also op. cit.7(3): 1,8-9 (1985).
Describes, with photos, four islands in Northern Marianas which will be given conservation protection status: Maug, Uracas, Asuncion, and Guguan. The island of Farallon de Medinilla, which is regularly bombed and strafed as a target range under the military lease agreement with the United States, is no longer considered a candidate for preservation.

Anonymous. 1985f. CNMI Northern islands win preservation. Information Bulletin (Pacific Science Association) 7(6): 57-58.
In November 1985, four uninhabited islands in the Commonwealth of the Northern Mariana Islands (Uracas (Farallon de Pajaros), Asuncion, Guguan, Maug) were set aside for purposes of conservation and preservation, including the plant species. The effects of past human habitation on Sariguan Island, including large populations of rats and wild goats, made that island a poor candidate for preservation status because many native species and habitats have been disturbed or destroyed.

Anonymous. 1986a. Endangered Species Act protection proposed for four plants. Endangered Species Technical Bulletin 9(10): 3-4.
In the Marianas, much of the habitat of Serianthes nelsonii has been destroyed by human activities, to the extent that only 64 of the plants survive on Rota, and only 2 remaining trees are on Guam.

Anonymous. 1986b. Two plants given final Endangered Species Act protection: Lanai sandalwood or 'iliahi. Endangered Species Technical Bulletin 11(2): 3.
Concerns Santalum freycinetianum var. lanaiense, of which only 39 individuals remain on Lanai (Hawaiian Islands). Introduced rats prey on its fruits, and it is also subjected to severe ecosystem disturbances.

Anonymous. 1986c. Found again. Species (Newsletter of IUCN-Species Survival Commission) 6: 20.
Formerly presumed extinct, Abutilon julianae (Malvaceae) from Norfolk Island was last recorded in 1912, but it was recently discovered on Philip Island, where vegetation once devastated by goats, pigs and rabbits is now regenerating.

Anonymous. 1986d. Recovering the Galapagos. IUCN Bulletin 17(4-6): 77.
"The IUCN, in cooperation with the Charles Darwin

Foundation, is attempting to reduce the threat posed to the Galapagos Islands native species by dozens of species introduced by man." Santiago Island still has the serious problem of 100,000 goats and 20,000 pigs.

Anonymous. 1986e. Mullein discovered in Haleakala National Park. Newsletter Hawaiian Botanical Society 25(3): 89.
A single common mullein plant (Verbascum thapsus) has been found near roadside at 9000 ft., and park employees are wary that potential infestation can be controlled.

Anonymous. 1987. Thyrsopteris elegans. IUCN Bulletin 18(1-3): SR12-SR13.
This tree-fern, along with 97 other plant species, is endemic to the Juan Fernandez Islands. More than half of these species are threatened by erosion created by the continuing spread of introduced animals, mainly feral cattle, sheep and goats.

Apfelbaum, S.I., Ludwig, J.P. and C. E. Ludwig. 1983. Ecological problems associated with disruption of dune vegetation dynamics by Casuarina equisetifolia L. at Sand Island, Midway Atoll. Atoll Research Bulletin 261: 1-19.
"It is clear that certain areas on Midway are being damaged for continued Navy use and altered for other uses. The cross runway is being invaded rapidly by ironwood (Casuarina). The runway aprons are almost completely invaded and root-heaving of the pavement by ironwood will probably destroy the runway in the 1980's. Similar problems are far more advanced on the Eastern Island runways."

Apple, R. and P. Apple. 1972. Again? Axis deer? Yes! Elepaio 32(9): 83.
Relates history and controversy over introduction of axis deer in Hawaiian Islands.

Atkinson, I.A.E. 1977. A reassessment of factors, particularly Rattus rattus L., influencing the decline of endemic forest birds in the Hawaiian Islands. Pacific Science 31(2): 109-113.
Includes section on introduced browsing mammals (cattle, horses, sheep, goats, English pigs) whose devouring of vegetation affected the food supply of the birds.

Aubert de la Rue, E. 1958. Man's influence on tropical vegetation. Proc. Ninth Pacific Science Congress 20: 81-94.
Examples cited include New Caledonian rain forest on serpentine massifs destroyed in process of mining nickel, chromium and cobalt; and the dangerously threatened limestone primary forests on Walpole I. and Makatea I. which are fated to disappear completely to permit the extraction of calcium phosphate deposits below

ground. Concludes with discussion by eight scientists.

Ayensu, E.S. and R.A. DeFilipps. 1978. Endangered and Threatened Plants of the United States. 403 pp. Washington, D.C.: Smithsonian Institution and World Wildlife Fund-U.S.
Lists 646 candidate endangered, 197 candidate threatened, and 270 presumed extinct plant species, subspecies and varieties in the Hawaiian Islands, which altogether comprise 50.6 percent of the indigenous flora.

Ayensu, E.S., Heywood, V.H., Lucas, G.L. and R.A. DeFilipps. 1984. Our Green and Living World: The Wisdom to Save It. 255 pp. Washington, D.C.: Smithsonian Institution Press.
Includes mention of vegetation status on Philip I., Norfolk I., Rose Atoll (American Samoa), Takapoto Atoll (Tuamotus), and Hawaiian Is.

Baines, G. 1984. Environment and resources: managing the South Pacific's future. Ambio 13(5-6): 355-358.
General discussion of critical issues.

Baker, J.K. and S. Allen. 1977. Hybrid Hibiscadelphus (Malvaceae) in the Hawaiian Islands. Pacific Science 31(3): 285-291.
Concerns progeny of H. giffardianus x H. hualalaiensis. Factors of hybrid fertility and gene flow "must be taken into consideration in any program designed to protect the genetic integrity of Hibiscadelphus taxa". Discovery of hybrid Hibiscadelphus has created much interest and controversy among those concerned with maintaining native species and ecosystem integrity.

Baker, R.H. 1946. Some effects of the war on the wildlife of Micronesia. Trans. Eleventh North American Wildlife Conference, pp. 205-213.
Effects of World War II on vegetation of Peleliu and Ulithi are considered.

Bakus, G.J. 1975. Marine zonation and ecology of Cocos Island, off Central America. Atoll Research Bulletin 179: 1-9.
Observes that feral pigs and goats roam the island.

Baldwin, P.H. and G.O. Fagerlund. 1943. The effect of cattle grazing on koa reproduction in Hawaii National Park. Ecology 24: 118-122.
Deleterious effects of cattle on Acacia koa.

Barrau, J. 1958a. Plant introduction and exploration in the South Pacific. South Pacific Bulletin 8(1): 16-19.
Duboisia myoporoides (Solanaceae) is a wild plant of New

Caledonia that potentially could be grown commercially for medicinal purposes.

Barrau, J. 1958b. Beware of this attractive noxious weed. South Pacific Bulletin 8(3):7.
Cryptostegia grandiflora(Asclepiadaceae), the "Indian rubber vine", is invading pastures of western New Caledonia.

Barrau, J. 1959a. Marquesas journey. South Pacific Bulletin 9(1): 18-21, 35.
"In many islands one finds at altitudes varying between 1,500 and 2,400 feet, vast grassy patches containing graminaceae (sic) and ferns of the Gleichenia type. These represent the final stage of the severe degradation of the vegetation caused by man and animals introduced since the arrival of the white man. This degradation often goes hand in hand with bad soil erosion."

Barrau, J. 1959b. The tamanu tree. South Pacific Bulletin 9(2): 44.
Kernels of Calophyllum inophyllum (Guttiferae) are exported to the French cosmetic industry from Tahiti. "There is certainly sufficient demand to demonstrate that local wild plants of the South Pacific Islands can sometimes be a source of cash income."

Barrau, J. 1960a. Plant exploration and introduction in Micronesia. South Pacific Bulletin 10(1): 44-47.
"Guam was on the route of the Spanish galleons which sailed across the Pacific linking Central America and the Philippines. This explains why so many plants of American origin were introduced into this island."

Barrau, J. 1960b. The sandalwood tree. South Pacific Bulletin 10(4): 39, 63.
Recounts the history of sandalwood decimation in Fiji, Juan Fernandez Is. and Hawaii, and lists the species of Santalum in Oceania.

Barrau, J. 1967. Les hommes, les plantes et la mer en Oceanie tropicale. Cahiers du Pacifique 10: 59-78.
Review of the history of introduced Pacific sustenance plants.

Barrau, J. 1981. Indigenous and colonial land-use systems in Indo-Oceanian savannas: the case of New Caledonia, pp. 253-265, in Harris, D.R., ed., Human Ecology in Savanna Environments. London: Academic Press.
Account of the European bastardization of a formerly stable ecosystem.

Barrau, J. 1983. La diffusion humaine des vegetaux et des animaux envisagee d'un point de vue biogeographique. C.

R. Societe Biogeographie 59(1): 19-27.
Island ecosystems such as New Caledonia provide examples of biogeographical changes caused by the diffusion of plants and animals by man.

Barrau, J. and L. Devambez. 1957. Quelques resultats inattendus de l'acclimatation en Nouvelle-Caledonie. Terre et Vie 104(4): 324-334.
Effects of introduced deer and plant species on New Caledonian vegetation.

Bartley, W.S. 1954. Iwo Jima: Amphibious Epic. 253 pp. U.S. Marine Corps Historical Monograph. Washington, D.C.: U.S. Marine Corps.
Includes photos showing effect of war operations on the vegetation during the capture of Iwo Jima in 1945.

Bayliss-Smith, T.P. 1978. Batiki in the 1970's: Satellite of Suva, pp.67-128, in Unesco/UNFPA Fiji Island Reports, No.4.Canberra, Australia:ANU for Unesco.
Most of Batiki once supported a tree cover; now there is dense weedy covering in a fire-climax vegetation.

Beighton, P. 1966. Easter Island people. Geographical Journal 132: 347-359.
Gives location of introduced Eucalyptus groves.

Berger, A.J. 1966. Save Hawaii's unique flora and fauna. Elepaio 27(1): 1-2.
Imputes lack of conservation effectiveness to the State reforestation activities; article followed by rebuttal by Governor Burns.

Berger, A.J. 1974. History of exotic birds in Hawaii. Elepaio 35(6): 60-65.
Includes discussion of habitat destruction caused by sugarcane cultivation, sandalwood harvests, and invasive tropical weeds (Lantana, Myrica, Rubus, Opuntia).

Berger, A.J. 1975a. The Hawaiian honeycreepers, 1778-1974. Elepaio 35 (10): 110-118.
Includes detailed history of Hawaiian forest destruction.

Berger, A.J. 1975b. Hawaii's dubious distinction. Defenders 50(6): 491-496.
Excellent summary of serious degradation of forests, noting there are 4,500 species of exotic (introduced) plants in the Hawaiian Islands.

Berger, A.J. 1977. Aloha means goodbye. National Wildlife 15(1): 28-35.
Disturbance of Hawaiian forests reduces habitats.

Biddulph, O. and R. Cory. 1952. The relationship between Ca45, total calcium and fission product radioactivity in plants of Portulaca oleracea growing in the vicinity of the atom bomb test sites on Eniwetok Atoll. U.S. Atomic Energy Commission Report UWFL-31: 1-15.
Physiological effects of radiation demonstrated.

Bishop, L.E. and D. Herbst. 1973. A new Hibiscadelphus (Malvaceae) from Kauai. Brittonia 25(3): 290-293.
The endangered species H. distans is described, with notes on status of close relatives.

Black, J.M. 1976. Galapagos National Park, problems and solutions. Parks 1(1): 2-4.
Discusses invading plagues of weeds and grazing animals and their destructive effects.

Blumberg, B.S. and R.A. Conard. 1961. A note on the vegetation of the northern islets of Rongelap Atoll, Marshall Islands, March 1959. Atoll Research Bulletin 84: 4-5.
Changes in the vegetation are similar to those suspected, by some researchers, as due to radioactive fallout.

Boutilier, J.A. 1981. The nature, scope, and impact of the tourist industry in the Solomon Islands, pp. 37-50, in Force, R.W. and B. Bishop, eds., Persistence and Change. 155 pp. Honolulu, Hawaii: Pacific Science Association.
Contains appropriate cautionary statements in hopes that the nascent Solomon Islands tourist industry will not result in disfigurement and overdevelopment such as befell Waikiki, Hawaiian Islands.

Bowman, R.I. 1963. The scientific need for island reserve areas, pp. 60-76, in Scientific Use of Natural Areas Symposium, XVI International Congress of Zoology. 103 pp. Miami, Florida: Coconut Grove. Field Research Projects, Natural Areas Studies No. 2.
Using Galapagos and other Pacific islands as examples, presents the scientific importance of islands for evolutionary studies (7 reasons), distributional studies, ecosystem studies, and "living museum" studies.

Brewer, W.A. 1975. The assault of our reefs and lagoons. Micronesian Reporter 23(3): 16-20.
"Sedimentation of estuaries, bays, and lagoons from accelerated, man-induced erosion is...probably the greatest environmental threat to Micronesia today."

Brookfield, H. and G. Glaser. 1975. Population and environment in the eastern islands of Fiji. Nature and Resources 11(2): 2-8.
Critical issues include environmental effects of the introduction of new weeds, and also the cessation of

human interference in certain areas.

Browne, M.W. 1987 (Jan. 13). New findings reveal ancient abuse of lands. New York Times, Science Times C1-C3.
Deforestation of Easter Island and other areas is used to support the observation that "there has never been such a thing as a noble savage, and that present-day man is neither more nor less destructive than his forebears."

Bruhin, D. 1985. The two endemic palms of Chile. International Dendrological Society Yearbook 1984: 119-122.
Includes Juania palm of Juan Fernandez Islands.

Bryan, E.H. 1929. The background of Hawaiian botany. The Mid-Pacific 37: 33-40.
Wasteful water runoff from deforested mountains must be counteracted "by covering the mountains with suitable and sufficient vegetation, to replace the native forests which are fast disappearing."

Bryan, E.H. 1931. Kahoolawe, the island of dust. Bishop Museum Special Publication 19: 13-14.
On this Hawaiian island, destructive animals have obliterated native vegetation.

Bryan, E.H. 1949. Economic Insects of Micronesia. 29 pp. Washington, D.C.: National Research Council.
To control the undesirable foreign Lantana camara plant on Ponape, the following insect enemies were introduced: lantana tortricid moth, lantana plume moth, lantana leaf bug, and lantana seed fly.

Bryan, E.H. 1954. The Hawaiian Chain. 71 pp. Honolulu, Hawaii: Bishop Museum Press.
Includes discussion of the upset of nature's balance, foreign introductions, and the sandalwood trade.

Bryan, E.H. 1982. Introduction, pp. ii-v, in Lamberson, J.O., A Guide to Terrestrial Plants of Enewetak Atoll. 73 pp. Honolulu, Hawaii: Pacific Scientific Information Center, B.P. Bishop Museum.
Due to World War II bombardments and later nuclear tests, "Enewetak might be called the most abused atoll in the Pacific."

Bryan, L.W. 1947. Twenty-five years of forestry work on the island of Hawaii. Hawaiian Planters' Record 51(1): 1-80.
Includes photos of introduced trees and revegetation projects, also of roundups of feral sheep and goats.

Bryan, L.W. 1971. Native Hawaiian plants. Newsletter

Hawaiian Botanical Society 10(4): 38-42.
Observations on numerous threatened endemic species.

Bryan, L.W. 1973. Ahinahina. Newsletter Hawaiian Botanical Society 12(1): 1-2.
On the decline and protection of Argyroxiphium sandwicense, the silversword or ahinahina (Compositae).

Buck, M. 1984. The precious forests of Ponape and Kosrae. Glimpses of Micronesia 24(3): 24(3): 33-37.
A forest inventory is being undertaken to provide baseline data or a starting point to monitor the effect of the current period of Micronesian cultural transition, growth, and change, on the forest resource.

Budowski, G. 1972. Book review, of Wiggins, I.L. and D.M. Porter, 1971, Flora of the Galapagos. IUCN Bulletin 3(10): 50.
Review is critical of the book's casual remark that the El Junco lake area on San Cristobal Island might support carefully planned, limited agricultural activity.

Bunge, F.M. and M.W. Cooke. 1984. Oceania, A Regional Study. 550 pp. Washington, D.C.: Headquarters, Department of the Army.
Includes useful background overview of the region.

Burcham, L.T. 1948. Observations on the grass flora of certain Pacific islands. Contributions United States National Herbarium 30(2): 405-447.
On Peleliu I. (Palau Is.), "virtually all vegetation was denuded from the western and southern portions by our (military) operations. However, configuration of the terrain and nature of the coral bedrock are such that this denudation should produce no erosion problems; as a matter of fact, the net result of these activities should be to accelerate soil formation."

Byrne, J.E., ed. 1979. Literature Review and Synthesis of Information on Pacific Island Ecosystems. Washington, D.C.: U.S. Fish and Wildlife Service, Office of Biological Services.
Contains articles by various authors concerning status of ecosystems in the Pacific.

Calvopina, L.H. and F. Calvopina. 1980. Reproductive biology of wild goats and growth and development of vegetation in permanent goat exclosures on Isla San Salvador (Santiago), pp. 87-97, in Annual Report 1980, Charles Darwin Research Station. Santa Cruz Island, Galapagos, Ecuador.
An objective of this project is to establish exclosures to protect endangered plants until goats can be brought under control or eradicated.

Calvopina, L.H. and T. DeVries. 1975. Estructura de la poblacion de cabras salvajes (Capra hircus L.) y los danos causados en la vegetacion de la Isla San Salvador, Galapagos. Rev. Universidad Catolica 3(8): 219-241.
Concerns the structure of the wild goat population and the damage caused to vegetation on San Salvador Island, Galapagos.

Campbell, D.J. and M.R. Rudge. 1978. Reply to: Goats on Auckland Islands. New Zealand Journal of Botany 16(2): 293-296.
Instructive for its approach to the feral goat problem in general.

Campbell, E.M.J. 1952. Land and population problems in Fiji. Geographical Journal 118(4): 477-482.
Population pressure impacts land adversely.

Campon, R. 1982. Additional Reading. Natural History 91(12): 88-89.
The December 1982 special issue of Natural History on Hawaii: Showcase of Evolution presents many interesting articles, and supplementary reading suggested by Campon covers the major topics.

Canby, T.Y. 1984. El Nino's ill wind. National Geographic 165(2): 144-183.
Explains causation of storms damaging vegetation, including picture of 1983 cyclone on Aruta Atoll, Polynesia, which arose due to El Nino.

Canfield, J.E. 1981. Palau: diversity and status of the native vegetation of a unique Pacific island ecosystem. Newsletter Hawaiian Botanical Society 20: 14-20.
Human disturbance factors include the historical burning of uplands, extensive cultivation of lowlands, mining and war damage, and the recent influx of weedy introductions.

Carew-Reid, J. 1984. The South Pacific Regional Environment Program. Ambio 13(5-6): 377.
General description of the program.

Carlquist, S. 1965. Island Life. 451 pp. Garden City, New York: Natural History Press.
Includes plant endemism, adaptation to island ecosystems, archipelago effects.

Carlquist, S. 1970. Hawaii: A Natural History. 463 pp. Garden City, New York: Natural History Press.
Includes biological phenomena relevant to plant conservation such as dispersal, loss of competitiveness, adaptation, breeding systems; special discussions on lobelioids, silverswords, extinction, and conservation.

Carlquist, S. 1974. Island Biology. 600 pp. New York: Columbia University Press.
Evolutionary processes and patterns in island biota, e.g. Hawaii, New Caledonia, Galapagos, and Juan Fernandez Islands.

Carlquist, S. 1982a. The first arrivals. Natural History 91(12): 20-22, 24, 26, 28,30.
Chance and deliberate dispersals of plants and animals to the Hawaiian Islands are described.

Carlquist, S. 1982b. Hawaii: a museum of evolution. The Nature Conservancy News 32(3): 4-11; Bulletin Pacific Tropical Botanical Garden 13(2): 33-39 (1983).
Includes discussion of threats to the vulnerable flora, such as feral mammals.

Carlson, N.K. 1954. The vanishing fishponds of Molokai. Natural History 63: 248-254.
Ponds are silting-up, due to increased soil erosion on slopes caused by overgrazing and destruction of vegetation.

Carlson, N.K. 1973. The Kamehameha Schools-Bernice Pauahi Bishop Estate and the forests of the Big Island. Newsletter Hawaiian Botanical Society 12(3): 16-19.
A conservationist offers alternative viewpoint to total preservation of Hawaiian forests.

Carpenter, R.W. 1959. Maui notes. Elepaio 20(1): 1.
Concerning the feral goats, Park Naturalist Carpenter cheerfully observes that "with all the damage they do, they are interesting to watch and may be seen most anywhere in the crater, and especially on the cliffs, in herds of from 3 or 4 to 30 or 40".

Carr, G.D. Undated, unpublished manuscripts. Status reports on Argyroxiphium sandwicense DC. var. sandwicense (Asteraceae); Santalum freycinetianum Gaud. var. lanaiense Rock (Santalaceae); Scaevola coriacea Nutt. (Goodeniaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Carr, G.D. 1982. Unpublished manuscripts. Status reports on Dubautia herbstobatae Carr (Compositae); Dubautia latifolia (Gray) Keck (Compositae); Wilkesia hobdyi St. John (Compositae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Carr, G.D. and J.K. Baker. 1977. Cytogenetics of Hibiscadelphus (Malvaceae): a meiotic analysis of hybrids in Hawaii Volcano National Park. Pacific Science 31(2):

191-194.
Hybridization can cause concern for the integrity of taxa. Refer to article by J.K. Baker and S. Allen (1977).

Carr, G.D., Robichaux, R.H. and D.W. Kyhos. 1982. Radiating silverswords. Natural History 91(12): 36-39.
Variation, evolution, adaptive radiation in Hawaiian Compositae of the genera Argyroxiphium, Dubautia, and Wilkesia.

Carson, H.L. 1982a. Hawaii: showcase of evolution, an introduction. Natural History 91(12): 16-18.
Hawaiian biota are mentioned.

Carson, H.L. 1982b. A cloudy future. Natural History 91(12): 72.
"Energy needs in the 1980's have generated new threats to natural areas (of Hawaii), especially to the rain and cloud forests that are still not deeply penetrated by agriculture."

Carter, W. 1940. A neglected aspect of land utilization in Hawaii. Proc. Sixth Pacific Science Congress 4: 903.
It is suggested to convert suitable forest lands to smallholder fruit and nut crops, e.g. cashew nuts in upper forests, and coconuts in coastal areas, to augment the Hawaiian food supply, and to quinine plantations for strategic medicine.

Catala, R.L.A. 1953. Protection de la nature en Nouvelle-Caledonie. Proc. Seventh Pacific Science Congress 4: 674-679.
In New Caledonia, native and naturalized weeds are rupturing the equilibrium of the land.

Caufield, C. 1985. In The Rainforest. 304 pp. New York: Alfred A. Knopf.
Makes reference to Unilever timbering in the Solomon Islands.

Caum, E.L. 1936. Notes on the flora and fauna of Lehua and Kaula islands. Occasional Papers, B.P. Bishop Museum 11(21): 3-17.
Lehua is overrun by rabbits and Lantana camara. Aubrey Robinson, owner of island of Niihau, is systematically exterminating the lantana on Lehua to prevent its spread to Niihau (Hawaiian Islands).

Chamberlain, P. 1972. Micro planning. Micronesian Reporter 20(2): 33-43.
Account of 1972 master planning for Wotje Atoll in the Marshall Islands; includes 1944 aerial photo of the heavily bomb-cratered island.

Chand, V. and S. Chand. 1980. Medicinal plants of Fiji with special attention to the antifertility plants, p. 235, in Fourth Asian Symposium on Medicinal Plants and Spices. Abstracts. Bangkok: Government of Thailand and Unesco.
An assessment of the traditionally used antifertility plants will attempt to discover their potential as a medicinal source in the Fijian fertility regulation program, since, although family planning is an important program in the nation, abortion is not yet legalized.

Chapline, W.R. 1961. FAO's interest in forest, range and watershed conservation in the Pacific area. Proc. Eighth Pacific Science Congress 6: 226-232.
Recommends studies to develop sound policies of forest grazing, e.g. reseeding forests that have deteriorated due to grazing animals, with native or exotic grasses.

Chapman, M.D. 1985. Environmental influences on the development of traditional conservation in the South Pacific region. Environmental Conservation 12(3): 217-230.
It is suggested that environmental factors such as predictability and extremeness could account for some of the fundamental differences in conservational attitudes observed in different traditional societies. Quite elaborate intentional conservation measures and regulations were in effect on Pukapuka and Tahiti in the old days.

Chapman, V.J. 1967. Conservation of maritime vegetation and the introduction of submerged freshwater aquatics. Micronesica 3: 31-35.
Appropriate cautionary measures must be observed with any introductions.

Chapman, V.J. 1969. Conservation of island ecosystems in the South-West Pacific. Biological Conservation 1: 159-165.
Includes descriptions of some species and vegetation types meriting preservation.

Char, W. 1976. Field studies of the Sesbania complex on the island of Hawaii. Bulletin Pacific Tropical Botanical Garden 6(2):41.
Sesbania tomentosa is subjected to cattle browsing damage at South Point (Ka Lae).

Char, W.P. and N. Balakrishnan. 1979. 'Ewa Plains Botanical Survey. Honolulu, Hawaii: University of Hawaii at Manoa. U.S. Department of the Interior Contract Report.
Includes status of Abutilon menziesii and many other endemics.

Chave, E.H. and J.E. Maragos. 1973. A historical sketch of the Kaneohe Bay region, pp. 9-13, in Smith, S.V., et al., eds., Atlas of Kaneohe Bay: A Reef Ecosystem Under Stress. 128 pp. Honolulu, Hawaii: University of Hawaii Sea Grant Program.
Population increase, urbanization, replacement of native vegetation by weeds and other introductions, and grazing which facilitated increased erosion and sediment loading in streams, are among causes of deterioration of the ecosystem. The effects of nutrient stresses on the biota include diminishment of algae in the south Bay, and an enormous growth of the "bubble alga", Dictyosphaeria, in mid-Bay.

Cheatham, N.H. 1968. Forestry and conservation in the Trust Territory of the Pacific Islands. South Pacific Bulletin 18(4): 38-41, 47.
Notes certain problems such as indiscriminate burning of the grassland areas on Babelthuap Island.

Cheatham, N.H. 1975. Land development: its environmental impact in Micronesia. Micronesian Reporter 23(3): 7-11.
"When planners consider various approaches to land development, they should weigh the estimated ecological impacts and choose alternatives that have the least detrimental impact on the environment."

Chevalier, J.-P., Denizot, M., Mougin, J.-L., Plessis, Y. and B. Salvat. 1968. Etude geomorphologique et bionomique de l'Atoll de Mururoa (Tuamotu). Cahiers du Pacifique 12: 1-144.
A section on flora and vegetation mentions the adventive plants on this French nuclear testing ground.

Chilcott, M. 1986. Australian plants campaign. Threatened Plants Newsletter (IUCN) 16: 6-8.
Includes discussion of project on conservation biology of the endangered Hibiscus insularis, a plant reduced to 8-10 living individuals in two small thickets on Philip Island, where its survival is threatened by rabbits.

Chock, A.K. 1963. Kokee. Newsletter Hawaiian Botanical Society 2(3): 37-39.
Kokee, where much of the endemic vegetation of Kauai is found, is partially being overrun by invasive exotic weeds such as blackberry, firebush, Malabar melastome, and lantana.

Christensen, B. 1983. Mangroves- what are they worth? Unasylva 35(139): 2-15.
Ecological significance of mangroves is discussed.

Christensen, C. 1979. Propagating Kauai's Brighamia. Bulletin Pacific Tropical Botanical Garden 9(1): 2-4.

Brighamia citrina var. napaliensis (Lobeliaceae), from the Na Pali cliffs of Kauai, in the first Brighamia ever to flower in cultivation.

Christensen, C.C. 1982. Hawaiian land snails: past, present, and (?) future. Ka 'Elele 9(2): 3.
"Land clearance for agriculture and deforestation by cattle or other means have resulted in the extinction of many species that were dependent on native vegetation."

Christensen, C.C. and P.V. Kirch. 1981. Nonmarine mollusks from archaeological sites on Tikopia, southeastern Solomon Islands. Pacific Science 35(1): 75-88.
Since the year 900 BC, mankind has cleared land for agricultural purposes on Tikopia, resulting in displacement of native vegetation. Then, interisland transport of economic plants by humans provided opportunities for the introduction of adventive terrestrial mollusks, of which three species are known to have become established there as of 900 BC.

Christian, K.A. and C.R. Tracy. 1980. An update on the status of Isla Santa Fe since the eradication of the feral goats. Noticias de Galapagos 31: 16-17.
On this island in the Galapagos, native vegetation appears denser and more diverse since feral goats were exterminated.

Christophersen, E. and E.L. Caum. 1931. Vascular plants of the Leeward Islands, Hawaii. B.P. Bishop Museum Bulletin 81: 1-41.
Relates history of rabbit swarms on Laysan Island, which denuded the terrain.

Cieply, M. 1983. East of Eden. Forbes (31 January): 34-36.
Tough economic considerations of Hawaiian land use are discussed.

Clapp, R.B., Kridler, E. and R.B. Fleet. 1977. The natural history of Nihoa Island, northwestern Hawaiian Islands. Atoll Research Bulletin 207: 1-147.
Discusses population of the threatened Pritchardia remota palm.

Clapp, R.B. and F.C. Sibley. 1971. Notes on the vascular flora and terrestrial vertebrates of Caroline Atoll, Southern Line Islands. Atoll Research Bulletin 145: 1-18.
Discusses the atoll as a coconut plantation in past years.

Clapp, R.B. and W.O. Wirtz. 1975. The natural history of Lisianski Island, northwestern Hawaiian Islands. Atoll Research Bulletin 186: 1-196.
Introduced European rabbits starved to extinction in

1915-1916 only after eating "every particle of vegetation" on Lisianski Island. A few plant species have begun to recolonize and revegetate the island.

Clark, H. 1986 (Sept. 21). Forest blaze on Big Island saddens botanists. The Sunday Star-Bulletin & Advertiser (Honolulu): A-12.
Report of an extensive fire which burned nearly 4,000 acres on the North Kona side of the Big Island, Hawaii. "This was the very best example of Hawaii dryland forest. There are nine species in that area on the endangered species list" said Quentin Tomich.

Clarke, J.F.G. 1986. Pyralidae and Microlepidoptera of the Marquesas Archipelago. Smithsonian Contributions to Zoology No. 416. 485 pp. Washington, D.C.: Smithsonian Institution.
Includes photographs depicting areas in the Marquesas where much devastation has been caused by deforestation, slashing, burning, and the introduction of horses, cattle and pigs, as well as showing pockets of original flora at higher elevations.

Clay, H.F. 1961. Narrative report of botanical field work on Kure Island, 3 October 1959 to 9 October 1959. Atoll Research Bulletin 78: 1-4.
Includes photo showing "habitat improvement", land clearance for albatross runways.

Cloud, P.E., Schmidt, R.G. and H.W. Burke. 1956. Geology of Saipan, Mariana Islands. Part 1. General Geology. U.S. Geological Survey Professional Paper 280-A. 126 pp.
"The vegetation of Saipan has been so altered by cultivation, burning, and importation of foreign species that it is difficult for any but the skilled botanist to know what plants are indigenous and which introduced."

Coblentz, B.E. 1978. The effects of feral goats (Capra hircus) on island ecosystems. Biological Conservation 13(4): 279-286.
Numerous deleterious effects of this pest are discussed.

Colinvaux, P.A., Schofield, E.K. and I.L. Wiggins. 1968. Galapagos flora: Fernandina (Narborough) caldera before recent volcanic event. Science 162: 1144-1145.
Exemplifies volcanic eruption as a natural threat to plant populations. The major, multimegaton explosion which collapsed the caldera probably killed or buried the plants on the crater walls, although summit Scalesia forest appeared almost unaffected.

Collins, M. and S. Wells. 1983. The IUCN Invertebrate RDB (Red Data Book)- Plant connections. Threatened Plants Newsletter 11: 19-21.

On Oahu (Hawaiian Islands), the indigenous Achatinella land snails are not adapting to the fast-growing introduced trees.

Colwell, R.N. 1946. The estimation of ground cover conditions from aerial photographic interpretation of vegetation types. Photogrammatic Engineering (June 1946): 151-161.
Includes photos and discussion of interconnecting facts regarding the values of plants, which are not often contemplated by altruistic botanists, e.g.: the dense concentrations of cycads in limestone areas of Okinawa indicate coral deposits at or near the surface of the earth, and such sites are ideally suited, in turn, for borrow-pit excavation of coral needed for surfacing roads and airfields.

Colwell, R.N. 1948. Aerial photographic interpretation of vegetation for military purposes. Photogrammetric Engineering (December 1948): 472-481.
The Pacific War Theatre sustained much vegetation damage in World War II. It is often on the basis of type of barrier posed to the conduct of military operations, that vegetation is classified on aerial photos for military purposes. Article includes stereogram (aerial photo) showing value of tone in differentiating coconut from betelnut palm, and discusses military value of casuarina, nipa palm, hevea rubber and cinchona. "There are four important ways in which vegetation may affect military operations: (1) it may facilitate or impede the movement of foot soldiers and motorized equipment; (2) it may accentuate or conceal evidence of military activity; (3) it may determine the ease with which clearings can be made for the construction of airfields and roads; and (4) it may serve as a source of construction material, fuel, or food."

Connell, J. 1984. Islands under pressure- population growth and urbanization in the South Pacific. Ambio 13 (5-6): 306-308, 310-312.
Discusses effects of population pressure on land.

Connell, J. 1986. Population, migration, and problems of atoll development in the South Pacific. Pacific Studies 9(2): 41-58.
Good precautionary background for considerations of development of atoll resources.

Cook, C.M. 1937. Extinction of land shell faunas of the Mangareva Islands. B.P. Bishop Museum Special Publication 30: 12-13.
Due to the destruction of practically all the native forests, the endemic land snails have been almost entirely wiped out.

Coolidge, H.J., compiler. 1948. Conservation in Micronesia. 70 pp. Washington, D.C.: National Research Council.
Contains 22 papers on conservation subjects by various authors, being a report on two conferences held under the auspices of the Pacific Science Board in Honolulu and Washington, D.C. in 1948.

Cooray, R.G. 1974. Stand Structure of a Montane Rain Forest on Mauna Loa, Hawaii. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 44. 98 pp. Honolulu, Hawaii: University of Hawaii.
Rooting activity of feral pigs destroys Acacia koa seedlings rooted in mineral soil. Pig populations, if allowed to increase, may cause a change in the stability trends of species populations, and an overall deterioration of this native rainforest ecosystem.

Corner, E.J.H. 1972. Urgent exploration needs: Pacific floras. Pacific Science Association Information Bulletin 24 (3 & 4): 17-27.
Lists operational threats in various island groups. The floras of the Admiralty Is., Santa Cruz Is., New Hebrides, Rotuma I. and Wallis I. are particularly inadequately explored.

Corporacion Nacional Forestal. 1976a. Plants, pp. 6-10, in Plan de Manejo Parque Nacional Juan Fernandez. Santiago, Chile: Org. Nacional Unidas para la Agric. y la Aliment., Officina Regional para America Latina.
Management plan for Juan Fernandez Is. National Park.

Corporacion Nacional Forestal. 1976b. Plants, pp. 9-10, in Plan de Manejo Parque Nacional Rapa Nui. Santiago, Chile: Org. Nacional Unidas para la Agric. y la Aliment., Officina Regional para America Latina.
Management plan for Rapa Nui (Easter Island) National Park.

Corwin, G., et al. 1957. Military Geology of Pagan, Mariana Islands. 259 pp. H.Q. US Army Japan.
"At present the airfield is pocked with bomb craters up to 18 feet deep and is overgrown by swordgrass, shortgrass, and scattered Casuarina trees."

Costa, M. 1978. The Garden of Eden alive and blooming on Kauai. Latitude 20 (The Hawaiian Air Magazine) 6(3): 18-19, 38-39.
Article concerns the Pacific Tropical Botanic Garden, which cultivates endangered plant species.

Costin, A.B. and R.H. Groves, eds. 1973. Nature Conservation in the Pacific. IUCN Publications New Series, No. 25. 337 pp. Morges, Switzerland: IUCN

(International Union for Conservation of Nature and Natural Resources).

Coulter, J.W. 1931. Population and utilization of land and sea in Hawaii, 1853. B.P. Bishop Museum Bulletin 88:1-33.
Useful data for determining vegetational changes occurring since 1853.

Coulter, J.W. 1940. The relation of soil erosion to land utilization in the Territory of Hawaii. Proc. Sixth Pacific Science Congress 4: 897-901.
Soil erosion is due to perturbations of the original vegetative cover, such as pineapple cultivation and overgrazing by wild sheep and goats. Some introduced plants are good soil-binders.

Coulter, J.W. 1946. Impact of the war on South Sea islands. Geographical Review 36(3): 409-419.
Construction of many airplane fields and hangars caused forests to be "cleared and the ground leveled with broken coral. Many people profited by the "white man's war"."

Cowan, I.M. 1976. Biota Pacifica 2000, pp. 86-98, in Scagel, R.F., ed., Mankind's Future in the Pacific. 198 pp. Vancouver: University of British Columbia Press.
The discovery of the Pacific Islands by the forerunners of the Melanesians, Micronesians, and Polynesians is much more recent (in many cases as recent as within the last 1,000 years) than the history of the peopling of Africa, southern Europe and Asia. In the Pacific Islands (and the Americas and Australia), man and fauna did not evolve together as in Europe and Asia, but instead man arrived in the Pacific with a well-developed hunting technology as a totally new force upon the existing biotic equation. The author further notes that man's power of extermination was best in hitherto untouched ecosystems. The subsequent arrival of Europeans in the Pacific in the 1500's was different only in degree to the forerunners of the indigenous Pacific islanders, and included introduction of foreign grazing animals and noxious weedy plants. Mentions forest destruction; Hawaii; Laysan I.; Galapagos.

Coyne, P. 1983. Revegetation attempt on Philip Island, South Pacific. Threatened Plants Newsletter(IUCN) 12: 14.
Enclosures protecting soil from rabbit grazing give evidence of soil's ability to support growth and regeneration of native and introduced plant species.

Craine, C. 1975. Dangerous and endangered species: a

political update on native ecosystems. Newsletter Hawaiian Botanical Society 14(1): 13-18.
Mainly about the effects of axis deer and cattle on ecosystems.

Cranwell, L.M. 1984. Lehua Maka Noe, an endangered bog. Newsletter Hawaiian Botanical Society 23: 3-6.
Kauai bog appears threatened by a proposal to build an earthen dam nearby.

Creutz, E. 1966. The tiare apetahi of Raiatea. Garden Journal (New York Botanical Garden) 16(4): 142-144.
Apetahi raiateensis (Lobeliaceae) is a shrub which grows only on several acres at one locality on Temehani Plateau on the island of Raiatea, which is 100 miles northwest of Tahiti.

Cribb, P.J. 1986. The slipper orchids of New Guinea and the Solomon Islands. Kew Magazine 3(4): 159-166.
Plate 71. Paphiopedilum bougainvilleanum from Bougainville is a species endangered by over-collecting, and Plate 72. P. wentworthianum from Bougainville and Guadalcanal represents a species which numbers no more than 100-200 individuals in the wild.

Cribb, P.J., Campbell, J. and G. Dennis. 1985. Paphiopedilum in the Solomon Islands: the rediscovery of "P. dennisii". Orchid Review 93(1098): 130-131.
On Guadalcanal, much of the mountainous locale of a new Paphiopedilum orchid once provisionally named P. dennisii, and now known to be P. wentworthianum, was under shifting agriculture and then covered by secondary growth, since the plant was first discovered in 1962. In 1984 it was rediscovered in an extremely inaccessible part of the island.

Croft, K.D., Cannon, J.R., Matsuki, Y., Toia, R.F. and A.H. White. 1980. Medicinal plants of the Fiji Islands, p. 227, in Fourth Asian Symposium on Medicinal Plants and Spices. Abstracts. Bangkok: Government of Thailand and Unesco.
Work includes examination of a variety of Alyxia bracteolosa rich in alkaloids; bark alkaloids from Hernandia peltata; and coumarins from Micromelum minutum. Bleekeria vitiensis (Apocynaceae), a Fijian endemic, is believed useful in control of some cancers, and has been shown to contain a mixture of alkaloids which exhibit a wide spectrum of antitumor activity.

Croft, L., Hemmes, D.E. and J.D. Macneil. 1976. Puukohola Heiau National Historic Site plant survey. Newsletter Hawaiian Botanical Society 15(4-5): 81-94.
Site contains rare endemic pololei fern, Ophioglossum concinnum.

Crosby, W. and E.Y. Hosaka. 1955. Vegetation, pp. 28-34, in M.G. Cline, Soil Survey of the Territory of Hawaii. USDA, Soil Survey Series 1939, No. 25.
Including many interesting facts on introduced trees, including the spreading forests of algaroba (Prosopis chilensis), an exotic first introduced to Hawaii as a few seeds in 1820 by a French priest in Honolulu.

Cruz, F., Cruz, J. and J.E. Lawesson. 1986. Lantana camara L., a threat to native plants and animals. Noticias de Galapagos 43: 10-11.
The agressive introduced weed Lantana camara (Verbenaceae) is spreading into the breeding ground of the Hawaiian, or dark-rumped, petrel (Pterodroma phaeopygia) on Floreana I. in the Galapagos, forming impenetrable stands to 6 feet tall in which the birds cannot make their nesting burrows. Lantana in the area also threatens several Floreana endemic plant species, Leucocarpus pinnatifidus and Scalesia villosa (both Compositae).

Cumberland, K.B. 1949. Pacific island neighbourhood: the postwar agricultural prospect. New Zealand Geographer 5(1): 1-18.
Notes postwar vegetation changes in Fiji, Samoa, and Cook Islands.

Cumberland, K.B. 1953. Soil erosion and the world food situation. Fiji Soc. Sci. Ind. 4: 1-8.
Notes deforestation in Fiji and Rarotonga.

Cumberland, K.B. 1963. Man's role in modifying island environments in the Southwest Pacific, with special reference to New Zealand, pp. 186-206, in Fosberg, F.R., ed. (1963).
"In pre-European times, the rotation of land for food gardens and exploitation of forest resources for food, fiber, fish poisons, and ornamental coloring matter, had interfered with virtually all primary forest on islands the size of Upolu, Mangaia, Tahiti, Rarotonga and Niue, which had little, if any, truly primary forest when Europeans arrived. In New Caledonia, Viti Levu, and Vanua Levu there were large leeward and seasonally drier areas from which even secondary forest had been removed and replaced with a graminaceous cover." Also discusses effects of domestic animals and exotic weeds in the area.

Curry-Lindahl, K. 1980. Zoogeographic subregions of the Pacific realm as a background for terrestrial ecological reserves: Part 1: General introduction and northern and western Pacific regions. Environmental Conservation 7(1): 125-136; Part 2: Central and eastern regions, etc., with conclusions, op.cit. 7(2): 125-136.

Data from faunal regions and ecological zonation schemes in the islands are used to develop a scientific basis for a system of Pacific natural areas. Presents much useful animal information that can be integrated with considerations of plant species and habitats. Part 2 includes mention of plants and exotic grazing animals in Hawaiian and Juan Fernandez islands.

Curry-Lindahl, K. 1981. Twenty years of conservation in the Galapagos: Assessment, lessons and future priorities. Noticias de Galapagos 34: 8-9.
"It is vital for the future of Galapagos to acknowledge the facts that the islands are ill-adapted to human settlement, unsuitable for agriculture and that livestock has disastrous environmental effects."

Dahl, A.L. 1980. Regional Ecosystems Survey of the South Pacific Area. 99 pp. Technical Paper No. 179, South Pacific Commission and IUCN. Noumea, New Caledonia: South Pacific Commission.
Major assessment review article summarizing all available information on conservation status of South Pacific islands, including listings of rare or endemic plants, and recommended nature reserve sites.

Dahl, A.L. 1984a. Future directions for the Oceanian Realm, pp. 359-362, in McNeely, J.A. and K.R. Miller, eds., National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society. 825 pp. Washington, D.C.: Smithsonian Institution Press.
"The peoples of the Pacific Islands have developed cultures and traditions with an important conservation element. However, present trends, based on external sources of food, capital, and labour, are placing much of the natural and cultural heritage of the Pacific region at risk."

Dahl, A.L. 1984b. Oceania's most pressing environmental concerns. Ambio 13(5-6): 296-301.
Includes mention of endangered species.

Dahl, A.L. 1984c. Biogeographical aspects of isolation in the Pacific. Ambio 13(5-6): 302-305.
Biota evolving in isolation result in numerous endemics and highly localized species.

Dahl, A.L. 1985. Status and conservation of South Pacific coral reefs. Proc. Fifth International Coral Reef Congress, Tahiti, 1985, 2: 95 (Abstract).
"The impacts of development in adjacent land areas and of damaging activities on the reefs themselves are probably producing a steady increase in the proportion of damaged and degraded reefs."

Dahl, A.L. and I.L. Baumgart. 1982. The state of the environment in the South Pacific, pp. 47-71, in SPREP Conference Human Environment. Report. Noumea, New Caledonia: South Pacific Commission.
Includes sections on forestry, conservation of fauna and flora, mangroves, development trends and their environmental consequences.

Danielsson, B. 1984. Under a cloud of secrecy: the French nuclear tests in the southeastern Pacific. Ambio 13(5-6): 336-341.
Perturbations of environment in Mururoa Atoll, Tuamotus.

D'Arcy, W.G. 1976. Near extinct plant in Climatron. Missouri Botanical Garden Bulletin 64(3): 5.
Lebronnecia kokioides Fosberg & Sachet (Malvaceae) reduced to one mature tree and some seedlings in the wild, from Iva-Iva in the Marquesas Islands.

Davidson, J. 1956. Peter Dillon and the discovery of sandalwood in the New Hebrides. Journal Societe Oceanistes 12(12): 99-105.
Interesting history of sandalwood forest exploitation on Eromanga from 1825 onwards. "From their heavily armed vessels, they (shipmasters) would open fire on villages whose people attempted to interfere with their despoiling of the forest." Similar incidents are recounted in Kent, G. 1972. Company of Heaven: Early Missionaries in the South Seas. 230 pp. Nashville, Tennessee: Thomas Nelson Inc.

Davis, C.J. and N.L.H. Krauss. 1961. Recent development in biological control of weed pests in Hawaii. Tenth Pacific Science Congress. Abstracts: 204-205.
New insect defoliators are effective on pernicious Lantana camara.

Davis, S.D., Droop, S.J.M., Gregerson, P., Henson, L., Leon, C.J., Villa-Lobos, J.L., Synge, H. and J. Zantovska. 1986. Plants in Danger: What do we know? 461 pp. Gland, Switzerland and Cambridge, England: International Union for Conservation of Nature and Natural Resources (IUCN).
A comprehensive, concise guide to information on endangered plants and their habitats around the world, and the efforts to conserve them, with detailed information for all island-groups in the Pacific Ocean.

Dawson, E.Y. 1959. Changes in Palmyra Atoll and its vegetation through the activities of man, 1913-1958. Pacific Naturalist 1(2): 1-51.
Numerous alterations to vegetation occurred concomitant with the establishment of military base.

Dawson, E.Y. 1962. Cacti of the Galapagos Islands and of coastal Ecuador. Cactus and Succulent Journal(U.S.) 34(4): 99-105.
Notes that Opuntia occurs infrequently on Charles and Chatham islands, probably due to the presence of tame and wild donkeys, and wild goats.

Dawson, J.W. 1981. The species-rich, highly endemic serpentine flora of New Caledonia. Tuatara 25(1): 1-6.
Contains endemism percentages for various localities on the island.

Decker, B.G. 1971. Plants, man and landscape in Marquesan valleys, French Polynesia. Dissertation Abstracts International 31(10): 1 page.
Contains "interpretive insights into the trend and nature of profound ecological change during almost two centuries since effective contact with European and Yankee mariners in the late eighteenth century."

Decker, B.G. 1975. Unique dry-island biota under official protection in northwestern Marquesas Islands (Isles Marquises). Biological Conservation 5(1): 66-67.
The islands are Eiao, Ile de Sable, and Hatutu. Some feral sheep and swine problems evidenced on Eiao.

Degener, O. 1945. Plants of Hawaii National Park Illustrative of Plants and Customs of the South Seas. 314 pp. Ann Arbor, Michigan.
Includes discussion of rare silversword and greensword plants (Argyroxiphium, Compositae).

Degener, O. 1963. Botanists expedition to Lanai. Newsletter Hawaiian Botanical Society 2: 107-108.
Forests of Lanai have become degraded.

Degener, O. 1966. Book review. Phytologia 13(5): 369-370.
A review of G.C. Ruhle, 1966. Waimea Canyon and Kokee, A Nature Guide. "With man's silly introduction of the passionflower (Tacsonia mollissima HBK) that smothers native trees, the raspberry (Rubus penetrans L.H. Bailey) and tibouchina (Tibouchina semidecandra Cogn.) that crowd out native shrubs and herbs, the barn owl which is a veritable flying mongoose, the goat and mouflon that browse along dry cliffs and ledges already subject to erosion without four-footed help, and the blacktailed deer that will devastate the endemic bog flora of Waialeale, man is wrecking within less than 200 years a flora that has taken 20 or so million years to perfect."

Degener, O. 1968. Comments on axis deer. Elepaio 29(3): 27.
Due to their damaging effects on vegetation, the author

refers to introduced goats, sheep, deer, mouflon, buffalo, and pigs as "four-legged vermin".

Degener, O. 1972. Axis deer damages. Elepaio 32 (11): 105-106.
Describes the annihilation of original dry forest of West Molokai by axis deer during the last 20 to 30 years.

Degener, O. 1977. Help save the dwindling endemic flora of the Hawaiian Islands at least as herbarium specimens for museums of the world. Phytologia 37(4): 281-284.
Recounts history of introduction of the pernicious weed Clidemia hirta (Koster's curse), and mentions that the nascent industrial forest resource base appears to favor Queensland maple, toona, and eucalypts.

Degener, O. and I. Degener. 1958. The Hawaiian beach scaevola (Goodeniaceae). Phytologia 6(6): 321.
Scaevola sericea var. faurei introduced to Canton Atoll in 1950-1951 has flourished.

Degener, O. and I. Degener. 1959. Canton Island, South Pacific (Resurvey of 1958). Atoll Research Bulletin 64: 1-24.
Some of the plants introduced to Canton Island have thrived and become naturalized; an update of O. Degener and E.G. Gillaspy (1955).

Degener, O. and I. Degener. 1961a. Green Hawaii: past, present and future of an island flora. Pacific Discovery 14(5): 14-17.
Evolved over a span of 13 million years, the isolated, indigenous Hawaiian flora has now become threatened by man, weeds, and grazing animals. Includes chronology of introduction of goats (in 1778), cattle and sheep (1793), horses (1803), axis deer (1867), as well as the more recently imported pronghorn antelope, mouflon sheep, brush-tailed rock wallaby, Rocky Mountain mule deer, and Columbian blacktailed deer, into Hawaii. Notes that the approximate percentage of native-growth (vegetation) remaining on each island is: Kauai-60%, Oahu-40%, Molokai-28%, Lanai-73%, Maui-34%, Hawaii-18%, and Kahoolawe-native vegetation liquidated. Includes photos of bulldozing destruction, faulty reforestation, and living type specimen of Pritchardia macrocarpa palm at Foster Botanical Garden.

Degener, O. and I. Degener. 1961b. A new Hawaiian variety of Capparis. Phytologia 7(7): 369.
"The precipitous northwest shore about Polihale, Kauai, is arid and, due to the ravages of feral goats and the competition with exotic weeds such as Leucaena glauca (L.) Benth. and Pluchea odorata (L.) Cass., almost de-

void of native plants."

Degener, O. and I. Degener. 1961c. A new Dodonaea from Molokai, Hawaii. Phytologia 7(9): 465.
Local officials are introducing continental game animals such as antelope, deer, and mouflon, and planting areas not suitable to agriculture or animal husbandry, with exotic timber trees such as pines and Samanea saman.

Degener, O. and I. Degener. 1963. Kaena Point, Oahu. Newsletter Hawaiian Botanical Society 2(6): 77-79.
The Kaena dunes area is the last stronghold of Sesbania tomentosa (Leguminosae), a vanishing species.

Degener, O. and I. Degener. 1966. Yes, thank you; we love ferns. Phytologia 13(7): 449-452.
Mentions specific areas on the islands of Hawaii, Oahu, Maui, Lanai, and Molokai, in which the native flora is in danger of extirpation.

Degener, O. and I. Degener. 1968. Review of F.E. Wimmer, Campanulaceae-Lobelioideae Supplementum. Phytologia 17(5): 369-371.
Newly describes the endangered Trematolobelia wimmeri, noting that in the area devastated by the 1959 Kilauea-Iki eruption, "in place of Trematolobelia, the unwelcome exotics Anemone japonica, Buddleja asiatica and Rubus penetrans were taking over the area."

Degener, O. and I. Degener. 1969. Review. Phytologia 19(1): 47-49.
Review of Finnish article on Hawaii, but includes information from the reviewers that "the 40 blacktail deer introduced from Canada in 1961 have multiplied steadily until there are at least 400 in the Kokee area of Kauai."

Degener, O. and I. Degener. 1970. Book review. The genus Pelea, with pertinent and impertinent remarks. Phytologia 19(5): 313-319.
Mentions collecting of the aromatic Pelea anisata for leis. Notes that the "holocaust of the native Hawaiian biota in less than two centuries is a horrible condemnation of our "civilization"."

Degener, O. and I. Degener. 1971a. Natural history of the Bonin Islands. Phytologia 21(2): 97-99.
Review of work by Japanese authors T. Tuyama and S. Asami, The Nature of the Bonin Islands, noting that overgrazed, eroded grasslands due to cattle are depicted therein.

Degener, O. and I. Degener. 1971b. Some Aleurites taxa in Hawaii and a note regarding Argemone. Phytologia 21(5):

315-319.
Aleurites moluccana var. aulanii, the small-seeded kukui (Euphorbiaceae) is newly described; used in seed leis. "Apparently only one tree remains in this once heavily populated valley (Waipio Valley, District of Kohala), badly mauled by careless collectors of its prized seeds."

Degener, O. and I. Degener. 1971c. Pritchardia and Cocos in the Hawaiian Islands. Phytologia 21(5): 320-326.
Many living colonies of loulou palm (Pritchardia) have succumbed to bulldozers. Notes that "Until recent bulldozing on Oahu destroyed them, erect (fossil) molds of the trunks were observable on the north side of the roadleading mauka to the U.S. Army Tripler General Hospital."

Degener, O. and I. Degener. 1971d. Review and comments about a thing. Phytologia 21(6): 369-374.
Review of R.E. Warner, ed., Scientific Report of the Kipahula Valley Expedition, sponsored by The Nature Conservancy. Notes that "When Astelia species are terrestrial, feral pigs feed on the rhizomes and young leaves, often destroying the colonies. They also penetrate the higher stretches of cinder-covered terrain where the endemic bracken can survive with its underground rhizomes to the exclusion of other vascular plants. Pigs, with great ease, root out the rhizomes from the friable ash, pumice and cinders for food."

Degener, O. and I. Degener. 1971e. Sophora in Hawaii. Phytologia 21(6): 411-415.
"Today, with Lanai practically a hunting preserve stocked with feral goat, axis deer, mouflon and pronghorn, we surmise the four trees (of Sophora lanaiensis) are no more...We believe this species (Sophora molokaiensis) extinct because, when we collected specimens of the plant in 1961 the area, thanks to the jeep road, was being bulldozed in strips for the planting of Pinus taeda to foster a lumber industry."

Degener, O. and I. Degener. 1972. Wikstroemia pulcherrima var. petersonii Deg. & Deg., from Hawaii. Phytologia 24(2): 151-154.
This variety is being exterminated by trampling cattle except between roadside fences.

Degener, O. and I. Degener. 1973. Santalum paniculatum var. chartaceum Deg. & Deg. Phytologia 27(3): 145-147.
"As many owners of this subdivision (Fern Forest Estates, Puna, Hawaii) are having their lots bulldozed clean of the endemic forest to replant them with Psidium guajava L. for an anticipated jam, jelly and juice

industry, this interesting taxon may not survive many more years."

Degener, O. and I. Degener. 1974a. Appraisal of Hawaiian taxonomy. Phytologia 29(3): 240-246.
Contains a capsule-commentary on history of human intervention in Hawaiian endemic flora and vegetation.

Degener, O. and I. Degener. 1974b. Flotsam and jetsam of Canton Atoll, South Pacific. Phytologia 28(4): 405-418.
Includes map indicating areas disturbed by bulldozing operations on Canton Island.

Degener, O. and I. Degener. 1974c. To save a rare naupaka. Newsletter Hawaiian Botanical Society 13(4): 16.
On sand dunes next to golf course at Waihee, 300 individuals of Scaevola coriacea are still surviving.

Degener, O. and I. Degener. 1975a. Silverswords and the Blue Data Book. Notes Waimea Arboretum 2(1): 3-6.
Historical causes of endangerment of the Hawaiian flora, particularly the decline of Argyroxiphium (Compositae).

Degener, O. and I. Degener. 1975b. Concerning a magazine article. Degener's Leaflet No. 3. 6 pp.
Notice of miscaptioned Hawaiian Argyroxiphium in D.W. Jenkins and E.S. Ayensu (1975).

Degener, O. and I. Degener. 1976. Wikstroemia perdita Deg. & Deg., an extinct(?) endemic of a paradise lost by exotic primates. Phytologia 34(1): 28-32.
A thymelaeaceous species known only from one male tree occurring in a bulldozed Hawaiian Metrosideros forest propels the authors into a swirling continuum of invective directed at "idiotic Primapes", namely the exotic primates (humankind) of the article's title.

Degener, O. and I. Degener. 1977a. Book review. Phytologia 35(3): 220.
Review of M.D. Merlin, 1976.Hawaiian Forest Plants. "Its lasting value is conservational, helping to stem the tide of extermination of Hawaii's botanical treasures."

Degener, O. and I. Degener. 1977b. Hibiscadelphus number KK-HX-1: an international treasure in Hawaii. Phytologia 35(5): 385-396.
Concerns a plant of H. giffardianus which is a direct descendant of the type specimen tree. Lists many introduced exotics becoming weedy in Hawaii Volcanoes National Park.

Degener, O. and I. Degener. 1977c. Some taxa of red-flowered hibiscus endemic to the Hawaiian Islands. Phytologia 35(6): 459-470.

The Hawaiian Hibiscus Society's living collection in Waikiki, Honolulu contained about 20 endemic Hawaiian species. The plantings were suddenly bulldozed without much prior warning, and the area was summarily converted into a scientifically worthless rose garden.

Degener, O. and I. Degener. 1984. To whom it may concern: regarding Kahauale'a Geothermal Project. Notes Waimea Arboretum 11(2): 6-12.
A plea to confine the proposed project, located on the island of Hawaii, to lower elevations where vegetation has already been massacred, rather than to the high elevations where indigenous flora still survives.

Degener, O., Degener, I. and H. Hormann. 1969. Cyanea carlsonii Rock and the unnatural distribution of Sphagnum palustre L. Phytologia 19(1): 1-3.
Cyanea carlsonii on island of Hawaii is threatened by possibility of grazing animals and is evidently nearly extinct. Sphagnum moss formerly was harvested above Waipio to be "used for enbaling earth-free seedlings of exotic timber trees before carrying them into the jungle for planting."

Degener, O. and E. Gillaspy. 1955. Canton Island, South Pacific. Atoll Research Bulletin 41: 1-51.
During World War II, there was extensive construction and land-grading on Canton. Article lists ornamental and useful plant seeds later supplied from Hawaii in an attempt to revegetate the bare island with a binding plant cover for induction of land stabilization.

Degeners and Sunadas. 1976. Argyroxiphium kauense, the Kau silversword. Phytologia 33(3): 173-177.
Notes that the plant is "very localized in distribution and exposed to extinction in case a flow of lava should overwhelm the area from the summit of actively volcanic Mauna Loa, or from introduced insects and browsing animals or exotic weeds."

DeGroot, R.S. 1983. Tourism and conservation in the Galapagos Islands. Biological Conservation 26(4): 291-300.
Consideration of tourist impact and how to contain it.

Dening, G. 1982. The Marquesas. 111 pp. Papeete, Tahiti: Les Editions du Pacifique.
Includes photo of Motane I. in which feral sheep appear.

DeRoy, T. 1987. When aliens take over. International Wildlife 17(1): 34-37.
Discusses the effects of feral animal invaders in the Galapagos, including the cows on Isabela I. which trample ferns and brush and thereby promote the spread of

grasslands, and the goats which transform dry areas into deserts.

D'Espeissis, J.L. 1953. Forestry in Fiji. Trans. & Proc. Fiji Society of Science and Industry 3(2): 130-139.
Fijian soil erosion and soil fertility losses are caused by unwise land use, uncontrolled burning, and timber cutting.

Devaney, D.M., Kelly, M., Lee, P.J. and L.S. Motteler. 1976. Kaneohe: A History of Change (1778-1950). 271 pp. Honolulu, Hawaii: Bernice P. Bishop Museum.
Notes that eleven species of threatened and vulnerable Cyrtandra are located in the Kaneohe Bay region of Oahu (Hawaiian Islands): 6 species from Waikane, 3 from Waiahole, and 1 each from Heeia and Kaneohe.

DeVries, T. 1977. Como la caza de chivos afecta la vegetacion en las Islas Santa Fe y Pinta, Galapagos. Rev. Universidad Catolica 5(16): 171-181.
Discusses hunting of goats on two of the Galapagos Islands, Santa Fe and Pinta, and its effect on vegetation recovery.

DeVries, T. and J. Black. 1983. Of men, goats and guava: problems caused by introduced species in the Galapagos. Noticias de Galapagos 38: 18-21.
"The most serious threats to the native vegetation by introduced plants are those caused by guava, cinchona, various grasses and, on some islands, Lantana camara.

Diamond, J.M.(convener). 1982. Implications of island biogeography for ecosystem conservation, pp. 46-60, in Siegfried, W.R. and B.R. Davies, eds., Conservation of Ecosystems: Theory and Practice. 97 pp. South African National Science Programmes Report No. 61. Pretoria: CSIR.
An introduction to current theoretical and practical considerations of biotic extinctions on islands, including such concepts as differential extinction risk; r-strategy and K-strategy types of life-history effects; and the "trophic cascade" effect mode of sequential extinction in relation to reintroduction into the wild.

DiCastri, F. and G. Glaser. 1980. Highlands and islands: ecosystems in danger. The Unesco Courier(April 1980): 6-11.
Land in eastern Fiji must be used for subsistence agriculture, rather than for other purposes.

DiSalvatore, B. 1981. The goat men of Aguijan. Islands 1(1): 86-92.
Aguijan I. (Marianas) is uninhabited by humans, but

supports c. 1,500 feral goats and is occasionally visited by goat hunters. In the early 1940's the Japanese introduced Australian pine as windbreaks, and massive pineapple and sugarcane plantations. Goats had exterminated much original vegetation in their wanderings.

Doan, D.B., et al. 1960. Military Geology of Tinian, Mariana Islands. 149 pp. H.Q. US Army Pacific.
"Land so severely altered by construction or preparation of military installations as to be beyond reasonable possibility of rehabilitation for agriculture or restoration to any semblance of its natural state has been mapped and measured."

Doan, D.B., Paseur, J.E. and F.R. Fosberg. 1960. Military Geology of the Miyako Archipelago, Ryukyu-Retto. 214 pp. H.Q. US Army Pacific.
"In almost every area, any part of the vegetation that is of any use to man has been, and is still being, exploited mercilessly, leaving scarcely a stick of firewood worth carrying home."

Dodd, E. 1976. Polynesia's Sacred Isle. 224 pp. New York: Dodd, Mead & Company.
Volume III of The Ring of Fire trilogy, this book contains much valuable data on the "tiare apetahi", Apetahia raiateensis, a lobelioid endemic to Mt. Temehani on Raiatea, Society Islands.

Dodge, E.S. 1976. Islands and Empires: Western Impact on the Pacific and East Asia. 350 pp. Minneapolis: University of Minnesota Press.
"The first impact of sandalwooding was felt from about 1790 to 1820 in the Polynesian islands and Fiji...Marquesan wood was cleaned out in only three years, beginning in 1814, but sandalwooding in Hawaii and Fiji spanned a decade or two and had a profound effect on the people of those islands."

Doe, G.T. 1971. The battle of Kwajalein. Micronesian Reporter 19(1): 17-25.
Includes photos of vegetation devastation resulting from 1944 battle in the Marshall Islands.

Donaghho, W.R. 1970. Destruction of virgin ohia and koa forest on Hawaii by the Division of Forestry. Elepaio 30(7): 67.
"The present program of forest destruction on Hawaii must stop. No one has the right to ruin our natural resources in this manner."

Doran, E. 1959. Handbook of Selected Pacific Islands. 223 pp. Pacific Missile Range, Point Mugu, California.

Publication No. PMR-MP-59-30.
"In general, the northern half of Eniwetok Atoll, subjected to AEC tests, does not have a "normal" vegetation. Site Irene, for example, is devoid of all vegetation. Heavy fighting in World War II destroyed most of the trees on the larger islets and, indeed, not one tree survived into 1946 on Fred (Eniwetok)."

Doria, J.J. 1979. Haleakala's silversword has a chance. National Parks and Conservation Magazine 53(12): 14-16.
Argyroxiphium macrocephalum, once on the verge of extinction, is protected in Haleakala National Park, Hawaii, but feral goats are serious obstacles to recovery.

Dorst, J., et al. 1972. Conservation, pp. 69-74, in Simkin, T., et al., eds., Galapagos Science: 1972 Status and Needs. Washington, D.C.: Smithsonian Institution.
A call for baseline and control studies of introduced destructive plants and animals, and for population dynamics and monitoring studies of endangered plant species.

Doty, M.S. 1969. The Ecology of Honaunau Bay, Hawaii. 221 pp. Hawaii Botanical Science Paper No. 14. University of Hawaii.
The vegetation at Honaunau has become so weedy that the author concludes there is no compelling botanical reason to bother about preserving it in its present condition.

Doty, M.S. 1973. Chapter 16. Marine organisms, tropical algal ecology and conservation, pp. 183-196, in A.B. Costin and R.H. Groves, eds. (1973).
For the study of invasive species, population dynamics and equilibrium, and algal phytogeography, the algal ecosystems of the Pacific Islands are worthy of conservation as a prelude to planned rational use of their resources.

Douglas, B. 1971. The export trade in tropical products in New Caledonia, 1841-1872. Journal Societe Oceanistes 31: 157-169.
Includes consideration of the sandalwood export trade.

Douglas, G. 1970. Draft check list of Pacific oceanic islands. Micronesica 5(2): 327-463.
Remarks on land use history and conservation status of various islands are included.

Doumenge, F. 1963. L'ile de Makatea et ses problemes. Cahiers du Pacifique 5: 41-68.
Impacts of intensive phosphate exploitation are discussed.

Dousset, R. and E. Taillemite. Undated(post-1978). The Great Book of the Pacific. 279 pp. Dee Why West, Australia: Books for Pleasure.
Sumptuous account of Pacific island cultures, including much on human immigration and development in New Caledonia. There, "the silvery niaouli bush, which produces soothing oil and provides so many cures with its bark, disappears into paper factories, while the nickel works spew their red dust into the air to darken the once crystal clear waters of the rivers...Meanwhile modern medicine is there to cure diseases which were formerly contained by a better adaptation to natural life". (Cf. Prior, I. and J. Stanhope, 1980).

Drahos, N. 1974. New specimen of Guam's rarest tree found. Guam Rail 8(9): 5.
An account of the discovery of the second known living specimen of Serianthes nelsonii (Leguminosae), which was found in 1974 on Pati Point, Andersen Air Force Base, Guam.

Duefrene, P. 1984. The top of Mauna Kea. Aloha 7(4): 62-67.
Discusses the effects of overgrazing cattle, sheep, and goats on the mamane-naio forests, as well as consequences for endangered birds. Mauna Kea is on the Big Island of Hawaii.

Duffy, D.C. 1981. Ferals that failed. Noticias de Galapagos 33: 21-22.
It is refreshing to consider the failure and partial failure of animals which are destructive to vegetation and are, or were, introduced in the Galapagos. Goats failed in only a few places, but feral sheep, deer and rabbits are fortunately exterminated in the islands.

Dugain, F. 1953. Degradation et protection des sols de la Nouvelle-Caledonie. Et. Melan. n.s. 5(7): 69-86.
A cause of soil degradation in New Caledonia is erosion induced by destruction of vegetation.

Dutton, C.E. 1884. Hawaiian volcanoes. U.S. Geological Survey Annual Report 4: 75-219.
Useful for comparison of vegetation status between 1882 and the present time.

Dworsky, S. 1986. Two in the tropics.Horticulture 64(3): 56-62.
The Pacific Tropical Botanical Garden and Allerton Gardens on Kauai (Hawaiian Islands) preserve plant species threatened with extinction in their natural habitat.

Dybas, H.S. 1948. Comments on conservation in Micronesia,

pp. 58-59, in H.J. Coolidge, compiler (1948).
Indicates the least-damaged vegetated areas, as well as general threats, in the Marianas (Tinian, Saipan, Guam) and Carolines (Palau, Ponape).

E., M. 1938. One hundred and fiftieth anniversary of the "Bounty" expedition. Gardeners' Chronicle ser.3, 104: 305-306.
Cutting of trees on Pitcairn Island affected rainfall and soil fertility.

Eckhardt, R.C. 1972. Introduced plants and animals in the Galapagos Islands. BioScience 22(10): 585-590.
Discusses the disastrous effects of many species.

Egler, F.E. 1939. Vegetation zones of Oahu, Hawaii.Empire Forestry Journal 18(1): 44-57.
Includes details of vegetation zones dominated by foreign, fast-spreading plants including guava, and other significant aliens such as Coffea arabica (Kona coffee). The introduced guava zone of vegetation is being invaded by Psidium guajava and Psidium cattleianum var. lucidum, which are themselves guavas.

Egler, F.E. 1941. Unrecognized arid Hawaiian soil erosion. Science 94: 513-514.
Concerns the relationship between vegetation and soil erosion.

Egler, F.E. 1942. Indigene versus alien in the development of arid Hawaiian vegetation. Ecology 23(1): 14-23.
On Oahu, in the absence of anthropic influences, most of the alien plants will be destroyed by the indigenous plants.

Egler, F.E. 1947. Arid southeast Oahu vegetation, Hawaii. Ecological Monographs 17(4): 383-435.
Includes section on grazing factors which inhibit and destroy original vegetation.

Egler, F.E. 1956. Oceania, pp. 611-630, in A World Geography of Forest Resources. The Ronald Press Company.
Includes discussion of the deleterious effects of man in the Pacific forests, subdivided into "Black Men and Brown Men" (Melanesians, Micronesians and Polynesians) and "White Men and Yellow Men" (the equally destructive Europeans and Mongoloid people arriving later).

Eibl-Eibesfeldt, I. 1960. Naturschutzprobleme auf den Galapagos-Inseln. Acta Tropica 17(2): 97-137.
Includes a brief mention, with photo, of the decimating effects of wild goats on Barrington Island (Galapagos), where they consumed all the vegetation except columnar cactus.

Eliasson, U. 1968. On the influence of introduced animals on the natural vegetation of the Galapagos Islands. Noticias de Galapagos 11: 19-21.
Endemic Scalesia, Calandrinia and Portulaca species are detrimentally affected by feral grazing animals.

Eliasson, U. 1982. Changes and constancy in the vegetation of the Galapagos Islands. Noticias de Galapagos 36: 7-12.
Threatening introduced plants affecting natural vegetation include Cinchona succirubra on Santa Cruz I. and Kalanchoe pinnata on Floreana.

Elliott, H.F.I. 1973. Chapter 20. Past, present and future conservation status of Pacific islands, pp. 217-227, in A.B. Costin and R.H. Groves, eds.(1973).
Presents data on frequency of the following types of disturbances known to adversely affect Pacific island ecosystems: 1. airstrips, airports; 2. coconut planting; 3. tourism, private ownership; 4. fowling; 5. mining, salt, phosphates; 6. military, naval, air bases; 7. nuclear and other weapons testing; 8. penal, leper, quarantine stations; 9. cattle and sheep; 10. horses and donkeys; 11. pigs; 12. cats, dogs, foxes; 13. poultry; 14. goats; 15. rabbits; 16. mice; 17. rats.

Elliott, M.E. and E.M. Hall. 1977. Wetlands and Wetland Vegetation of Hawaii. 344 pp. Report prepared for the U.S. Army Corps of Engineers, Pacific Ocean Division, Fort Shafter.
Detrimental disturbance factors, when present, are noted for 62 wetland sites. Destructive management practices are often applied to Hawaiian wetlands.

Ellis, W.S. 1986. Bikini: a way of life lost. National Geographic 169(6): 813-834.
Intriguing story of the post-war nuclear test blasts on Enewetak and Bikini atolls (Marshall Is.), and subsequent radioactive contamination clean-up attempts.

Ellshoff, Z.E.1986. Symposium on control of introduced plants in native ecosystems of Hawaii: summary of presentations. Newsletter Hawaiian Botanical Society 25(3): 79-88.
Contains a summary of the important facts gleaned from the presented papers, along with he Program of the symposium, which occurred on June 10-12, 1986.

Elton, C.S. 1958. The Ecology of Invasions by Animals and Plants. 181 pp. London: Methuen.
Includes comments on vegetation impacted on Easter Island and Hawaiian Islands.

Ely, C.A. and R.B. Clapp. 1973. The natural history of Laysan Island, northwestern Hawaiian Islands. Atoll Re-

search Bulletin 171: 1-361.
"Rabbits introduced in 1903...and only the timely arrival of the Tanager expedition in 1923 saved the island from complete devegetation."

Evans, E.C., Murchison, A.E., Peeling, T.J., and Q.D. Stephen-Hassard. 1972. A Proximate Biological Survey of Pearl Harbor, Oahu. 65 pp. NUC-TP 290. San Diego, California: Naval Undersea Research and Development Center.
Includes list of 10 endangered plant species of the area, which are co-existing with introduced European weeds.

Eyde, R.H. and S.L. Olson. 1983. The dead trees of Ilha da Trindade. Bartonia 49: 32-51.
Studies by Professor D. Mueller-Dombois on dieback of Metrosideros collina forests on island of Hawaii are referred to in this study of disappearing trees on an Atlantic Ocean island.

Fagerlund, G.O. 1947. The Exotic Plants of Hawaii National Park. 62 pp., mimeod. Hawaii National Park, Natural History Bulletin, No. 10.
Where the vegetation of an area remains in its original condition, foreign plants have little chance to establish themselves. But much of the Kilauea-Mauna Loa section of Hawaii National Park (244 square miles) has been disturbed and exotic plants have invaded. Birds, especially alien species, are distributing agents for seeds of many alien plants. Includes checklist of 384 exotic species in the park. Report notes the peculiar fact that many of these plants were introduced in order to add variety to the perceived visual "monotony" possessed by the indigenous Hawaiian vegetation. A long bibliography is provided.

Falanruw, M.V.C. 1971. Conservation in Micronesia. Atoll Research Bulletin 148: 18-20.
Originally, man's culture included the practice of limitation of human population; this practice formed a buffer which prevented the destruction of his islands. Other original preservation factors include self-imposed "conservation laws", complex land ownership systems, and various taboos.

Falanruw, M.C. 1976a. Life on Guam: Human Impact. 84 pp. Guam Department of Education.
Workbook on Guam ecological and environmental problems for high schools. Notes that almost two-thirds of Guamanian plant species are introductions from elsewhere.

Falanruw, M.C. 1976b. Life on Guam: Savanna, Old Fields,

Roadsides. 74 pp. Guam Department of Education.
Workbook for high schools, including topics such as savanna burning effects, soil erosion caused by motorcycle tracks, reforestation programs, and the parade of invasive American pests including tangan-tangan (Leucaena leucocephala).

Falanruw, M.V.C. 1985. People pressure and management of limited resources on Yap, pp. 348-354, in McNeely, J.A. and K.R. Miller, eds., National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society. Washington, D.C.: Smithsonian Institution Press.
"Prospects for sustainable development seem dismal."

Faulkner, D. 1981. Palau: a pattern of islands. Oceans 14(4): 36-43.
Management plan threatens island.

Fay, J.J. 1978. Hawaii: extinction unmerciful. Garden 2(4): 22-27.
Elaborates the reasons for, and extent of, plant decimation in the Hawaiian Islands.

Fay, J.J. 1980 (2 September). Endangered and threatened wildlife and plants: proposed endangered status for the 'Ewa Plains 'akoko (Euphorbia skottsbergii var. kalaeloana). Federal Register 45(171): 58166-58168.
This, and the Fay citation following it, are included to demonstrate the process whereby a plant species is officially listed as endangered or threatened pursuant to the U.S. Endangered Species Act of 1973, by means of a notice proposing its status; then a waiting period during which further status information is collected from interested individuals in the scientific, commercial, and public communities; and then the publication of a final rulemaking or determination. All are published under auspices of the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C., in the Federal Register.

Fay, J.J. 1982 (24 August). Endangered and threatened wildlife and plants: determination that Euphorbia skottsbergii var. kalaeloana ('Ewa Plains 'Akoko) is an endangered species. Federal Register 47(164): 36846-36849.
See annotation under preceding citation.

Fernald, E.F. 1981. A decision-making process for application to island resources, pp. 59-68, in Force, R.W. and B. Bishop, eds., Persistence and Change. 155 pp. Honolulu, Hawaii: Pacific Science Association.
Suggests that information on a particular island's potentially and actually destructive alien plants and grazing animals should be included as resource manage-

ment data, since those organisms represent the possibility of causing local ecosystem instability.

Fischer, J.L. and A.M. Fischer. 1957. The Eastern Carolines. 274 pp. Washington, D.C.: Pacific Science Board.
Includes general remarks on condition of natural vegetation on the islands, noting, e.g., that nearly all mature native Exorrhiza palm trees on Truk were chopped down by the Japanese during World War II in order to consume the terminal bud as a green vegetable called "heart of palm".

Fisher, H.I. 1949. Populations of birds on Midway and the man-made factors affecting them. Pacific Science 3(2): 103-110.
Includes effects of war activities on the vegetation.

Fisher, H.I. 1966. Airplane-albatross collisions on Midway Atoll. Condor 68: 229-242.
Depicts bulldozed vegetation on Midway.

Flanders, G. 1985. Preserving Hawaii's heritage. Hawaii 2(3): 22-25.
Short but excellent article discussing panoply of threats to Hawaii's botanical heritage. Cattle destroy more of Hawaii's native plants than any other animal, yet the State of Hawaii leases out 200,500 acres for cattle grazing. Also reports that in one leasing situation, government-owned koa trees, which provided a habitat for the severely endangered alala bird, were felled for sale despite the repeated objections of state foresters. 10 photos.

Forbes, C.N. 1911. Notes on the naturalized flora of the Hawaiian Islands. Occasional Papers, B.P. Bishop Museum 4(5): 23-34.
"Introduced weeds appear along new trails through the native forest in from two to three weeks in places where it would be impossible to find them before."

Forbes,C.N. 1913a.Notes on the flora of Kahoolawe and Molokini. Occasional Papers, B.P. Bishop Museum 5(3): 3-15.
On Kahoolawe (Hawaiian Is.), "goats cause considerable harm by girdling the keawe (Prosopis juliflora), a tree introduced here about fifteen years ago and spread by horses and mules."

Forbes, C.N. 1913b. An enumeration of Niihau plants. Occasional Papers, B.P. Bishop Museum 5(3): 17-29.
Although this Hawaiian island was formerly overrun with goats, most of its available land is now used as sheep and horse pasture.

Force, R.W. 1981. Introduction: Change, nonchange, and exchange, pp. 1-13, in Force, R.W. and B. Bishop, eds., Persistence and Change. 155 pp. Honolulu, Hawaii: Pacific Science Association.
Includes mention of the consequences of plantdisturbance to Palau and Hawaii in this review of man's arrival and subsequent utilization of natural resources in the Pacific.

Fosberg, F.R. 1936. Plant collecting on Lanai, 1935. Mid-Pacific Magazine 49: 119-123.
Discusses rehabilitation of Lanai vegetation.

Fosberg, F.R. 1937a. An aggressive Lantana mutation. B.P. Bishop Museum Special Publication 31: 18.
An aggressive form of Lantana camara has spread to large areas in Manoa and Palolo valleys, Oahu. The Oahu mutation has corolla white, with yellow tube, and more prickly stems than the typical form. It is replacing the normal form rapidly, due to greater shade tolerance, greater seed production, and greater resistance to parasites.

Fosberg, F.R. 1937b. Immigrant plants in the Hawaiian Islands. I. University of Hawaii Occasional Papers No. 32: 3-11.
Includes objectionable Compositae: Pluchea, Eupatorium, and Elephantopus.

Fosberg, F.R. 1942. Uses of Hawaiian ferns. American Fern Journal 32(1): 15-23.
It is likely that wild hogs and other introduced animals are responsible for the destruction of the "pala" (Marattia douglasii), which was formerly rather common in Hawaii, and is today rare.

Fosberg, F.R. 1948a. Immigrant plants in the Hawaiian Islands. II. University of Hawaii Occasional Papers No. 46: 1-17.
An early warning of many exotics which have since become pernicious smotherers of the indigenous vegetation.

Fosberg, F.R. 1948b. Island floras, pp. 18-21, in H.J. Coolidge, compiler (1948).
Discusses the peculiarities and vulnerability of island floras in the Carolines and Marianas, and the need to conserve irreplaceable plants.

Fosberg, F.R. 1948c. Derivation of the flora of the Hawaiian Islands, pp. 107-119, in Zimmerman, E.C., Insects of Hawaii, vol. 1. Introduction. Honolulu, Hawaii: University of Hawaii Press. (Reprinted as pp. 396-408 in Kay, E.A., ed., 1972. A Natural History of the Hawaiian Islands- Selected Readings. Honolulu, Hawaii:

University of Hawaii Press.)
"An average of one successful arrival and establishment every 20,000 to 30,000 years would account for the flora..., granting an estimate of 5 to 10 million years of above-water history for the entire Hawaiian chain."

Fosberg, F.R. 1949. Flora of Johnston Island, Central Pacific. Pacific Science 3(4): 338-339.
By 1946, "there was apparently no original vegetation remaining, the whole island being occupied by runways and buildings with disturbed ground in the open places and along paths and roadsides."

Fosberg, F.R. 1950. The problem of rare and vanishing plant species. Proc. Papers International Technical Conference, Protection of Nature, Lake Success 1949: 502-504.
Many Pacific plants have nearly vanished, e.g. Capparis carolinensis from island of Peleliu represented by one living specimen in 1946, and causes of such diminishment are generally goats, temporary agriculture, and weedy exotic plants crowding out the indigenous flora.

Fosberg, F.R. 1951. Micronesia, pp. 515-517, in IUCN, The Position of Nature Protection Throughout the World in 1950. Brussels: IUCN.
"Old habits, such as that of burning the vegetation, are destructive...the natives do not understand why they should not burn grass, brush, and forest."

Fosberg, F.R. 1953a. A conservation program for Micronesia. Proc. Seventh Pacific Science Congress 4: 670-673.
Discussion of atoll and high island conservation problems.

Fosberg, F.R. 1953b. The naturalized flora of Micronesia and World War II. Eighth Pacific Science Congress Abstracts, pp. 174-176.
Introduction and spread of plant species as a result of the war.

Fosberg, F.R. 1953c. Vegetation of Central Pacific atolls: a brief summary. Atoll Research Bulletin 23: 1-26.
Includes comments on changes caused by activities of man.

Fosberg, F.R. 1954a. Vanishing island floras and vegetation. IUCN Technical Meeting, Caracas, 1952 (Reports), pp. 538-543.
Protection of lowland flora, which often contains interesting species (not just widespread plants as so often assumed), is encouraged, especially for Hawaiian Is., Palau, Fiji, and the Solomons.

Fosberg, F.R. 1954b. The protection of nature in the islands of the Pacific. VIII Congres International de Botanique, pp. 104-116.
With the advent of the Europeans, several events occurred which ultimately resulted in widespread disaster for nature in the Pacific: (1) the release of goats and other hoofed animals, (2) the introduction of steel tools, and (3) the introduction of a commercial economy as against the originally developed subsistence agriculture. To these events were later added the effects of World War II and considerations of human population increases.

Fosberg, F.R. 1955. Northern Marshall Islands Expedition, 1951-1952. Narrative. Atoll Research Bulletin 38: 1-36.
Includes notes on adventive, weedy vegetation which rapidly colonized such islands as Wake after World War II.

Fosberg, F.R. 1956a. The protection of nature in the islands of the Pacific. 8me Congres International de Botanique C.R. Seances 21-27: 104-117.
Progress in conservation on Micronesia, particularly Guam, is reported.

Fosberg, F.R. 1956b. Vegetation, pp. 185-220, in Military Geography of the Northern Marshalls. 320 pp. H.Q. US Army Forces Far East.
Discussion of 21 atolls includes revegetation of areas denuded either naturally or by military operations, and rates of change in plant communities, often smothered by weeds.

Fosberg, F.R. 1957a. Vegetation of the Oceanic Province of the Pacific. Proc. Eighth Pacific Science Congress 4: 48-55.
Includes numerous general and specific observations on vegetation alteration and disruption in the Pacific islands.

Fosberg, F.R. 1957b. The naturalized flora of Micronesia and World War II. Proc. Eighth Pacific Science Congress 4: 229-234.
During the war, Angaur and Peleliu were almost completely burned over; scarcely an acre of Saipan remained undisturbed; and the northern plateau of Guam was heavily impacted. These and other areas afforded habitats for new invasions of weeds after the cessation of hostilities.

Fosberg, F.R. 1959a. Long-term effects of radioactive fallout on plants? Atoll Research Bulletin 61: 1-11. Condensed in Nature 183: 1448 (1959).
Islets in Utirik, Ailinginae, Rongelap, and Rongerik

atolls display a vegetation in very poor condition with visible abnormalities, after the Castle Bravo bomb test on Bikini Atoll on March 1, 1954.

Fosberg, F.R. 1959b. Vegetation and flora of Wake Island. Atoll Research Bulletin 67: 1-20.
Includes discussion of regeneration of the Wake vegetation after three years of almost daily bombardment in World War II.

Fosberg, F.R. 1959c. Conservation situation in Oceania. Proc. Ninth Pacific Science Congress 7: 30-31.
In the past 4 years, 5 conservation areas were set aside in Guam to preserve examples of forest; mouflon, or wild sheep, were introduced on Lanai and Kauai (Hawaiian Is.); the French administration in New Caledonia decided to go ahead with construction of a dam which would flood the famous Plaine des Lacs, with its remarkable aggregation of rare and endemic plants; Christmas Island was used for nuclear weapons testing; colonization and sheep ranching were encouraged on Juan Fernandez Islands National Park (Chile); and, goats were introduced into Henderson Island.

Fosberg, F.R. 1959d. Vegetation, pp. 168-172, in Tracey, J.I., et al. (1959).
On Guam, "A long history of disturbance by the Guamanians, by frequent typhoons, and by the destructive effects of World War II and subsequent military activities, has left little undisturbed primary forest on the island."

Fosberg, F.R. 1960a. The vegetation of Micronesia: 1. General descriptions, the vegetation of the Marianas Islands, and a detailed consideration of the vegetation of Guam. Bulletin American Museum of Natural History 119, Article 1: 75 pp. + 40 plates.
Abundant information on disturbance, secondary forests, succession, deterioration of vegetation through effects of introduced plants, wartime activities, land clearance, and intensive pre-World War II phosphate mining.

Fosberg, F.R. 1960b. Vegetation, pp. 165-187, in Doan, D.B., et al., Military Geology of the Miyako Archipelago, Ryukyu-Retto. H.Q. US Army Pacific.
"The vegetation of even the completely uncultivable areas of limestone with practically no soil has been profoundly influenced by man."

Fosberg, F.R. 1960c. Vegetation, pp. 51-84, in Foster, H.L., et al., Military Geology of Ishigaki-Shima, Ryukyu-Retto. H.Q. US Army Pacific.
The vegetational aspect of this island is changing due to introduction of exotic plants, and active land

clearing for pineapple plantations has greatly reduced the amount of forest at base of mountains.

Fosberg, F.R. 1961. Typhoon effects on individual species of plants, pp. 57-68, in Blumenstock, D.I., ed., A report on typhoon effects upon Jaluit Atoll. Atoll Research Bulletin 75: 1-105.
Devastating impact of Typhoon Ophelia on January 7, 1958.

Fosberg, F.R. 1963a. Grazing animals and the vegetation of oceanic islands, pp. 168-169, in Unesco, Symposium on the Impact of Man on Humid Tropics Vegetation (Goroka, Papua New Guinea). 402 pp. Djakarta.
Consideration of vegetation disturbance by grazing quadrupeds.

Fosberg, F.R. 1963b. Disturbance in island ecosystems, pp. 557-561, in Gressitt, J.L., ed. (1963).
Mentions Hawaiian examples of ecosystems extremely susceptible to disturbance.

Fosberg, F.R., ed. 1963 (Reprinted 1965). Man's Place in the Island Ecosystem: A Symposium. 264 pp. Honolulu: Bishop Museum Press.

Fosberg, F.R. 1966. The volcanic island ecosystem, pp. 55-61, in Bowman, R.I., ed., The Galapagos. Berkeley and Los Angeles: University of California Press.
Includes brief discussion on status of Galapagos Islands ecosystems.

Fosberg, F.R. 1967. Some ecological effects of wild and semi-wild exotic species of vascular plants, pp. 98-109, in Towards A New Relationship of Man and Nature in Temperate Lands, Part III. Changes due to Introduced Species. IUCN Publications New Series, No. 9. Morges, Switzerland: IUCN.
Review article includes mention of invasion of Eupatorium adenophorum on Molokai, Hawaiian Is.

Fosberg, F.R. 1968a. Some relations between ecosystem size and cultural evolution, pp. 702-704, in Misra, R. and B. Gopal, eds., Proceedings of the Symposium on Recent Advances in Tropical Ecology, Part II. Varanasi, India: International Society for Tropical Ecology.
Resistance of traditional cultures to introduced cultures in the Pacific has tended to break down, and the ecological effects of such deterioration include accelerated soil erosion, siltation of marine environments, and abandonment of taro culture and the highly evolved irrigation systems that accompany it.

Fosberg, F.R. 1968b. Systematic notes on Micronesian

plants. Phytologia 15(7): 496-502.
Mimosa invisa from Saipan and Palau, an "unpleasant, viciously spiny Brazilian creeper,...should be ruthlessly eradicated wherever found."

Fosberg, F.R. 1971. Endangered island plants. Bulletin Pacific Tropical Botanical Garden 1(3): 1-7.
Includes biological reasons for fragility of island ecosystems, and adaptations developed by indigenous Hawaiian flora in isolation from predators.

Fosberg, F.R. 1972a. Man's effects on island ecosystems, pp. 869-880, in Farvar, M.T. and J.P. Milton, eds., The Careless Technology: Ecology and International Development. Garden City, New York: Natural History Press.
Explains destructive acts of man on vegetation.

Fosberg, F.R. 1972b. The axis deer problem. Elepaio 32(9): 86-88.
"Scientifically (speaking),... introducing deer on the island of Hawaii will, in the long run, be a catastrophe with no compensating benefit."

Fosberg, F.R. 1973a. Temperate zone influence on tropical forest land use: a plea for sanity, pp. 345-350, in Meggers, B.J., Ayensu, E.S., and W.D. Duckworth, eds., Tropical Forest Ecosystems in Africa and South America: A Comparative Review. Washington, D.C.: Smithsonian Institution Press.
"Tropical peoples suspect, understandably, that attempts to introduce ideas of conservation and environmental preservation are merely designed to deny them material benefits from rapid exploitation of their resources. Yet, it is distressing to see them repeating the same mistakes that have brought about serious degradation of temperate environments, perpetuating them, in fact, with the increased tempo characteristic of the tropics and augmented by modern technology." Notes stream siltation on Hamakua Coast of Hawaii due to sugarcane plantations on sloping ground inviting runoff.

Fosberg, F.R. 1973b. On present condition and conservation of forests in Micronesia, pp. 165-171, in Planned Utilization of the Lowland Tropical Forests. 263 pp. Pacific Science Association Symposium, 1971, Cipayung, Bogor, Java.
"Forest types which may be regarded as "natural", even though they result from modification of original forest by man, still exist on Guam, Rota, Alamagan, and possibly to a very limited extent on Saipan, in the Marianas, on Babeldaob in the Palaus, on Yap, Truk, Ponape and Kusaie, and on a few of the atolls in the Carolines."

Fosberg, F.R. 1973c. Chapter 13. Vascular plants - widespread island species, pp. 167-169, in A.B. Costin and R.H. Groves, eds. (1973).
Many widespread plant species of the Pacific Islands are polymorphic, comprising several recognizable varieties and forms. These variants should not be destroyed, and many of them have unfortunately already been lost.

Fosberg, F.R. 1973d. Chapter 19. Past, present and future conservation problems of oceanic islands, pp. 209-215, in A.B. Costin and R.H. Groves, eds. (1973).
Discusses catastrophic effects of introduced plants and animals on these islands, where competition from an indigenous equilibrated biota is of minimal effect against the aliens.

Fosberg, F.R. 1975. The deflowering of Hawaii. National Parks and Conservation Magazine 49(10): 4-10.
Recommends that large samples of all kinds of habitat must be preserved if a significant number of Hawaii's endangered plant species is to be saved from extinction.

Fosberg, F.R. 1977. An irresponsible scientific expedition. Atoll Research Bulletin 219: 4-5.
Reports fire-vandalism to Pisonia forest on Vostok Island caused by expedition mounted by government of the Gilbert and Ellice Islands.

Fosberg, F.R. 1979. Tropical floristic botany - concepts and status - with special attention to tropical islands, pp. 89-105, in Larsen, K. and B. Holm-Nielsen, eds., Tropical Botany. 453 pp. London: Academic Press.
Makes the useful distinction within destructive weeds, between those able to invade closed, rarely even undisturbed, vegetation, such as Clidemia hirta, Psidium cattleianum, P. guajava, Paederia foetida and Mikania scandens sensu lato, and the category of weeds that are able to occupy open or disturbed areas (habitats) created by man through agricultural, grazing, logging and other activities. Many island endemics have been killed out by plants of the first category in closed vegetation.

Fosberg, F.R. 1983. The human factor in the biogeography of oceanic islands. C.R. Soc. Biogeographie 59(2): 147-190.
Discusses introduction of exotic plants and animals; deforestation; agriculture; fire; and also individually describes the degree of alteration by man which has occurred on each of the principal oceanic islands. "Since the original biogeographic patterns on most islands are not or little understood, ...the nature and effects of man's activities should be carefully and continually documented."

Fosberg, F.R. 1984a. Henderson Island saved. Environmental Conservation 11(2): 183-184.
Stimulated by environmental concerns, the British government declined an offer to partially convert the island to a private development.

Fosberg, F.R. 1984b. Phytogeographic comparison of Polynesia and Micronesia, pp. 33-44, in Radovsky, F.J., Raven, P.H. and S.H. Sohmer, eds., Biogeography of the Tropical Pacific. Bishop Museum Special Publication No. 72. 221 pp.
Includes discussion of anthropic (human) plant geography, and reconstruction of original, pre-human vegetation on high and low islands. Notes that "On oceanic islands,...man's arrival was comparatively recent, and he had already reached the stage where he could build boats, make tools and weapons, use fire, domesticate animals and plants, and thus produce much of his own food." Observes that "if we do not do something soon to protect the remaining vestiges of natural vegetation in the islands, Pacific botany will continue only as herbarium paleobotany."

Fosberg, F.R. 1985. Present state of knowledge of the floras and vegetation of emergent reef surfaces. Proc. Fifth International Coral Reef Congress, Tahiti 2: 138.(Abstract)
"The sad fact, also, is that on almost all coral islands and limestone portions of "high" islands phosphate mining, plantation agriculture, military activities, nuclear weapons testing, introduced feral herbivores and weedy exotic plants, as well as overly dense human settlement have changed the vegetation, eliminated species, and blurred the biogeographic patterns so that island biogeography has become a difficult and uncertain science."

Fosberg, F.R. and G. Corwin. 1985. A fossil flora from Pagan, Mariana Islands. Pacific Science 12: 3-16.
Among other exotic flora, the Jatropha gossypifolia introduced by the Japanese in the 1930's has spread and now dominates large areas in central Pagan.

Fosberg, F.R. and D. Herbst. 1975. Rare and endangered species of Hawaiian vascular plants. Allertonia 1(1): 1-72.
An extensive listing of endangered and threatened plant species, subspecies and varieties, representing one of the more fragile and vulnerable floras on earth.

Fosberg, F.R. and M.-H. Sachet. 1962. Vascular plants recorded from Jaluit Atoll. Atoll Research Bulletin 92: 1-39.

Useful for tracing the spread of introduced plants throughout the Marshall Islands, from pre-German and Japanese times.

Fosberg, F.R. and M.-H. Sachet. 1966. Lebronnecia, gen. nov. (Malvaceae) des Iles Marquises. Adansonia 6(3): 507-510.
Extremely rare and endangered Lebronnecia kokioides is described from Tahuata Island.

Fosberg, F.R. and M.-H. Sachet. 1969. Wake Island vegetation and flora, 1961-1963. Atoll Research Bulletin 123: 1-15.
Observations on disturbance and recovery of vegetation.

Fosberg, F.R. and M.-H. Sachet. 1983a. Henderson Island threatened. Environmental Conservation 10(2): 171-173.
Threatened desecration of a unique biota due to human development activities (later averted by British government).

Fosberg, F.R. and M.-H. Sachet. 1983b. Plants of the Society Islands, pp. 76-107, in Carr, D.J., ed., Sydney Parkinson, Artist of Cook's Endeavour Voyage. 300 pp. Honolulu, Hawaii: University Press of Hawaii.
Parkinson's paintings of plants done in 1769 are useful for documenting species, such as both Hibiscus rosa-sinensis and Miscanthus floridulus on Tahiti, which were members of the Polynesian flora in pre-European times.

Fosberg, F.R. and M.-H. Sachet. 1985. Rare, endangered, and extinct Society Island plants. National Geographic Society Research Reports 21: 161-165.
Approximately 200 out of the total 850 indigenous plant species of the Society Islands are either rare or extinct.

Fosberg, F.R., Sachet, M.-H. and D.R. Stoddart. 1983. Henderson Island (Southern Polynesia): Summary of current knowledge. Atoll Research Bulletin 272: 1-47.
A reasonably unaltered, raised atoll threatened at the time by the spectre of development for human activities. The indigenous flora of Henderson includes 9 species and 6 varieties of endemic angiosperms.

Fowler, L. 1979. Population ecology and impact of the feral burros of Galapagos. Annual Report of the Charles Darwin Research Station 1979: 111-113.
Burros (Equus asinus) were introduced to the Galapagos in the mid-1800's and have become firmly established on all 5 major islands. On Volcan Alcedo (Isla Isabela) the large feral burro population may be overgrazing the vegetation, particularly in the dry season.

Frome, M. 1986. Hawaii's heritage remains at risk. Defenders 61(5): 18-19, 44.
Includes brief discussion of effects of seemingly disadvantageous Hawaiian forestry practices, and status of Hawaiian Volcanoes National Park and proposed geothermal energy complex on the Campbell Estate at Kilauea.

Fullard-Leo, B. 1985. Turtle Bay Hilton: one island, two worlds. Aloha 8(4): 68-70.
Amusements provided for guests at Turtle Bay Hilton and Country Club on Oahu (Hawaiian Islands) include dune-cycling on four-wheeled recreation vehicles along secluded beach and forest trails.

Fullaway, D.T. 1975. Forestry's role in Micronesia. Micronesian Reporter 23(3): 12-15.
Due to domination by a steady succession of foreign powers, some Micronesian societies have been influenced to change from depending on the land for their needs, to a dependency on imported goods, which has affected their attitude towards conservation of land-based resources.

Funk, E. 1982. Unpublished manuscripts. Status reports on Abutilon menziesii Seem. (Malvaceae); Geranium arboreum Gray (Geraniaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Furnas, J.C. 1948. Anatomy of Paradise: Hawaii and the Islands of the South Seas. 542 pp. New York: William Sloane Associates, Inc.
In the Hawaiian Islands, "Sandalwooding left its mark. The hunt for it destroyed a good deal of timberland, as the natives lazily burned the forest to detect stands of it by smell. But far more destructive was the fact that the trade attracted whites, whose very presence was subversive."

Gagne, B.H. 1982. Unpublished manuscript. Status report on Gardenia brighamii Mann (Rubiaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Gagne, W.C. 1975. Hawaii's tragic dismemberment. Defenders 50(6): 461-469.
Causes of threats to fragile ecosystems of Hawaii are portrayed.

Gagne, W.C. 1983. Nihoa: biological gem of the northwest Hawaiian Islands. Ka 'Elele 10(7): 3-5.
The remote environment of the endemic, presumed vulnerable Nihoa loulou palm, Pritchardia remota.

Gagne, W.C. 1986. Hawaii's botanical gardens: panacea or Pandora's box in the conservation of Hawaii's native flora. Newsletter Hawaiian Botanical Society 25: 7-10.
"Some plant groups such as the melastomes and gingers have become sufficiently notorious naturalizers that unanimity would be reached on banning further introductions and coming to grips with the eventual control of the escapees."

Gardiner, J.M. 1979. Silverswords and greenswords from Hawaii. The Garden 104(2): 50-54.
Includes data on Argyroxiphium kauense in cultivation at Royal Botanic Garden, Edinburgh, and cultural requirements of A. sandwicense and A. kauense.

Gardner, T. and P. Gardner. 1985. Rescue in paradise. International Wildlife 15(4):12-13.
Lord Howe I. woodhen saved from threat of extinction presented by feral pigs and goats which were "destroying the thick, wet, forest litter".

Garnock-Jones, P.J. 1978. Plant Communities on Lakeba and southern Vanua Balavu, Lau Group, Fiji. Royal Society of New Zealand Bulletin 17: 95-117.
Man-induced fire, severe soil erosion, and introduced weeds play a part in altering naturally vegetated land here.

Gerrish, G. and D. Mueller-Dombois. 1980. Behavior of native and non-native plants in two tropical rain forests on Oahu, Hawaiian Islands. Phytocoenologia 8(2): 237-295.
Distribution patterns of several exotic species indicate that they may be altering the vegetation structure over large areas in a manner that may reduce the quality of the habitat for endemic plants.

Giffin, J. 1977. Ecology of the feral pig on Hawai'i Island. Elepaio 37(12): 140-142.
"Fern or rain forest habitat is the most extensive feral pig habitat found in the State". Pigs break open tree-fern trunks for starch.

Gilbert, B. 1977. A hellish spot in heavenly surroundings. Audubon 79(2): 30-46.
Article concerns Kalaupapa Peninsula on Molokai I., Hawaiian Is. Discusses "mongrelization" of Hawaiian flora with a "conglomerate of Asiatic, Polynesian, South, Central, North American, Mediterranean, and African species."

Gilbert, C. 1974. The Galapagos and man. Oceans 7(2): 40-47.
Includes remarks on extent of agriculture in the archipelago.

Gillett, G.W. 1972. The critical need for conservation in the Marquesas Islands. Newsletter Hawaiian Botanical Society 11(4): 33-36.
Domesticated and feral grazing animals have largely exterminated the original flora of Nukuhiva, Uahuka, and Uapou.

Gilmartin, A.J. 1970. First colloquium on rare and endangered species of Hawaii. Association for Tropical Biology Newsletter 22: 1-4.
Mentions bulldozing of koa (Acacia koa) forests and replanting them with Eucalyptus in certain areas.

Gilpin, M.E. and J.M. Diamond. 1980. Subdivision of nature reserves and the maintenance of species diversity. Nature 285(5766): 567-568.
Includes reference to Vanuatu (New Hebrides).

Given, D.R. 1975. Conservation of rare and threatened plant taxa in New Zealand: some principles. Proc. New Zealand Ecological Society 22: 1-6.
Includes concise remarks on the status of the Philip Island glory pea (Streblorrhiza speciosa), a presumed extinct legume.

Glassman, S.F. 1957. The vascular flora of Ponape and its phytogeographical affinities. Proc. Eighth Pacific Science Congress 4: 201-213.
A number of endemics in the original vegetation of the comparably sized island of Guam must have been destroyed by man, causing confusion when scientists try to estimate the true, or former, percentage of endemism on Ponape.

Gold, H. 1984. The Galapagos: Seeing what Charles Darwin saw. Islands 4(5): 40-59.
Notes a study of revegetated areas fenced off from goats by personnel of the Galapagos National Park. The Park and the Charles Darwin Research Station are helping to protect the caldera floor of Volcan Alcedo, as well as the cacti of Isla Fernandina, and the pahoehoe lava fields of Isla San Salvador.

Gold, H. 1985. Maui, the isle of the trickster god. Islands 5(2): 20-31.
Includes photographs of Haleakala National Park, and also of recent enormous housing developments on the north coast of Maui at Kahului, and at Kaanapali Beach.

Gon, S.M. 1987. The dunes of Mo'omomi. The Nature Conservancy News 37(1): 14-17.
On the coast of west Molokai, Hawaiian Islands. "Within vast, integrated communities of nearly undisturbed na-

tive grasses and shrubs grow more rare coastal species than in any other single place in the islands."

Gorman, M.L. and S. Siwatibau. 1975. The status of Neoveitchia storckii, a species of palm tree endemic to the Fijian island of Viti Levu. Biological Conservation 8(1): 73-76.
"The species has been reduced to a single population of 150-200 sexually mature trees."

Gormley, R. 1984. Molokai-on the edge. Aloha 7(1): 20-27.
Pineapple plantations are slackening and tourism is increasing, calling for wise land-use in diversified agricultural and development programs so as not to harm the Molokai ecosystem.

Gosnell, M. 1976. The island dilemma. International Wildlife 6(5): 24-35.
On Kauai (Hawaiian Islands) indigenous forests have been cleared for housing developments and for cultivation of Anthurium species and other florist flowers. Also, the introduced European blackberry is a pest there.

Gourou, P. 1963. Pressure on island environment, pp. 207-225, in Fosberg, F.R., ed. (1963).
In the discussion following this article, F.R. Fosberg notes that deforestation and accelerated erosion have had adverse effects on the landscape of Kahoolawe, Lanai, southeast Oahu, and Niihau (Hawaiian Is.).

Gradstein, S.R. and W.A. Weber. 1982. Bryogeography of the Galapagos Islands. Journal Hattori Botanical Laboratory 52: 127-152.
"Because of the destruction of much of the original Scalesia forest (itself a rich habitat), and its replacement by extensively introduced exotic trees and cultivars, this zone (moist evergreen woodland) probably will continue to yield new discoveries of bryophytes and possibly some of them will have been accidentally imported in modern times with animals, fowl, provisions, shoes and pants-cuffs, just as have so many phanerogams."

Grady, M. 1986. Stand structure of an isolated forest in Lyon Arboretum, Oahu, Hawaii. Newsletter Hawaiian Botanical Society 25(2): 47-59.
"Understanding the structural dynamics of small stands can help in planning for nature reserves to prevent extinction of unique forest ecosystems."

Graf, D.F. 1972. American Samoa - Annual Environmental Report. 17 pp. Pago Pago, American Samoa: Office of the Governor.
"With slopes often exceeding 30 percent, the clearing of

vegetation for gardening or home construction generally results in considerable erosion."

Graham, B. 1987 (March 19). Tourism, immigration put strain on Galapagos. Washington Post: A-25.
Pressures from the commercial tourist trade along with a sharp increase in numbers of permanent settlers worry some conservationists that development will be allowed to progress uncontrolled, although government officials indicate that preservation of the islands is important. One senior planner spoke of the desirability of guarding against the "Hawaiianization" of the Galapagos.

Grant, P.R. 1981. Population fluctuations, tree rings and climate. Noticias de Galapagos 33: 12-16.
On Isabela and Santa Cruz (Galapagos), the Bursera populations will eventually collapse unless the feral goats are controlled. A study of individual growth patterns from tree rings will be helpful in assessing the long term survival of Bursera populations.

Green, P.S. 1969. Discussion. Philosophical Transactions Royal Society B255: 616-617.
"Unintelligent burning is a great danger to the plant cover in New Caledonia, almost as great perhaps as the danger from the encroachment of mining, even in the remoter areas in the northern parts of the island."

Green, P.S. 1979. Observations on the phytogeography of the New Hebrides, Lord Howe Island and Norfolk Island, pp. 41-53, in Bramwell, D., ed., Plants and Islands. 459 pp. New York and London: Academic Press.
Only 3 or 4 bushes of Hibiscus insularis now exist in the wild on Philip Island, an island that "presents us with a first-rate example of what man, by means of goats and pigs and finally by rabbits, can do to exterminate a flora."

Green, P.S. 1985. Refound: on South Sea isle. Threatened Plants Newsletter 15: 21.
Abutilon julianae (Malvaceae), extirpated on Norfolk Island, has recently been discovered on Philip Island. Includes observations on condition of Philip vegetation.

Grepin, F. 1976. La medecine Tahitienne traditionnelle. Cahiers du Pacifique 19: 337-382.
Includes list of c.75 traditional medicinal plants of Tahiti, with 14 useful illustrations, and recipes for medications.

Gressitt, J.L., ed. 1963. Pacific Basin Biogeography: A Symposium. 563 pp. Honolulu, Hawaii: Bishop Museum Press.

Groube, L.M. 1971. Tonga, Lapita pottery, and Polynesian

origins. Journal of the Polynesian Society 80(3): 278-316.
Mankind has been occupying Tonga and altering its vegetation to some extent for over 3,000 years.

Guillaumin, A. 1933. Materiaux pour la flore de la Nouvelle-Caledonie, XIII. Revision des Verbenacees. Bull. Soc. Bot. France 80: 476-480.
Briefly traces the introduction and spread of Lantana camara and other verbenaceous weeds in New Caledonia.

Guillaumin, A. 1953a. Mesures de conservation a prendre pour la sauvegarde de la flore de la Nouvelle-Caledonie. (Resume). Proc. Seventh Pacific Science Congress 4: 674.
Urgently recommends establishment of series of integral nature reserves to protect localized plant species.

Guillaumin, A. 1953b. L'evolution de la flore Neo-Caledonienne. Journ. Soc. Oceanistes 9(9): 79-85.
Includes discussion of introduced plants, weeds, forest exploitation.

Guillaumin, A. 1970. Le santal en Nouvelle-Caledonie. Journ. Agric. Trop. Bot. Appl. 17(7-9): 340-341. (Notice (review) by Plessis, J. 1972. Cahiers du Pacifique 16: 214).
Detrimental exploitation of New Caledonian sandalwood had become 230, 563 kg.'s worth in 1908; trade has since ceased.

Gustafson, R.J. 1979. Hawaii's unique and vanishing flora - the genesis of an exhibit. Terra 18(2): 3-9.
Discusses demolishment of Hawaiian flora.

Hall, E.O. 1839. Notes of a tour around Oahu. Hawaiian Spectator 2: 94-112.
Describes lowland vegetation as it was before sugarcane, pineapple, and Prosopis took it over.

Hall, W.L. 1904. The forests of the Hawaiian Islands. USDA Forestry Bulletin 48: 1-29.
Includes notes on forest decline and reforestation.

Halle, F. 1978. Arbres et forets des Iles Marquises. Cahiers du Pacifique 21: 315-357.
Includes discussion of Marquesan forest types which are perpetuated, and encouraged, or modified by human inhabitants.

Halle, N. 1980. Les Orchidees de Tubai (Archipel des Australes, Sud Polynesie). Cahiers de l'Indo-Pacifique 11(3): 69-130.
Cyathea cumingii Baker, the tree-fern of Tubai, is highly endangered. Forests with lesser degradation in

high altitudes contain rare species seemingly in danger of extinction. Contains catalogue of ferns and angiosperms of Austral Is., to which additions are made in the article on vegetation of Rurutu, Halle, N. 1983. Bull. Mus. Nat. Hist. Nat. Paris, ser.4, sect.B., Adansonia 5(2): 141-150.

Hamann, O. 1978. Recovery of vegetation on Pinta and Santa Fe Islands. Noticias de Galapagos 27: 19-20.
Liquidation of goat populations produced recovery of vegetation.

Hamann, O. 1979a. Taxonomic and floristic notes from the Galapagos Islands. Bot. Notiser 132: 435-440.
Callitriche deflexa is a recent introduction which prefers habitats disturbed by goats and pigs. The recent spread of Triumfetta semitriloba may be associated with the continuing disturbance of the natural vegetation caused by feral animals.

Hamann, O. 1979b. Regeneration of vegetation on Santa Fe and Pinta Islands, Galapagos, after the eradication of goats. Biological Conservation 15(3): 215-236.
On Pinta Island about 40,000 feral goats were shot during the period 1971-1977, and as a result of the killings, a rapid regeneration of vegetation in the arid lowlands is underway.

Hamann, O. 1979c. The survival strategies of some threatened Galapagos plants. Noticias de Galapagos 30: 22-25.
Habitat diminishment of Scalesia, Piscidia and Miconia is discussed.

Hamann, O. 1981. Plant communities of the Galapagos Islands. Dansk Botanisk Arkiv 34(2): 1-163.
Grazing goats have degraded the steppe forest in the central arid region of Pinta. Santa Cruz I. has experienced many recent vegetational changes due to introduced plants on new roads, woodcutting, and effects of goats, pigs and donkeys. On Baltra I., it is predicted that desert scrub will dominate due to man's negative influence. On Santa Fe I., goats have devastated the dry-season deciduous steppe forest. The highland plateau of Santa Maria I. is mostly covered with Psidium guajava, an introduced, aggressive competitor. Feral goats are the most serious plague of San Salvador I. The only large island of the Galapagos remaining completely undisturbed by man is Fernandina, which has frequent volcanic eruptions.

Hamilton, L.S., ed. 1983. Forest and Watershed Development and Conservation in Asia and the Pacific. 560 pp. Boulder, Colorado and Essex, England: Westview Press.

Discusses forests and watersheds as natural resources to be conserved as valuable assets.

Hamilton, T.H., Rubinoff, I., Barth, R.H. and G.L. Bush. 1963. Species abundance: natural regulation of insular variation. Science 142: 1575-1577.
Of interest relating to studies of endemism and evolution in the Galapagos.

Harney, T. 1983. Fostering rare breeds on the museum's rooftop. The Torch(Smithsonian Institution) 83(1 January): 2.
The endangered Abutilon sachetianum (Malvaceae) from Marquesas Is. is being grown in National Museum of Natural History's rooftop greenhouse, Washington, D.C.

Harris, D.R. 1962. Invasion of oceanic islands by alien plants. Transactions, Institute of British Geographers 31: 67-82.
Includes pertinent observations on the Pacific Islands.

Harrison, B.C. 1972. The vegetation of Waihoi Valley, East Maui, pp. 94-136, in Kjargaard, J.I., ed., Scientific Report of the Waihoi Valley Project. Sponsored by National Science Foundation. 252 pp. University of Hawaii.
Pastures with remnants of thicket-producing indigenous Dicranopteris linearis (uluhe fern) are often trampled by cattle "until there is nothing but bare earth, almost as if a bulldozer had been at work". "Further introduction of hoofed animals to Maui should be prevented to protect habitats such as Waihoi from being modified." A stand of a possibly new species or variety of Pritchardia palm was mapped.

Hart, A.D. 1975. Living jewels imperiled. Defenders 50(6): 482-486.
Introduced trees, pests and collectors are decimating indigenous land snails (Achatinella) of Hawaii.

Hartley, R.L. 1963. Agriculture on Rotuma Island. South Pacific Bulletin 13(2): 57-61, 63.
On Rotuma I. (politically a part of Fiji Is.) the two most heavily infesting weeds are Lantana camara and Hibiscus tiliaceus. Native "timber is now being used regularly and in large quantities for firing the copra driers."

Hartt, C.E. and M.C. Neal. 1940. The plant ecology of Mauna Kea, Hawaii. Ecology 21(2): 237-266.
Depredations made by feral grazing cattle, goats, sheep, horses and hogs are discussed as biotic factors in the removal of the flora.

Hashimoto, T. 1977. Ogasawara plants with potential for cultivation as ornamentals. Notes Waimea Arboretum 4(1): 12-19.
Interesting data on endemic plants having ornamental qualities suitable for consideration as useful to man.

Hatheway, W.H. 1952. Composition of certain native dry forests: Mokuleia, Oahu, Territory of Hawaii. Ecological Monographs 22: 153-168.
Characteristics and composition of some of the vegetation zones have been altered or destroyed by feral grazing animals and introduced plant pests such as Prosopis and Leucaena.

Havas, V. 1985a. Galapagos tortoises race progress and flames. Islands 5(5): 10.
Describes adverse effects on environment caused by enormously widespread fire which began in February 1985 when Santo Tomas residents (on Isabela I.) burned diseased coffee plants and the fire inadvertently spread to native vegetation.

Havas, V. 1985b. Next stop, Easter Island. Islands 5(6): 12.
It has been claimed that Easter Island's ecology will not be interfered with by NASA's planned extension of Mataveri airstrip for the purpose of accommodating future aborted launchings of space shuttles from California's Vandenberg Air Force Base.

Hawaii Volcanoes National Park. 1974. National Park Service Silversword Restoration Project Proposal. 15pp. Hawaii Volcanoes National Park, National Park Service, U.S. Department of the Interior.
Concerns conservation of the rare silversword plants of Hawaii (Argyroxiphium, Compositae).

Heacox, K. 1984. El cuidado de las Islas Encantadas. Americas 36(6): 2-5, 46-49.
Efforts to prevent adverse impacts from tourism in the Galapagos Islands.

Heine, A. 1984. Urbanization and social change in the Marshall Islands. Ambio 13(5-6): 313-315.
Urbanization has inevitable effects on the surrounding environment.

Heinl, R.D. 1947. The Defense of Wake. 75 pp. Washington, D.C.: U.S. Marine Corps.
Photos depicting effects of 1941 military operations on the vegetation of Wake atoll are included.

Heinl, R.D. and J.A. Crown. 1954. The Marshalls: Increasing the Tempo. 188 pp. Washington, D.C.: U.S.

Marine Corps.
Photos depicting effects of 1944 military operations on the vegetation of the Marshall Islands are included.

Herbst, D.R. 1972a. Botanical survey of the Waiehu sand dunes. Bulletin Pacific Tropical Botanical Garden 2(1): 6-7.
Includes information on Hawaiian Scaevola coriacea.

Herbst, D. 1972b. Ohai, a rare and endangered Hawaiian plant. Bulletin Pacific Tropical Botanical Garden 2(3): 58.
Sesbania tomentosa on leeward shores is presently threatened by motorcyclists and the proposed construction of a highway which would open the area to greater disturbance.

Herbst, D. 1976. Appendix B-2. Vegetation survey of the Barbers Point Harbor Area, Oahu. 3 pp. Final Environmental Impact Statement, Barbers Point Harbor, Oahu, Hawaii. Honolulu, Hawaii: U.S. Army Engineers.
Mentions endangered plant species in the area.

Herbst, D. 1977a. Endangered Hawaiian plants. Newsletter Hawaiian Botanical Society 16(1-2): 22-29.
"A kapu placed on cattle allowed the build-up of enormous herds until their destruction (of vegetation) was so great that man was forced to contain or destroy them."

Herbst, D. 1977b. Vanishing plants. Water Spectrum 9(4): 20-26.
Includes discussion of vanishing elements of Hawaii's indigenous flora.

Herbst, D. 1980. Miscellaneous notes on the Hawaiian flora.I. Phytologia 45(1): 67-81.
Includes notes on spread of introduced weeds near LORAN station on Tern Island, French Frigate Shoals.

Herbst, D. 1984. Cooke's kokio (Kokia cookei). Endangered Wild Flower Calendar. Brooklyn, New York: Department of Biology, Brooklyn College.
Includes descriptive caption material.

Herbst, D. and J.J. Fay. 1981 (30 January). Proposal to list Panicum carteri (Carter's Panicgrass) as an endangered species and determine its critical habitat. Federal Register 46(20): 9976-9979.
Includes range map of Panicum carteri on Mokoli'i Island, Hawaiian Islands.

Hertlein, L.G. 1963. Contribution to the biogeography of Cocos Island, including a bibliography. Proc. California

Academy of Science 32(8): 219-289.
Cocos I., in the Pacific Ocean off Central America: discussion of biotic environment.

Hess, W.N. 1962. New horizons in resource development. Geographical Review 52: 1-24.
Illustrates nuclear blast devastation on Enewetak.

Heyerdahl, T. 1940. Marquesas Islands. Proc. Sixth Pacific Science Congress 4: 543-546.
At the time, nature protection was lacking in the Marquesas. In some places, semiwild animals were devouring plants and bringing in weeds which then developed and spread along trails.

Heyerdahl, T. 1963. Prehistoric voyages as agencies for Melanesian and South American plant and animal dispersal to Polynesia, pp. 23-35, in Barrau, J., ed., Plants and the Migrations of Pacific Peoples." 136 pp. Honolulu, Hawaii: Bishop Museum Press.
Remarks on a single dwarfed, mutilated living specimen of Sophora toromiro in the Rano Kao crater, the only individual remaining of this Easter Island endemic, are included.

Heyerdahl, T. 1968. The prehistoric culture of Easter Island, pp. 133-140, in Yawata, I. and Y.H. Sinoto, eds., Prehistoric Culture in Oceania: A Symposium. Honolulu, Hawaii.
Refers to evidence of forest plants existing when period of human occupation began.

Heyligers, P.C. 1967. Vegetation and ecology of Bougainville and Buka islands, pp. 121-145, in: CSIRO (Australia), Lands of Bougainville and Buka Islands, Territory of Papua and New Guinea. CSIRO Land Research Series No. 20. 184 pp. Melbourne: CSIRO.
Essential to any future studies of vegetation change on Bougainville (formerly in Solomon Islands politically), and includes descriptions of anthropogenous vegetation types. Land-use map accompanies entire publication.

Heywood, V.H. 1979. The future of island floras, pp. 431-441, in Bramwell, D., ed., Plants and Islands. London: Academic Press.
General considerations of the fate of insular plants are presented.

Hickman, J. 1985. The Enchanted Islands: The Galapagos Discovered. 169 pp. Dover, New Hampshire: Tanager Books.
Chapter 16: Conservation of Species, includes discussion of alien plants, and introduced animals such as the 100,000 goats and 20,000 pigs of Santiago Island in the Galapagos.

Higashino, P.K., Guyer, W. and C.P. Stone. 1983. The Kilauea Wilderness Marathon and Crater Rim runs: sole searching experiences. Newsletter Hawaiian Botanical Society 22: 25-28.
Contestants from the weed-ridden island of Oahu were prevented from inadvertently spreading weed seeds on the soles of their running shoes, prior to participating in a foot-race on the island of Hawaii.

Hirano, R.T. 1973. Preservation of the Hawaiian flora. Arboretum and Botanical Gardens Bulletin 7(1): 10-11.
Contains general remarks on the title subject.

Hirano, R.T. and K.M. Nagata. 1972. A Checklist of Indigenous and Endemic Plants of Hawaii in Cultivation at the Harold L. Lyon Arboretum. 22 pp. University of Hawaii, Harold L. Lyon Arboretum.
165 taxa are being cultivated for the preservation and study of a rapidly diminishing Hawaiian flora.

Hobdy, R. 1976. Hawaiian ecosystems, pp. 17-18, in Department of Planning and Economic Development, Industrial Forestry for Hawaii. 40 pp. Honolulu, Hawaii.
The need for a timber industry (commercial forestry) in Hawaii is discussed relative to a managerial commitment to protect proposed endangered plant species.

Hodel, D. 1980. Notes on Pritchardia in Hawaii. Principes 24(2): 65-81.
Several species of Pritchardia palm are highly localized endemics and threatened in Hawaii.

Hoffman, C.W. 1950. Saipan: The Beginning of the End. 286 pp. Washington, D.C.: U.S. Marine Corps.
Illustrates effects of 1944 military operations on vegetation.

Hoffman, C.W. 1951. The Seizure of Tinian. 169 pp. Washington, D.C.: U.S. Marine Corps.
Illustrates effects of 1944 military operations on vegetation.

Holden, C. 1985. Hawaiian rainforest being felled. Science 228: 1073-1074.
Ohi'a trees (Metrosideros) on 3,300-acre tract of Campbell Estate on island of Hawaii are threatened by conversion of habitat to grazing lands.

Holdgate, M.W. and E.M. Nicholson. 1967. An international conservation programme for the Pacific Islands. Micronesica 3(1): 51-54.
Lists 9 principal conservation problems.

Holdgate, M.W. and N.M. Wace. 1961. The influence of man on the floras and faunas of southern islands. The Polar Record 10(68): 475-493.
Includes Juan Fernandez Is., where problems of goats were enough to cause severe soil erosion on Masafuera.

Holdsworth, D.K. 1974. A phytochemical survey of medicinal plants in Papua New Guinea, Part I. Science in New Guinea 2(2): 142-154.
The author has investigated medicinal plants of numerous Melanesian islands politically in Papua New Guinea.

Holing, D. 1987. Hawaii: the Eden of endemism. The Nature Conservancy News 37(1): 6-13.
Discussion of Hawaii's unique biota, and of factors which contribute to its high percentage of endemism. Vulnerability to threats from introduced species and human disturbance are mentioned.

Holt, R.A. 1981. Unpublished manuscript. Status report on Gouania hillebrandii Oliver (Rhamnaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plant of the Hawaiian Islands.

Holt, R.A. 1983a. Exotic species control: an island perspective. The Nature Conservancy News 33(4): 23-24.
Includes Clidemia hirta, an objectionable melastomataceous weed of Hawaii.

Holt, R.A. 1983b. The Maui Forest Trouble: A Literature Review and Proposal for Research. Hawaii Botanical Science Paper No. 42. 67 pp. Honolulu, Hawaii: University of Hawaii.
Widespread canopy dieback in Hawaiian and other Pacific rainforests is discussed.

Holthus, P.F. 1985. A reef resource conservation and management plan for Ponape Island (Caroline Archipelago, Micronesia). Proc. Fifth International Coral Reef Congress 2: 184.(Abstract)
Includes consideration of habitat degradation from sand extraction.

Holzner, W.M., Werger, J.A. and I. Ikusima, eds. 1983. Man's Impact on Vegetation. 370 pp. The Hague, The Netherlands: Dr. W. Junk BV Publishers.
Many basic principles and problems are presented for evaluation and discussion.

Hosaka, E.Y. 1936. A troublesome introduced grass. Mid-Pacific Magazine (April-June): 126.
Chloris divaricata or "star grass", native to Australia, is a troublesome, destructive invader of Honolulu lawns where it replaces the "Bermuda grass", Cynodon dactylon.

Hosmer, R.S. 1910. Kahoolawe Forest Reserve. Hawaiian For. Agr. 7: 264-267.
Imputes a local climatic change due to destruction of Kahoolawe vegetation.

Hosokawa, T. 1967. Life-form of vascular plants and the climatic conditions of the Micronesian islands. Micronesica 3: 19-30.
Human disturbance of vegetation may cause confused speculation as to the original sequence of seral stages in plant succession towards climax vegetation.

Hosokawa, T. 1973. On the tropical rainforest conservation to be proposed in Micronesia, pp. 150-164, in Planned Utilization of the Lowland Tropical Forests. 263 pp. Pacific Science Association Symposium, 1971, Cipayung, Bogor, Java.
Recommends the conservation of mossy forests near summits of Mt. Nanarant and Mt. Niinioanii and near the top of Mt. Fenkol in Kusiae; of the Planchonella forests on uninhabited Palauan islands; of any remaining Campnosperma forests on Palau and Ponape; and of any remaining Terminalia carolinensis forests on Kusaie.

Hough, F.O. 1947. The Island War: The United States Marine Corps in the Pacific. 415 pp. Philadelphia and New York: J.B. Lippincott Company.
World War II destruction of vegetation on Pacific Islands, often as a direct or side-result of attempts to extricate opposing troops from fortified limestone caves, was accomplished with apparatus including portable one-man flamethrowers; napalm-throwers mounted on amphtracks (tracked landing vehicles) or on the turrets of tanks; and by attaching bulldozer blades to tanks and armored amphtracks (amphibious tanks) in order to clear operating positions.

Hough, F.O. 1950. The Assault on Peleliu. 209 pp. Washington, D.C.: U.S. Marine Corps.
Illustrates effects of 1944 military operations on the vegetation of Peleliu.

Hough, F.O. and J.A. Crown. 1952. The Campaign of New Britain. 220 pp. Washington, D.C.: U.S. Marine Corps.
Illustrates effects of 1944 military operations on the vegetation of New Britain.

Howard, R.A. 1962. Hawaii - a botanical and horticultural opportunity. Garden Journal 12(6): 223-226.
Discusses land use and the need for preservation of natural areas in Hawaii.

Howard, W.E. 1965. Control of Introduced Mammals in New

Zealand. 96 pp. New Zealand DSIR, Information Series, No. 45.
Unstable habitat conditions caused by introduced noxious animals such as sheep and deer in New Zealand are discussed, and should exemplify the repercussions awaiting similar ill-conceived introductions contemplated in the Pacific.

Howarth, F.G. 1972. Ecological Studies on Hawaiian Lava Tubes. 20 pp. Island Ecosystems IRP/IBP Hawaii, Technical Report No.16. Honolulu, Hawaii: University of Hawaii.
The forest overlying many of the caves has been cut or removed, thus drastically altering the ecology of the caves beneath. Also, regrettably , the fields with the largest caves known on Kauai were covered to a depth of 5 meters by sugar cane bagasse (pressed cane-stem trash) and the caves are now gone and their fauna extinct.

Howarth, F.G. 1973. The cavernicolous fauna of Hawaiian lava tubes, 1. Introduction. Pacific Insects 15(1): 139-151.
The forest over the tube of Kazumura Cave (Island of Hawaii), one of the largest known lava tubes in the world, has recently been altered by fire and cutting for a housing subdivision and is now a swampy savanna with Metrosideros trees. Many of the tree roots are dead but still hang from the ceiling of the cave. Significance: Tree roots dangling in cave-air function to supply food and form pathways for percolation of organically rich water which supports life of cave organisms.

Howe, K.R. 1984. Where the Waves Fall: A New South Sea Islands History From First Settlement to Colonial Rule. 400 pp.
Includes detailed consideration of the Melanesian sandalwood trade from 1840's to end.

Hoyle, M.A. 1978. Forestry and conservation in the Solomon Islands and the New Hebrides. Tigerpaper 5(2): 21-24.
Interactions of forest management and conservation practices.

Hughes, P.J. and G. Hope. 1979. Prehistoric man-induced degradation of the Lakeba landscape: evidence from two inland swamps. Unesco/UNFPA Fiji Island Reports 5. Canberra: Australian National University.
Lakeba I. is in the Lau group of the Fiji Islands.

Huguenin, B. 1974. La vegetation des Iles Gambier: releve botanique des especes introduites. Cahiers du Pacifique 18(2): 459-471.
Lists 200 plant species introduced in Mangareva I., western Polynesia.

Hunt, P.F. 1969. Orchids of the Solomon Islands. Philosophical Transactions Royal Society B255: 581-587.
Some of the coastal orchids of Koloombangara I. in the Solomon Is. were brought from New Georgia and Giza by the native Melanesians and Gilbertese. This activity of collecting orchids and then cultivating them somewhere else could possibly affect future understanding of the true pattern of island orchid endemism in the area. A similar concern for the possible mix-up in geographical ranges resulting from human introduction of a plant is evidenced by the note on the palm Pelagodoxa henryana Beccari by E.J.H. Corner, loc. cit. 592-593 (1969).

Hurlimann, H. 1953. Etude sur la structure des forets de la Nouvelle-Caledonie: Experiences et propositions. Et. Melan. n.s. 5(7): 55-68.
Includes considerations of plant conservation in New Caledonia.

Hurlimann, H. 1959a. Naturschutzbestrebungen in Pazifik. Schweizer Naturschutz 4: 123-127.
Includes history of vegetation disturbance in Pacific islands, and specifically relates the threat of inundation in the Plaine des Lacs, New Caledonia.

Hurlimann, H. 1959b. Need for a conservation park in New Caledonia. Proc. Ninth Pacific Science Congress 7: 50.
A proposed large hydroelectric project to create artificial lakes would inundate most flat and swampy areas of the Plaine de Yate and Plaine des Lacs in New Caledonia. This process would exterminate the serpentine endemics, especially Podocarpus palustris, Dacrydium guillauminii, and perhaps also Libocedrus yateensis.

Hurlimann, H. 1960. Un parc de conservation botanique en Nouvelle-Caledonie. Jour. Soc. Oceanistes 16: 110-112.
Transplantation of threatened New Caledonian plants has been attempted.

Iltis, H.H. 1967. Whose fight is the fight for nature? Sierra Club Bulletin 52(9): 34-39.
Invokes the expression by Edgar Anderson, that "Taxonomists are mice hiding behind herbarium cases hating each other", in order to persuade taxonomists to reject irresponsibly arrogant attitudes towards plant conservation.

IUCN (International Union for Conservation of Nature and Natural Resources).Headquarters: Gland, Switzerland.

IUCN Commission on National Parks and Protected Areas (CNPPA). 1982a. IUCN Directory of Neotropical Protected Areas. Dublin, Ireland: Tycooly International Publishing Ltd.

Discusses (pp. 194-196) the Galapagos National Park and World Heritage Site.

IUCN Commission on National Parks and Protected Areas (CNPPA). 1982b. The World's Greatest Natural Areas: An Indicative Inventory of Natural Sites of World Heritage Quality. 70 pp.
Universal significance of 220 sites around the world is described, including: Marine lakes of Palau (Republic of Belau), Village of Nan Madol (Caroline Islands), Rapa Nui National Park (Chile), Island of Tahiti (France), Rennell Island (Solomon Islands), Savo Island (Solomon Islands), Kulambangara Island (Solomon Islands), Hawaii Volcanoes National Park (USA), Le Pupu-Pue National Park (Western Samoa), Lord Howe Island, Juan Fernandez National Park (Chile), and Galapagos National Park (Ecuador).

IUCN Conservation Monitoring Centre (CMC). 1983a(3 January). List of Hawaiian Threatened and Endemic Plants Recorded in Cultivation. 12 pp. Royal Botanic Gardens, Kew, England.
In addition to this Hawaiian list, the CMC has prepared lists for the Galapagos and Juan Fernandez Islands (1984).

IUCN Conservation Monitoring Centre (CMC). 1983b. Background Notes on the Hawaiian Flora. 4 pp. Royal Botanic Gardens, Kew, England.
Includes data on main threats to the flora, conservation measures taken, and lists of parks, refuges, and botanical gardens of relevance to plant conservation in Hawaii.

IUCN Conservation Monitoring Centre (CMC). 1985. The Botanic Gardens List of Rare and Threatened Species of the Hawaiian Islands. Botanic Gardens Conservation Co-ordinating Body Report No. 14. 21 pp. Royal Botanic Gardens, Kew, England.
Lists 274 rare and threatened Hawaiian endemic plants in cultivation in Hawaiian botanical gardens and other gardens throughout the world.

IUCN Conservation Monitoring Centre (CMC). 1986a (3 April). List of CCAL References for Pacific. 10 pp. Royal Botanic Gardens, Kew, England.
This unpublished computer-generated list contains many references to articles published in the Federal Register and the Endangered Species Technical Bulletin concerning proposed and officially listed endangered and threatened plant species of Hawaii and elsewhere in the American Pacific. Updated lists are produced upon request to CMC.

IUCN Conservation Monitoring Centre (CMC). 1986b. The

Plant Sites Red Data Book. 48 pp. Royal Botanic Gardens, Kew, England.
Outline of a book-concept from the Threatened Plants Unit, containing paragraphs describing candidate plant conservation localities in Hawaii, Galapagos, Juan Fernandez Is., Fiji, New Caledonia, Marquesas, Rapa (Austral Is.), and Western Caroline Is.

Jacobi, J.D. 1978. Vegetation Map of the Kau Forest Reserve and Adjacent Lands, Island of Hawaii. 1 sheet. Resource Bulletin PSW-16. Berkeley, California: Pacific Southwest Forest and Range Experiment Station.
This map outlines areas of "introduced shrub-dominated community", often with a disturbed understory dominated by Psidium cattleianum (guava).

Jacobi, J.D. 1981. Vegetation Changes in a Subalpine Grassland in Hawaii Following Disturbance by Feral Pigs. 23 pp. Cooperative National Park Resources Studies Unit, Technical Report 41. University of Hawaii at Manoa.
In Haleakala National Park, native and introduced plant species competed equally for areas uprooted by pigs.

Jacobs, M. and T.J.J. de Boo. 1982. Conservation Literature on Indonesia: Selected, Annotated Bibliography. 274 pp. Leiden, The Netherlands: Rijksherbarium.
Comprises references to literature on all aspects of conservation in Indonesia. Geographical coverage includes Papua New Guinea, and thus of interest regarding the adjacent Bismarck Archipelago.

Jenkin, R.N. and M.A. Foale. 1968. An Investigation of the Coconut-Growing Potential of Christmas Island. Volume 1. The Environment and the Plantations. 123 pp. Land Resource Study No. 4. Land Resources Division, Directorate of Overseas Surveys, Tolworth, Surrey, England.
Christmas Island, in the Gilbert and Ellice Islands Colony, had an almost complete lack of trees for natural reasons before coconuts were planted, "the exception being the occurrence of a few buka trees, Pisonia grandis, on Motu Tabu and near the South-East Point, though the latter were virtually destroyed by the 1957 atomic test." It is also observed that recent clearing for coconut planting has largely destroyed the Messerschmidia argentea - Sida fallax association.

Jenkins, D.W. 1975. At last, a brighter outlook for endangered plants. National Parks and Conservation Magazine 49(1): 13-17.
Includes discussion and photos of endangered Hawaiian plant species, e.g. Hibiscus kahilii.

Jenkins, D.W. and E.S. Ayensu. 1975. One-tenth of our

plant species may not survive. Smithsonian 5(10): 92-96.
Includes discussion of several endangered Hawaiian plants, e.g. Rollandia and Argyroxiphium.

Jenkins, J.T. 1948. Bibliography of whaling. Journal, Society for the Bibliography of Natural History 2(4): 71-166.
Whalers were sometimes the first non-indigenous people to variously discover, describe, explore, exploit, or adversely impact certain remoter Pacific islands.

Johannes, R.E. 1985. The value today of islanders' traditional knowledge of their natural resources. Pandanus Periodical 7: 3 pp.
Traditional knowledge of wise land use and of medicinal herbs is being lost, and Pacific islanders should be encouraged to retain such knowledge.

Johnson, C.G., Alvis, R.J. and R.L. Hetzler. 1960. Military Geology of Yap Islands, Caroline Islands. 164 pp. Tokyo: H.Q. US Army Pacific.
"Southernmost Yap Island was once cleared by the Japanese and planted to gardens and (citrus) orchards. This area has been lying fallow since 1945 and the whole area is grown over by low brush and very dense stands of tall grass (Ischaemum muticum L.) and weeds."

Johnson, M.P. and P.H. Raven. 1973. Species number and endemism: the Galapagos Archipelago revisited. Science 179: 893-895.
Includes explanation of patterns of plant endemism among the 29 Galapagos islands.

Johnson, S.P. 1972. Palau: conservation frontier of the Pacific. National Parks and Conservation Magazine 46(4): 12-17.
Describes efforts to protect Palau's ecosystem, threats to which include brush fires, soil erosion, and phosphate mining.

Johnston, E.G. 1975. A review of literature on native medicine in Micronesia with emphasis on Guam and the Mariana Islands. Guam Recorder 5(2): 60-65.
Includes articles on role of traditional medicinal plants in health-delivery systems of various islands.

Johnston, W.B. 1959. The Cook Islands. Journal of Tropical Geography 13: 38-57.
"Few remnants of the original tropical rain forest have survived and, even in the interior, the larger forest members have been milled for building material and for boxwood."

Josiah, S.J. 1983. Guam's badlands. Glimpses of Micronesia

23(2): 32-35.
"Overgrazing by livestock, bulldozing and recreational vehicles are speeding up the erosion process."

Judd, C.S. 1916. Kahoolawe, pp. 117-125, in Thrum, T.G., compiler, Hawaiian Almanac and Annual for 1917. Honolulu, Hawaii: T.G. Thrum.
Relates the history of vegetation destruction by feral animals on Kahoolawe Island.

Judd, C.S. 1921. Hawaiian forests and trails. Hawaiian Forester and Agriculturist 18: 79-82.
Seeds of Paspalum conjugatum grass were accidentally introduced and the plants have invaded forests.

Judd, C.S. 1922. Honolulu watershed protection. Hawaiian Forester and Agriculturist 19: 30-45.
Hawaiian wet forests are very susceptible to destructive influences that retard their utility as a useful watershed.

Judd, C.S. 1927a. The natural resources of the Hawaiian forest regions and their conservation. Hawaiian Forester and Agriculturist 24(2): 40-47.
Includes history of sandalwood exploitation, and effects of sugarcane cultivation and cattle grazing.

Judd, C.S. 1927b. Factors deleterious to the Hawaiian forest. Hawaiian Forester and Agriculturist 24(2): 47-53; B.P. Bishop Museum Special Publication 12: 11-12.
Discusses deforestation of Oahu watershed by overgrazing. On the island of Hawaii, land cleared for coffee and subsequently abandoned is occupied by invasive Hilo grass.

Judd, C.S. 1927c. Hawaiian forest regions and their conservation. B.P. Bishop Museum Special Publication 13: 9.
"The damage done to the forests during the period of the sandalwood trade and by the cattle which were allowed to run wild, together with the clearing and cultivation of large tracts of land, have reduced the forests to a point where they are not even adequate to protect our water supply."

Judd, C.S. 1927d. Bamboo against staghorn fern. Hawaiian Forester and Agriculturist 24(2): 54-55.
Bamboo (Bambusa vulgaris) which was planted in a reforestation experiment on Maui where natural forest had died out, has displaced invasive staghorn fern (Gleichenia linearis) in some places.

Judd, C.S. 1936. Growing sandalwood in the Territory of Hawaii. Journal of Forestry 34(1): 2 pp.

Native species of sandalwood, once largely extirpated for trade, are increasing in population size due to protection from scorching fires and grazing animals.

Judd, C.S. 1937. Staghorn fern invasion. B.P. Bishop Museum Special Publication 31: 8-9.
"Although the uluhi or staghorn fern (Gleichenia linearis) makes a fair cover for water conservation, it has two undesirable qualities. It invades the native forest with a dense mat which prevents natural reproduction, and in dry seasons this mat presents a serious fire menace."

Judd, C.S. 1940. Forest resources of the Territory of Hawaii, U.S.A. Proc. Sixth Pacific Science Congress 4: 797-800.
Along dry seashores is found the algaroba forest type, comprising introduced Prosopis juliflora which has run wild on 100,000 acres, and is interspersed with plants such as the prickly pear cactus (Opuntia).

Juvik, J.O. and S.P. Juvik. 1984. Mauna Kea and the myth of multiple use, endangered species and mountain management in Hawaii. Mountain Res. Devel. 4(3): 191-202.
Considerations for effective use of natural resources of the Hawaiian mountainous areas.

Kalkman, C., ed. 1983. People unite against Unilever. Flora Malesiana Bulletin 36: 3916-3917.
"The people of North New Georgia, Solomon Islands, have become aware of the damage a large timber operator like Levers Pacific can do to their forests."

Karasik, G. 1984. Smiley Ratliffe: some men are islands. Islands 4(5): 16-17.
An excursion into the mentality of an individual who proposed to acquire rights to Henderson Island for partial clearance and settlement.

Kastadalen, A. 1982. Changes in the biology of Santa Cruz Island between 1935 and 1965. Noticias de Galapagos 35: 7-12.
Regarding introduced plants, it is noted that avocados (Persea americana) crowd out all native vegetation where they become established, and so do Hibiscus tiliaceus and Eugenia jambos.

Kawamura, K., Tanaka, T. and T. Inagaki. 1940. On the soils of the Saipan, Tenian, and Rota Islands, Marianas. Part I and II. Jour. Sci. Soil and Manure 14: 439-484. (Translation by U.S. Geological Survey, 1949).
Includes data on changes in soil conditions after deforestation.

Kay, E.A. 1972. Hawaiian natural history: 1778-1900, pp. 604-653, in Kay, E.A., ed., A Natural History of the Hawaiian Islands - Selected Readings. Honolulu, Hawaii: University of Hawaii Press.
Includes much useful background information on Hawaiian environment.

Keast, A. 1966. Australia and the Pacific Islands - A Natural History. New York: Random House.
Chapter 10 on Hawaii, Tahiti, Society Is., Samoa, Tonga, Marquesas; Chapter 11 on atolls such as Bora Bora, Tuamotu; Chapter 12 on Melanesia and Lord Howe Island.

Keck, C.B. 1957. Visit to Eniwetok. Proc. Hawaiian Entomological Society 16: 188.
So much of Eniwetok's topsoil was removed during World War II that even ants are absent from the land.

Kemf, E. 1985. The Galapagos fire: 50 years' damage. World Wildlife Fund News 37: 8.
During the 3-month long fire on Isabela Island, the introduced pest tree, guava (Psidium guajava), contributed to the massive forest destruction in a curious way: "Fire burning in these trees often advanced against the wind because the oil in the plants ignited rapidly and spread destruction to surrounding vegetation."

Kenchington, R. 1985. Coral-reef ecosystems: a sustainable resource. Nature and Resources 21(2): 18-27.
Reef animal species suffer indirectly through "land-based events such as deforestation."

Kikukawa, H.H. and R.K. LeBarron. 1971. Ohia-lehua. Aloha Aina 2(2): 12-13.
Metrosideros collina (ohia-lehua) and koa forests have been destroyed by cattle grazing in some areas of the Hawaiian Islands.

Kimura, B.Y. and K.M. Nagata. 1980. Hawaii's Vanishing Flora. 88 pp. Honolulu, Hawaii: Oriental Publishing Co.
Colored photos and detailed status coverage of 56 official and candidate endangered and threatened species, including at least one literature reference for each treated plant.

King, J. 1978. Hawaii's wildlife - legacy and stewardship. Elepaio 38(11): 122-125.
Mentions detrimental effects of goats, farming, and weedy Clidemia and Passiflora on native ecosystems.

King, W. 1971. Hawaii: haven for endangered species? National Parks and Conservation Magazine 45(10): 9-13.
Indigenous Hawaiian vegetation of dryland forests was

sequentially ravaged and denuded by grazing and browsing introduced mammals, then by European settlers who indiscriminately cleared land for sugarcane and pineapple plantations, then by cattle which were encouraged to enter the forests, and then followed by goats eating everything within reach.

King, W.B. 1973. Conservation status of Central Pacific islands. Wilson Bulletin 85: 89-103.
Includes information of interest to vegetational status in various islands.

Kinnane, J. 1983. People of Pitcairn. Oceans 16(5): 42-51.
Notes that feral "goats...are a nuisance because they crop the vegetation too close and cause erosion."

Kira, T., Ogawa, H. and K. Yoda. 1962. Some unsolved problems in tropical forest ecology. Proc. Ninth Pacific Science Congress 4: 124-134.
With data included from Ryukyus, it is shown that an unavoidable limitation is imposed upon temperate zone methods of agriculture when they are employed under tropical climatic regimes. Implications of this observation regarding the fall in productivity (ecosystem metabolism) caused by forest destruction are discussed.

Kirch, P.V. 1980. Polynesian prehistory: cultural adaptation in island ecosystems. American Scientist 68(1): 39-48.
Notes that prehistoric Polynesian burning of forest cover and similar sequences of forest destruction due to Polynesian agriculture have a cumulative effect in transforming the landscape of Polynesian islands.

Kirch, P.V. 1982a. Transported landscapes. Natural History 91(12): 32, 34-35.
"Both the purposeful and the inadvertent introductions to Hawaii of a range of competitive species by the Polynesians provide a classic example of what the botanist Edgar Anderson called "man's transported landscapes". Not only did the Polynesians surround themselves with an imported flora and fauna; they also undertook to actively modify and manipulate their insular environment according to cultural concepts that they had inherited from their ancestors in the South Pacific and, ultimately, Southeast Asia."

Kirch, P.V. 1982b. Ecology and the adaptation of Polynesian agricultural systems. Archaeol. Oceania 17: 1-6.
On Mangareva, Easter Island, and Kahoolawe, environmental degradation, often through radical reduction of forest, shrub and grassland communities, led to various innovations in agricultural techniques and other

forms of repercussion.

Kirch, P.V. 1982c. The impact of the prehistoric Polynesians on the Hawaiian ecosystem. Pacific Science 36(1): 1-14.
Polynesian impact was greater than heretofore realized. "The cumulative effects of forest clearance and habitat modification through the use of fire led to major changes in lowland ecology." Includes long, excellent bibliography.

Kirkpatrick, J.B. and D.C. Hassall. 1981. Vegetation of the Sigatoka sand dunes, Fiji. New Zealand Journal of Botany 19(3): 285-297.
The native closed-forest "formation has been drastically reduced in area by firing, cutting, grazing, and the instability of the parabolic dune system in the high-energy coastal environment. The closed-forest may be eliminated if the present pattern of use of the area continues or if the full area of the dunes is used for mining of magnetite.

Kluge, P.F. 1969a. The landscape of war. Micronesian Reporter 17(1): 19-25.
The intensive battle of Peleliu in the Palau Is., 1944, caused great damage to the landscape and vegetative cover, as shown by photos in this article.

Kluge, P.F. 1969b. The beaches of Saipan. Micronesian Reporter 17(2): 21-32.
Includes specifications as to which Saipan beaches are not yet overgrown with tangantangan weed-trees, or littered with tourist garbage.

Kluge, P.F. 1969c. Tinian: island in waiting. Micronesian Reporter 17(3): 34-36.
The atomic bombs which destroyed the Japanese cities of Hiroshima and Nagasaki in 1945 originated from the loading pits of Tinian, a coral island in the Marianas. For such purposes, Tinian had been largely transformed into an aircraft staging ground by the Seabees. At present, those roads and runways are choked with weeds, sharing the land with ranched cattle and pigs.

Kluge, P.F. 1986. Palau: problems in the Pacific. Smithsonian 17(6): 44-55.
Includes a substantial discussion of current environmental pressures on Palau.

Knapp, R. 1975. Vegetation of the Hawaiian Islands. Newsletter Hawaiian Botanical Society 14(5): 95-121.
Includes discussion of changes in the vegetation since the discovery of the Hawaiian Islands by Europeans, and of 8 types of plant communities developed as a conse-

quence of those changes.

Knibb, D. 1984. Pioneer project in the Pacific. American Forests 90(10): 39-40, 51-53.
Teak on Savaii.

Kobayashi, H.K. 1973. Present status of the ahinahina or silversword, Argyroxiphium sandwicense DC. on Haleakala, Maui. Newsletter Hawaiian Botanical Society 12(4): 23-26.
About 40,000 individuals of this plant are present, and the population is impacted by insect larval damage to seeds, vandalism by visitors, and goat browsing. See O. Degener, op. cit. 13(1): 1-2 (1974) for related data.

Kobayashi, H.K. 1974. Preliminary investigations on insects affecting the reproductive stage of the silversword (Argyroxiphium sandwicense DC., Compositae), Haleakala Crater, Maui, Hawaii. Proc. Hawaii Ent. Soc. 21(3): 397-402.
Insect larvae destroy the plant's seeds.

Kochi, J.S. 1971. Objectives and importance of conservation. Atoll Research Bulletin 148: 21-22.
Lists eleven ways to enrich the natural resources of Palau.

Koford, C.B. 1966. Economic resources of the Galapagos Islands, pp. 286-290, in Bowman, R.I., ed., The Galapagos. Berkeley and Los Angeles, California: University of California Press.
Discusses introduced animals of Galapagos.

Konishi, T., Kondo, N. and A. Yoshida. 1979. Kokia cookei: extinction or survival? Notes Waimea Arboretum 6(1): 2-5.
Efforts to save endangered Hawaiian malvaceous plant.

Koopowitz, H. and H. Kaye. 1983. Plant Extinction: A Global Crisis. 239 pp. Washington, D.C.: Stone Wall Press, Inc.
Seed banks could be employed to save Hawaiian and other Pacific plant species.

Kores, P. 1979. A review of the literature on Hawaiian orchids. Newsletter Hawaiian Botanical Society 18(3-5): 34-55.
Includes notes on the rare endemic Habenaria holochila.

Kramer, P. 1973. Wildlife conservation in the Galapagos Islands (Ecuador). Nature and Resources 9(4): 3-10.
Includes discussion of agricultural practices, introduced plants, and other problems of direct human pressure on vegetation.

Kramer, P. 1974. Galapagos conservation: present position and future outlook. Noticias de Galapagos 22: 3-5.
Three goats were introduced onto Isla Pinta in 1957. By 1971, more than 30,000 of their descendants had been exterminated by the Park Service.

Kramer, P. 1983. The Galapagos: islands under siege. Ambio 12(3-4): 186-190.
Comprehensive account of environmental disturbances in the Galapagos.

Kramer, R. 1969. We're botching conservation! Do you care? Elepaio 29(11): 98-101.
Includes discussion of effects of feral grazing animals on Hawaiian vegetation.

Kroon, A.H. 1953. Forestry in Western Samoa: a review. South Pacific Bulletin 3(3): 29-30.
Photos include clearing of forests, and of forest margin and areas of shifting cultivation being invaded by vines and secondary species.

Kuroda, N. 1954. Report on a trip to Marcus Island with notes on the birds. Pacific Science 8(1): 84-93.
The island is presently in a "totally disfigured" condition due to human intervention in the form of troop garrisons, etc. in World War II.

Kurrus, T. 1985. Uncle Sam in paradise. Aloha 8(2): 48-55.
U.S. Navy destroyers will now limit their use of the island of Kahoolawe for target practice to a small section of the island, and the Navy has promised to affect repairs wherever damage was done to the terrain. The 5 principal branches of the U.S. Armed Services own or control over 260,000 acres of land on 6 Hawaiian islands, including 25 percent of the land on Oahu. Environmental and land-use conflicts between the services and civilians sometimes erupt.

Kuschel, G. 1963. Composition and relationship of the terrestrial faunas of Easter, Juan Fernandez, Desventuradas, and Galapagos Islands, pp. 79-95, in Galapagos Islands: A Unique Area for Scientific Investigations. Occasional Papers California Academy of Sciences, No. 44.
Zoological article includes notes on impoverishment of the floras.

Lal, P.N. 1984. Environmental implications of coastal development in Fiji. Ambio 13(5-6): 316-321.
Negative impact may result unless proper precautions are taken on coastal Fiji.

Lamb, K.P. and J.L. Gressitt, eds. 1976. Ecology and Conservation in Papua New Guinea. Pamphlet No. 2. Wau Ecology Institute, Papua New Guinea.
Of related interest to the Bismarck Archipelago.

Lamoureux, C.H. 1961. Botanical observations on Leeward Hawaiian atolls. Atoll Research Bulletin 79: 1-10.
On Kure Atoll, there are 4 types of area disturbed by weed invasions: margins of roads and landing strip; albatross runways; clearings around living quarters; and clearing around the radio tower.

Lamoureux, C.H. 1963a. Vegetation of Laysan. Proc. Hawaiian Academy of Science 37(1961-1962): 22.
Introduction of rabbits to Laysan in 1903 caused the number of native higher plant species to drop from 25 in 1896, to 13 in 1911, to 4 in 1923. In 1923 the rabbits were exterminated, and a 1961 expedition found 17 native plant species on Laysan.

Lamoureux, C.H. 1963b. The flora and vegetation of Laysan Island. Atoll Research Bulletin 97: 1-12.
Introduction of rabbits in 1903 resulted in their multiplying to consume most of the native vegetation, and to convert the island into a wasteland by 1923, when they finally succumbed to starvation. The island was then replanted, and the natural vegetation also recovered.

Lamoureux, C.H. 1964. The Leeward Hawaiian Islands. Newsletter Hawaiian Botanical Society 3(2): 7-11.
Includes history of denudation and revegetation of Laysan Island.

Lamoureux, C.H. 1968. Should the axis deer be introduced to the island of Hawaii? Elepaio 29(2): 10-15.
Opposes introduction of deer on aesthetic, recreational, economic, and scientific grounds.

Lamoureux, C.H. 1973a. Plants, pp. 63-66, in University of Hawaii (Department of Geography). Atlas of Hawaii. Honolulu, Hawaii: University Press of Hawaii.
Includes considerations of rare plant conservation.

Lamoureux, C.H. 1973b. Chapter 28. Conservation problems in Hawaii, pp. 315-319, in Costin, A.B. and R.H. Groves, eds. (1973).
The 7 major categories of problems are: land development; land clearing for roads and housing sites; beach "improvement" projects; water development projects; expansion of pasture lands; timber (native species replacement); and hunting.

Lamoureux, C.H. 1976a. Trailside Plants of Hawaii's

National Parks. 80 pp. Hawaii Natural History Association.
"Lantana, originally brought to Hawaii as a garden ornamental in 1958, escaped from cultivation and has become a major pest(in agricultural and pasture lands) at elevations up to 4,000 feet."

Lamoureux, C.H. 1976b. Endangered species in Hawaii, effect on other resource management: a response. Newsletter Hawaiian Botanical Society 15(1): 14-21.
Calls for integration of plant conservation concerns and good forest resource management practices.

Lamoureux, C.H. 1981. Unpublished manuscript. Status report on Kokia drynarioides (Seem.) Lewt. (Malvaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Lamoureux, C.H. 1982. Unpublished manuscripts. Status reports on Mezoneuron kavaiense (Mann) Hdb. (Fabaceae); Munroidendron racemosum (Forbes) Sherff (Araliaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Landgraf, L.K. 1973. Mauna Kea and Mauna Loa silversword: alive and perpetuating. Bulletin Pacific Tropical Botanical Garden 3(4): 64-66.
Argyroxiphium sandwicense is on Maui and Hawaii; A. kauense only on Hawaii; and A. caliginii only on Maui.

Langlois, A.C. 1976. Supplement to Palms of the World. 252 pp. Gainesville, Florida: University Presses of Florida.
Discusses status of populations of the palm Taveunia trichospadix Burret on island of Taveuni, Fiji, "...when we arrived at Taveuni in 1966, the area below an elevation of 1,000 ft. (above which the coconut will not thrive) had been converted into one large coconut grove. This very considerable planting of coconut palms, involving the complete destruction of the native forest, evidently eliminated whatever stands of Taveunia that may have existed previously. What the planters did not do, the hogs and rats did, so that very reduced numbers of T. trichospadix are now confined to, and above, the cloud line."

Lasseter, J.S. and C.R. Gunn. 1979. Vicia menziesii Sprengel(Fabaceae) rediscovered: its taxonomic relationships. Pacific Science 33(1): 85-101.
Last collected in 1915 on island of Hawaii and regarded as extinct until rediscovered in 1973.

Lawcock, L. 1982. Guam's young conservationists. Glimpses of Micronesia 22(1): 32-37.
Helping to combat further degradation of the Guamanian

ecosystem.

Lawesson, J.E. 1986. Problems of plant protection in the Galapagos. Noticias de Galapagos 44: 12-13.
Problems include damage caused by introduced animals (goats, pigs, donkeys, cattle); rising demands of the human population for timber, which result in threats to stands of Piscidia carthagenensis; and spread of pernicious exotic plants such as guava, cinchona, lantana, avocado, and passion fruit, which variously affect the indigenous Miconia and Scalesia zones.

Laycock, G. 1970. Haunted sands of Laysan. Audubon 72(2): 42-49.
Mentions the almost total destruction of the vegetation by rabbits.

LeBarron, R.K. 1962. Eucalypts in Hawaii: A Survey of Practices and Research Programs. 24 pp. Pacific Southwest Forest and Range Experiment Station, Miscellaneous Paper No. 64.
More than 100 species of Eucalyptus have been introduced into Hawaii. "Eucalypts excel many, although not all, other trees in Hawaii in their ability to overtop and quickly outgrow competing vegetation."

LeBarron, R.K. 1966. The program and objectives of the Hawaiian Division of Forestry. Elepaio 26(8): 67-69.
Contains statistics on land ownership, acreage and usage.

LeBarron, R.K. 1970. Saving Hawaii's forests. Aloha Aina 1(1): 7-8.
Serious pests getting into forests include cattle, and blackberry vines which smother native vegetation.

LeBarron, R.K. 1971a. A forester's point of view. Aloha Aina 2(2): 6-11.
Illustrates an exclosure to keep grazing animals away from the rare na'u tree, Gardenia remyi, in Hawaiian Islands.

LeBarron, R.K. 1971b. Kahoolawe. Aloha Aina 2(2): 16-20.
The Hawaiian island of Kahoolawe's vegetation suffers from suppression and overgrazing by feral sheep and goats; deterioration from soil erosion; and use as a U.S. Navy bombing target. There is "unexploded ordnance (ammunition) virtually all over the island."

Lee, K.E. 1969. Some soils of the British Solomon Islands Protectorate. Philosophical Transactions, Royal Society B255: 21-257.
"Indiscriminate burning of Santa Isabel and San Jorge has resulted in baring of the soil surface over

considerable areas, and loss of surface soil horizons by sheet and gully erosion." Lee believes the fires are set as a form of entertainment.

Lee, M.A.B. 1974. Distribution of native and invader plant species of the island of Guam. Biotropica 6(3): 158-164.
"The type of invading species and the organization of native species into communities appear to be important factors in the success of plant invasion."

Leigh, J., Briggs, J. and W. Hartley. 1981. Rare or Threatened Australian Plants. Canberra, Australia: Parks and Wildlife Service.
Includes lists of 69 species of endemic flowering plants and ferns for Lord Howe I. and 49 species for Norfolk and Philip I.

Levathes, L.E. 1983. Kamehameha - Hawaii's warrior king. National Geographic 164(5): 558-599.
Describes some land-use problems.

Lever, R.J.A.W. 1953. Distribution of fauna species in Oceania. Fiji Society of Science and Industry 3: 70-77.
Contains mention of goats being introduced to Henderson Island.

Lever, R.J.A.W. 1964. Savo, British Solomon Islands Protectorate. South Pacific Bulletin 14(3): 41-42.
"Primary jungle is now found only some distance inland from the villages, which are all situated on the coast and linked by a passable road."

Levine, J. 1984. Islands of life. National Wildlife 22(3): 56-63.
Concerns the volcanic coasts of Hawaiian Islands.

Lewin, R. 1978. Galapagos: the endangered islands. New Scientist 79(1112): 168-171.
The threat of ecological disaster now hangs over the islands as a result of human colonization.

Libby, K. 1969. The promised voyage. Micronesian Reporter 17(1): 29-39.
Pictorials on the devastated landscape and obliterated vegetation of Bikini Atoll when Bikini was recolonized after radioactivity levels subsided in 1968.

Liem, D. 1977. Wildlife utilisation in the proposed Garu Wildlife Management Area, pp. 285-292, in Winslow, J.H., ed., The Melanesian Environment. 562 pp. Canberra: Australian National University Press.
The study area is on the north coast of West New Britain. "It must be remembered that with the

disappearance of the forest stands, the wildlife protein supply, minor forest products (rattan) and other forest plants utilised for social, cultural or medicinal purposes will also be lost or considerably reduced."

Lindsey, R. 1986. Hawaii issue: how much tourism is too much? The New York Times, 13 March 1986: A10.
Environmentalists on the Big Island of Hawaii have lost a court complaint in which it was asserted that the construction of a $360 million hotel complex featuring tramways and Venetian-style canals and gondolas, would tend to unfavorably alter the natural environment.

Linge, T. 1983. Un jeune biologiste americain se preoccupe de la sauvegarde de la vegetation d'origine. La Depeche (newspaper), p. 23.
Interview with Gustav Paulay regarding his plant conservation efforts on the island of Rurutu, French Polynesia.

Linklater, E. 1974. The Voyage of the Challenger. 288 pp. London: Sphere Books Ltd.
At the time of the voyage of the Challenger in 1872-1876, no trees were found below an elevation of 700 feet on Juan Fernandez I., since all trees originally growing up to that altitude had previously been cut down to provide fuel.

Linney, G.K. 1982. Unpublished manuscripts. Status reports on Alectryon macrococcus Radlk. (Sapindaceae); Drypetes phyllanthoides (Rock) Sherff (Euphorbiaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Little, E.L., Jr. 1969. Native trees of Hawaii. American Forests 75(2): 16-17,44-45.
Includes trees of plant communities which are being impacted by habitat alteration.

Little, H.P. 1982. The Nature Conservancy of Hawaii's endangered forest and bird project, pp. 355-358, in McNeely, J.A. and K.R. Miller, eds., National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society. Washington, D.C.: Smithsonian Institution Press.
Concerns endangered bird species whose habitats are endangered due to "biological dismemberment" of the ecosystem by man.

Lodge, O.R. 1954. The Recapture of Guam. 214 pp. Washington, D.C.: U.S. Marine Corps.
Includes photographs of effects of World War II military operations on the vegetation.

Long, Senator O.E. 1960. Sheep destruction of woodland. Bulletin Conservation Council for Hawaii 1(2): 4.
Forests on the upper slopes of Mauna Kea are being destroyed by feral sheep. Includes statistics on sheep population increase.

Loope, L.L. and C.P. Stone. 1984. Introduced vs. native species in Hawaii, a search for solutions to problems of island biosphere reserves, pp. 283-288, in Unesco/UNEP. Conservation, Science and Society. Paris.
Exploration of a perennial problem in Hawaiian plant habitat conservation.

Lowry, J.B. 1973. Phytochemical prospecting and conservation of lowland tropical rainforest, pp. 248-252, in Planned Utilization of the Lowland Tropical Forests. Pacific Science Association Symposium, 1971, Cipayung, Bogor, Java. 263 pp.
A plant's "secondary metabolites" or "natural products" may provide important starting materials for the manufacture of chemical compounds useful to man. Examples from Dacrydium (Podocarpaceae) and Connaropsis (Oxalidaceae) are included.

Lucas, G. 1980. Deux cas remarquables de taxa menaces: Cyprinodontinae nord-africains, Araucaria neo-caledoniens. C. R. Soc. Biogeographie 56(489): 51-52.
Intensification of destruction and exploitation of lateritic soils in New Caledonia for nickel mining would increasingly threaten the several Araucaria species occurring there.

Lucas, G. L. and H. Synge, compilers. 1978. The IUCN Plant Red Data Book. 540 pp. Morges, Switzerland: IUCN.
Includes data on status in the wild, in cultivation, and in protected areas, of numerous endangered and vulnerable plant species native to the Pacific islands, e.g., species from Lord Howe I., Gambier Is., Hawaiian Is., Henderson I., Juan Fernandez Is., Guam, Easter I., Marquesas, New Caledonia, Philip I., and Fiji Is.

Lucas, S.A. 1981. Recent introductions of ornamental value. Bull. Pacific Tropical Botanical Garden 11(1): 8-13.
Includes young plants of Sophora toromiro (Leguminosae), an Easter Island endemic which is extinct in the wild due to the introduction of sheep to the island.

Lyon, H.L. 1918. The forests of Hawaii. Hawaiian Pl. Rec. 18: 276-280.
Observations on Hawaiian forest destruction.

Lyon, H.L. 1919. Some observations on the forest problem of Hawaii. Hawaiian Pl. Rec. 21: 289-300.

Problems associated with Hawaiian reforestation are noted.

Lyon, H.L. 1922. Hawaiian forests. Hawaiian For. Agr. 19: 159-162.
Discusses vegetation dynamics of Hawaii and invasion of Paspalum conjugatum grass.

Lyon, H.L. 1927. Botany in Hawaii. B. P. Bishop Museum Special Publication 12: 10-11.
Indicates the reasons why Hawaiian forests are extremely sensitive to invasion by stock.

Lyon, H.L. 1929. Forestry on Oahu. Hawaiian For. Agr. 26: 11-15.
Problems involving re-establishment of forests on watersheds of Oahu are discussed.

MacCaughey, V. 1918. The Hawaiian sumach. Torreya 18: 183-188.
This lowland plant is being reduced by competition from introduced plants.

MacCaughey, V. 1918-1919. History of botanical exploration in Hawaii. Hawaiian For. Agr. 15: 388-396, 417-429, 508-510 (1918); 16: 25-28, 49-54(1919).
In 31 brief chapters, the author mentions, where appropriate, "the original introductions of the grazing animals which have been the most influential single factor in the alteration of the Hawaiian vegetation."

MacDaniels, L.H. 1947. A study of the fe'i banana and its distribution with reference to Polynesian migrations. B. P. Bishop Museum Bulletin 190: 1-56.
Among the causes of disappearance of wild fe'i banana strains from some Tahitian valleys: the fe'i are eaten by wild cattle and hogs; the plants are smothered by weeds such as Lantana and wild morning-glory.

MacDaniels, L.H. 1952. New Caledonia: a warning. Cornell Plantations 8: 40-44.
Grasslands and forests are subjected to uncontrolled burning, causing disaster to the vegetation.

Mack, J. 1975. Hawaii's first natural area reserve. Defenders 50(6): 500-503.
Concerning Ahihi-Kinau reserve on Maui.

Mackensen, G. and D. Hinrichsen. 1984. A "new" South Pacific. Ambio 13(5-6): 291-294.
Contains good background material for understanding present conditions in the Pacific.

Mangenot, G. 1963. The effects of man on the plant world,

pp. 117-132, in Fosberg, F.R., ed. (1963).
Includes discussion by H.M. Johnson which mentions disturbance problems of Hawaiian vegetation.

Mann, H. 1866. Denudation on the Hawaiian Islands. Proc. Boston Society Natural History 10: 232-234.
General observations on threats to native vegetation.

Manner, H.I., Thaman, R.R. and D.C. Hassall. 1984. Phosphate mining induced vegetation changes on Nauru Island. Ecology 65(5): 1454-1465.
Analysis of the extent to which vegetation has been established on the disturbed open-pit phosphate-mined areas of Nauru.

Maragos, J.E. and M.E. Elliott. 1985. Coastal resource inventories in Hawaii, Samoa and Micronesia. Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 2: 235. (Abstract)
Inventories provide baseline data to develop resource conservation plans.

Marden, L. 1957. I found the bones of the Bounty. National Geographic 112(6): 725-789.
Notes that Pitcairn Island is deforested, and that Pitcairners do their woodcutting on uninhabited Henderson Island.

Marsh, J.A. 1979. Book review of Scagel, R.F., ed., Mankind's Future in the Pacific (1975). Micronesica 15(1 & 2): 335-337.
Mentions the book's articles by I.M. Cowan on "Biota Pacifica 2000", M. Strong on "Environment and man's future in the Pacific"; W. Epstein on "The environmental impact of weapons use and testing."

Marshall, A.G. 1973. A start to nature conservation in the New Hebrides. Biological Conservation 5(1): 67-79.
Preliminary conservation efforts are discussed, with map. Reef I., the only atoll in the group, is a proposed nature reserve.

Marshall, A.G. and Lord Medway. 1976. A mangrove community in New Hebrides, South-West Pacific. Biological Journal Linnean Society 8(4): 319-336.
Notes human alteration of mangrove vegetation by planting coconuts, etc. at Port Stanley, Malekula, New Hebrides.

Marshall, C. 1949a (Reprinted 1966). Report on Forestry in the Trust Territory of the Pacific Islands. 94 pp. Scientific Investigations in Micronesia, SIM Report No. 14. Trust Territory of the Pacific Islands: Division of Land Management, Department of Resources and Development.

Includes examples to follow up the statement that "With the coming of Euro-Asiatic Iron-Age culture, the natives (in high Pacific islands) were suddenly enabled to attack the forest and destroy their land and soil almost as efficiently as the people of the Middle East, the Nile Valley, the Mediterranean, India, China and America have destroyed the natural resources of their lands."

Marshall, C. 1949b. Forestry problems of the South Pacific. Agricult. Journal (Fiji) 20(4): 1-7.
Includes description of forest degradation in Fiji Is.

Marshall, C. 1953. Forestry problems of the South Pacific. Proc. Seventh Pacific Science Congress 6: 267-277.
A well-rounded account with plea to respect ecological stability of forest ecosystems, emphasizing Fijian conditions.

Marshall, C. 1961. Forestry, conservation and land tenure in Southeast Asia and the Pacific. Proc. Eighth Pacific Science Congress 6: 222-225.
It is asserted that, at the time (1953), a cause of bitter political criticism was the refusal of the British administration in Fiji to permit the more astute immigrant businessmen of Europe, India and China to acquire the right to destroy land.

Marshall, D. 1961. Ra'ivavae - "High Island". Pacific Discovery 14(2): 2-8.
Includes an interpretation of the vegetation disturbance history of Ra'ivavae in Polynesia.

Mason, L. 1979. Socioeconomic development and ecosystem integrity in American-controlled Pacific Island locations, pp. 10-1 - 10-27, in Byrne, J.E., ed. (1979).
Includes discussion of disruptive activities and their ecological effects. Topics are typhoons and other natural disasters; changing subsistence technologies; commercial development of agriculture and fisheries; transportation facilities; tourism and industrial development; war; and urbanization.

Massal, E. and J. Barrau. 1956. Some lesser-known Pacific food plants. South Pacific Bulletin 6(3): 17-18.
Hitherto underexploited native plants with seeming potential for wider utilization include Gnetum gnemon from the New Hebrides.

Matsue, H. 1932. Ten Year History of South Sea Islands Exploitation. 239 pp. Tokyo, Japan. (In Japanese).
History of clearance of vegetation of Tinian and planting of sugar cane as a replacement, with photos.

Matthiessen, P. and R. Wenkham. 1970. Kipahulu - from

cinders to the sea. Audubon (May, 1970): 14 pp.
Includes a plea to save the dense wilderness rainforests of the Kipahulu Valley on Maui, Hawaiian Islands.

Maxwell, J. 1985. Paniolos, the cowboys of Hawaii. Islands 5(4): 78-80.
In order to control the depredations of herds of wild cattle, John Palmer Parker was given an official land grant in 1847 by King Kamehameha III of Hawaii, to bring the cattle under domestication. Thus began the Parker Ranch, now the largest singly owned ranch in the United States, comprising 225,000 acres with 45,000 cattle.

McClelland, C.K. 1915. Grasses and Forest Plants of Hawaii. 43 pp. Hawaii Agricultural Experiment Station Bulletin No. 36.
"The cactus known as prickly pear, or panini (Opuntia sp.), is one of the important forage crops of Hawaii. On some ranches there are large areas fairly well covered with this plant. On Ulupalakua, for example, there are 2,000 acres; on the Haleakala Ranch 1,500 acres; on leeward Hawaii 10,000 acres."

McCombs, P. 1987 (March 15). Cousteau and the capture of Paradise. Washington Post : G1-G6.
On Raoul I. (Kermadec Is.) there is a program to eradicate weedy plants, including buttercup, passionfruit and 30-40 other species, which are taking over and strangling the indigenous plants. Thus far, 35,000 buttercup plants have been dug out or treated.

McCracken, R.J. 1953. A preliminary report on the soils of Saipan, Mariana Islands. Pacific Science 7(3): 267-277.
"The original vegetation of Saipan...was greatly decimated by extensive clearing for sugar cane culture during the period of Japanese control."

McGorum, P. 1975. The trouble with tourists. Defenders 50(6): 516-520.
Includes an interview with the botanists Dr. and Mrs. O. Degener of Hawaii. Tourists inadvertently introduce exotic plant species to the islands; they also bring increased incentives for developers to construct warrens to accommodate their future visits.

McHarg, I.L. 1971. Man: Planetary Disease. 28 pp. Washington, D.C.: Agricultural Research Service, U.S. Department of Agriculture.
We must learn to live in peaceful co-existence with the biota in our ecosystem. Mankind's predatory disposal of passive species would suggest that we are a persistent, contaminating, contagious and lethal parasite of the world's natural vegetation.

McHugh, D. 1986. Recovering the Galapagos. 3 pp. IUCN Feature Stories. Gland, Switzerland: IUCN Press Sevice.
Santiago I. has 100,000 goats and 20,000 pigs, causing much destruction of natural vegetation. The recovery of Pinta I. after the annihilation of 40,000 goats has been marvelous, and erosion halted as well.

McIntire, E.G. 1960. Canton Island (Phoenix Islands). 42 pp. Library brochure prepared for the Pacific Missile Range, Point Mugu, California. Riverside, California: University of California.
"Nearly half of the land area of Canton Island has been disturbed by man and his activities during the last two decades...much of the area which has been disturbed remains bare of any vegetation."

McIntire, E.G. 1961. Hawaiian Islands, With Special Reference to Kaneohe Bay, Oahu; South Point, Hawaii; Waimea District, Kauai. 73 pp. Library brochure prepared for the Pacific Missile Range, Point Mugu, California. Riverside, California: University of California.
"Little natural vegetation is left on the lower slopes of the mountains in the southern and western parts of Kauai, since nearly all suitable land has been planted to sugar cane or pineapple."

McKinney, J. 1983. Haleakala and Hawaii Volcanoes: from the sublime to the ridiculous. Islands 3(2): 20-32.
Includes discussion of feral goat damage in Haleakala National Park (Maui), and undesirable exotic plants such as pine, gorse and thistle.

McKinney, J. 1985. Bombs away, Kahoolawe. Islands 5(1): 10.
An Hawaiian environmentalist group claims that the 1985 RIMPAC maneuvers (shelling, anti-submarine, torpedo and counter-vessel activities) conducted near Kahoolawe by the United States, Australia, New Zealand, Canada, and Japan, may have adversely impacted the environment which already suffers from uncontrolled devouring of vegetation by feral goats. The island's pristine reefs are said to be dying from the runoff of the eroded soil and ashes of explosives.

McKinney, J. 1986. Kauai: a journey through the Garden Isle. Islands 6(2): 38-59.
The Hawaiian island of Kauai attempts to achieve economic security through development, without destroying the fragile landscapes. Article discusses prospects of selling Kauai-grazed buffalo (bison) meat to Japan; also, mentions exotic trees of Waimea Canyon including California redwood, Australian Eucalyptus, and Japanese sugi pine.

McMakin, P.D. 1977. Shoreline Erosion on Guam: A Position Paper. 4 pp., in Guam Coastal Management Program Technical Reports, Vol. II. Agana, Guam: Bureau of Planning.
The practice of sand mining for construction, landfill and golf course purposes has degraded several beaches in terms of reduced ecological complexity, aesthetic appearance and recreational potential.

McMichael, D.F. and F.H. Talbot. 1970. Conservation of islands and coral reefs of the Great Barrier Reef system, the islands of the Coral Sea, and Norfolk and Lord Howe Islands. Micronesica 5(2): 493-496.
Human impacts threaten the indigenous terrestrial floras on Norfolk and Lord Howe islands.

McQueen, D.R. 1983. Notes on the ecology of Nothofagus aequilateralis in New Caledonia. Tuatara 26(2): 62-69.
"Nothofagus aequilateralis is a tree of low to medium altitudes in New Caledonia. It does not form extensive forests but is in isolated patches over a wide geographic range, suggesting fragmentation by man-induced fires."

Melville, R. 1979. Endangered island floras, pp. 361-377, in Bramwell, D., ed., Plants and Islands. London and New York: Academic Press.
Contains examples of endangered plants from the Pacific Ocean islands.

Menard, W. 1982. To find Niihau. Oceans 15(5):16-20.
On the privately owned and protected Hawaiian island of Niihau, the people are contented to live within the stabilizing requirements of their own population carrying capacity, as determined by water availability. Attempts to achieve sensible adjustment to prevailing environmental conditions could well be instituted in the more destitute semi-arid regions of the world.

Merlin, M.M. 1985. Woody vegetation in the upland region of Rarotonga, Cook Islands. Pacific Science 39(1): 81-99.
Although the indigenous coastal and lowland vegetation is absent or in a very disturbed condition, alteration of the native upland forest has been comparatively mild.

Merrill, E.D. 1940. Man's influence on the vegetation of Polynesia, with special reference to introduced species. Proc. Sixth Pacific Science Congress 4: 629-639; reprinted in Chronica Botanica 10(3-4): 334-345 (1946).
Guam was an important area for the introduction and spread of economic and weedy plants from various points abroad.

Mid-Pacific Marine Laboratory. 1975. Mid-Pacific Marine

Laboratory, Enewetak, Marshall Islands. 25 pp. Kaneohe, Hawaii: Mid-Pacific Marine Laboratory.
Subsequent to World War II damage, "the (Enewetak) flora was further decimated by the 43 atomic events that took place during the U.S. test program."

Milne, C.A. and M.D. Steward. 1967. The inheritance of land rights in Laura, 45 pp., in Mason, L., ed., The Laura Report. Honolulu, Hawaii: University of Hawaii.
People of Laura, a large village on Majuro Atoll in the Marshall Islands, recognise 25 categories of land ownership and acquisition. Efforts to exploit, or to preserve land for conservation purposes in this and similar communities, will have to take the existence of such categories into consideration.

Milton, J.P. 1968. Introduction: The islands and the meaning of diversity, pp. 22-36, in Porter, E. and K. Brower, Galapagos - The Flow of Wildness, vol. 2: Prospect. 187 pp. San Francisco, New York, London: Sierra Club.
Includes some discussion of effects of introduced animals and plants on the indigenous vegetation.

Mitchell, F. 1981. Mouflon sheep and Kau silversword. Notes Waimea Arboretum 8(1): 6.
"The mouflon sheep introduced into Hawaii in 1973 have now become very noticeable in the area of the Kau silversword on Mauna Loa, Hawaii."

Mohlenbrock, R.H. 1983. Where Have All The Wildflowers Gone? 239 pp. New York: Macmillan Publishing Co., and London: Collier Macmillan.
Includes discussion of such Hawaiian endangered plants as Kokia cookei, Lipochaeta venosa, and Vicia menziesii.

Moir, W.W.G. 1971. Objective Secured. 22 pp. Honolulu, Hawaii: Hawaiian Botanical Gardens Foundation, Inc.
Describes the background and struggles by the Hawaiian Botanical Gardens Foundation to secure a national charter for the Pacific Tropical Botanical Garden, among whose objects and purposes is: "to collect and cultivate tropical flora of every nature and origin and to preserve for the people of the United States species of tropical plant life threatened with extinction."

Moldenke, H.N. 1968. The vervains collected on the Galapagos Islands by Charles Darwin during the voyage of the "Beagle". Phytologia 16(4): 340-342.
Notes that the introduced Verbena litoralis "is now quite abundant in many parts of the island group and appears to be spreading in the manner of introduced "weeds"."

Montgomery, S. 1972. Feral animals. Newsletter Hawaiian Botanical Society 11(2): 13-16.
Surveys the concern over the impact of hooved animals on native Hawaiian vegetation.

Moomaw, J.C. and M. Takahashi. 1960. Vegetation on gibbistic soils in Hawaii. Journal Arnold Arboretum 41: 391-411.
Gibbistic soils of Kauai, which have high alumina and iron content, have long been exploited and therefore support very degraded plant communities on the acidic ground.

Moore, D.M. 1983. Human impact on island vegetation, pp. 237-246, in Holzner, W., Werger, M.J.A. and I. Ikusima, eds., Man's Impact on Vegetation. The Hague: Dr. W. Junk Publishers.
Mentions Hawaiian Islands and New Caledonia. Discussion topics include levels of endemism, environmental stability, mechanical interference with plant cover, grazing animals, and alien plants.

Moore, H.E. 1966. Palm hunting around the world. IV. Lord Howe Island. Principes 10: 13-21.
This island is known for the endemic Belmore sentry palm (Howea belmoreana, synonym: Kentia belmoreana) and the Forster sentry, or kentia, palm (Howea forsterana, synonym: Kentia forsterana).

Moore, H.E. 1969. Satakentia: a new genus of Palmae-Arecoideae. Principes 13(1): 3-12.
In a protected grove of Satakentia liukiuensis on Ishigaki Island (Ryukyus), these palms have probably grown from seedlings which remained after mature palms were cut for the "cabbage", or edible terminal bud, during World War II.

Moore, H.E. 1979. Endangerment at the specific and generic levels in palms. Principes 23(2): 47-64.
Includes discussion of status of New Caledonian Pritchardiopsis and Fijian Neoveitchia.

Moore, H.E. and N.W. Uhl. 1984. The indigenous palms of New Caledonia. Allertonia 3(5): 313-402.
Pritchardiopsis jeanneneyi Beccari was rediscovered in 1980, having been presumed extinct because penal convicts detained at the Bay of Prony in the 1890's cut the plants for the edible palm "cabbage", and subsequent searches until 1980 were unsuccessful.

Moore, P.H. 1974. Guam's flora: rare ferns of Guam. Guam Rail 8(8): 5.
On Guam, Cyathea lunulata "is in constant danger during the dry season, of being destroyed by fire except in the

vicinity of Fena Lake where it is still protected by the Navy." Includes discussion of Angiopteris durvilleana.

Moore, P.H. 1980. Notes on the endangered species of Guam. Notes Waimea Arboretum 7(1): 14-16; followed by Daguio, C., Checklist of plants growing at Waimea Arboretum (1980) collected by P.H. Moore, loc. cit. 16-17.
Only 4 adult trees of the endemic Serianthes nelsonii are known to exist on Guam, and the plant has been extirpated from Rota.

Moore, P.H. and P.D. McMakin. 1979. Plants of Guam. 186 pp. University of Guam, Cooperative Extension Service.
Coverage of topics includes erosion in the Savannah, and the effects of introduced mammals in limestone forests.

Moore, P.H., Raulerson, L., Chernin, M. and P. McMakin. 1977. Inventory and Mapping of Wetland Vegetation in Guam, Tinian and Saipan, Mariana Islands. Department of Biosciences, University of Guam.
Species endangered in Guam include Lumnitzera littorea, Bruguiera gymnorrhiza, Xylocarpus moluccensis, and Rhizophora mucronata.

Moore, W.R. 1945. Gilbert Islands in the wake of battle. National Geographic 87: 129-162.
Includes photos of vegetation after invasion during World War II military operations in the Pacific Combat Theater.

Morat, P. and J.-M. Veillon. 1985. Contribution a la connaissance de la vegetation et de la flore de Wallis et Futuna. Adansonia 3: 259-329.
Over large areas, forest vegetation destroyed by clearing and by fire is replaced by various types of secondary vegetation, including an unusual heath vegetation over certain repeatedly burned soil types.

Motooka, P.S., Saiki, D.F., Plucknett, D.L., Younge, O.R. and R.E. Daehler. 1967. Control of Hawaiian jungle with aerially applied herbicide. Down to Earth 23(1): 18-22.
Efforts to eradicate exotic vegetation are discussed; some indigenous vegetation is harmed in the process.

Moverley, A.V. 1953. Pitcairn Island: an economic survey. Transactions and Proceedings of The Fiji Society 4(3): 61-67.
On Pitcairn, "Deforestation is practically complete except for a small area on the northwest side, and timber is now not available locally for building houses and boats or even coffins."

Mueller-Dombois, D. 1967. Ecological relations in the alpine and subalpine vegetation of Mauna Loa, Hawaii.

Journal Indian Botanical Society 46(4): 403-411.
Grazing by cattle and goats, and uprooting by pigs with subsequent invasion by introduced grasses, has interfered with the original vegetation here.

Mueller-Dombois, D., ed. 1972. Island Ecosystems Stability and Evolution Subprogram. IBP/IRP Technical Report No. 2. 262 pp. Honolulu, Hawaii: University of Hawaii.
Includes coverage of every form of biological threat to the vegetation of Hawaii; excludes treatment of tourism effects.

Mueller-Dombois, D. 1973a. Natural Area System Development for the Pacific Region, A Concept and Symposium. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 26. 55 pp. Honolulu, Hawaii: University of Hawaii.
The concept and role of parks and ecological reserves in a Pacific natural area system is discussed.

Mueller-Dombois, D. 1973b. A non-adapted vegetation interferes with water removal in a tropical rain forest area of Hawaii. Tropical Ecology 14(1): 1-18.
"The introduced Andropogon virginicus grass causes damage to the landscape and probably adds to the undesirable silting-up process in the Kaneohe Bay area on Oahu."

Mueller-Dombois, D. 1973c. Some Aspects of Island Ecosystems Analysis. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 19. 26 pp. Honolulu, Hawaii: University of Hawaii.
Varying degrees of impact, from mild to serious, are caused by different species of exotic grass invaders which replace native grasslands of Hawaii.

Mueller-Dombois, D. 1980. Chapter 7. The ohia dieback phenomenon in the Hawaiian rain forest, pp. 153-161, in Cairns, J., ed., The Recovery Process in Damaged Ecosystems. Ann Arbor, Michigan: Ann Arbor Science Publishers, Inc.
Trees already surviving under conditions of nutrient starvation may die from conditions of either iron toxicity or soil drought caused by varying extreme rainfall patterns.

Mueller-Dombois, D. 1981. Understanding Hawaiian forest ecosystems: the key to biological conservation, pp. 502-520, in Mueller-Dombois, D., Bridges, K.W. and H.L. Carson, eds., Island Ecosystems: Biological Organization in Selected Hawaiian Communities. 583 pp. US/IBP Synthesis Series No. 15. Stroudsburg, Pennsylvania: Hutchinson Ross Publishing Co.
A review of the complex and fragile ecosystem dynamics in the Hawaiian Islands.

Mueller-Dombois, D. 1983a. Canopy dieback and successional processes in Pacific forests. Pacific Science 37(4): 317-325.
"Massive tree (Metrosideros polymorpha) dieback has occurred periodically in the Hawaiian montane rain forest", and is a pattern and process sequence in primary succession.

Mueller-Dombois, D. 1983b. Population death in Hawaiian plant communities: a causal theory and its successional significance. Tuexenia 3: 117-130. See, also, related article in Phytocoenologia 11(1): 117-137 (1983).
Explanation of synchronized plant-group dying or dieback as a chain reaction process involving senescing cohorts and various triggering factors.

Mueller-Dombois, D. 1984a. Ohi'a Dieback in Hawaii: 1984 Synthesis and Evaluation. Hawaii Botanical Science Paper No. 45. 44 pp. Honolulu, Hawaii: University of Hawaii.
Presents new research findings, new research needs, policy and management considerations.

Mueller-Dombois, D. 1984b. Classification and mapping of plant communities: a review with emphasis on tropical vegetation, pp. 21-88, in Woodwell, G.M., ed., The Role of Terrestrial Vegetation in the Global Carbon Cycle: Measurement by Remote Sensing. John Wiley & Sons, Ltd.
Reviews methods of classifying and mapping terrestrial vegetation, with many examples from the island of Hawaii, having several main objectives including: (1) improved accuracy in estimating world phytomass, and (2) the monitoring of tropical forest loss.

Mueller-Dombois, D. 1984c. Zum Baumgruppensterben in pazifischen Inselwaldern. Phytocoenologia 12(1): 1-8.
Data on forest-stand dieback in some Pacific islands suggest it is a natural and recurring phenomenon in primary succession.

Mueller-Dombois, D. and V.J. Krajina. 1968. Comparison of east-flank vegetations on Mauna Loa and Mauna Kea, Hawaii. Proc. Symposium Recent Advances in Tropical Ecology 2: 508-520.
On Mauna Kea the cattle are interfering with the reproduction cycle of native koa, Acacia koa.

Mueller-Dombois, D. and C.H. Lamoureux. 1967. Soil - vegetation relationships in Hawaiian kipukas. Pacific Science 21(2): 286-299.
Mentions need for precise measurements of damage in pig-scarified vegetation.

Mueller-Dombois, D. and G. Spatz. 1972. The Influence of

Feral Goats on the Lowland Vegetation in Hawaii Volcanoes National Park. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 13. 46 pp. Honolulu, Hawaii: University of Hawaii. See related article, also, in Phytocoenologia 3(1): 1-29 (1975).
Impact of the grazing goats is dramatic in the coastal lowland of Hawaii Volcanoes National Park, a concentration center for feral goats.

Mull, M.E. 1975a. Comments on natural resources management plan. Elepaio 35(11): 127-131.
Concerning the goals of "re-establishing endemic plants in areas freed of destructive exotic mammals", and related matters.

Mull, M.E. 1975b. Comments on silversword planting project, Draft Environmental Assessment, June 1974 to Superintendent G. Bryan Harry, Hawaii Volcanoes National Park, from Mae E. Mull, 31 July 1974. Elepaio 36(4): 45-47.
Since the two intentionally planted forms of Argyroxiphium sandwicence did not originally occur in the Park (namely, the Haleakala silversword planted in 1953-1954, and the Mauna Kea silversword planted in 1973), it is recommended that the removal of "all existing silverswords in the Park is the only proposal consistent with the policy to re-establish rare endemic plants into their former range."

Mull, M.E. 1977. Feral sheep vs. the mamane ecosystem in the Mauna Kea Plan. Elepaio 38(5): 54-55.
Feral mammals are incompatible with native ecosystem components on Mauna Kea, Hawaii.

Mull, M.E. 1978. Question: should wild sheep be allowed to roam free on Mauna Kea? Elepaio 38(10): 117.
Presents evidence to reject, on ecological grounds, the notion of allowing sheep on Mauna Kea, Hawaii.

Mull, W.P. 1975. Magnificent minutiae. Defenders 50(6): 487-490.
Concerns insects, spiders and other creepy-crawlies of Hawaii, noting that exotic organisms cause destruction of indigenous plants and animals.

Mune, T.L. and J.W. Parham. 1956. The Declared Noxious Weeds of Fiji and Their Control. 73 pp. Bulletin No. 31. Department of Agriculture, Fiji.
Fijian weeds include prickly pear cactus, Opuntia vulgaris: "The spread of prickly pear throughout the world would never have been so extensive without the help of its greatest ally, man. These thoughtless criminals, or "cactus fans" present the biggest danger in its spread within the Colony."

Munro, G.C. 1929. Windbreaks for wind eroded lands. Hawaiian For. Agr. 26: 124-125.
Re-establishment of plant cover on denuded Lanai is discussed.

Munro, G.C. 1933. Preserving the rare plants of Hawaii. B.P. Bishop Museum Special Publication 21: 26-27.
Mentions interesting plants worth saving in various habitats.

Munro, G.C. 1952a. Revisiting the island of Lanai in 1952. Elepaio 12(10): 62-64.
Discusses status of some native rare plants, and introduced plants, as against the effects of grazing cattle, on Lanai (Hawaiian Islands).

Munro, G.C. 1952b. Attempts to save the shoreside and dryland plants of Hawaii. Elepaio 13(1): 1-5.
The earliest known attempt was made in 1918 by Harry and Frank Baldwin at Kanepuu, Hawaii, at the suggestion of Mr. Munro.

Munro, G.C. 1952c. Na Laau Hawaii. Elepaio 13(6): 39-43.
Discloses attempts to conserve areas of xerophytic or dryland forests in Hawaiian Islands made by the author, including transplanting of various species.

Munro, G.C. 1955a. Preserving the rare plants of Hawaii. Elepaio 15(10): 57-58.
Includes plea to preserve a living collection of native Lobelioideae, including Cyanea baldwinii, a species represented by only one solitary tree in nature, on Lanai. Paper originally written in 1933.

Munro, G.C. 1955b. Na Laau Hawaii. Elepaio 16(1): 1-2.
Reports on growth of Erythrina sandwicensis and other suitable dryland Hawaiian endemics introduced into a preserve.

Munro, G.C. 1957a. Na Laau Hawaii at the crossroads. Elepaio 18(5): 29-30.
Describes efforts to create and perpetuate a natural dryland area for endemic plants on the open country of Diamond Head. Several articles in successive issues of Elepaio indicate the species being grown by Mr. Munro in this sanctuary for native flora.

Munro, G.C. 1957b. Fogdrip on Lanai watershed. Elepaio 17(7): 49.
Narrative of the introduction of Norfolk Island pine (Araucaria sp.) to the wet forest of Lanai, for purposes of intercepting fogdrip to recharge ground water.

Munro, G.C. 1970. Axis deer on Molokai and Lanai, circa 1952. Elepaio 31(2): 15-17.
"It was partly on my suggestion that deer were taken to Lanai. I class that as the greatest mistake I made on that island."

Murdock, G.P. 1963. Human influences on the ecosystems of high islands of the tropical Pacific, pp. 145-154, in Fosberg, F.R., ed. (1963).
Notes some examples of degree of man's influence on Pacific vegetation.

Murthy, S.G. 1985. Sandalwood: case study of a resource decline. Garden 9(1): 16-19.
Article concerns the decline of the tree in India, which is interesting to compare with the erstwhile sandalwood trade in Oceania.

Muzik, K. 1985. Dying coral reefs of the Ryukyu Archipelago (Japan). Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 2: 256. (Abstract)
"Natural vegetation (of Okinawa Prefecture) has been extensively removed, for dams and pineapple fields. Riverbanks and shorelines have been paved with cement, leading to extreme loss of topsoil with every rainfall."

Myers, N. 1980. Conversion of Tropical Moist Forests. Washington, D.C.: U.S. National Academy of Sciences.
Includes statistics of forest-felling in Melanesia.

Myrhe, S.B. 1970. Kahoolawe. Newsletter Hawaiian Botanical Society 9(4): 21-27.
Details the effects of introduced animals and plants on the indigenous vegetation of Kahoolawe, Hawaiian Islands.

Nagata, K. 1971. Hawaiian medicinal plants. Economic Botany 25(3): 245-254.
Describes uses made by traditional medical practitioners of Hawaiian healing.

Nagata, K. 1981. Unpublished manuscript. Status report on Achyranthes rotundata (Hdb.) St.John (Amaranthaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Nagata, K. 1982. Unpublished manuscript. Status report on Isodendrion hosakae St.John (Violaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Nanyo Cho (South Seas Government). 1932. Nanyo Gunto Shashin Chyo (Photo Album of the South Sea Islands). 90 pp. Palau.

Photos of Micronesian vegetation, useful for determining changes due to World War II military operations on various islands. At Library of Congress, Washington, D.C. (Orientalia, Japan).

Nelson, R.E. 1960. Silk-oak in Hawaii: Pest or Potential Timber? 5 pp. Pacific Southwest Forest and Range Experiment Station, Miscellaneous Paper No. 47.
Grevillea robusta from Australia is much planted by watershed managers in Hawaii for soil stabilization, but it is a vigorous, natural self-seeder which poses a threat to some grazing lands.

Nelson, R.E. 1964. A Look at the Forests of American Samoa. 14 pp. U.S. Forest Service, Research Note PSW-53.
Includes recommendations that watershed values in Samoan forested mountains must be protected and enhanced, and that the possible consequences of expanded agricultural activities should be carefully studied.

Nelson, R.E. 1967. Records and Maps of Forest Types in Hawaii. 22 pp. U.S. Forest Service Resource Bulletin PSW-8.
Includes discussion of Hawaiian vegetation changes after the year 1788 due to timber harvesting, animals and insects, fire, and plant introductions.

Nelson, R.E. 1971. Hawaii's forest resource needs, production potentials, and constraints. Proc. Twelfth Pacific Science Congress 1:118. (Abstract)
Constraints to developing the productive capacity of forest-land to grow exotic timber crops in Hawaii include the watershed value of unlogged forests and the preservation of native forests as natural ecosystems.

Nelson, R.E. and E.M. Hornibrook. 1962. Commercial Uses and Volume of Hawaiian Tree Fern. 10 pp. Pacific Southwest Forest and Range Experiment Station, Technical Paper 73.
The Hawaiian tree ferns, 3 species of Cibotium (Dicksoniaceae), are now on Appendix II of CITES and international trade in their parts and derivatives is monitored.

Newell, L.A. 1986. Demographics and mangrove resources in the Eastern Carolines. American Pacific Forestry News July 1986: 5-7.
Discussion of presumed cumulative impact of economic activities on the mangrove forests of Moen (Truk Lagoon) and Pohnpei. "The pressures on Pohnpei's mangroves come from settlement, logging for sawtimber, cutting for fuelwood and craftwood, siltation from roadbuilding, dredging, and disturbance of upland forests."

Newhouse, J. 1979. The energy budget of Takapoto, Tuamotu Archipelago, 1976. Cahiers de l'Indo-Pacifique 1(2): 195-213.
The tight energy budget on Takapoto is contravened by any act of plant resource exploitation within the vulnerable ecosystems, including the replacement of indigenous flora by coconut plantations.

Newhouse, J. 1980. Marine and terrestrial flora of atolls. C.R. Soc. Biogeographie 491: 63-68.
Includes remarks on introduced floras of Pacific atoll runways, where it is suspected that "a number of these plants arrived as seeds caught in the external seams of airplanes."

Nicholson, E.M. 1969. Draft check list of Pacific oceanic islands. Micronesica 5(2): 327-463.
Includes information on past and present land use, as well as status and scientific knowledge, of each Pacific island group.

Nicholson, E.M. and G.L. Douglas. 1970. Conservation of oceanic islands, pp. 200-211, in IUCN Publications New Series, No. 17. IUCN Eleventh Technical Meeting, New Delhi 1969, Vol. I.
Includes recommendations for the conservation of Palau Islands National Park, Bonin Is., Ryukyu Is., and Hawaiian wildlife reserve areas.

Nicholson, E.M. and L.C. Eldredge, eds. 1970. International Biological Programme Technical Meeting on Conservation of Pacific Islands held at Koror, Palau and Guam in November, 1968. Proceedings. Micronesica 5(2): 1-496.
Relevant articles are separately cited.

Niering, W.A. 1956. Bioecology of Kapingamarangi Atoll, Caroline Islands: Terrestrial Aspects. 32 pp. + 33 figs. SIM Report No. 22. Washington, D.C.: Pacific Science Board, National Research Council.
Calophyllum inophyllum trees, whose wood is in high demand for making saleable coconut grater handicrafts, are disappearing from the lagoon shore faster than they are being replaced.

Niering, W.A. 1961. Observations on Puluwat and Gaferut, Caroline Islands; with historical and climatic information on Gaferut Island by M.-H. Sachet. Atoll Research Bulletin 76: 1-15.
Includes description of Gaferut vegetation and speculation on the history of its alteration.

Niering, W.A. 1963. Terrestrial ecology of Kapingamarangi Atoll, Caroline Islands. Ecological Monographs 33: 131-

160.
Man's impact on the vegetation includes selective clearing of the native undergrowth since many of the species are used in construction and in making utensils and handicrafts.

Nisbet, I.C.T. 1976. Pacific follies, or the ravishing of Hawaii. Technology Review 78: 8-9.
Environmental alterations negatively affecting the Hawaiian Islands are discussed.

Nishi, M. 1968. An evaluation of Japanese agricultural and fishery developments in Micronesia during the Japanese Mandate 1914 to 1941. Micronesica 4(1): 1-18.
"A total of 238 fruits, vegetables, grasses, shrubs, and trees not previously found in the Islands were experimentally attempted for their agricultural promise."

Nolan, R.S., McConnaughey, R.R. and C.R. Stearns. 1975. Fishes inhabiting two small nuclear test craters at Enewetak Atoll, Marshall Islands. Micronesica 11(2): 205-217.
Instructive for the visualization of landscape demolishment, showing aerial photos of two "small" (354 feet, or 118 meters, in diameter) nuclear test craters on Runit (Yvonne) Island: Cactus Crater created by detonation May 1958, and LaCrosse Crater created by detonation April 1956.

Norris, R. 1986. The last interstate battle. Audubon 88(6): 46, 48-51.
Expresses concern for potential environmental damage which could be caused by construction of Interstate Highway H-3, connecting Kaneohe with Pearl Harbor, on Oahu, Hawaiian Islands.

Numata, M. 1969. Ecological background and conservation of Japanese islands. Micronesica 5(2): 295-302.
Discussion topics include the remarkably thorough disfigurement of the Bonin and Ryukyu island ecosystems by human activities.

Obata, J. 1976. Cultivating an "extinct" species. Newsletter Hawaiian Botanical Society 15(2): 35-37.
Tetramolopium filiforme (Compositae) rediscovered on Oahu.

Obata, J.K. 1985a. Another noxious melastome? Oxyspora paniculata. Newsletter Hawaiian Botanical Society 24: 25-26.
A large, regenerating population of O. paniculata on Oahu, along the upper Lulumahu Stream, seems to be displacing yet another noxious melastome, the Koster's

curse (Clidemia hirta).

Obata, J.K. 1985b. The declining forest cover of the Ko'olau summit. Newsletter Hawaiian Botanical Society 24: 41-42.
The changing, exotic vegetation lacks the fog interception capabilities of the stable, native Metrosideros tree cover.

Obata, J.K. 1986. The demise of a species: Urera kaalae. Newsletter Hawaiian Botanical Society 25(2): 74-75.
This species is relegated to the talus slopes in the Kunia Mts. of Oahu, Hawaiian Islands, where threatening weeds in its habitat include Passiflora, Schinus, and Psidium.

Obata, J.K. and C.W. Smith. Undated, unpublished manuscript. Status report on Cyanea superba (Cham.)Gray (Campanulaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Oberhansley, F.R. 1953. Some conservation problems in Hawaii National Park. Proc. Seventh Pacific Science Congress 4: 652-657.
Compares feral goats in the park to "hoofed locusts", noting also that when the park was established it inherited a problem: "Unplanned development of roads, trails, and structures designed for human convenience with little thought given to the preservation of the primeval wilderness resulted in unrestricted encroachment on the most vital parts of the area."

Office of the Chief Engineer, General Headquarters, Army Forces, Pacific. 1951. Engineers of the Southwest Pacific 1941-1945. Volume VI: Airfield and Base Development. 533 pp. Southwest Pacific Area Army Forces, Pacific.
In the Southwest Pacific Theater of Operations during World War II, vegetation clearance for airfields was necessary. On Norfolk Island, 350 giant pines had to be removed from the airfield site. On Woodlark Island, more than 10,000 feet of over-all clearing was required to obtain the desired maximum glide angle for the aircraft. For construction of Mokerang airdrome on Los Negros Island (Admiralty Is.), "the work consisted of clearing 1,100 acres, from which 18,000 coconut trees were removed, stripping 360,000 cubic yards of overburden, moving 172,000 cubic yards of coral in preparing the subgrade and surfacing." In general, "Clearing of airfield sites in the Southwest Pacific ranged from the comparatively simple mowing of thick kunai grass to the removal of extensive and heavy rain forests. Width of necessary clearing depended upon a number of factors, including height of trees and local conditions, such as

cross winds, obstructions, and direction of runway in regard to prevailing winds."

Okutomi, H., et al. 1982. Endemic flora and fauna, pp. 393-403, in Okutomi, H., ed., Conservation Reports of the Minami-Iwojima Wilderness Area. 403 pp. Tokyo, Japan: Nature Conservation Bureau, Environment Agency of Japan. Concerns Volcano Island.

Oliver, D.L. 1951. Planning Micronesia's Future. 94 pp. Cambridge, Massachusetts: Harvard University Press. Recognises that biological conservation programs should be instituted.

Ono, M. 1985. Speciation and distribution of Pittosporum in the Bonin Islands, pp. 7-17, in Hara, H., ed., Origin and Evolution of Diversity in Plants and Plant Communities. Tokyo, Japan: Academic Scientific Book Inc. Includes notes on the endangered Pittosporum parvifolium of Chichijima, Bonin Islands.

Ono, M., Kobayashi, S. and N. Kawakubo. 1986. Present situation of endangered plant species in the Bonin (Ogasawara) Islands. Ogasawara Research 12: 1-32. A brief discussion of the history of the Bonin Islands is followed by a list of endangered plant species, with special attention given to some of the most critically endangered ones. Several causes of their precarious situation are discussed.

Ord, W.M. 1962. Preservation of plants and wildlife in Hawaii. Elepaio 22(10): 75-77. Mourns the loss of the 1940 open hunting season for shooting feral animals.

Otobed, D.O. 1975. Conservation priorities in Micronesia, pp. 73-79, in Force, R.W. and B. Bishop, eds., The Impact of Urban Centers in the Pacific. 362 pp. Honolulu, Hawaii: Pacific Science Association. Recognises importance of indigenous flora as a basic island resource.

Owen, R.P. 1978. Conservation is for everyone. Micronesian Reporter 26(3): 16-20. The Rock Island Palm (Gulubia palauensis) is an endangered species which is attacked in Palau by the sulphur-crested cockatoo, an introduced bird which chews through the crownshaft and topples it.

Owen, R.P. 1979. A conservation program for the Trust Territory. Micronesian Reporter 27(1): 22-28. Recognises the ecological importance of plant species and asks for the creation of wildlife preserves and national parks.

Pacific Ocean Biological Survey Program. 1964. Preliminary Biological Survey of Sand Island - Johnston Atoll. 136 pp. Washington, D.C.: Smithsonian Institution.
"The role of man as an agent in plant introduction on Sand-Johnston Atoll is emphasized by the fact that the man-created portion of Sand has almost twice the plant variety that the original portion has."

Pacific Science Board. 1953. Our Heritage in the Pacific. 13 pp. Washington, D.C.: Pacific Science Board of the National Academy of Sciences - National Research Council.
Unique document for sensing the immediacy of post-war concerns for the conservation of Pacific flora, forests and fauna for all humanity.

Paine, R.W. 1934. The control of Koster's curse (Clidemia hirta) on Tavenui. Agriculture Journal (Fiji) 7(1): 10-21.
Results of experiments designed to exterminate a noxious weed on a Fijian island.

Palumbo, R.F. 1962. Recovery of the land plants at Eniwetok Atoll following a nuclear detonation. Radiation Botany 1(2): 182-189.
All plants except a few species (Guettarda, Lepturus, Portulaca spp.) recovered rapidly.

Paramonov, S.J. 1963. Lord Howe Island, a riddle of the Pacific, Part III. Pacific Science 17(3): 361-373.
Discusses composition of native flora. Interesting for the map of the island bearing different symbols indicating "wild goats" and "wild pigs" placed where those animals are concentrated.

Pardo, R. 1984. Forestry and "customary land ownership": are they compatible? American Forests 90(10): 41, 60-62.
Includes notes on Pinus caribaea in Fiji.

Parham, B.E.V. 1953a. The naturalized flora of Fiji, with special reference to the grasses, legumes and weeds. Proc. Seventh Pacific Science Congress 5: 221-253.
There are many exotic induced plant communities in Fiji. Recognition of the increasing economic importance of the exotic vegetation may lead to the more detailed long-term investigations which are necessary to any future plan to combat the further degradation of natural resources.

Parham, B.E.V. 1953b. International Technical Conference on the Protection of Nature - 1949. The Fiji Society 4: 54-56.
In Fiji, some attention should be given to the protection of the native banana (Musa fehi) and the

beautiful indigenous shrub Lindenia vitiensis, both of which are very rare at the present time.

Parham, B.E.V. 1953c. Recent advances in local weed control. Transactions and Proceedings, Fiji Society of Science and Industry 3(3): 160-165.
Weeds are "partners (with man) in the crime of converting the valuable lands of the (Fiji) Colony into unproductive wastes."

Parham, B.E.V. 1953d. Notes on the alien flora of Fiji, or the effect of settlement upon the vegetation of Fiji. Fiji Society of Science and Industry 2(2): 76-88.
Includes many plants originally introduced for ornamental purposes.

Parman, T. 1975. An autecological review of Sophora chrysophylla in Hawaii. Newsletter Hawaiian Botanical Society 14(3): 40-49.
"Both habitat manipulation (e.g. land clearing, planting exotic species) and habitat destruction by exotic feral mammals have been important factors in the decline of this endemic tree."

Parrat, J. 1971. Destruction et defense de la couverture vegetale en Nouvelle-Caledonie, pp. 1-6, in Colloque Regional sur la Protection de la Nature - Recifs et Lagons, Commission du Pacific Sud (Noumea, 1971). SPC/RSCN/WP 16 (597/71). Reviewed by Plessis, J. 1972. Cahiers du Pacifique 16: 214.
A special problem of New Caledonian vegetation conservation is the ever-increasing effects of mining and attendant pollution. Reclamation of butchered terrain and protection of forests containing rare endemic species are encouraged.

Parsons, J. 1945. Coffee and settlement in New Caledonia. Geographical Review 35(1): 12-21.
Introduced, aggressive flora of the expanding brush community includes guava, lantana, Leucaena glauca, Acacia spirorbis, and Acacia farnesiana.

Patterson, C.B. 1986. At the birth of nations. National Geographic 170(4): 460-499.
Includes depiction of the garbage-encrusted coastal environment of Ebeye in the Marshall Islands. Elsewhere in the Marshalls, it is noted that "Kwajalein is the Pacific terminus (target) of a U.S. missile range, where experts measure the splashdown accuracy of ballistic rockets fired from Vandenberg Air Force Base, 4,500 miles away in California. The facility is expected to play an important part should President Reagan's "Star Wars" technology go forward."

Perez, G.S.A. 1975. Guam conservation priorities, pp. 89-96, in Force, R.W. and B. Bishop, eds., The Impact of Urban Centers in the Pacific. 362 pp. Honolulu, Hawaii: Pacific Science Association.
Notes that tourism and the geographic-strategic importance of Guam, combined with continued population pressures, presents a conservation dilemma characterized by depletion of marine resources, soil erosion, disappearance of plant and animal life, pollution, and socio-economic dislocation.

Perlman, S. 1977. Collecting breadfruit in the Society Islands. Bulletin Pacific Tropical Botanical Garden 7(4): 81-84.
Rare and disappearing variants such as the Tahitian lavender-fruited "Afara" variety of breadfruit, and seeds of the endangered Erythrina tahitensis from the last tree on Mt. Aori, were collected.

Perlman, S. 1978. A rare Hawaiian orchid. Bulletin Pacific Tropical Botanical Garden 8(1): 19.
Eight plants of Platanthera holochila were discovered in Alakai Swamp bog, Mt. Waialeale, Kauai.

Perlman, S.P. 1979. Brighamia in Hawaii. Bulletin Pacific Tropical Botanical Garden 9(1): 1-2.
All species of Brighamia (Lobeliaceae) are rare and endangered. B. citrina var. napaliensis from Kauai was collected for cultivation.

Perry, L.M. and J. Metzger. 1980. Medicinal Plants of East and Southeast Asia. 620 pp. Cambridge, Massachusetts and London, England: MIT Press.
Coverage includes the Solomon Islands.

Perry, R. 1969. Conservation problems in the Galapagos Islands. Micronesica 5(2): 275-281.
"Grazing by introduced animals is leading toward the local extermination of certain (indigenous) plants, such as Opuntia, upon which the tortoises rely almost exclusively for food during the dry seasons."

Perry, R. 1974. Sunflower trees of the Galapagos. Noticias de Galapagos 22: 11-13.
On Santa Cruz, both the endemic Miconia robinsoniana and Scalesia pedunculata (sunflower tree) have largely disappeared as a result of land clearance, grazing by domestic animals and burning.

Perry, R. 1984a. Juan Fernandez Islands: a unique botanical heritage. Environmental Conservation 11(1): 72-76.
Discusses interesting endemic plant species.

Perry, R. 1984b. Galapagos. Key Environment Series. 321 pp. Oxford, England: IUCN/Pergamon Press.
In-depth coverage of Galapagos ecosystems.

Petard, P. 1948. La vegetation madreporique du District de Teavaro (Ile Moorea). Journal Soc. Oceanistes 4:115-131.
The character of the indigenous Tahitian vegetation near the large European establishments has been completely stamped out.

Peterson, B. 1964. Carl Skottsberg, 1880-1963. Taxon 13(1): 1-7.
Succinct description of Skottsberg's interest in the vulnerable vegetation of Juan Fernandez Is. and his influence in establishing the national park.

Peterson, D. 1976. The Scientific Report of the Manawainui Research Project, East Maui, Hawaii. 320 pp. National Science Foundation. Unpublished report.
Includes considerations of harmful feral pigs and other threats to the vegetation.

Peterson, R.T. 1967. The Galapagos: eerie cradle of new species. National Geographic 131(4): 541-585.
General background on Galapagos ecosystems.

Pickard, J. 1973. An annotated botanical bibliography of Lord Howe Island. Contributions from New South Wales National Herbarium 4: 470-491.
Includes many articles of phytogeographic interest.

Pickard, J. 1980. The palm seed industry on Lord Howe Island. Principes 24(1): 3-13.
Seeds of four endemic species are harvested: Howea forsterana (Kentia palm), Howea belmoreana (Curly palm), Hedyscepe canterburyana (Big Mountain palm), and Lepidorrhachis mooreana (Small Mountain palm). Seed production is threatened by the overabundance of rats which damage this crop.

Pickard, J. 1984. Exotic plants on Lord Howe Island: distribution in space and time, 1853-1981. Journal of Biogeography 11(3): 181.
Influence of introduced flora on native species.

Pickford, G.D. 1962. Opportunities for Timber Production in Hawaii. 11 pp. Pacific Southwest Forest and Range Experiment Station, Miscellaneous Paper No. 67.
The author observes that, on the relatively idle acreage of Hawaii state forest reserves, "some exotic timber species are far more suitable and compatible to recreation use than is the present jungle type."

Polansky, E.A. 1966. Rabaul. South Pacific Bulletin 16(2):

42-47.
Notes regarding Rabaul, located on the Gazelle Peninsula of New Britain, "During the war years until 1945, Allied bombing obliterated the old town with its famous Botanical Gardens."

Porcher, M. and M. Dupuy. 1985. Environment and coastal land use planning in coral reef areas, French Polynesia. Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 2: 303. (Abstract)
Includes coastal zone management scheme, and studies of micro-areas for precise impact studies, especially of tourism projects near the lagoon.

Porteous, J.D. 1978. Easter Island: the Scottish connection. Geographical Review 68(2): 145-156.
The mode of exploitation during the past 100 years has been directed by the enterprise of two successive Scottish sheep-rearing companies. The role of the companies in the transformation of Easter Island is considered in terms of sociopolitical structure, economy, and landscape.

Porter, D.M. 1976. Geography and dispersal of Galapagos Islands vascular plants. Nature 264 (5588): 745-746.
The deleterious effects on the native flora of some of the species introduced by man (which total 124 weed and 57 cultivated exotic species) are just beginning to be appreciated.

Porter, D.M. 1979. Endemism and evolution in Galapagos Islands vascular plants, pp. 225-256, in Bramwell, D., ed., Plants and Islands. London and New York: Academic Press.
Much useful background data on indigenous flora.

Powell, E. 1982. Unpublished manuscript. Status report on Santalum ellipticum var. littorale (Hdb.) Skottsberg (Santalaceae). Washington, D.C.: Department of the Interior.
Endangered plants of Hawaiian Islands.

Powell, E. 1985. The Mauna Kea silversword: a species on the brink of extinction. Newsletter Hawaiian Botanical Society 24: 44-57.
Concerns Argyroxiphium sandwicense (Compositae), which is not regenerating naturally, and is further threatened by mouflon sheep.

Powell, R.H. 1968. Harmful plant species entering New Zealand 1963-1967. New Zealand Journal of Botany 6(3): 395-402.
Hawaii and Fiji are probable sources of some potentially harmful species arriving in New Zealand.

Pratt, T. 1973. Plant communities and bird distribution on East Molokai. Elepaio 33(7): 66-70.
Chronicles extensive damage by feral goats and cattle, noting that "surely Molokai must lose more forest every year to these two animals than is reclaimed by reforestation with Eucalyptus and pines."

Prescott-Allen, R. and C. Prescott-Allen. 1982. The case for in situ conservation of crop genetic resources. Nature and Resources 18(1): 15-20.
Lycopersicon cheesmanii , a wild relative of the tomato from Galapagos, has maritime ecotypes that are tolerant of saline soils, which should be autecologically studied in situ.

Price, W. 1936. Mysterious Micronesia: Japan's mandated islands. National Geographic 69(4): 481-510.
Notes that 238 plant species have been introduced into the Marianas by the Japanese. See, also, similar article by same author, op. cit. 81(6): 759-785(1942).

Prior, I. and J. Stanhope. 1980. Epidemics, health and disease in a small, isolated environment. World Development 8: 995-1016.
"Some health consequences of the interaction of man and his environment on the three small Pacific atolls that constitute Tokelau are examined."

Pulea, M. 1984. Environmental legislation in the Pacific region. Ambio 13(5-6): 369-371.
Refers to Tonga.

Pung, E. 1971. Forestry saves koai'a. Aloha Aina 2(2): 25-26.
The endangered endemic koai'a tree (Acacia koaia) on Hawaii was over-browsed by cows nearly to the point of total destruction, before the Koai'a Sanctuary was designated in 1950. Trees are regenerating.

Radovsky, F. J., Raven, P.H., and S.H. Sohmer, eds. 1984. Biogeography of the Tropical Pacific. 221 pp. B.P. Bishop Museum Special Publication No. 72.
Proceedings of a symposium, including articles on endemism and extinctions.

Rageau, J. 1973. Les Plantes Medicinales de la Nouvelle-Caledonie. 139 pp. Travaux et Documents de ORSTOM, No. 23.
Most of the endemic plants (80 percent of the New Caledonian flora) await biochemical and pharmacodynamic investigation. This document reviews medicinal properties of 600 mostly introduced species.

Ralph, C.J. 1978. Hawaiian plant on endangered species

list. Elepaio 38(12): 142-143.
Refers to Vicia menziesii (Leguminosae).

Ralph, C.J. 1982. Birds of the forest. Natural History 91(12): 40-45.
In the Hawaiian Islands, deforestation has caused severe reduction in habitat of many indigenous forest birds, affecting biological diversity of the region. Logging of koa trees is particularly disastrous.

Ralph, C.J., Pearson, A.P., and D.C. Phillips. 1980. Observations on the life history of the endangered Hawaiian vetch (Vicia menziesii) (Fabaceae) and its use by birds. Pacific Science 34(2): 83-92.
"Our study shows that the species appears to be susceptible to herbivore damage and suggests that this is probably the major limiting factor in its present limited distribution."

Randall, J.E. 1973. Expedition to Pitcairn. Oceans 6(2): 12-21.
Wood of Thespesia is utterly depleted on Pitcairn Island.

Randall, R.H. and J. Holloman. 1974. Coastal Survey of Guam. 404 pp. University of Guam Marine Laboratory, Technical Report No. 14.
Contains remarks on status of Guam vegetation from Fosberg, F.R. in Tracey, J.I., et al. (1959).

Randall, R.H. and R.T. Tsuda. 1974. Field Ecological Survey of the Agana - Chaot River Basin. 64 pp. University of Guam Marine Laboratory, Technical Report No. 12.
Sensitivity of the Agana, Guam marsh and swampland environment to activities of man, such as the influence of dredging and land-filling on the water table, are discussed.

Ranjitsinh, M.K. 1979. Forest destruction in Asia and the South Pacific. Ambio 8(5): 192-201.
Contains a minimum of information regarding South Pacific islands.

Rao, Y.S. and C. Chandrasekharan. 1983. The state of forestry in Asia and the Pacific. Unasylva 35(140): 11-21.
Includes considerations of deforestation.

Rappaport, R.A. 1963. Aspects of man's influence upon island ecosystems: alteration and control, pp. 155-174, in Fosberg, F.R., ed. (1963).
Elements introduced in pre-European times by the founding indigenous Pacific peoples are discussed in detail, including examples of introductions and elimina-

tions of plants.

Rauh, W. 1981. Brighamia insignis, a curious succulent of the lobelia family, from the Hawaiian Islands. Cactus and Succulent Journal (U.S.) 53(5): 219-220.
A rare endemic plant species.

Raynal, J. 1979. Three examples of endangered nature in the Pacific Ocean, pp. 149-150, in Hedberg, I., ed., Systematic Botany, Plant Utilization and Biosphere Conservation. Stockholm, Sweden: Almqvist & Wiksell International.
Endangered ecosystems in the Society Is., New Hebrides, and New Caledonia are discussed.

Reboul, J.L. 1975. Deux exemples d'introductions malheureuses pour la nature polynesienne. Te Natura o Polynesia 2: 14-20.
Concerns the ravages of the water hyacinth, Eichornia crassipes, in Tahiti and neighboring islands.

Reed, E.K. 1952. General Report on Archaeology and History of Guam. 133 pp. Washington, D.C.: National Park Service.
Includes general notes on extensive vegetation changes on Guam due to land clearance and annual burning of hilly grasslands.

Reeser, D.W. 1976. Successful goat control at Hawaii Volcanoes. Parks 1(2): 14-15.
This National Park in Hawaii began a fencing program to curtail the devastating effects of feral goats (Capra hircus), and the vegetation has responded by regenerating within the fenced areas.

Richardson, F. 1949. The status of native land birds on Molokai, Hawaiian Islands. Pacific Science 3(3): 226-230.
"Pigs, deer and cattle apparently do not now occur in Pelekunu and Wailau Valleys, but once in these valleys it seems apparent that they would work their way up the least precipitous slopes and irreparably alter the native forest."

Richardson, F. 1963. Birds of Lehua Island off Niihau, Hawaii. Elepaio 23(9): 43-45.
Advises the eradication of vegetation-damaging rabbits from the island.

Richmond, G.B. 1965. Naturalization of Java podocarpus in Hawaii rain forest. 5 pp. U.S. Forest Service Research Note PSW-76. Pacific Southwest Forest and Range Experiment Station, Berkeley, California.
Podocarpus cupressina is naturalized in rainforest near Hilo, Hawaii, where reproduction has invaded both planted forest and undisturbed native forest.

Ridgeway, J. 1983. Micronesia: America's Third World. Amicus Journal 5(2): 16-25.
Suggests that Micronesia is the "Siberia" of the United States, "poised on the edge of potentially devastating economic exploitation", and subjected to hopelessly incompetent planning on some of the islands.

Rinke, D. 1986. The status of wildlife in Tonga. Oryx 20: 146-151.
Human encroachment upon available habitat for wildlife decimates the plant cover of the island.

Robbins, R.G. 1972. Vegetation and man in the Southwest Pacific and New Guinea, in Ward, R.G., ed., Man in the Pacific Islands; Essays on Geographical Change in the Pacific Islands. 339 pp. Oxford, England.

Robyns, W. and S.H. Lamb. 1939. Preliminary ecological survey of the island of Hawaii. Bull. Jardin Botanique Bruxelles 15(3): 241-293.
The progress of natural plant succession is impeded or obscured by overgrazing, and by the establishment of new climaxes by introduced, aggressive grasses, shrubs, and trees.

Rock, J.F. 1916. The Sandalwoods of Hawaii. 43 pp. Botanical Bulletin No. 3. Territory of Hawaii, Board of Agriculture and Forestry.
Includes history of depletion of Hawaiian groves of fragrant sandalwood.

Roedelberger, F.A. and V.I. Groschoff. 1967. Wildlife of the South Seas. 216 pp. London: Constable; New York: Viking Press.
On Pacific islands, "goats, rabbits and pigs ruined the restricted vegetation and deprive the indigenous (bird) species of their food." Book review appears in Special Supplement to IUCN Bulletin 2(11): 7 (1976).

Rogers, D. 1975. Micronesian Claims Commission: its origin and goals. Micronesian Reporter 23(2): 8-12.
Claims brought by Micronesians due to land used and destroyed for agricultural purposes by U.S. Forces, in the Pacific Theater of Operations during World War II, will receive an award of $90 to $1,500 per acre. Claims due to death by starvation will receive an initial payment of up to $1,000. Includes photos of devastated landscapes.

Ronck, R. 1975. New world in the Marianas. Oceans 8(6): 6-9.
Notes a record for Cordia on Maug I.

Root, I.C. 1952. Report on Park and Recreation Areas, Territory of Guam. 67 pp. Washington, D.C.: National Park Service.
Observes that "The island of Guam at one time was densely forested. The Japanese occupation reduced the already depleted timber land and post-war construction has taken all of the remaining timber of usable size that is readily accessible."

Routley, R. and V. Routley. 1980. Destructive forestry in Melanesia and Australia. Ecologist 10(1-2): 56-67.
Deforestation poses a serious problem on some Melanesian islands.

Russ, G.W. 1932. Notes on the distribution of Neowawrea. B.P. Bishop Museum Special Publication 20: 6-7.
N. phyllanthoides (Euphorbiaceae) has been virtually exterminated in the Hawaiian Is. due to vegetational changes.

Sabath, M.D. 1977. Vegetation and urbanization on Majuro Atoll, Marshall Islands. Pacific Science 31(4): 321-333.
Urbanization on Uliga, Dalap and Djarrit since 1944 resulted in reduction of tree canopy; establishment of extensive yards with grasses and herbs; and reduction of many indigenous and aboriginally introduced understory species.

Sablan, M.C. 1976. Anatahan. Micronesian Reporter 23(1): 37-38.
On Anatahan (Marianas), no Leucaena glauca was observed, but the number of goats on this uninhabited island is "staggering".

Sachet, M.-H. 1954. A summary of information on Rose Atoll. Atoll Research Bulletin 29: 1-25.
Includes an urgent plea for conservation of this unoccupied atoll of eastern Samoa.

Sachet, M.-H. 1957. The vegetation of Melanesia: a summary of the literature. Proc. Eighth Pacific Science Congress 4: 35-47.
The post-World War II status of Eucalyptus naudiniana lowland forest on New Britain is questionable, as these trees which attain heights of up to 240 feet were being actively logged even in the 1920's. Article discusses northwest Melanesia, New Hebrides, New Caledonia.

Sachet, M.-H. 1963. History of change in the biota of Clipperton Island, pp. 525-534, in Gressitt, J.L., ed. (1963).
Influence of introduced pigs and weeds on the original vegetation is discussed.

Sachet, M.-H. 1973. The discovery of Lebronnecia kokioides. Bull. Pacific Tropical Botanical Garden 3(3): 41-43.
Rare malvaceous species from the Marquesas (Tahuata I.), with seeds covered with long, brown hair as in a wild cotton.

Sachet, M.-H. 1983a. Vegetation et flore terrestre de l'atoll de Scilly (Fenua Ura). Journal Societe Oceanistes 39(77): 29-34.
Coconut plantations have replaced much of the natural plant cover of this atoll in French Polynesia.

Sachet, M.-H. 1983b. Takapoto Atoll, Tuamotu Archipelago: terrestrial vegetation and flora. Atoll Research Bulletin 277: 1-41.
"With the coming of European man, much of the forest was destroyed and replaced by coconut groves or plantations."

Sachet, M.-H. 1983c. Botanique de l'ile de Tupai, Iles de la Societe. Atoll Research Bulletin 276: 1-26.
Essentially the atoll of Tupai has been transformed into a coconut plantation.

Sachet, M.-H. 1983d. Natural history of Mopelia Atoll, Society Islands. Atoll Research Bulletin 274: 1-37.
"The overriding characteristic of the vegetation of Mopelia is that most of it, especially inland, is very profoundly disturbed, coconut palms having been planted everywhere."

Sachet, M.-H. and F.R. Fosberg. 1983. An ecological reconnaisance of Tetiaroa Atoll, Society Islands. Atoll Research Bulletin 275: 1-67.
Published with the accord of the owner of Tetiaroa Atoll, Mr. Marlon Brando, this article suggests environmentally sound procedures regarding human activities, ecological objectives, management, and future development of the atoll, comprising 13 vegetated islets which have been profoundly altered by both Polynesian inhabitants and European copra producers.

Sachet, M.-H., Schafer, P.A., and J.C. Thibault. 1975. Mohotani: une ile protegee aux Marquises. Bull. Soc. Etudes Oceaniennes 16(6) (No. 193): 557-568.
The action of man on the vegetation through the introduction of sheep, is discussed.

Sakagami, S.F. 1961. An ecological perspective of Marcus Island, with special reference to land animals. Pacific Science 15(1): 82-104.
Marcus Island received 171 attacks from 759 bombers from September 1944 to the Armistice on August 15, 1945. "All

trees on the island were completely damaged by repeated bombing during the war. The present arboreal stratum is, therefore, the outcome of postwar regeneration."

Salcedo, C. 1970. The search for medicinal plants in Micronesia. Micronesian Reporter 18(3): 10-17.
Describes efforts on Palau to learn the uses of plants employed by traditional medical practitioners, which are often kept secret, as groundwork for possible development of new medicines and the income they will produce.

Salvat, B. 1976. Un programme interdisciplinaire sur les ecosystemes insulaires en Polynesie francaise. Cahiers Pacifique 19: 397-405.
Development of island ecosystem studies in French Polynesia is discussed.

Salvat, B. 1985. An integrated (geomorphological and economical) classification of French Polynesian atolls. Proc. Fifth International Coral Reef Congress (Tahiti, 1985): 2: 337. (Abstract)
The economic classification includes consideration of resource exploitation.

Salvat, B. and G. Richard. 1985. Takapoto Atoll, Tuamotu Archipelago. Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 1: 323-377.
"Before its destruction and replacement by coconut plantations, clearly marked due to brush cutting and burning activities, much of Takapoto's emerged land mass was probably covered by forest (scrub vegetation, as too were many atolls of the region.)"

Sampson, P. 1968. The Bonins and Iwo Jima go back to Japan. National Geographic 134(1): 128-144.
The islands have developed infestations of Leucaena, originally planted as camouflage during World War II.

Sanders, R.W., Stuessey, T.F. and C. Marticorena. 1982. Recent changes in the flora of the Juan Fernandez Islands, Chile. Taxon 31(2): 284-289.
Vegetation of the islands has been impacted by human activities.

Schafer, P.A. 1977. La Vegetation et l'Influence Humaine aux Iles Marquises. 31 pp. Montpellier, France: Academie de Montpellier, Universite des Sciences et Techniques du Languedoc.
The profoundly detrimental effects of human intervention in the vegetation of the Marquesas are discussed and illustrated.

Scheuer, P.J. 1961. Natural products from Hawaiian plants. Proc. Hawaiian Academy of Science 36(1960-1961): 18.

Discusses chemical constituents of species of Ochrosia, Platydesma, Pelea, Tacca, Piper, Eugenia and Passiflora.

Schlanger, S.O. and G.W. Gillett. 1976. A geological perspective of the upland biota of Laysan Atoll (Hawaiian Islands). Biological Journal of the Linnean Society 8(3): 205-216.
"Laysan is viewed as a refugium for upland and montane lineages able to keep pace, via great adaptive flexibility, with drastic habitat changes."

Schmid, M. 1981. Fleurs et Plantes de Nouvelle-Caledonie. Les Editions du Pacifique.
Includes brief section on human intervention in the New Caledonian flora, and mentions the endangered palm Pritchardiopsis jeanneneyi from the Prony region.

Schmid, M. 1982. Endemisme et speciation en Nouvelle-Caledonie. Compte Rendu Seances Societe de Biogeographie 58(2): 52-60.
The New Caledonian flora comprises 44 endemic gymnosperm species, 250 endemic monocot species, and 1,900 endemic dicot species.

Schofield, E.K. 1973a. Annotated bibliography of Galapagos botany, 1836-1971. Annals Missouri Botanical Garden 60(2): 461-477.
Includes references to articles by Ecuadorians and Galapagos resident which include data on factors influencing the vegetation.

Schofield, E.K. 1973b. A unique and threatened flora. Garden Journal 23(3): 68-73.
Threats to the endemic flora of the Galapagos, such as domestic animals, wild goat herds, introduced flora, and agricultural activities, are discussed.

Schofield, E.K. 1973c. Galapagos flora: the threat of introduced plants. Biological Conservation 5(1): 48-51.
"Two endemic species, Scalesia pedunculata Hooker fil. and Miconia robinsoniana Cogniaux, are especially endangered by farming practices."

Schofield, E.K. 1981. Hope for the Galapagos. Garden (New York) 5(1): 16-21.
Efforts to protect Galapagos vegetation are now in motion.

Schofield, E.K. 1984. Plants of the Galapagos Islands. 159 pp. New York: Universe Books.
Designed as an excursion flora for interested visitors to the Galapagos.

School of Naval Administration, Hoover Institute, Stanford

University. 1948. Handbook on the Trust Territory of the Pacific Islands. 311 pp. Washington, D.C.: Office of the Chief of Naval Operations, Navy Department.
"Extensive plantings of the iron wood tree are found on Saipan in the northern Marianas where the Japanese reforested large areas with this tree in order to assure a source of fuel for the sugar mills there."

Schubert, E. 1961. Pitcairn Island is catching up. South Pacific Bulletin 11(2): 55-59.
"When the Bounty mutineers settled here in 1790 Pitcairn must have been almost completely covered with forest, but after 170 years of clearing and burning this has been reduced to a thin patch on the western tip of the island. The only certain indigenous trees are miro (Hibiscus tiliaceus) and rata (Metrosideros villosa).

Schultze-Motel, W. 1974. Die moose der Samoa - Inseln. Willdenowia 7: 333-408.
Monograph of Samoan mosses includes sections on human population explosion at the expense of the biota, and conservation.

Scowcroft, P.G. 1971. Koa: monarch of Hawaiian forests. Newsletter Hawaiian Botanical Society 10(3): 23-26.
Discusses threats of cattle, logging, weeds, and fungus disease to the koa (Acacia koa) forests.

Scowcroft, P.G. 1983. Tree cover changes in mamane (Sophora chrysophylla) forests grazed by sheep and cattle. Pacific Science 37(2): 109-119.
In forests of Mauna Kea, Hawaii, cattle browsing is more destructive than sheep browsing.

Scowcroft, P.G. and H.F. Sakai. 1984. Stripping of Acacia koa bark by rats on Hawaii and Maui. Pacific Science 38(1): 80-86.
"Koa (Acacia koa) is the most valuable native timber species in Hawaii. Bark stripping of young trees by rats, a common but unstudied phenomenon, may affect survival, growth, and quality of koa."

Sears, P.B. 1959. The ecology of man. Smithsonian Report for 1958: 375-398.
The human mind created the illusion that prosperity is the reward of virtue, to the extent that we now believe prosperity is itself a virtue and poverty is therefore a crime. To attain the desired prosperity, man converts and mutilates the biosphere, damaging the equilibrium of ecosystems forming his own life-support system.

Seiden, A. 1985. Lanai: talking tourism and planting pineapple. Aloha 8(1): 24-29.
Proposal for economic development, known as the "Lanai

Plan", calls for preservation of the island's ultimate resource, i.e., space itself, in an ever more crowded world. This Hawaiian island is the world's largest pineapple plantation, mostly 14,000 acres of pineapple in Palawai Basin, relieved by a few introduced Norfolk Island pines.

Serpell, J. 1983. Desert island risk. New Scientist 1356: 320; Threatened Plants Newsletter 11: 14-15.
Henderson Island biota threatened by intentions of human colonization.

Serpell, J., Collar, N., Davis, S., and S. Wells. 1983. Submission to the Foreign and Commonwealth Office on the Future Conservation of Henderson Island in the Pitcairn Group. 26 pp.
The possibility of introduced pigs and weeds becoming established would threaten the endemic flora, which comprises 10 flowering plant species including Santalum hendersonensis and Bidens hendersonensis.

Setchell, W.A. 1923. A reconnaisance of the vegetation of Tahiti, with special reference to that of the reefs. Carnegie Institution of Washington Yearbook No. 21 (for 1922): 180-187.
Environmental conditions in Tahiti foster the growth and spread of alien plants originally introduced as ornamentals and fuel suppliers, which crowd out some native fuel and food plants.

Setchell, W.A. 1926. Phytogeographical notes on Tahiti, I. Land vegetation. University of California Publications in Botany 12(7): 241-290.
Stenolobium stans, the "yellow elder", a native of Atlantic tropical America and cultivated in Tahiti as an ornamental since c.1845, is rapidly naturalizing on xeric mountain slopes, "and literally armies of young trees are seen ascending these slopes."

Shallenberger, R.J. 1975. Hawaii's endangered water birds. Defenders 50(6): 524-528.
Drainage of Hawaiian wetland plant communities reduces bird habitats.

Shallenberger, R.J. 1982. A seal slips away. Natural History 91(12): 48-53.
Tern I., in the Hawaiian archipelago, has a landscape profoundly modified by humans to accommodate a landing strip which covers the vast majority of the island's surface. In building the strip, engineers left some space for the endangered Hawaiian monk seals.

Shikama, T. 1942. On the deer of Ponape Island, Caroline Group. (In Japanese). Biogeographical Society of Japan,

Bulletin 12(6): 97-103.
Deer introduced from the Philippine Islands were still surviving in forests of Ponape.

Shimozono, F. and K. Iwatsuki. 1986. Botanical gardens and the conservation of an endangered species in the Bonin Islands. Ambio 15(1): 19-21.
Concerns propagation of Melastoma tetramerum, and includes discussion of human impact on forest vegetation of the Bonin Islands.

Shineberg, D. 1967. They Came for Sandalwood: A Study of the Sandalwood Trade in the South-West Pacific, 1830-1865. Melbourne, Australia: Melbourne University Press.
Details on nature and impact of sandalwood trade on Isle of Pines, New Caledonia.

Shiva, V. and J. Bandyopadhyay. 1983. Eucalyptus: a disastrous tree for India. The Ecologist 13(5): 184-187.
Discusses presumed effects of the water requirements of Eucalyptus on the ecological stability of reafforested lands in India. These considerations may find a wider application to other parts of the world, including the Pacific, where eucalypts have been introduced on a plantation scale.

Siegel, S.M. 1973. Lead: Aspects of its Ecology and Environmental Toxicity. 58 pp. Hawaii Botanical Science Paper No. 32. University of Hawaii.
"Parkland soils and vegetation in Honolulu, Hawaii are heavily contaminated with lead and zinc originating from automobiles."

Simmonds, H.W. 1934. Biological control of noxious weeds with specific reference to the plants Clidemia hirta (The Curse) and Stachytarpheta jamaicensis (Blue Rat Tail). Agriculture Journal (Fiji) 7(1): 3-10.
Fiji is overrun with weeds such as these.

Simmonds, H.W. 1956. A banana collecting expedition to South East Asia and the Pacific. Tropical Agriculture 33: 251-271.
Diploid wild (and cultivated) strains of Musa acuminata and taxa presumed to be conspecific with acuminata were sought as potential sources of new genes, as material for crossing with various hybridized bananas, and for replenishment of known (correctly identified) stocks in cultivation. On Samoa (Upolu and Savaii) M. banksii and forms of M. fehi were collected; Ensete calospermum and Musa maclayi were found on New Ireland.

Singh, A. and S. Siwatibau. 1977 (27 July). Medicinal Plants in Fiji and Other South Pacific Islands. Document WHO, WPR/DPM/77.2.

Produced by the World Health Organization of the United Nations.

Singh, B. 1982. Keynote Address: The Oceanian Realm, pp. 310-314, in McNeely, J.A. and K.R. Miller, eds., National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society. Washington, D.C.: Smithsonian Institution Press.
Includes discussion of current status of protected areas such as the 8 nature reserves in Fiji, and notes that land tenure systems have impeded establishment and effective management of protected areas in some Pacific localities.

Singh, Y.N. 1986. Traditional medicine in Fiji: some herbal folk cures used by Fiji Indians. Journal of Ethnopharmacology 15(1): 57-88.
There is some resurgence of interest in herbal cures in rural areas of Fiji. Eighty-six plant species from 39 families are treated, including notes on biodynamics. Useful Bibliography.

Siwatibau, S. 1984. Traditional environmental practices in the South Pacific: a case study of Fiji. Ambio 13(5-6): 365-368.
Agricultural systems as they impact on landscape and ecosystem.

Skottsberg, C., ed. 1920-1956. The Natural History of Juan Fernandez and Easter Island. 3 vols. 688 pp. Uppsala, Sweden: Almqvist & Wiksells.
Includes floristic impoverishment of Easter Island (1928).

Skottsberg, C. 1935. Notes on the vegetation in the Cumberland Bay Caves, Masatierra, Juan Fernandez Islands. Ecology 16(3): 364-374.
It is likely that man has acted as the agent of distribution of the cave fern and bryophyte flora in many cases, by transporting spores and fragments of thalli from one cave to another. The caves were excavated by buccaneers in the 17th and 18th centuries, and in the 19th century were used to hold political prisoners.

Skottsberg, C. 1940. Report of the Standing Committee for the Protection of Nature In and Around the Pacific for the years 1933-1938. Proc. Sixth Pacific Science Congress 4: 499-542.
Includes accounts of status of preservation of various Pacific islands to the year 1938, by means of systematically answered questionnaires (37 questions). F.R. Fosberg is respondant for Pacific.

Skottsberg, C. 1953a. The Vegetation of the Juan Fernandez Islands. 167 pp. + 58 plates. Uppsala, Sweden: Almqvist & Wiksells.
Includes mention of history of goat and exotic plant (weed) introductions; photos of deforested valleys; history of sandalwood exploitation (Santalum fernandezianum); and status of specifically identified endemic plant species.

Skottsberg, C. 1953b. Report of the Standing Committee for the Protection of Nature In and Around the Pacific for the years 1939-1948. Proc. Seventh Pacific Science Congress 4: 586-597.
Contains pertinent vegetational observations from New Caledonia, Galapagos, and the individual Hawaiian Islands.

Skottsberg, C. 1954. A Geographical Sketch of the Juan Fernandez Islands. 103 pp. + 100 plates. Uppsala, Sweden: Almqvist & Wiksells.
On Masafuera Island the original plant cover (1) was impacted by complete extermination of sandalwood, (2) had foreign grasses preventing the germination of native tree seeds in cleared spaces, (3) had goats devouring arborescent Compositae and endemic herbs, and (4) was subjected to the indignity of forest cutting by convicts interned there between 1908 and 1917.

Skottsberg, C. 1957. The vegetation of the Juan Fernandez and Desventuradas Islands. Proc. Eighth Pacific Science Congress 4: 181-185.
On Masafuera, forest destruction dating back perhaps two centuries has been going on in connection with the activities of the convict settlement, established there by the Chilean government.

Skottsberg, C. 1961. The status of conservation in Chile, Juan Fernandez, and Easter Island. Proc. Eighth Pacific Science Congress 6: 128-131.
The Juan Fernandez Islands were declared a Chilean national park in 1935, with hopes that unlawful cutting of the endemic palm (Juania australis) and the export of endemic tree ferns would cease. Unfortunately, some time before 1945 Masatierra National Park was made a sheep farm. The present management of Easter Island National Park clearly works against the rules expressed in the Government Act of 1935.

Skottsberg, C. 1962. Report of the Subcommittee on Nature Protection. Proc. Ninth Pacific Science Congress 4: 29-38.
Excellent description of the mindless destruction of vegetation on Masatierra, Santa Clara I., and Masafuera (Juan Fernandez Is.) due to human foibles.

Smathers, G.A. 1969. Plant succession and recovery in the 1959 Kilauea Iki Devastation Area, Hawaii Volcanoes National Park. National Park Service, Office of Natural Science Studies, Annual Report 1968: 59-72.
Includes data on recovery of vegetation after volcanic eruption.

Smathers, G.A. and D.E. Gardner. 1979. Stand analysis of an invading firetree (Myrica faya Aiton) population, Hawaii. Pacific Science 33(3): 239-255.
More knowledge of the behavior of firetree in its natural habitats in Macaronesia (Canary Is., etc.) is needed in order to help find controls to effectively eliminate or stabilize its spread as an exotic in Hawaii.

Smathers, G.A. and D. Mueller-Dombois. 1974. Invasion and Recovery of Vegetation After a Volcanic Eruption in Hawaii. 129 pp. National Park Service Scientific Monograph Series No. 5, and Island Ecosystems IRP/IBP Hawaii Contribution No. 38.
Successional studies conducted after devastating eruption in 1959 indicate that "there appears to be no threat of native plants to be replaced by exotics on these new volcanic substrates."

Smith, A.C. 1970. The Pacific as a Key to Flowering Plant History. 28 pp. Honolulu, Hawaii: Harold L. Lyon Arboretum of the University of Hawaii.
The Asia - Australia region contains 53 of the 60 extant primitive angiosperm families, including the Amborellaceae with primitively vesselless wood from New Caledonia, and the Degeneriaceae with primitive stamens and carpels from Fiji. These plants and their natural habitats should be conserved for scientific evolutionary research.

Smith, C.W. 1971. Lichens and air pollution. Newsletter Hawaiian Botanical Society 10(2): 13-15.
Absence of lichens on trees along certain Honolulu streets is attributed to motor vehicle exhaust emissions.

Smith, N., ed. 1977. Lord Howe Island. 42 pp. Sydney, Australia: The Australian Museum.
Includes discussion of values of environmental conservation of the island, versus exploitation.

Smith, S.V., et al. 1978. Kaneohe Bay Sewage Relaxation Experiment: Pre-Diversion Report. 166 pp. Kaneohe, Hawaii: Hawaii Institute of Marine Biology, University of Hawaii at Manoa.
Kaneohe Bay is a semi-enclosed embayment on the

northeast (windward) coast of Oahu. Concomitant with recent dramatic growth in human population numbers in the Kaneohe watershed, several human impacts on the bay environment have been at work, of which the most profound are dredging, modified runoff patterns, increased sewage discharge, introduction of exotic plant and animal species, and heavy fishing pressure.

Smithsonian Institution. 1975. Report on Endangered and Threatened Plant Species of the United States. 200 pp. Committee on Merchant Marine and Fisheries, Serial No. 94-A. U.S. Congress. Washington, D.C.: U.S. Government Printing Office.

Lists of endangered, threatened and presumed extinct plants of Hawaii provided by Dr. F.R. Fosberg, Department of Botany, Smithsonian Institution, Washington, D.C.

Sneed, M.W. 1979. Palm collecting in the South Pacific: island hopping to Australia and back. Principes 23(3): 99-127.

Includes the rare Fijian Neoveitchia storckii.

Sneed, M.W. 1983. Forty years after chaos: Guadalcanal has beautiful palms. Principes 27(1): 31-33.

Guadalcanal (Solomon Is.) was heavily damaged as part of the Pacific War Theater military operations in World War II. However, some palm gardens have been rejuvenated to good condition and are flourishing.

Snow, P. and S. Waine. 1979. The People From the Horizon: An Illustrated History of the Europeans Among the South Sea Islanders. 296 pp. Oxford, England: Phaidon.

Includes examples of ravages of the sandalwood trade.

Sohmer, S.H. 1978. Kaluua Gulch revisited. Newsletter Hawaiian Botanical Society 15(1): 23-24.

Noteworthy Hawaiian plants in this habitat are discussed.

Sorensen, J. 1974. Remote Oceanic Islands: Approaches to Conservation of an International Resource. 26 pp. University of California, Berkeley: Institute of Urban and Regional Development.

Plots 26 inventory factors and measures onto a matrix of 10 types of suitability of an island for alternative uses, in order to arrive at an inventory of the resource stock of an oceanic island. The major problem-areas of oceanic islands are: overpopulation; degradation of natural resources; colonial rule vs. island self-determination; extinction of distinct island races; human and crop diseases, animal and plant pests; property and resource ownership; extinction of species from island or world; and disruption, corruption or loss of

indigenous cultural patterns.

Sorensen, J. 1977. Andropogon virginicus (Broomsedge). Newsletter Hawaiian Botanical Society 16(1-2): 7-22.
An obnoxious pest seemingly introduced by accident into Hawaii pre-1932.

Souder, P. 1968. Report on Conservation Areas on Guam. 2 pp., mimeo. Agana, Guam: Micronesian Area Research Center.
In 1968, only 3,594 acres or 2.65 percent of Guam's total area was devoted to conservation. Report lists conserved areas.

Sparre, B. 1973. Plants from Robinson Crusoe's island. Taxon 22(1): 171.
Complaint that scientists have over-collected rare plants on Juan Fernandez Islands.

Spate, O.H.K. 1979. The Spanish Lake. 330 pp. Minneapolis, Minnesota: University of Minnesota Press.
Concerning the era when the Manila galleons traversed the Pacific from Middle and South America to the Philippines, non-stop travel except for one stop in Guam, "Plants introduced (to Asia) via the Pacific included acacias, capsicums, groundnuts, papaya, indigo, manihot, tobacco; maize was probably already in Southeast Asia before any Spanish introduction...There was little plant transferral from Asia; in contrast to the westbound sailings, the cold on the northern reaches of the eastwards run was probably enough to inhibit success with seedlings."

Spatz, G. and D. Mueller-Dombois. 1972a. Succession Patterns After Pig Digging in Grassland Communities on Mauna Loa, Hawaii. 44 pp. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 15. Honolulu, Hawaii: University of Hawaii.
"It was found that pig digging greatly enlarges the component of introduced species in communities with a former high percentage of native species." See similar article in Phytocoenologia 3(2-3): 346-373 (1975).

Spatz, G. and D. Mueller-Dombois. 1972b. The Influence of Feral Goats on Koa (Acacia koa Gray) Reproduction in Hawaii Volcanoes National Park. 16 pp. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 3. Honolulu, Hawaii: University of Hawaii.
If high numbers of goats are permitted to exist, the koa stands will become senile and the remnant trees will eventually die a normal physiological death, as is presently demonstrated in the parallel ecosystem on Mauna Kea, where cattle interfere with the koa reproduction cycle. Goat extermination is suggested to remedy the

situation.

Spatz, G. and D. Mueller-Dombois. 1973. The influence of feral goats on koa tree reproduction in Hawaii Volcanoes National Park. Ecology 54(4): 870-876.
Several negative effects are observed.

Spence, G.E. and S.L. Montgomery. 1976. Ecology of the dryland forest at Kanepu'u, Island of Lanai. Newsletter Hawaiian Botanical Society 15(4-5): 62-80.
To preserve this forest, fires should be suppressed, axis deer should be limited, and conservation re-zoning should be enforced.

Spoehr, A. 1954. Saipan: the ethnology of a war-devastated island. Fieldiana: Anthropology 41: 1-379.
The vegetation of Saipan has been so altered by man that its original character is no longer preserved. Only in a few small restricted areas on Mount Tapochau and along the cliffs and steep slopes of the east coast are there patches of forest that probably resemble the vegetation of early days.

Squire, S. 1984. Frozen assets. National Wildlife 22: 7-13.
Includes discussion of exotics introduced to Hawaii.

Stager, K.E. 1964. The birds of Clipperton Island, Eastern Pacific. Condor 66: 357-371.
Mentions destructive activity by feral pigs.

Stark, J.T., et al. 1958. Military Geology of Truk Islands, Caroline Islands. 205 pp. Tokyo: H.Q. US Army Pacific.
"Most of the present grassland areas were cleared during the latter years of the Japanese administration...When abandoned at the end of World War II, these areas were revegetated with Ischaemum (shortgrass), Gleichenia (fern), and Merremia (vine)."

State Department of Land and Natural Resources (Hawaii). 1976. Forestry Potentials for Hawaii. 68 pp. U.S. Forest Service, Region 5.
Feral pigs and other vectors have spread the aggressive exotic "banana poka" vine over at least 25,000 acres, drastically altering the forest in some areas. It has been estimated that at least 150,000 acres are infested with undesirable exotic plants such as black wattle, fire-tree, banana poka, melastoma, lantana, gorse, and blackberry.

Stebbins, G.L. 1966. Variation and adaptation in Galapagos plants, pp. 46-54, in Bowman, R.I., ed., The Galapagos. Berkeley and Los Angeles: University of California Press.

Characteristics of endemic plant species of the Galapagos, evolved in isolation, are discussed.

Steenis, C.G.G.J. van. 1964. On the origin of island floras. Advancement of Science (May 1964): 79-92.
The author is proponent of theory of a land origin of Pacific floras, an alternative to the diffusionist theory. Endemic genera of various islands are mentioned.

Steenis, C.G.G.J. van. 1965. Man and plants in the tropics: an appeal to Micronesians for the preservation of nature. Micronesica 2(1): 61-65.
Suggests flora should be inventoried, living collections should be maintained in botanical gardens, and nature reserves laid out in Micronesia.

Steenis, C.G.G.J. van. 1972. Axis deer tragedy in Hawaii. Flora Malesiana Bulletin 26: 2017.
Remarks on the vegetation damage which may occur as a result of proposed experimental introduction of axis deer to a large enclosure on Mauna Kea, for sport hunting.

Steinberg, R. 1978. Island Fighting. 208 pp. Alexandria, Virginia: Time - Life Books.
In Pacific island combat areas during World War II, enemy defense personnel were often deployed in nearly impregnable concrete bunkers, limestone caves, subterranean tunnels, reinforced pillboxes, trenches, blockhouses and gun emplacements. Underbrush and dense taller vegetation which presented an impediment to access and dislodgement of enemy resistance was either purposefully or inadvertently eliminated. Penetration methods and instruments on difficult terrain included bomber-strafer airplanes; naval bombardment; airplane rockets; hand grenades; dynamite, TNT and demolition charges; armored bulldozers; one- and two-man flamethrower teams; tanks; amtrac-mounted flamethrowers (amtracs are amphibious tractors, known as LVT, for "Landing Vehicle, Tracked"); long-range flamethrowers mounted on tanks; and artillery, mortar and napalm attacks. In many cases, the Seabees (U.S. Navy Construction Battalions) were called in to build roads, airstrips, naval bases and related facilities, which required clearing and flattening of much remaining atoll vegetation, involving utilization of bulldozers, detonation blasting of stumps and coral, power-shovels, dynamite-assisted quarrying, road surface graders, Marston mats, trenching machines, and earth-movers. Thus, the genesis of a secondary flora on many Pacific islands. Illustrated.

Stemmermann, L. 1980. Observations on the genus Santalum (Santalaceae) in Hawaii. Pacific Science 34(1): 41-54.

In the lowlands of Maui, habitat destruction, and perhaps the effects of sandalwood trade, is extensive. Plants such as Santalum freycinetianum now exist only in relict pockets.

Stemmermann, L., Higashino, P.K., Char, W. and L. Yoshida. 1986. Botanical survey of the Kahuku Training Area, Oahu, Hawaii. Newsletter Hawaiian Botanical Society 25(3): 90-118.
The training area consists of 9,646 acres leased by the U.S. Army, extending from near sea level to the coast of the Koolaus (approx. 2,000 ft.). Includes discussion of vegetation types, rare plants and limitations of survey. Ochrosia compta, two species of Tetraplasandra, and Reynoldsia sandwicensis were located.

Stemmermann, L. and F. Proby. 1978. Inventory of Wetland Vegetation in the Caroline Islands. Vol. I. Wetland Vegetation Types. 231 pp. Honolulu, Hawaii: VTN Pacific. Prepared for Pacific Ocean Division, US Army Corps of Engineers.
Discusses invasive plants, flora of bomb craters, and several rare plants. Volume II. Wetland Plants. 382 pp. (1978) warns of the noxious potential of the now rare Clidemia hirta on Palau.

Stewart, M. 1973. New species found on Kauai. Bulletin Pacific Tropical Botanical Garden 3(4): 71.
Recounts various species of Hibiscadelphus (Malvaceae).

Stine, P.A. 1986. Refuge established for endangered Hawaiian forest birds. Endangered Species Technical Bulletin 11(1): 5.
The Hakalau Forest National Wildlife Refuge on island of Hawaii will protect several potentially threatened plants, including species of Clermontia, Cyanea, Gouldia and Platydesma.

St. John, H. 1946. Endemism in the Hawaiian flora, and a revision of the Hawaiian species of Gunnera (Haloragidaceae). Hawaiian Plant Studies 11. Proceedings California Academy of Sciences, ser. 4, 25(16): 377-419. Reprinted as pp. 517-527, in Kay, E.A., ed. 1972. A Natural History of the Hawaiian Islands: Selected Readings. Honolulu, Hawaii: University of Hawaii.
Pertinent data on Hawaiian endemic plants.

St. John, H. 1947. The history, present distribution, and abundance of sandalwod on Oahu, Hawaiian Islands. Hawaiian Plant Studies 14. Pacific Science 1(1): 5-20.
History of the extensive, destructive trade in sandalwood, a monopoly of the Hawaiian kings.

St. John, H. 1954a. Ferns of Rotuma Island, a descriptive

manual. B.P. Bishop Museum, Occasional Papers 21(9): 161-208.
More than 90 percent of the land area of Rotuma I., near Fiji, is planted in coconuts for copra.

St. John, H. 1954b. The vegetation of Hawaii at the time of Capt. James Cook in 1778-79, and a comparison with its present status. Eighth Congr. Int. Bot. Rapp. Comm. 21 a 27: 176-177.
Origin of adventive plants in Hawaii is probed.

St. John, H. 1957a. Adventive plants in the Marshall Islands before 1941. Proc. Eighth Pacific Science Congress 4: 227-228.
Brief outline of successive waves of weeds occupying the Marshalls, until the 1890's development of coconut plantations opened up even more habitats for weed encroachment.

St. John, H. 1957b. Vegetational provinces of the Pacific: Hawaiian. Proc. Eighth Pacific Science Congress 4: 56-57.
The natural flora of Hawaiian zones having a rainfall of 20 to 60 inches annually at lower altitudes, has been virtually exterminated by man and his animals.

St. John, H. 1959. Botanical novelties on the island of Niihau, Hawaiian Islands. Hawaiian Plant Studies 25. Pacific Science 13(2): 156-190.
Includes account of the first discovery, in an area of grazing sheep and cattle, of the endangered endemic palm Pritchardia aylmer-robinsonii.

St. John, H. 1960. Flora of Eniwetok Atoll. Pacific Science 14(4): 313-336.
Heavy bombing and fighting on Eniwetok in February 1944 "caused general devastation on the largest islet, Eniwetok Islet, and on several others. It probably exterminated some of the rarer plant species."

St. John, H. 1966. Monograph of Cyrtandra (Gesneriaceae) on Oahu, Hawaiian Islands. B.P. Bishop Museum Bulletin 229: 1-465.
Details history of forest destruction in Schofield Saddle region: "Now the forest is so completely destroyed that prolonged research was needed to reveal that it once existed."

St. John, H. 1977. The flora of Niuatoputapu Island, Tonga. Pacific Plant Studies 32. Phytologia 36(4): 374-390.
"The vegetation of Niuatoputapu has been extensively modified as a result of some 3,000 years of Polynesian occupation."

St. John, H. 1979. A new Stenogyne (Labiatae). Hawaiian Plant Studies 84. Phytologia 41(5): 305-308.
On the island of Hawaii in the saddle area between Mauna Kea and Mauna Loa volcanoes, Stenogyne pohakuloaensis occurs in a lava fissure in vegetation that has suffered from the grazing of feral goats and from military maneuvers and cannon fire, for it is now a military training area.

St. John, H. and A.C. Corn. 1981. Rare Endemic Plants of the Hawaiian Islands, Book I. Honolulu, Hawaii: Department of Land and Natural Resources.
Details of status, threats, and habitat of 68 threatened plant species of Hawaii.

St. John, H. and F.R. Fosberg. 1937. Vegetation of Flint Island, Central Pacific. B.P. Bishop Museum, Occasional Papers 12(24): 3-4.
"The original vegetation of this island has been practically destroyed, and the island is now an intensively cultivated copra plantation."

St. John, H. and W.R. Philipson. 1962. An account of the flora of Henderson Island, South Pacific Ocean. Transactions Royal Society of New Zealand, Botany 1(14): 175-194.
"Each summer, when possible, they (Pitcairn islanders) sail in whale boats the 90 miles to windward to Henderson Island, land at the north end and fell trunks of "milo", Thespesia populnea and sandalwood, Santalum hendersonense. From the beautiful reddish wood of the latter they make carvings to be offered for sale to passengers on passing steamers."

Stockman, J.R. 1947. The Battle for Tarawa. 86 pp. Washington, D.C.: U.S. Marine Corps.
Tarawa, devastated island of the Pacific Combat Theater in 1943, is shown with many photos of vegetation destroyed due to military operations in World War II.

Stoddart, D.R. 1965. Geography and the ecological approach: the ecosystem as a geographic principle and method. Geography 50(3): 242-251.
Includes brief indications of studies of Pacific ecosystems impacted by introduced mammals, e.g. Clipperton I., Fiji Is.

Stoddart, D.R. 1967. Organism and ecosystem as geographical models, pp. 511-548, in Chorley, R.J. and P. Haggett, eds., Models in Geography. London: Methuen & Co., Ltd.
Ecosystem modelling as an activity for geographers, including references to articles on the interaction of man, plants and animals in Fiji and Hawaii.

Stoddart, D.R. 1968a. Isolated island communities. Science Journal 4(4): 32-38.
Includes map indicating locales of threats posed to Pacific islands by the development of international airports, airstrips, military bases, weapons testing sites, and guano and phosphate mining.

Stoddart, D.R. 1968b. Catastrophic human intervention with coral atoll ecosystems. Geography 53(1): 25-40.
Includes effects of coconut plantations, airstrip construction, and nuclear weapons testing, on the Pacific flora, e.g. the disappearance of Cordia forest on Canton I.

Stoddart, D.R. 1969. Sand cays of eastern Guadalcanal. Philosophical Transactions, Royal Society B255: 403-432.
"Field mapping of the Marau cays suggests a major distinction between the vegetation of islands much disturbed by man, dominated by coconuts and Casuarina, and the less disturbed islands (such as East, Keura, North, Horohato and Tarvarau) which are still largely covered with broadleaf woodland."

Stoddart, D.R. 1971. Conservation of the Phoenix Islands, Central Pacific Ocean. 20 pp. Report to the Southern Zone Research Committee, Royal Society, Department of Education and Science, and Foreign and Commonwealth Office.
Recommendations for preserving the fragile ecosystems of the Phoenix Is.

Stoddart, D.R. 1975. Reef islands of Aitutaki. Atoll Research Bulletin 190: 59-72.
Mentions that vegetation of the Ootu peninsula of Aitutaki was considerably leveled and cleared for runway development in World War II, and still is periodically cleared.

Stoddart, D.R. 1976. Scientific Importance and Conservation of Central Pacific Islands. 28 pp. Report to the Southern Zone Research Committee, Royal Society, Department of Education and Science, and Foreign and Commonwealth Office.
Includes discussion of disturbances caused by human activities in the central Pacific.

Stone, B.C. 1963. The role of pandanus in the culture of the Marshall Islands, pp. 61-82, in Barrau, J., ed., Plants and the Migrations of Pacific Peoples. 136 pp. Honolulu, Hawaii: Bishop Museum Press.
"Pandanus trunks are split down the middle for use in light construction, especially for walls, and were so much employed by American armed forces in the Gilberts during World War II that the area saw a great reduction

in the Pandanus population."

Stone, B.C. 1967a. The phytogeography of Guam, Marianas Islands. Micronesica 3: 67-73.
Sixty-three percent of the total Guam flora (585 out of 931 species) is introduced by man. Introduced and native species are categorized under several headings for discussion. A large number of the introduced plants are from Mexico, Central or South America, and may be traced to the Spanish galleon route from Acapulco, Mexico, to Guam, and on to Manila in the Philippines. Most endemics occur on coral substrate.

Stone, B.C. 1967b. The flora of Romonum Island, Truk Lagoon, Caroline Islands. Pacific Science 21(1): 98-114.
"Very little, if any, of the original vegetation is left intact."

Straatmans, W. 1964. Dynamics of some Pacific island forest communities in relation to the survival of the endemic flora. Micronesica 1(1 & 2): 113-122.
Concerns 'Eua I. in Tonga Is. "Land clearing, ring-barking, firing, logging and crop-growing under increasing population pressure has resulted in drastic changes which cross-pattern the spontaneous dynamics of the virgin forests."

Strauss, T. 1978. The Cousteau Odyssey: Blind Prophets of Easter Island. 58 min. running time. A Cousteau Society Production. J. & P. Cousteau, Executive Producers.
This film discusses the former civilization of Easter Island, or Rapa Nui, which died trying to destroy its own habitat. As the island was denuded of timber, the people became impoverished and sought the natural shelter of caves . Social disorder became commonplace as overpopulation and food shortages continued. Strange petroglyphs of flowers and large trees survive to indicate the formerly flourishing woodlands, and the huge totemic stone figures, mute celebrities of the island's history, now stand amid the short grass. Today, the handful of descendants of the ancient people have no conscious recollection that wood was once plentiful on their depleted island.

Street, J.M. 1960. Eniwetok Atoll, Marshall Islands. 63 pp. Library brochure prepared for Pacific Missile Range, Point Mugu, California. Riverside, California: University of California.
"Bogombogo Islet, which was denuded by a nuclear shot set off at a distance of 2.3 miles in November 1952, was re-covered with a heavy growth of Scaevola and Messerschmidia when examined in April, 1954."

Strong, M.F. 1976. Environment and man's future in the

Pacific, pp. 99-11, in Scagel, R.F., ed., Mankind's Future in the Pacific. 198 pp. Vancouver: University of British Columbia Press.
Includes mention of various Pacific islands which have become "ecologically bankrupt", such as Banaba (or, Ocean I. in the Gilberts), and large desecrated areas of New Caledonia, including the importance of restoring centuries of damage in the Galapagos. See similar article in SPC Environment Newsletter 2: 10-17 (1975).

Stuessy, T.F. and O. Silva. 1983. The evolution of the flora of the Juan Fernandez Islands. Rep. Chilean Univ. Life 15: 3-6.
Some endemics have unusual life-forms.

Stuessy, T.F., Sanders, R.W. and O.R. Matthei. 1983. Juania australis revisited in the Juan Fernandez Islands, Chile. Principes 27(2): 71-74.
Status of a rare endemic palm.

Stuessy, T.F., Sanders, R.W. and M. Silva. 1984. Phytogeography and evolution of the flora of the Juan Fernandez Islands: a progress report, pp. 55-69, in Radovsky, F.J., Raven, P.H. and S.H. Sohmer, eds., Biogeography of the Tropical Pacific. 221 pp. B.P. Bishop Museum, Special Publication No. 72.
"The main reason for the decline in the endemic flora is the destruction by domesticated and feral animals including goats, sheep, cattle, coatimundis, rabbits and horses."

Summerhays, B. 1984. The endangered species of Darwin's islands. Environment Southwest 504: 3-6.
Environmental perturbations in Galapagos are mentioned.

Svenson, H.K. 1963. Opportunities for botanical study on the Galapagos Islands, pp. 53-58, in Galapagos Islands: a unique area for scientific investigations. Occasional Papers, California Academy of Sciences, No. 44.
Dry areas of the islands have the more pronounced endemism.

Svihla, A. 1936. Rana rugosa Schlegel. Mid-Pacific Magazine (April-June): 124-125.
It is possible that this Japanese and Korean frog may have arrived in the Hawaiian Islands (where it is known from Oahu and Maui) by means of man as an agent of plant dispersal, i.e., tiny frog eggs inadvertently concealed among the roots of aquatic plants shipped from Japan. Breakdown of frog's breeding rhythm postulated as a result.

Svihla, A. 1936. The Hawaiian rat. The Murrelet 17: 2-14.
In a strange reversal of the overwhelmingly provable

concept that introduced plants are usually deleterious to the native biota, the indigenous "iole" or Hawaiian rat, Rattus hawaiiensis, actually prefers to live in gullies thick with growths of introduced guavas, cactus and lantana, rather than in dry areas where the native vegetation is sparse.

Sykes, W.R. 1969. The effect of goats on vegetation of the Kermadec Islands. Proc. New Zealand Ecological Society 16: 13-16.
On the Kermadec Is., located between Tonga and New Zealand, and particularly with respect to Raoul I., palatable indigenous flora will continue to disappear due to grazing pressure by goats, unless goats are exterminated.

Sykes, W.R. 1980. Botanical Science, pp. 9-67, in Bibliography of Research on the Cook Islands. New Zealand Nat. Comm. Unesco, DSIR, Lower Hutt.
Cook Islands are New Zealand territory located by Tonga.

Sykes, W.R. 1981. The vegetation of Late, Tonga. Allertonia 2(6): 323-353.
To avert the threat of potentially dangerous weed spread, all visible plants of Mimosa pudica on the lava cliff dwelling site were eradicated by the author.

Tabata, R.S. 1980. The native coastal plants of Oahu, Hawaii. Newsletter Hawaiian Botanical Society 19: 2-44.
Threats to indigenous plants in coastal habitats discussed in detail; includes checklist of plants and recommended protective measures for them.

Tagawa, T.K. 1976. Endangered species in Hawaii: effect on other resource management. Newsletter Hawaiian Botanical Society 15(1): 7-14.
Discloses a mounting apprehension concerning the bureaucratic burdens involved in protecting officially listed Hawaiian plants and critical habitats. Followed by rebuttal article by Lamoureux, C.H., loc. cit. 14-21 (1976).

Takahashi, M. and J.C. Ripperton. 1949. Koa Haole (Leucaena glauca): Its Establishment, Culture, and Utilization as a Forest Crop. 56 pp. Bulletin 100. Honolulu, Hawaii: University of Hawaii Agricultural Experiment Station.
Background information on a plant which has since become, due to improper management, an invasive pest on several Pacific islands.

Taketa, K.H. 1987. Hawaii's islands of life: a campaign to stem the tide of extinction. The Nature Conservancy News 37(1): 4-5.

Briefly describes the objectives of TNC Islands of Life Campaign recently initiated in the State of Hawaii, along with mention of TNC's accomplishments of the past decade.

Takeuchi, W. 1980. Unpublished manuscripts. Status reports on Bidens cuneata Sherff (Compositae); Schiedea adamantis St. John (Caryophyllaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Takeuchi, W. 1982. Unpublished manuscript. Status report on Brighamia spp. (Lobeliaceae). Washington, D.C.: U.S. Department of the Interior.
Endangered plants of Hawaiian Islands.

Talbot, F.H. and C.E. Holdren. 1985. The protection of coral reef ecosystems: the size of viable reserves. Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 2: 375. (Abstract)
"Economic development in the form of tourism; overfishing or poor fishing technique; siltation from housing development, forestry, agriculture or mining; or pollution from increasing city size and industrial growth, often threaten the long term productivity or even the survival of many coral reefs."

Talbot, L.M. 1969. Highlights of conservation in the International Biological Programme in the Asia-Pacific Region. Malaysian Forester 32: 391-394.
Discusses nature conservation in the Pacific.

Tannowa, T. and A. Yoshida. 1975. Plant Collecting in the Ogasawara Islands: Collecting and Breeding. Institute of Breeding Research, Tokyo, Vol. 37, No. 8. (In Japanese)
Rare endemic plants, principally of Hahajima I. and Mukojima I.

Tannowa, T., Yoshida, A. and K.R. Woolliams. 1976. Tentative list of rare and endangered plants of the Ogasawara Islands. Notes Waimea Arboretum 3(2): 10-12.
Endemic Ogasawara plants requiring conservation.

Taylor, J.L. 1951. Saipan: a study in land utilization. Economic Geography 27(4): 340-345.
Includes vegetation and land use.

Taylor, R.H. 1968. Introduced mammals and islands: priorities for conservation and research. Proc. New Zealand Ecological Society 15: 61-67.
Exotic mammals should not be permitted to gain a foothold on unmodified islands, and they also should be removed from unstable, actively degrading islands. But the control of introduced mammals on modified, stable

islands with balanced ecosystems, or on nearly stable islands with declining mammal populations, should not be attempted solely as a conservation measure unless the need is confirmed by sufficient ecological research.

Taylor, W.R. 1950. Plants of Bikini and Other Northern Marshall Islands. 227 pp. Ann Arbor, Michigan: University of Michigan Press.
Damage to terrestrial vegetation on various islands as a result of military installations and atomic bomb stations is noted.

Telfer, T.C. 1971. Kauai's blacktail deer. Aloha Aina 2(1): 16-18.
The deer were introduced from Oregon to Kauai because, "In view of the goat control measures, the needs and desires of the Island sport hunters had to be considered."

Templet, P.H. 1986. American Samoa: establishing a coastal area management model for developing countries. Coastal Zone Management Journal 13(3-4): 241-264.
Pressures on Samoan coastal ecosystems are treated.

Tenney, E.D. 1909. Oahu water resources. Hawaiian For. Agr. 6: 130-132.
Remarks on Kahoolawe deforestation and ensuing climatic changes.

Tercinier, G. 1974. Les sols de l'Ile de Mangareva (Gambier): etude pedologique temoin d'une ile haute de la Polynesie Francaise. Cahiers du Pacifique 18(2): 341-457.
Human activity destroyed the forest cover and fragile soil of Mangareva, promoting erosion and sedimentation.

Terrell, J. 1976. Island biogeography and man in Melanesia. Arch. and Phys. Anthrop. in Oceania 11(1): 1-17.
Biogeography, the study of distribution patterns of plants and animals in time and space, has been an integral part of human geography for generations, although some investigators do not wish to consider human beings as animals. Animals or not, our increasing and diffusing populations are consuming and converting a great deal of biomass, including native forests and vegetation.

Thaman, R.R. 1974a. Lantana camara: its introduction, dispersal and impact on islands of the tropical Pacific Ocean. Micronesica 10(1): 17-39.
Documents the presence of lantana on many islands and its adverse alteration of many floras, in conjunction with other modifications by man. Good, long Bibliography.

Thaman, R.R. 1974b. Tongan agricultural land use: a study of plant resources, pp. 153-160, in Proc. International Geographical Union Regional Conference and Eighth New Zealand Geography Conference. Palmerston North, New Zealand: New Zealand Geographical Society.
Owing to population pressure (over 300 persons per square kilometer in 1971) and over 3,000 years of human occupance, very little primary vegetation remains on Tongatapu. The existing vegetation communities provide gene pools of plants commonly found in either a protected or wild state on many bush allotments.

Thaman, R.R. 1976. The Tongan Agricultural System. 433 pp. Suva, Fiji: University of the South Pacific.
Includes details of Tongan plant associations, weeds , and how people interact and utilize indigenous flora. Native forest species on Tongatapu are rapidly being eliminated as a result of the need for firewood and timber for banana "shooks" and other purposes.

Theobald, W.L. 1976. Proposed road through garden defeated. Bull. Pacific Tropical Botanical Garden 6(3): 64-68.
Scenic road proposed by the Hawaii State Department of Transportation, which would have gone through the Lawai Valley and the PTBG, was aborted due to pressures from conservationists.

Theobald, W.L. 1978. Economic crop survey: New Hebrides and New Caledonia. Bull. Pacific Tropical Botanical Garden 8(4): 81-85.
In New Caledonia, "Cattle grazing is significant for the local population and there is a timber industry which is rapidly depleting the native flora."

Theobald, W.L. 1980. The nation's tropical garden. Pacific Horticulture 41(2): 28-34.
A primary goal of the Pacific Tropical Botanical Garden is to grow endangered plants.

Thibault, J.-C. 1975. Rapa Iti: l'ile de la derniere chance. Te Natura o Polynesia 4: 8-10.
Introduced plants have abundantly multiplied and therefore significantly modified the environmental milieu of Rapa Iti.

Thompson, P.G. 1965. Goat breeding in Fiji. South Pacific Bulletin 15(2): 28-30.
"Goats were well established in Fiji before Cession in 1874, and Angora goats were run on the Nananu Is., at Nadi, on Mago I., and probably elsewhere...Fiji's large Indian population much prefers goat meat to mutton." Control of stock numbers to prevent overgrazing is suggested.

Thorby, R.G. 1954. Afforestation in the Cook Islands. South Pacific Bulletin 4(4): 15-16.
Deforested areas and sheet-washed slopes should be reafforested before they become irremediably ruined. Acacia, Eucalyptus and Albizzia falcata are being tested for this purpose.

Thorne, R.F. 1965. New Caledonia, island of botanical opportunity. Newsletter Hawaiian Botanical Society 4(1): 1-3.
"The area of native vegetation on la Grand-Terre is rapidly being diminished by frequent and extensive burning, destructive prospecting and mining, timbering, over-grazing, and other disturbances attributable to civilized man."

Thorp, T.E. 1960a. Wake Island. 42 pp. Library brochure prepared for the Pacific Missile Range, Point Mugu, California. Riverside, California: University of California.
Original vegetation patterns on Wake have been considerably modified by "(1) wartime construction work, and (2) by damage resulting from air and sea bombardments of the islands by both Japanese and U.S. forces."

Thorp, T.E. 1960b. Midway Islands. 47 pp. Library brochure prepared for the Pacific Missile Range, Point Mugu, California. Riverside, California: University of California.
Includes brief history of the considerable modification of the vegetation by introduction of exotic species, and construction work.

Thorp, T.E. 1960c. Johnston Island. 40 pp. Library brochure prepared for the Pacific Missile Range, Point Mugu, California. Riverside, California: University of California.
Discusses incidence of naturalized weeds, some of which may have come in with nursery stock from Hawaii.

Tindle, R.W. 1983. Galapagos conservation and tourism: eleven years on. Oryx 17(3): 126-129.
Minimization of tourist impact is desired.

Titcomb, M. 1969a. The axis deer: impending threat to the Big Island. Elepaio 30(3): 21-25.
Deer may turn out to have the same "nuisance value" as feral goats in Hawaii.

Titcomb, M. 1969b. Axis deer: welcome or not? Elepaio 30(6): 52-54.
"Recent observers have called East Molokai's forest a disaster area, as to its vegetation." (Hawaiian Islands)

Tokyo Metropolitan Government. 1969-1970. Survey Report on Nature Conservation of Bonin Islands. Vol. 1 (1969); Vol. 2, 251 pp. (1970). Reviewed by Eldridge, L.G., Atoll Research Bulletin 185: 34-37.
Volume 1 contains article by T. Tuyama on "Flora of the Bonin Islands", pp. 79-110.

Tomich, P.Q. 1965. A question of values. Elepaio 25(7): 54-55.
Concerns program for eradication of rabbits from Manana Island (Hawaiian Is.). "Rabbits have inhabited Manana for more than 60 years and undoubtedly were the greatest factor in the extirpation of nearly all the original vegetation."

Tomich, P.Q. 1969. Mammals in Hawaii. B.P. Bishop Museum Special Publication No. 57.
Concerns introductions of animals which became feral in Hawaii.

Tomich, P.Q. 1972. The feral goat in Hawaii, with particular reference to problems in the national parks, pp. 203-204, in Mueller-Dombois, D., ed. (1972).
The goat is an inharmonious element in native ecosystems and has caused extensive damage, modifications, and also probable extinctions relative to the indigenous flora and fauna.

Tomich, P.Q., Wilson, N. and C.H. Lamoureux. 1968. Ecological factors on Manana Island, Hawaii. Pacific Science 22: 352-368.
Feral rabbits are potent destructive agent on Manana.

Tracey, J.I., et al. 1959. Military Geology of Guam, Mariana Islands. 282 pp. U.S. Army, Chief of Engineers, Intelligence Division, H.Q. US Army Pacific (Tokyo).

Trotman, I.G. 1979. Western Samoa launches a national park program. Parks 3(4): 5-8. Reprinted in Tigerpaper 6(4): 11-14 (1979).
The largest park likely to be established is O Le Pupu - Pu'e National Park in the southern part of Upolu Island, Western Samoa.

Trust Territory of the Pacific Islands. 1972. Rota Master Plan. 93 pp. + 11 Appendices. Planning Division, Department of Public Works, TTPI.
Contains excellent narrative on history of land alteration on Rota (Mariana Is.) from Spanish through German, Japanese, and World War II eras. "The present distribution and nature of the flora represents a mirror of man's activity on the islands and is so artificial as to make it almost impossible to reconstruct the original

climax pattern."

Trust Territory of the Pacific Islands. 1976. Adopted Regulations, Title 45: Fish, Shellfish and Game, Chapter 5: Endangered Species. Territorial Register 2(1): 4 December.
Lists 5 endangered plant species of the Trust Territory: Rock Island Palm, Gulubia palauensis from Palau; Truk Palm, Clinostigma carolinensis from Truk; Palau Palm, Ptychosperma palauensis from Palau; and the Marianas Serianthes, Serianthes nelsonii from Rota.

Tuoc, L.T. 1983. Some thoughts on the control of introduced plants. Noticias de Galapagos 37: 25-26.
Too little has been achieved in checking the spread of introduced plants from the colonized areas (of human habitation and agriculture) into the Galapagos National Park.

Turner, J.S., Smithers, C.N. and R.D. Hoogland. 1968. The Conservation of Norfolk Island. 41 pp. Australian Conservation Foundation, Special Publication No. 1.
Compares Philip I., devastated by feral grazers, to Norfolk I. which has representative remaining plant communities likely to be threatened by recent developments (airstrip, hotels).

Tuttle, M.D. 1986. Gentle fliers of the African night. National Geographic 169(4): 540-558.
Vegetarian bats ("flying foxes") are vital seed-dispersal agents for the regeneration of forests. They are often wrongfully decimated as crop-destroying pests and food-animals, and their decline could have a devastating effect on tropical ecosystems in Samoa, Fiji, Guam, and Saipan where they are declining. Also, three continents support flying foxes that are likewise important for forest regeneration.

Tuyama, T. 1953. On the phytogeographical status of the Bonin and Volcano Islands. Proc. Seventh Pacific Science Congress 5: 208-212.
Owing to the dense population and the inadequate forestry administration, the original forest of the Bonin Group was mostly destroyed. The tall forests which maintain the original features are seen only in restricted areas in Peel and Bailey Islands.

Uhe, G. 1974. Medicinal plants of Samoa. Economic Botany 28(1): 1-30.
154 species are covered in this preliminary survey, a forerunner of more detailed studies of specific plants and remedies.

Umpingco, N.R. 1975. The realities facing Guam today, pp.

107-114, in Force, R.W. and B.P. Bishop, eds., The Impact of Urban Centers in the Pacific. 362 pp. Honolulu, Hawaii: Pacific Science Association.
Guam remains a favorite tourist destination, especially favored by Japanese honeymooners, and the growing economy adversely impacts on the environment, including the systematic destruction of pristine lands.

U.S. Army, Office of the Engineer, Intelligence Division. 1955. Military Geology of Saipan, Mariana Islands. Volume 1. Introduction and Engineering Aspects. 67 pp. H.Q. US Army Forces Far East.
"The vegetation of Saipan has been so altered by burning, cultivation, and importation of foreign species that it is difficult for any but the skilled botanist to know what plants are indigenous and which introduced."

U.S. Army, Office of the Engineer, Intelligence Division. 1956. Military Geology of Palau Islands, Caroline Islands. 285 pp. Tokyo: H.Q. US Army Pacific.
Describes World War II damage to terrain; soil deficiencies; occurrence of bauxite.

U.S. Civil Administration of the Ryukyu Islands. 1953. Ryukyu Islands Forest Situation. 123 pp. USCAR, Special Bulletin No. 2.
Clearing of the forests is a major problem in the Ryukyus. Other threats to native vegetation include the effects of burning, grazing, introduced timber trees, and exploitation of cycads for starch in the "Cycad Hell" of Amami Oshima.

U.S. Department of the Interior, Fish and Wildlife Service. 1968. Hawaii's Endangered Wildlife. 16 pp. Portland, Oregon.
Demonstrates interdependence of endangered vegetation (as habitat) and fauna (especially birds) affected by grazing of rabbits and other animals. Also illustrates how a housing development erected on a pond destroyed a waterbird marsh.

U.S. Department of the Interior, Fish and Wildlife Service. 1970. Hawaii's Endangered Forest Birds. 30 pp. Portland, Oregon.
Demonstrates dependence of specialized native birds on intact, vegetated habitats, i.e., the survival of bird species is linked to preservation of large tracts of native forest. Exotic plants in Alakai Wilderness Preserve (Kauai) threaten the Hawaiian crow; feral goats in Lanai forests threaten the Lanai thrush; grazing rabbits on Laysan Island caused extinction of the Laysan apapane bird; and feral browsing mammals threaten liwi birds on Molokai.

U.S. Navy. 1946. Field survey of Japanese defenses on Chichi Jima Retto. Part One: The Report. CINCPAC - CINCPOA Bulletin 2-46: 1-114.
Useful to researchers wishing to date the changes in vegetation due to military operations.

U.S. War Department, Historical Division. 1946. The Capture of Makin (20 November - 24 November 1943). 135 pp. Washington, D.C.
Includes photos depicting effects of war activities on the vegetation.

VanBalgooy, M.M.J. 1971. Plant-Geography of the Pacific. Blumea Supplement Volume VI. 216 pp. Rijksherbarium, Leyden, The Netherlands.
Contains separate discussions of the composition, including endemism, of the floras of 36 prominent island groups of the Pacific.

VanBalgooy, M.M.J. 1973. Chapter 14. Vascular plants: the altitudinal range of some taxa, pp. 171-175, in Costin, A.B. and R.H. Groves, eds. (1973).
Many plants (mostly at the generic level) which occur in both the Pacific islands and Malesia show two tendencies: "the same taxa occur at lower altitudes in the Pacific than in Malesia; and the total altitudinal range in the Pacific is in general narrower than in Malesia...In the Pacific the impact of man on the original vegetation is greatest in the lowlands, to which many taxa are restricted. Therefore it is particularly important that lowland areas receive high priority in conservation."

Van der Poel, C.J. 1975. Human and cultural values on Guam in a period of rapid transition, pp. 327-336, in Force, R.W. and B. Bishop, eds., The Impact of Urban Centers in the Pacific. 362 pp. Honolulu, Hawaii: Pacific Science Association.
Guamanian young people feel they are becoming second-class citizens in their own country, and are more disturbed than the entrenched older persons about situations such as the presence of military forces on the island; the fact that so much arable land is utilized for roads, hotels and factories; and the breaking up of the forested coastline to build hotels. Their concerns are significant because, as explained by R.W. Force (loc. cit., pp. 345-362), "Much of the credit for the consciousness that exists in the world today about our environment, what is happening to it, and what is happening to man as part of that environment, may be awarded quite legitimately to young people, who sometimes seem to have more respect for the world and its inhabitants than do some of us who are a bit older." Force further observes that Pacific "people are not

museum populations, nor do they wish to be."

Van der Werff, H.H. 1978. The Vegetation of the Galapagos Islands. 102 pp. + 12 plates. Ph.D. thesis, University of Utrecht. Zierikzee, The Netherlands: Drukkerij Lakenman & Ochtman.
Includes new records of pantropical weed introductions, e.g. Tridax procumbens on Santa Cruz; and Pangola grass, Digitaria procumbens, on Santa Cruz where it easily escapes from cultivation as a forage grass and threatens to overrun the native vegetation in the fern-sedge zone by means of vegetative reproduction.

Van der Werff, H.H. 1979. Conservation and vegetation of the Galapagos Islands, pp. 391-404, in Bramwell, D., ed., Plants and Islands. London and New York: Academic Press.
Review of the problems besetting the Galapagos.

Van der Werff, H.H. 1982. Effects of feral pigs and donkeys on the distribution of selected food plants. Noticias de Galapagos 36: 17-18.
Differences in distributions of the orchids Liparis and Prescottia on Santa Cruz I. and Alcedo I. (Galapagos) are probably a result of feral pigs who dig up and eat the subterranean organs of the plants.

Van Tilburg, J. 1987. Symbolic archaeology on Easter Island. Archaeology 40(2): 26-33.
Includes brief discussion of early deforestation by original inhabitants of Easter Island.

Veillon, J.M. 1971. La flore Neo-Caledonienne, son originalite, sa vulnerabilite face aux problemes de degradation et de pollution. Commission du Pacifique Sud, Colloque Regional sur la Protection de la Nature - Recifs et Lagons, Noumea, 4-14 Aout 1971, SPC/RSCN WP. 23 (633/71), pp. 1-5.
In New Caledonia, the relictual, highly endemic flora is exposed to the dangers of destruction through mineworks, roads, and mineral discharges. From review by Plessis, J. Cahiers du Pacifique 16: 213-214 (1972).

Vietmeyer, N. 1986a. Casuarina: weed or windfall? American Forests 92(2): 22-25, 63.
Casuarina, or "Australian pine", grows vigorously in places such as the toxic alumina soils of New Caledonia. This article discusses the potential of Casuarina in reforesting barren lands in developing countries.

Vietmeyer, N. 1986b. Lesser-known plants of potential use in agriculture and forestry. Science 232: 1379-1384.
Several underexploited leguminous tree species are presented as "important weapons" against deforestation in tropical areas. Creating the most enthusiasm is Leu-

caena leucocephala, a fast-growing, nitrogen-fixing tree that promises to provide wood and reforestation for much of the tropics. Experimental plots of leucaena are being grown by the University of Hawaii at Waimanalo, on the island of Oahu.

Villa, J.L. and A. Ponce. 1982. Islands for people and evolution: The Galapagos, pp. 584-587, in McNeely, J.A. and K.R. Miller, eds., National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society. Washington, D.C.: Smithsonian Institution Press.
Suggests ways to orient the management of Galapagos National Park towards the achievement of rural development objectives which benefit people living in the area.

Villiers, A. 1971. Captain Cook: the man who mapped the Pacific. National Geographic 140(3): 297-373.
Background information on major discoveries of land in the Pacific, in non-technical presentation.

Virot, R. 1951a. Associations vegetales de la Nouvelle-Caledonie et leur protection. Journal Societe Oceanistes 7: 263-269.
Plea for judicious control of mineral prospecting, forest exploitation, and other activities which negatively impact the vegetation of New Caledonia.

Virot, R. 1951b. Les plantes indigenes utiles de la Nouvelle-Caledonie. Rev. Intern. Bot. Appliquee no.339-340 (Jan.-Feb. 1951, XII): 120-131.
An attempt to inventory useful plants of New Caledonia, including the endemic medicinal plants Gardenia aubreyi, Gardenia urvillei and Nicotiana fragrans.

Virot, R. 1954. Le probleme de la protection de la nature en Nouvelle-Caledonie. Eighth Congr. Intern. Bot. Rapp. Comm. 21-27: 14-144.
Discusses human threats to vegetation of New Caledonia and conservation procedures to counteract them.

Virot, R. 1956. La vegetation Canaque. Memoires Museum National Histoire Naturelle, serie B. Botanique, 7: 1-398. (Th. Sc. Nat. Paris, 1956, ser. A, no. 736).
Invasions of weeds and other current and future modifications to the vegetation of New Caledonia are discussed. Extensive Bibliography of New Caledonian flora included.

Vogl, R.J. 1971. General ecology of northeast outer slopes of Haleakala Crater, East Maui, Hawaii. Contr. Nat. Cons. 6: 1-8.
Preservation of the slopes is recommended.

Vogl, R.J. and J. Henrickson. 1971. Vegetation of the

alpine bog on East Maui, Hawaii. Pacific Science 25(4): 475-483.
Grazing by feral goats, pigs and cattle may have eliminated Lobelia and/or Argyroxiphium species that may have once existed in the bog.

Wace, N.M. 1960. The botany of the southern oceanic islands. Proceedings of the Royal Society B152: 475-490.
These highly impoverished floras are extremely vulnerable to competition from continental species introduced by man. The native floras have few or no annual species to exploit the open habitats produced by the destruction of the vegetation. The Juan Fernandez Is. are within the scope of this article.

Wace, N.M. 1978. The Character of Oceanic Islands and the Problem of Their Rational Use and Conservation. Morges, Switzerland: IUCN.
Energy flow models are presented for island ecosystems.

Wace, N.M. and M.W. Holdgate. 1976. Man and Nature in the Tristan da Cunha Islands. IUCN Monograph No. 6. 114 pp. Morges, Switzerland: IUCN.
Oceanic islands will have increasing significance as baseline monitoring sites, e.g., a station at Mauna Loa, Hawaii, monitors atmospheric carbon dioxide levels. (Tristan da Cunha, the principal subject of this article, is in the Atlantic Ocean.)

Wagner, J.P. 1985. The "scandalwood". Hawaii 2(2) (Issue No. 4): 51-52.
Story of the 30-year (1800-1830) Hawaiian sandalwood trade, from which the trees are only now slowly reviving. By the 19th century, the original non-Hawaiian resources of sandalwood had dried up through a lack of conservation measures in India, Java, Timor and the East Indies. The Hawaiian aristocracy mortgaged the economy of the islands with promissory notes payable in sandalwood, with disastrous results on the native vegetation.

Wagner, W.H. 1950. Ferns naturalized in Hawaii. B.P. Bishop Museum, Occasional Papers 20(8): 95-121.
Interesting historical data on the establishment of invasive fern species which became naturalized in the Hawaiian Islands, e.g. Azolla filiculoides and Blechnum occidentale.

Wagner, W.H. 1981. Ferns in the Hawaiian Islands. Fiddlehead Forum 8(6): 43-44.
Many ferns were introduced into Hawaii for commercial purposes, e.g. Adiantum cuneatum, Pteris vittata, Ceratopteris thalictroides, and Pityrogramma calomelanos. Apparently extinct ferns of Hawaii include Botrychium

subbifoliatum, Asplenium leucostegioides, and Diellia mannii.

Waimea Arboretum and Botanical Garden. 1983. Checklist of Hawaiian Endemic, Indigenous, Food Plants and Polynesian Introductions in Cultivation in Hawaii. 31 pp. Waimea Arboretum Foundation Educational Series No. 2. Haleiwa, Hawaii: Waimea Arboretum Foundation.
Includes numerous endangered and threatened Hawaiian species, growing at 16 garden sites.

Walker, C.M. 1971. Forest Conservation Research Plan for the Seventies. 35 pp. Honolulu, Hawaii: Department of Land and Natural Resources, Division of Forestry.
Discusses ways in which the ecological basis for understanding forest conservation in Hawaii must be strengthened, and considers the impact of invasive plant species and feral sheep.

Walker, E.H. 1952. A botanical mission to Okinawa and the Southern Ryukyus. Asa Gray Bulletin, n.s. 1 (3): 225-244.
Records the northernmost occurrence in the world of the useful nipa palm, Nipa fruticans, at Hinai Bay, Iriomote Island, Ryukyus. Also includes many observations, on all the Ryukyus, of invasive weeds and reversions of grassland and agricultural land to forests.

Walker, E.H. 1953. Botanizing with the Okinawans. The Smithsonian Report for 1952, pp. 359-383. Washington, D.C.: Smithsonian Institution.
One-third of Okinawa I. (Ryukyus) was devastated in the World War II invasion of 1945. Regarding the barren appearance of the southern end due to the paucity of trees: "Those (trees) that the Japanese army did not use in building defenses, the Americans blew down to eliminate snipers...The appearance of barrenness is further augmented by the American installations built on great bulldozed and leveled areas, once hills and valleys covered with grass, trees, or cultivated fields."

Walker, E.H. 1957. A sketch of the vegetation and plants of the Southern Ryukyu Islands. Proc. Eighth Pacific Science Congress 4: 397-406.
On southern Okinawa Island, long occupation and destruction by World War II have swept away most of the arboreal cover, leaving extensive areas grown up in coarse grasses such as Miscanthus floridulus and "la-lang" (Imperata cylindrica var. koenigii).

Walker, F.S. 1962. The Forests of the British Solomon Islands Protectorate. 186 pp. Honiara, Guadalcanal: South Pacific Commission. (Reprint of 1948 Original).
Details of extensive secondary vegetation on various islands are included.

Walker, R.L. 1969. Staff report by State Division of Fish and Game on question: Should axis deer be introduced to the Island of Hawaii. Elepaio 30(4): 31-36.
Division of Fish and Game recommends introduction of axis deer to island of Hawaii, after reviewing 18 harmful effects such action may cause; indirectly provides excellent insight into bureaucratic mentality.

Wallace, R., et al. 1973. Chapter 6. The enigma of a tree, pp. 150-163, in The American Wilderness Series: Hawaii. New York: Time-Life Books.
Concerns Hibiscadelphus distans (Malvaceae).

Wallis, O.L. 1961. Coral Reefs, A Challenge to Conservation. 24 pp. mimeo. Paper presented at Sixth International Game Fish Conference, Miami Beach, Florida, 1961. Washington, D.C.: U.S. Department of the Interior, National Park Service.
Among the eleven stated categories of impact to the fragile ecosystems of coral reefs is "changes wrought on land". Massive land-clearing can cause water run-off into coral beds, silting them up. Bibliography of 46 references.

Walsh, J. 1976. Superport for Palau debated: ecopolitics in the Far Pacific. Science 194(4268): 919-921.
The possibility that a superport for transshipping Iranian oil to Japan may be built in Palau, causes concern for resource development in the ecologically fragile lagoon and reef of Palau. Also mentions incipient cultural deterioration which may ensue due to infusion of more money and material possessions to Palauans at such a superport.

Ward, R.G. 1965. Land Use and Population in Fiji: A Geographical Study. 309 pp. Department of Technical Cooperation, Overseas Research Publication No. 9. London: Her Majesty's Stationery Office.
Relates intensive utilization of terrestrial resources due to increasing population pressure.

Wardle, P., Moar, N.T. and D.R. Given. 1978. Goats on Auckland Islands. New Zealand Journal of Botany 16(2): 291-292.
Instructive for its approach to the feral goat problem, though Auckland Is. are not covered by the present Bibliography. See Campbell, D.J. and M.R. Rudge (1978) for rebuttal article.

Warner, R.E. 1960. A forest dies on Mauna Kea. Pacific Discovery 13(2): 6-14.
On the island of Hawaii, feral sheep have destroyed natural vegetation in the "mamane" forest dominated by

Sophora chrysophylla, on the upper slopes of Mauna Kea volcanic peak. Graphically illustrated with photos.

Warner, R.E. 1961a. The problem of native forest destruction in Hawaii. Tenth Pacific Science Congress, Abstracts, 251-252.
Short notes on aspects of Hawaiian deforestation.

Warner, R.E. 1961b. Hawaii's birds: birth and death of an island biota. Pacific Discovery 14(5): 6-13.
Photos show effects, on vegetation and forests, of feral sheep and other stock, overbrowsing, overgrazing, trampling, erosion; bulldozing natural vegetation for macadamia nut orchards.

Warner, R.E. 1963. Recent history and ecology of the Laysan duck. The Condor 65(1): 3-23.
Details the effects of destruction of the Laysan duck's habitat by overgrazing rabbits, pigs and Guinea pigs. "The nearly completed annihilation of the flora of Laysan Island followed the introduction of domestic rabbits in 1903 to provide meat for guano miners."

Warner, R.E., ed. 1968. Scientific Report of the Kipahulu Valley Expedition. 184 pp. The Nature Conservancy.
Contains numerous observations on status and threats to natural vegetation of the Kipahulu Valley, Hawaii, by expedition participants R.E. Warner, R.E. DeWreede, C.H. Lamoureux, and G.A. Smathers.

Warshauer, F.R. 1977. The Kalapana extension of Hawaii Volcanoes National Park: its variety, vegetation, and value. Newsletter Hawaiian Botanical Society 16(3-4): 57-60.
Severe problems with feral pigs are delineated.

Warshauer, F.R. and J.D. Jacobi. 1982. Distribution and status of Vicia menziesii Spreng. (Leguminosae): Hawaii's first officially listed endangered plant species. Biological Conservation 23(2): 111-126.
"The primary factors responsible for the decline of V. menziesii are habitat loss and excessive predation on the plants by introduced ungulates. Continued logging and cattle grazing within its remnant range are major threats to its existence."

Watson, J.S. 1961. Feral rabbit populations on Pacific islands. Pacific Science 15(4): 591-593.
Discusses rabbit damage to vegetation, and causes of rabbit population fluctuations, in the Hawaiian Leeward Islands of Lisianski and Laysan; Phoenix I., Philip I., and islets of the main Hawaiian group: Manana, Lehua and Molokini.

Watson-Gegeo, K.A. 1982. Review of Bryan Farrell, Hawaii, The Legend That Sells. Honolulu: University of Hawaii Press, 1982. 420 pp. Pacific Studies 6(1): 128-132.
Farrell's book is "the first comprehensive treatment of tourism development in Hawaii", with a chapter on the impact of tourism on the physical landscape indicating that "the negative impacts on land and shore have been coral reef destruction, problems of beach access for local people, overstressing of energy and water resources, and destruction of local vegetation and soil."

Watters, R.F. 1960. The nature of shifting cultivation: a review of recent research. Pacific Viewpoint 1: 59-99.
Impact of shifting cultivation in Fiji and Samoa.

Watts, D. 1970. Persistence and change in the vegetation of oceanic islands: an example from Barbados, West Indies. Canadian Geographer 14(2): 91-109.
Evidence from the Caribbean island of Barbados strengthens the view that the position of plant aliens in local (indigenous) vegetation associations is an artificial one, in that as soon as felling or grazing activities are reduced in scale, native species usually regain their pre-eminence. Statistics from Pacific islands are included for comparison.

Weaver, K.F. 1971. Maui, where Old Hawaii still lives. National Geographic 139(4): 514-543.
Includes mention of the silverswords (Argyroxiphium) of Haleakala Crater.

Weber, D. 1971. Pinta, Galapagos: une ile a sauver. Biological Conservation 4(1): 8-12.
Efforts to salvage the ecosystems of Pinta I. in the Galapagos Islands of Ecuador.

Weber, W.A. 1986. The lichen flora of the Galapagos Islands, Ecuador. Mycotaxon 27: 451-497.
Includes discussion of catastrophic losses of lichen habitats in the Galapagos caused by the El Nino phenomenon of 1982-1983.

Weber, W.A., Gradstein, S.R., Lanier, J. and H.J.M. Sipman. 1977. Bryophytes and lichens of the Galapagos Islands. Noticias de Galapagos 26: 7-11.
Differences in the bryophyte assemblages on each island in the Galapagos may be due in part to the influence of man and his cattle. Suggests protection of San Cristobal permanent streams in view of unique bryophyte flora there.

Webster, G.L. 1951. The Polynesian species of Myoporum. Pacific Science 5(1): 52-77.

"The real value of Myoporum to the Hawaiian Islands resides in its role in the formation of a dry forest cover and in the consequent checking of soil erosion. On most of the islands the dry forest region has been partially or completely denuded, with serious consequent erosion."

Weimarck, G. 1984. Conservation work with Sophora toromiro, the tree of Easter Island. Reports from the Botanical Institute, University of Aarhus No. 10: 40-42.
The toromiro tree, "virtually eradicated" from Easter Island, now exists only as three specimens in Goteborg Botanical Garden, grown from seeds collected by Thor Heyerdahl from the last surviving tree in 1955, which is now dead (having been gradually cut down for the wood used for sculptures). Attempts have been made to reintroduce the species to Easter Island.

Weller, D. 1981. A Preliminary Look at Some Environmental Effects of the U.S. Nuclear Weapons Testing Program in the Marshall Islands. 20 pp. Unpublished manuscript. San Jose, California.
Includes consideration of effects of nuclear device detonation on igniting the vegetation, soil radionuclide uptake by plants (radioactivity), and destruction of surface soil.

Wells, S.M. 1985. The IUCN Directory of Coral Reefs of International Importance. Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 2: 298. (Abstract)
Objectives include to provide a broad survey of the world's reefs in sufficient detail to enable priorities for reef conservation to be established at both national and international levels."

Wenkham, R. 1967a. Importance to the people of Hawaii of conservation of natural scenic resources. Newsletter Hawaiian Botanical Society 6 (1 & 2): 1-5.
Instances of alleged carelessness towards Hawaiian natural environment are enumerated.

Wenkham, R. 1967b. A Kauai national park. National Parks Magazine 41(234): 4-8.
97,000 acres (150 square miles) of shoreside cliffs and wilderness interior are proposed for preservation on Kauai (Hawaiian Is.), including Waimea Canyon, Napali Cliffs, and Alakai Swamp.

Wenkham, R. 1971. Micronesian parks: a propsal. Micronesian Reporter 19(3): 9-22.
Descriptions and photos of natural areas being proposed for parks.

Wenkham, R. and K. Brower. 1975. Introduction: towards

oceanic parks for Micronesia - a proposal, pp. 10-25, in Brower, K., Micronesia: Island Wilderness. 161 pp. San Francisco, California: Friends of the Earth.
Discusses conservation benefits that would accrue from proposed oceanic parks on Nan Madol (Ponape), Elabaob (Palau Is.), Peleliu (Palau Is.), Arno Atoll (Marshall Is.), Marpi (Saipan, Marianas), Truk Lagoon, and Guam.

Wentworth, C.K., Mason, A.C. and D.A. Davis. 1955. Salt-water encroachment as induced by sea-level excavation on Angaur Island. Economic Geology 50(7): 669-680.
Phosphate mining on Angaur I. (Palau Is.) produced excavations below sea level in which lakes were formed, and contamination of freshwater supplies and of agricultural land by salt water resulted from tidal pulsations through the fissured rock.

Westendorp, F.J. van. 1961. Agricultural development on Niue. South Pacific Bulletin 11(2): 67-69.
Photos include: "Part of the "Niue desert", an area of 8,100 acres which because of wrong use in the past, including frequent burning off, became valueless for agricultural purposes."

Wester, L. 1978. Development of the Adventive Flora of the Hawaiian Islands. 13 pp. Paper prepared for 74th Annual Meeting of the Association of American Geographers, New Orleans, April 1978.
Discusses alternative explanations that may account for the recent decline in the rate of arrival of introduced plants. A preliminary survey indicates there are at least 600 adventive plant species in Hawaii.

Wester, L.L. and H.B. Wood. 1977. Koster's curse (Clidemia hirta), a weed pest in Hawaiian forests. Environmental Conservation 4(1): 35-41.
A plant of the melastome family, which smothers extensive areas of indigenous vegetation.

Whistler, W.A. 1976. Inventory and Mapping of Wetland Vegetation in the Territory of American Samoa. 74 pp. U.S. Army Corps of Engineers, Pacific Ocean Division, Fort Shafter.
Aunu'u Crater marsh, Pala Lagoon, and the mud lake on Aunu'u with its mangrove forest, are recommended for nature preserves. Samoan localities of Xylocarpus moluccensis should be protected.

Whistler, W.A. 1978. Vegetation of the montane region of Savai'i, Western Samoa. Pacific Science 32(1): 79-94.
Includes discussion of proposal to establish a national park in the Mt. Silisili area, which supports many endemic plant species.

Whistler, W.A. 1980. The vegetation of Eastern Samoa. Allertonia 2(2): 45-190.
Includes discussion of 4 types of disturbed vegetation: managed land; kula (Dicranopteris) fernland; disturbed forest; and Rhus secondary forest. In general, "approximately one-third of the area (of Eastern Samoa) is covered by plantation and another third by secondary forest."

Whistler, W.A. 1981a. A naturalist in the South Pacific: off the beaten track in Samoa. Bulletin Pacific Tropical Botanical Garden 11(1): 1-6.
Various proposals to erect a hotel on Nu'utele ("an inviable project") and to raise goats on the islands to provide export goat meat for Fiji, have caused the rare vegetation to "remain under the sword of Damocles".

Whistler, W.A. 1981b. A naturalist in the South Pacific: north to Tokelau. Bulletin Pacific Tropical Botanical Garden 11(2): 29-37.
Observing rare plants such as Hedyotis romanzoffianus on Atafu, and newly introduced weeds such as Lepidium virginicum on Nukunono.

Whistler, W.A. 1982. A naturalist in the South Pacific: in search of the apetahi. Bulletin Pacific Tropical Botanical Garden 12(1): 1-4.
The "apetahi" is Apetahia raiateensis, a woody lobelioid endemic to Temehani Mountain on Raiatea (in Leeward Society Is.). The plant is seriously threatened by flower pickers especially during celebrations such as the Bastille Day fete in mid-July, when masses of its flowers are picked for sale in town.

Whistler, W.A. 1983a. The flora and vegetation of Swains Island. Atoll Research Bulletin 262: 1-25.
Swains is politically in the Territory of American Samoa. "The vegetation of Swains Island is greatly disturbed and nearly the whole island is covered with coconut palms. It is doubtful if any of the original forest vegetation remains."

Whistler, W.A. 1983b. Vegetation and flora of the Aleipata Islands, Western Samoa. Pacific Science 37(3): 227-249.
Condition of the vegetation is observed.

Whistler, W.A. 1984. Annotated list of Samoan plant names. Economic Botany 38(4): 464-489.
Useful adjunct to other articles on Samoa by Whistler.

Whistler, W.A. 1983c. Weed Handbook of Western Polynesia. 152 pp.
Weed control has become very important as the trend to increase food crop production continues in Polynesia.

White, K.J. 1965. Forestry activity (in the Territory of Papua and New Guinea). South Pacific Bulletin 15(2): 31-34.
Mentions reafforestation at Kerauat, near Rabaul (New Britain) with native hoop and klinkii pine (Araucaria cunninghamii, A. hunsteinii) and teak (Tectona grandis).

Whiteaker, L.D. 1983. The vegetation and environment of the Crater District of Haleakala National Park. Pacific Science 37(1): 1-24.
Exotic plant "introductions have resulted in native species losing ground to invading forms, and there has been up to 100 percent alteration in species composition in some areas."

Whitesell, C.D. 1964. Silvical Characteristics of Koa (Acacia koa Gray). 12 pp. U.S. Forest Service Research Paper, PSW-16.
Forests of koa, the most valuable common native timber species in Hawaii, have been reduced by land clearing, poor cutting practices, and destruction by animals, insects, and fire.

Whitesell, C.D. 1972. Natural areas on Guam. Newsletter Hawaiian Botanical Society 11(1): 7.
"The best residual forests on Guam are on the Naval Magazine, and on Andersen Air Base, protected by the military."

Whitesell, C.D. 1974. Tree plantings on Kahoolawe. Newsletter Hawaiian Botanical Society 13(2): 4-5.
Describes trial plantings for purposes of reforesting, on a Hawaiian island said to have no soil, only parent material (bare rock).

Whitesell, C.D. and M.F. Landgraf. 1966. Growing Queensland maple on lava rocklands in Hawaii. Tree Planters' Notes No. 77: 1-3.
"Thousands of acres of rough or "aa" lava rockland now support low-value species, but this land can produce valuable stands of timber." On two and one-half acres in the Waiakea Forest Reserve (Island of Hawaii), the Queensland maple trees, Flindersia brayleana, were planted after most of the native ohia vegetation was knocked down and crushed by bulldozers in preparation. Growth of the Queensland maple was "impressive".

Whitmore, T.C. 1966. The social status of Agathis in a rain forest in Melanesia. Journal of Ecology 54: 285-301.
Details the status of the kauri, A. macrophylla, in forests of Vanikoro Island, as well as in deforested and forest-managed areas of the island.

Whitmore, T.C. 1969. The vegetation of the Solomon Islands. Philosophical Transactions, Royal Society B255: 259-270.
"The extensive areas which carry thickets of small trees and climber tangles instead of high forest are thought due to the combined influence of man, earthquake, landslip and cyclone."

Whitmore, T.C. 1976. Conservation Review of Tropical Rainforests: General Considerations and Asia. 116 pp. IUCN-UNEP, WWF Switzerland.
Includes general account of Fiji, Micronesia, Polynesia, New Hebrides.

Whitmore, T.C. 1980. Utilization, potential, and conservation of Agathis, a genus of tropical Asian conifers. Economic Botany 34: 1-12.
Agathis includes the kauri, A. macrophylla, of Melanesia.

Whitney, L.D., Hosaka, E.Y. and J.C. Ripperton. 1939 (Reprinted 1964). Grasses of the Hawaiian Ranges. 148 pp. Hawaii Agricultural Experiment Station Bulletin No. 82.
Useful discussions of introduced, aggressive weedy and potentially weedy grasses are included, e.g. ripgut grass (Bromus rigidus), barbwire grass (Cymbopogon refractus), and Kikuyu grass (Pennisetum clandestinum).

Wichman, C. 1978. Limahuli Valley botanical survey. Bulletin Pacific Tropical Botanical Garden 8(1): 1-6.
The PTBG's new satellite garden on fairly wild land harbors two apparently new color forms of the endemic (on Kauai) and rare Hibiscus saintjohnianus, and other novelties.

Wiens, H.J. 1955. The Geography of Kapingamarangi Atoll in the Eastern Carolines. 94 pp. SIM Report No. 21. Washington, D.C.: Pacific Science Board, National Research Council.
The atoll comprises 33 vegetated islets which support creeping vines such as Cassytha, Vigna and Ipomoea, which choke out native vegetation. "The high degree of manipulation of the vegetation by man obscured the natural vegetation succession...it was very difficult to interpret the natural ecology and environment from the apparent patterns."

Wiens, H.J. 1957. Field notes on atolls visited in the Marshalls, 1956. Atoll Research Bulletin 54: 1-23.
The islets visited on Kwajelein Atoll had been violently disturbed by World War II military operations and the vegetation was thus quite abnormal. War damage to vegetation is apparently the major factor in weed invasion and spread on Majuro Atoll.

Wiens, H.J. 1962. Atoll Environment and Ecology. 532 pp. New Haven, Connecticut: Yale University Press.
Includes discussions of plants introduced and maintained by man on atolls (Chapters 16 & 17), and of population pressures on atoll resources.

Wiggins, I.L. 1966. Origins and relationships of the flora of the Galapagos Islands, pp. 175-182, in Bowman, R.I., ed., The Galapagos. Berkeley and Los Angeles: University of California Press.
Good background relating to endemic flora.

Wiggins, I.L. and D.M. Porter. 1971. Flora of the Galapagos Islands. 998 pp. Stanford, California: Stanford University Press.
Includes information on patterns of human settlement in the Galapagos, with attendant agricultural expansion, goat problems, and encroachment into natural forests.

Williams, M. and B. Macdonald. 1985. The Phosphateers. 586 pp. Carlton, Victoria, Australia: Melbourne University Press.
An account of the British Phosphate Commissioners, including reference to extensive phosphate mining on Nauru, Banaba (Ocean I.), Makatea (Tahiti), as well as Christmas I. (Indian Ocean); considerations of land rehabilitation.

Wills,R. 1965. Tourism for Guam. South Pacific Bulletin 15(3): 44-45, 58.
"The coconut palm is predominant and much of the jungle area is covered with a thick green mantle of tangan tangan, Leucaena glauca, which is used extensively for animal fodder and fuel."

Wilson, P.T. 1976. Conservation problems in Micronesia. Oceans 9(3): 34-41.
Aspects of a number of serious Micronesian questions are elaborated.

Wirawan, N. 1974. Floristic and Structural Development of Native Dry Forest Stands at Mokuleia, N.W. Oahu. Island Ecosystems IRP/IBP Hawaii, Technical Report No. 34. 56 pp. Honolulu, Hawaii: University of Hawaii.
Introduced Schinus suppresses native Canthium, and introduced Melinis grass suppresses seedling establishment of Erythrina sandwicensis, but native Sapindus is able to invade stands of introduced Leucaena.

Wodzicki, K. 1970. Man and his animals. New Zealand Science Review 28(5): 89-102.
Includes a quotation from Quentin Thomas regarding

Hawaii, to the effect that "A choice must be made between managing the native flora and fauna out of existence by an increasing encroachment upon natural or semi-natural areas, or of wisely conserving specific elements of it under a well-defined plan."

Wodzicki, K. 1971. The birds of Niue Island, South Pacific: an annotated checklist. Notornis 18(4): 291-304.
"During the last century the shifting system of agriculture with repeated burning of second-growth forest has led to the establishment of large "fern-land areas" and to a considerable reduction of the primeval, tropical forest that once covered the whole island. This must have significantly affected all (bird) species that solely or partly depend on the fruit or seeds of forest trees or require tall forest community with a high canopy for nesting, such as tuaki, taketake, or ngongo.

Wodzicki, K. 1973. Problems of vanishing plants and animals. Proc. Regional Symposium on Conservation of Nature - Reefs and Lagoons, Part II, pp. 217-223.
Includes considerations of rare plants of the South Pacific.

Wodzicki, K. 1981. Some nature conservation problems in the South Pacific. Biological Conservation 21(1): 5-18.
Conservation problems affecting various ecosystems in the South Pacific include: adventive plant and animal species, forest fires, tourism, pollution of mangrove and sea-grass communities, mining, population growth, and milling of indigenous forests. Useful bibliography included.

Wodzicki, K. and M. Laird. 1970. Birds and bird lore in the Tokelau Islands. Notornis 17(4): 247-276.
Man causes vegetational changes such as the planting of coconut palms and other crops, which in addition to the hunting of birds and their eggs, makes him appear to be the most important and efficient negative factor affecting birds on tropical islands.

Womersley, J.S., compiler. 1974. Conservation of primitive, rare, and endangered species, p. 594, in Specht, R.L., et al., eds., Conservation of Major Plant Communities in Australia and Papua New Guinea. 667 pp. Australian Journal of Botany, Supplementary Series, Supplement No. 7.
A period of locally intense agricultural development is commencing in Papua New Guinea and this will mean the destruction of large areas of closed forest, particularly on the north coast of the island of New Britain.

Woodward, P.W. 1972. The natural history of Kure Atoll, Northwestern Hawaiian Islands. Atoll Research Bulletin

164: 1-318.
On Green I., introduced Verbesina encelioides in the central plain is spreading rapidly and threatening the native plant species, which cannot grow under it. It also threatens the breeding habitat of blue-faced booby birds.

Woolliams, K. 1972a. Propagation of endangered tropical plants. Bulletin Pacific Tropical Botanical Garden 2(1): 17-20.
Lists Hawaiian species being grown in the nursery of PTBG, with cultural notes. A number of subsequent articles entitled "From the Nursery" document additional species being cultivated there.

Woolliams, K. 1972b. A report on the endangered species. Bulletin Pacific Tropical Botanical Garden 2(3): 46-49.
Data on 12 Hawaiian endangered plants being propagated in Garden nursery.

Woolliams, K.R. 1974a. Plant collecting trip to the Ogasawara Islands. Bulletin Pacific Tropical Botanical Garden 4(2): 23-28.
The Ogasawara Islands flora comprises at least 400 species, of which 46 percent is endemic. Hahajima I. has endangered Erythrina boninensis. On Minamijima I. all goats were exterminated in 1972 and the vegetation has since somewhat regenerated. The handsome palm Clinostigma savoryanum occurs on Chichijima I., where its population was reduced to 100-200 plants during World War II: the young growing tips served as a food source. The Clinostigma is now threatened since rats eat and destroy its seeds, making regeneration difficult.

Woolliams, K.R. 1974b. Endangered species now established in the grounds of Pacific Garden. Bulletin Pacific Tropical Botanical Garden 4(2): 33.
List includes 26 Hawaiian species.

Woolliams, K.R. 1975a. The propagation of Hawaiian endangered species. Newsletter Hawaiian Botanical Society 14(4): 59-68.
Includes specific examples of successes and failures.

Woolliams, K.R. 1975b. Propagation (Sesbania tomentosa). Notes Waimea Arboretum 2(2): 7-8.
Cultivation of an endangered Hawaiian legumes.

Woolliams, K.R. 1975c. Plant collecting in the Ogasawara Islands. "Collecting and Breeding". Institute of Breeding Research (Tokyo) 37(7). (In Japanese)
Emphasizes indigenous plants of Chichijima and Minamijima islands.

Woolliams, K.R. 1976a. Tentative list of rare and endangered plants of the Ogasawara Islands. Notes Waimea Arboretum 3(2): 10-12.
Several endemics are endangered.

Woolliams, K.R. 1976b. Propagation of Hawaiian endangered species, pp. 73-83, in Simmons, J.B., et al., eds., Conservation of Threatened Plants. New York and London: Plenum Press. (Abstract appears in Notes Waimea Arboretum 2(2): 5.1974.)
The procedures leading to cultivation of rare and endangered Hawaiian plants.

Woolliams, K.R. 1976c. Propagation (Chenopodium pekeloi). Notes Waimea Arboretum 3(1): 5-6.
Cultivation of an endangered Hawaiian chenopod.

Woolliams, K.R. 1978a. Propagation of some endangered Hawaiian plants at Waimea Arboretum. Notes Waimea Arboretum 5(1): 3-4.
Data on Sophora, Mezoneuron, Lepechinia.

Woolliams, K.R. 1978b. Observations on the flora of the Ogasawara Islands. Notes Waimea Arboretum 5(2): 2-10; 6(1): 6-14 (1979).
Data on 18 mostly threatened plant species.

Woolliams, K.R. 1979. Kokia cookei: extinction or survival? Notes Waimea Arboretum 6(1): 2-5.
Precarious existence of endangered Hawaiian plant.

Woolliams, K.R. 1980. Oahu yellow hibiscus found. Notes Waimea Arboretum 7(1): 9, 12.
Concerns Hibiscus brackenridgei var. mokuleiana.

Woolliams, K.R. 1981a. Serianthes nelsonii:an update. Notes Waimea Arboretum 8(1): 8-9.
First discovery of the plant in 1980 on Rota I., near Guam.

Woolliams, K.R. 1981b. Kokia cookei: progress report. Notes Waimea Arboretum 8(1): 8.
K. cookei grafted onto K. drynarioides, in Hawaii.

Woolliams, K.R. 1982. Kokia cookei: more good news. Notes Waimea Arboretum 9(1): 3-4.
Progress of Kokia cookei in cultivation.

Woolliams, K.R. 1983. Ogasawara Islands: news from Hahajima. Notes Waimea Arboretum 10(1): 4-5.
Data on four threatened plant species.

Woolliams, K.R. 1985. Endangered Heliconia: how serious a problem? Notes Waimea Arboretum 12(1): 5-8.

Refers to Fiji.

Woolliams, K., Degener, O. and I. Degener. 1980a. Kokia cookei Deg.: then there were two!. Notes Waimea Arboretum 7(1): 2-7.
Cultivation history of an extremely endangered species.

Woolliams, K., Degener, O. and I. Degener. 1980b. Cooke's kokia again. Notes Waimea Arboretum 7(2): 8-9.
Refers to the endangered Hawaiian Kokia cookei (Malvaceae).

Wright, H.D. 1946. Orchid hunting on Guadalcanal. American Orchid Society Bulletin 15(3): 106-116.
"Much of the northern coast was shorn of vegetation to create huge Lever Brothers Coconut Plantations."

Wylie, R.B. 1924. Notes on introduced plants. Proc. Iowa Academy of Science 30: 333-336.
In the Fiji Islands of 1922, the intolerable nuisance weeds already included the sensitive plant (Mimosa pudica), Para grass (Panicum barbinode), lantana (Lantana camara), guava (Psidium guajava), Mikania scandens, and Koster's curse (Clidemia hirta).

Yates, S. 1984. On the cutting edge of extinction. Audubon 86(4): 62-85.
Deforestation contributes to habitat diminishment of Hawaiian endemic birds.

Yee, R. 1984a. Gardens in time: plants of modern Hawaii. Ka 'Elele 11(2): 4-5.
Discusses introduced plants harmful to Hawaiian ecosystems, e.g. lantana, koa-haole, and banana poka.

Yee, R. 1984b. Dry lowland plants dominate this garden. Ka 'Elele 11(6): 4-5.
In the Hawaiian Is., dry lowland forest contains more endangered species than any other plant community. Plants such as Hibiscus brackenridgei are rare in this rapidly diminishing ecosystem.

Yen, D.E. 1975. Effects of urbanization on village agriculture in Oceania, pp. 171-180, in Force, R.W. and B. Bishop, eds., The Impact of Urban Centers in the Pacific. 362 pp. Honolulu, Hawaii: Pacific Science Association.
It is possible that the depopulation of rural and outer-island areas in Oceania may actually have a beneficial effect on natural resources. When people move to cities and urbanized areas, there is created a "fallowing" period for the land they vacated: land whose topography and soils are best fit for the readaptation of traditional crops and forms of agriculture under a new

economic and political order emanating from the towns.

Yocom, C.F. 1967. Ecology of feral goats in Haleakala National Park, Maui, Hawaii. American Midland Naturalist 77(2): 418-451.
Feral goats may have eliminated native Lobelia and Argyroxiphium species.

Yoshida, A. and T. Tannawa. 1976. Endangered plant species of the Ogasawara Islands. Notes Waimea Arboretum 3(2): 8-9.
Listing of endangered plants from area formerly known also as Bonin Islands.

Young, R.A. and P. Popenoe. 1916. Saving the kokio tree. Journal of Heredity 7(1): 24-28.
Refers to the Hawaiian Kokia drynarioides (Malvaceae).

Younge, O.R. and J.C. Moomaw. 1960. Revegetation of stripmined bauxite lands in Hawaii. Economic Botany 14: 316-330.
Experimental study of devastated lands.

Yuncker, T.G. 1934. Some botanical aspects of the Hawaiian Islands. Torreya 34(2): 29-36.
Includes remarks on unfavorable influences on the native flora, including feral pigs, feral goats, vigorous weeds, sandalwood trade, as well as mentioning beneficial plants for reforestation.

Yuncker, T.G. 1937. Three additional species of Peperomia in Hawaii. B. P. Bishop Museum, Occasional Papers 13(14): 161-165.
In Honolulu (Oahu), Peperomia pellucida is now naturalized and locally common. The species was "probably accidentally introduced from India with plants for reforestation."

Yuncker, T.G. 1945. Plants of the Manua Islands. B.P. Bishop Museum Bulletin 184: 1-73.
In American Samoa, "the original vegetation has now been exterminated to a large extent on the lowlands and lower hillsides to provide for coconut and banana plantations."

Yuncker, T.G. 1956. Plants of Tonga. B.P. Bishop Museum Bulletin 220: 1-283.
On Tonga, some alien plant species "have undoubtedly played a part in limiting or even exterminating some endemics or indigenous species through aggressiveness." Lumber operations on some islands have caused soil erosion problems on slopes.

Zacharin, R.F. 1978. Emigrant Eucalypts: Gum Trees as

Exotics. 137 pp. Carlton, Victoria, Australia: Melbourne University Press.
Background of the often deprecated genus Eucalyptus, used in many reforestation programs in the Pacific.

Zimmerman, E.C. 1948. Island faunas in general: their special interest and vulnerability, pp. 17-18, in Coolidge, H.J., compiler (1948).
The Bishop Museum 1934 Mangareva Expedition found that on Mangareva "all the native forests are gone - burned and reburned, and eaten away by goats...Today on Mangareva, nothing but the ghosts of a once unique and magnificent biota hover - their cries are echoed by the moaning birds screaming over mountain slopes barren of native life and mocked by the bleating of hungry goats."

Zimmerman, E.C. 1963. Nature of the land biota, pp. 57-64, in Fosberg, F.R., ed. (1963).
Notes that many Polynesian islands have been stripped bare by goats, and the lower islands (of 1,000 or 2,000 feet in elevation) that do not have heavy rain forest have been subjected to repeated burning.

Zucker, W.H. 1985. Reef management in the Pacific Region. Proc. Fifth International Coral Reef Congress (Tahiti, 1985) 2: 424.
The South Pacific Regional Environment Programme (SPREP) includes coverage of coastal ecosystem interactions.

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