United States
Department of
Agriculture

Forest Service

Southern Forest
Experiment Station

New Orleans,
Louisiana

General Technical Report
SO-51
September, 1984

Bibliography of Forestry. in Puerto Rico

Menandra Mosquera, JoAnne Feheley, Compilers

An Institute of Tropical Forestry Publication

COMPILERS:

Menandra Mosquera, formerly working as a college librarian in Puerto Rico, is now living and working in Washington, D.C. The nucleus of this work originated with references for a bibliography on the history of the Institute of Tropical Forestry by Ms. Mosquera. It was part of the course-work for her Master's Degree in library science from the University of Puerto Rico.

JoAnne Feheley is the library technician at the Institute of Tropical Forestry in Río Piedras, Puerto Rico.

The compilers decided to broaden extensively the original concept and make this a record of written material on all forestry activities in Puerto Rico.

This work was done in cooperation with the University of Puerto Rico,

BIBLIOGRAPHY OF FORESTRY IN PUERTO RICO

MENANDRA MOSQUERA and JoANNE FEHELEY, COMPILERS

CONTENTS

Page

Foreword 1

Bibliography 3

Appendix. Highlights of Forestry in Puerto Rico and the U.S. Virgin Islands 169

Author Index 172

Subject Index 183

Species Index 187

de los autores principales y co-autores. El índice de materia dirigirá a las materias claves discutidas o citadas en las publicaciones que no son autoexplicativas a través de los títulos. Sólo incluimos los nombres de las especies que aparecen en. los titulos. Tanto en los índices de autor y de materia, los números refieren al niimero de la publicación en la bibliografía.

Si nota algún error u omisión en esta bibliografía, será apreciado si ellos fuesen referidos a la atención de la biblioteca del Instituto de Dasonomía Tropical, Apartado AQ, Río Piedras, Puerto Rico 00928.

1. Aaron, John M.
1973. Geology and mineral resources of Isla de Mona, P.R. In Mona and Monito Islands: an assessment of their natural and historic resources. V. II, App. B, B-l - B-7. Environ. Qual. Bd., San Juan, P.R.

2. Abbad y Lasierra, Iñigo.
1979. Historia geogrdfica civil y natural de la Isla de San Juan Bautista de Puerto Rico. Editorial Universitaria, San Juan, P.R.

This is latest edition of this book, the original of which was written in 1788.

3. Acosta, José de.
1590. Historia natural y moral de los Indios. [Puerto Rico]. Seville, Arturo Morales Carrión. 2 vols.

The natural and cultural history of the Indians. [Puerto Rico].

4. Addor, Eugene E., William N. Rushing, and Warren E. Grabau.
1970. A procedure for describing the geometry of plants and plant assemblages. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, B-13, p. B-151 - B-167. USAEC, Oak Ridge, Tn.

A procedure for the quantitative description of vegetation geometry is presented with diagram and computer computations.

5. Agriculture Experiment Stations of the Land Grant Universities, Southern Region, and U.S. Dep. Agric., Soil Cons. Serv., South Region.
1969. Tropical Soils Workshop, Puerto Rico and Virgin Islands, August 5-14, 1969. 114 p. U.S. Dep. Agric. Exp. Sta. and U.S. Dep. Agric. Soil Cons. Serv., South Region.

Proceedings of the Southern Regional Technical Work-Planning Conference of the National Cooperative Soil Survey.

6. Ahern, G. P., and H. K. Newton.
1928. A bibliography on woods of the world, exclusive of the temperate region of North America and with emphasis on tropical woods. 77 p. [References on woods of the West Indies, p. 18-21]. Amer. Soc. Mech. Engin., New York.

7. Ahlers, David.
1968. I think that I shall never see a Puerto Rican tree... The San Juan Star [San Juan, P.R.], July 28, 1968.

Article about Puerto Rican indigenous species.

8. Albanese, Lorelei.
1974. There's more to a forest than the trees. The San Juan Star [San Juan, P.R.], Feb. 24, 1974.

Maintenance and management problems in Río Abajo Forest, one of Puerto Rico's 13 forest reserves.

9. Alexander, William Henry.
1902. Porto Rico, its climate and resources. Amer. Geog. Sec. Jour. 34:401-409.

10. Alexander, William Henry.
1904. Climatology of Porto Rico. U.S. Dep. of Comm., Weather Bureau. [Unpublished].

11. Alexopoulos, Constantine J.
1970. Rain forest myxomycetes. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-3, p. F 21-F 23. USAEC, Oak Ridge, Tn.

Sixty species of slime molds were collected in the Caribbean Islands during a six-week period in 1965 and 1966. Myxomycetes fructifications were less abundant in these rain forests than in temperate forests in rainy periods.

12. Almodóvar, L. R., and R. Biebl.
1962. Osmotic resistance of mangrove algae around La Parguera, P.R. Rev. Algol. 6:203-208.

13. Almodóvar, L. R., and F. A. Pagán.
1962. Notes on a mangrove channel at La Parguera, P.R. [Unpublished manuscript].

14. Almy, C. C., Jr., and C. Carrión Torres.
1963. Shallow-water stony corals of Puerto Rico. Caribb. J. Sci. 3(2/3):133-163.

15. Alvarez García, Luis A.
1939. A mahogany seedling blight in Puerto Rico. Caribb. For. 1(1):23-24.

16. Alvarez García, L. [Luis] A.
1940. A cedar seedling blight in Puerto Rico. Caribb. For. 1 (2):26.

17. Anderson, David E.
1968. Buscan salvar cotorra. El Mundo [San Juan, P.R.], Oct. 17, 1968.

An effort to save the parrot.

18. Angleró, José I.
[n.d.] Información sobre árboles ornamentales y de sombra. 110 p. Servicio de Extensión Agrícola, Universitaria de Puerto Rico, Río Piedras.

Information about ornamental and shade trees.

19. Angleró, José I.
1962. Su ganado necesita sombra. Rev. de Agr. de P.R. 49(1):153-155.
The need of shade for livestock is discussed.

20. Anglo-American Caribbean Commission.
1944. Recommendations of the Soil, Water, and Forest Conservation Committee of the Fourth Meeting of the Anglo-American Caribbean Commission. [An abstract from the proceedings of the fourth meeting of the Anglo-American Caribbean Commission held August 17-21, 1943, at Charlotte Amalie, St. Thomas, V.I.]. Caribb. For. 5(2):78-83.

21. Anthony, H. E.
1918. The indigenous land mammals of Porto Rico. Amer. Mus. Natur. Hist. Mem. 2(2):331-435.

22. Anthony, H. E.
1925-1926. Mammals of Porto Rico, living and extinct. In Scientific Survey of Porto Rico and the Virgin Islands. V. 9, Parts 1 and 2, p. l-238. New York Acad. of Sci., N.Y.

23. Aráez y Fernando, R.
1905. Historia del ciclón del día de San Ciriaco. San Juan, P.R., Imprenta Heraldo Español.

History of the cyclone on the day of Saint Cyrriacus.

24. Arena, C.
1972. Conservationists blast Ferré Jobos Bay Act. San Juan Star [San Juan, P.R.], Aug. 3, 1972. p. 81.

25. Arrarás, J. D.
1964. The Commonwealth concept. In F.M. Andic and T.G. Mathews, eds., The Caribbean in transition. Second Caribbean Scholars Conf. Proc., Mona, Jamaica. Inst. Caribb. Studies, Univ. of Puerto Rico, Río Piedras.

26. Arrieta, Rubén 0.
1978, A como de lugar quieren sembrar Pinos Hondureños. El Nuevo Día [San Juan, P.R.], May 11, 1978. p. 24.

Controversy over the planting of the Honduras pine and the introduction of the mycorrhiza fungus in Puerto Rico.

27. Ascorbe, F. J.
1953. The inhibitory action of organic chemicals on a blue stain fungus. Caribb. For. 14(3/4):136-139.

20. Austin, H. M.
1971. A survey of the Ichtyofauna of the mangroves of western Puerto Rico during December 1967 - August 1968. Caribb. J. Sci. 2 (i/2):27-39.

29. Báez, Vicente, ed.
1976. La flora de Puerto Rico. In La Gran Enciclopedia de Puerto Rico. Madrid, Ediciones R.V. 10, p. 335-341.

30. Bagué, Jaime.
1962. Presencia de los montes en nuestra historia. Rev. de Agr. de P.R. 49(1):4-86.

History of the silviculture in Puerto Rico from 1830 to 1962.

31. Bagué, Jaime.
1968. Movimientos de reforma agraria en Puerto Rico. (1510-1961) Parts 1-3. Rev. de Agr. de P.R. 55.

The agrarian reform movement in Puerto Rico from 1510-1961.

32. Baillon, H.
1882. Un nouveau Cinnamodendron. (An endemic tree of Puerto Rico). Bull. Soc. Linn. Paris 1:317-319.

Description of Cinnamodendron macranthum (Pleodendron macranthum (Baill.) v. Tiegh).

33. Balmer, William E., and José A. Zambrana.
1977. Planting trees in urban areas. (In Spanish on reverse side, "Cómo sembrar árboles en la zona Urbana.") U.S. Dep. Agric. For. Serv., Urban For. Bull., Caribbean Area, Río Piedras, P.R. 2 p.

34. Bannister, Barbara A.
1970. Ecological life cycle of Euterpe globosa Gaertn. In A tropical rain forest: A study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-18, p. B 299 - B 314. USAEC, Oak Ridge, Tn.

The life cycle of the sierra palm, studied in environment chambers and in the rain forest of Puerto Rico, suggests that Euterpe is adapted to conditions inside the forest and is a normal component of rain forest vegetation, not a successional species as previously assumed.

35. Barber, H. G.
1939. Insects of Porto Rico and the Virgin Islands, Hemiptera-Heteroptera (excepting the Miridae and Corixidae). In Scientific Survey of Porto Rico and the Virgin Islands. V. 14, Part 3, p. 263-441. New York Acad. Sci., N.Y.

36. Barber, M. C.
1978. A Markovian model for ecosystem flow analysis: nitrogen flow in a Puerto Rican rain forest as an example. Ecol Model. 15(3):193-206.

37. Barbour, William R.
1933. Soil and stumpage values on the Luquillo purchase unit. Unpublished memorandum in files of U.S. For. Serv., Río Piedras, P.R., 8 p.

38. Barker, E. Euqene.
1920. Impressions of a nature lover in Porto Rico. Nature Study Rev. 16:10-12.

39. Barres, H.
1964. Rooting media for growing pine seedlings in hydroponic culture. U.S. Dep. Agric. For. Serv., Res. Note ITF-2, 4 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series]
Rooting medium influences the growth and survival of Honduras pine in a hydroponic culture.

40. Barres, H.
1966. La recherche sylvicole á Porto Rico tiré a part du-Journal Forestier Suisse. Schweiz. Z. Forstw. 117(2):127-134.

Recent forestry research undertaken in Puerto Rico, including site evaluations and species trials.

41. Barrett, 0. W.
1902. The fall of Porto Rican forests. Plant World 5:111-11

A record of the deforestation begun prior to 1850, with consequent rarity of many forest trees.

42. Barrett, 0. W.
1902. Report on trip to locate boundaries of public lands in the Luquillo District. [P.R. Dep. of Pub. Wks. files]

43. Barrett, O.W.
1925. The food plants of Porto Rico. J. Dep. Agric. Porto Rico 9:61-208.

Annotated and descriptive list of cultivated and naturalized species and varieties of food plants.

44. Barrett, 0. W.
1929. Food plants of Porto Rico. Porto Rico School Review 14:14, 15, 18, 42, 43, 45.

This is an address delivered at the School of Tropical Medicine in San Juan, P.R.

45. Barrett, Wilfredo H. G., and Lamberto Golfari
1962. Descripción de dos nuevas variedades del "Pino del Caribe." Caribb. For. 23(2):59-71.

Description of two new varieties of the "Caribbean Pine."

46. Bartlett, Federico P.
1943. Population and resources in Puerto Rico. Puerto Rico Jour. Pub. Health Trop. Med. 19:9-34.

47. Bascopé, R.
1959. Los manglares en America. In Descripciones de drboles forestales No. 5. Inst. For. Lat. Am. de Investigación y Capacitación. Mérida, Ven. 52 p.

The mangroves in America are described.

48. Batchelder, R. B.
1952. The subhumid plain of Northwestern Puerto Rico: a study in rural land utilization. In The Rural Land Classification Program of Puerto Rico. (Northwest. Univ. Studies in Geog. No. i). p. 77-114. The William and Marion Hass Res.. Fund, Evanston, Ill.

49. Bates, C. [Charles] Z.
1930. La siembra de árboles en los terrenos de la escuela. Rev. de Agr. de Puerto Rico 24:70.

The planting of trees in school areas is discussed.

50. Bates, C. [Charles] Z.
1938. La silvicultura en la finca. Rev. de Agr. de Puerto Rico 32:16-20.

Farm silviculture is outlined.

51. Bates, Charles [Z.]
1939. La siembra de árboles en las fincas de Puerto Rico. Rev. de Agr. de P.R. 31(1):130-134.

An article about planting trees on farms in Puerto Rico.

52. Bates, Charles Z.
1924. División Forestal. [Puerto Rico] Resumen del trabajo realizado durante el mes de julio de 1924. Rev. de Agr. de P.R. 13(2):111-113.

Report of work done during July 1924.

53. Bates, Charles Z.
1925. Lo que la silvicultura puede hacer por Puerto Rico. Rev. de Agr. de P.R. 14(2):97-101.

What silviculture can do for Puerto Rico.

54. Bates, Charles Z.
1925. Introducción de drboles exbticos. [Puerto Rico]. Rev. de Agr. de P.R. 14(5):305-309.

Introduction of exotic trees to Puerto Rico.

55. Bates, Charles Z.
1929. Efectos del huracán del 13 de septiembre de 1928 en distintos drboles. Rev. de Agr. de P.R. 23:113-117.

The effects of the hurricane of Sept. 13, 1928 on various trees in Puerto Rico.

56. Bates, Charles z.
1930. Hurricane damage to Porto Rican forests. J. For. 38:772-774.

57. Bates, Charles Z.
1930. La silvicultura en la finca, una necesidad en Puerto Rico. Rev. de Agr. de P.R. 25(1):16-20.

Silviculture on the farm, a necessity in Puerto Rico.

58. Bates, [Charles] Z.
1932. Silvicultura elemental para escolares. 34 p. Puerto Rico Dep. Agr. y Corn., San Juan.

Teaching tool for students which includes illustrations of Puerto Rican trees.

59. Baynton, H. W.
1968. The ecology of an Elfin Forest in Puerto Rico. 2. The micro-climate pf Pico del Oeste. J. Arnold Arbor. 49(4):419-430.

60. Baynton, H. W.
1969. The ecology of an Elfin Forest in Puerto Rico. 3. Hilltop and forest influences in the micro-climate of Pico del Oeste. J. Arnold Arbor. 50(1):80-92.

61. Beard, John Stewart.
1942. Montane vegetation in the Antilles. Caribb. For. 3(1):61-74.

62. Beard, J. '[John] S. [Stewart].
1944. Climax vegetation in Tropical America. Ecology 25:127-158.

63. Beard, J. [John] S. [Stewart].
1949. The natural vegetation of the Windward and Leeward Islands. Oxford Forestry Memoirs No. 21. 192 p.

64. Beard, J. [John] S. [Stewart].
1945. Some ecological work in the Caribbean. Emp.. For. Jour. 24:40-46.

65. Beinroth, F. [Friedrich] H.
1969. Puerto Rico and its natural environment. In U.S. Dep. Soil Conserv. Serv., Carib. Area. Trop. Soils Workshop, Puerto Rico and Virgin Islands. Santurce, P.R.

66. Beinroth, Friedrich H.
1969. An outline of the geology of Puerto Rico. Univ. of P.R. Agric. Exp. Stn. Bull. 213. UPR Agric. Exp. Stn., Río Piedras, P.R.

67. Bell, C. A.
1970. Seed distribution and germination experiment. In A tropical rain forest]; A study of irradiation and-ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-6, p. D 177-D 182. USAEC, Oak Ridge, Tn.

Germination of Phytolacca and other species was studied in

12 seed flats filled with soils from six stations in and around the North Cut Center. Half of the flats of soil were moved into the sunlight and half were distributed to the sites of soil collection. Disturbance stimulated germination even in the shade, but explosive seedling production required sunny exposure.

68. Bell, C. C.
1952. Forest utilization in Puerto Rico. U.S. Dep. Agric., For. Serv. For. Prod. Lab.., Madison, Wisconsin.

69. Bello y Espinosa, Domingo.
1881-1883. Apuntes para la flora de Puerto Rico. Anales Soc. Esp. Hist. Nat. 10:231-304, pl. 4, 5, 1881; 12:103-130, pl. 1, 1883. [Reprint p. 102, pl. 3.].

70. Benedict, F. F.
1976. Herbivory rates and leaf properties in four forests in Puerto Rico and Florida. M.S. thesis. Univ. of Fla., Gainesville. 78 p.

71. Benner, Thomas E.
1928. Porto Rico after the storm. Rev. of reviews 78:487-488.

72. Berkey, C. P.
1915. Geological reconnaissance of Porto Rico. Ann. N.Y. Acad. Sci. 26:1-70.

73. Berkey, C. P.
1919. Introduction to the geology of Porto Rico. In Scientific Survey of Porto Rico and the Virgin Islands, N.Y. Acad. Sci., N.Y.

74. Bevan, A. [Arthur].
1940. The forest problem in Puerto Rico. Rev. de Agric., Ind. y Corn. [P.R.] 32(3):447-448.

75. Bevan, Arthur.
1940. Possibilities for forestry in the Virgin Islands: St. Thomas, St. John, St. Croix. Caribb. For. 2(1):8-12.

76. Bevan, Arthur.
1942. Farm forestry in Puerto Rico. Rev. de Agric., Ind. y Corn. [P. R.] 34(1):79-81

77. Biaggi, Virgilio.
1970. Las aves de Puerto Rico. 371 p. Editorial Universitaria, Univ. de P.R., Río Piedras, P.R.

The birds of Puerto Rico.

78. Biebl, R.
1962. Protoplasmatisch-okologische untersuchungen an mangrovealgen von Puerto Rico. Protoplasma 55:572-606.

Protoplasm-ecology investigations on mangroves of Puerto Rico.

79. Biebl, R., and A. Kinzel.
1965. Blattban und salzhaushalt von Laguncularia racemosa (L.) Gaertn. f. und andern mangrovebaume auf Puerto Rico. Oesterr. Bot. Z. 112:56-93.

Investigation on Laguncularia racemosa (L.) and other mangroves of Puerto Rico.

80. Bloom, Sanford G., and Gilbert E. Raines.
1970. Kinetic model study of hydrogen flow through the El Verde forest system. In A tropical rain forest: A study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, Ch. H-7, p. H 123 - H 128. USAEC, Oak Ridge, Tn.

A mathematical model is presented for the flow of hydrogen and tritium through the rain forest system at El Verde, Puerto Rico.

81. Bobb, M. [Maggie].
1972. Explica el valor de los manglares y arrecifes en las costas de Puerto Rico: la Sra. Mary Margaret Goodwin, biólogo marino. El Mundo [San Juan,P.R.]', Jan. 20, 1972. p. 13-A.

The value of the mangroves and reefs to the coasts of Puerto Rico.

82. Bobb, Maggie.
1972. Asignación ambiental: zona manglares desaparecerd. [Puerto Rico]. El Mundo [San Juan, P.R.], Oct. 30, 1972. p. 16-A.

Environmental assignment: The mangroves in Puerto Rico will disappear.

83. Bock, C. [Carl] A.
1946a. Planning report on the proposed Río Blanco Extension. P.R. Water Resour. Auth., San Juan, P.R. [mimeo]

84. Bock, Carl A.
1946b. Planning report on the El Yunque Hydroelectric Project. P.R. Water Resour. Auth., San Juan, P.R. 31 p. [mimeo].

85. Bogart, D. B., T. Arnow, and J. W. Crooks.
1964. Water resources of Puerto Rico, a progress report. Water Resour. Bull. 4. U.S. Geol. Surv. in coop. with the Commonw. of P.R., San Juan, P.R. 102 p.

86. Bonnet, J. [Juan] A.
1940. Phosphoric acid and silica of Puerto Rico soils. Journ. Agric. of UPR 24(4):143-150.

87. Bonnet, J. [Juan] A.
1941. Chemical data of Puerto Rico soils. Agric. Exp. Stn. Bull. 1, Rfo Piedras, P.R. 53 p.

Correlation of data for humid and arid areas. Field response of crops to available phosphorus and potash in soils.

88. Bonnet, J. [Juan] A., and M. A. Lugo López.
1950. Relative' erosiveness of Puerto Rico soils. Journ. Agric. of UPR 34(3):294-307.

89. Bonnet, Juan A.
1974. Aspectos científicos-tecnológicos de la calidad ambiental del aire, las aguas y los suelos aplicados a Puerto Rico. Departamento de Instrucción Pública, Estado Libre Asociado de Puerto Rico.

Scientific-technological aspects of the environmental quality of the air, water, and soils of Puerto Rico.

90. Boone, R. S. , and M. Chudnoff.
1970. Variations in wood density of the mahoganies of Mexico and Central America. Turrialba 20(3):360-371.

91. Boone, 'R. S., and M. Chudnoff.
1972. Compression wood formation and other characteristics of plantation-grown Pinus caribaea. U.S. Dep. Agric. For. Serv. Res. Pap. ITF-13, 16 p. U.S. Dep. Agric., For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

Trees from four plantations were sampled to determine the amount, orientation, and effect of compression wood on physical and mechanical properties of 8-10 year old Pinus caribaea grown in Puerto Rico.

92. Boone, R. S., M. Chudnoff, and E. Goytía.
1969. Chemical control of bostrichidae during air drying of fence posts. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-8, 8 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

Insecticides other than borax and BHC formulations and various methods of application have been investigated to halt attacks of a bostrichid (Tetrapriocera longicornis) during air drying of small diameter posts.

93. Bovey, R. W., C. C. Dowler, and J. D. Díaz Colón.
1969. Response of tropical vegetation to herbicides. Weed Sci. Urb. 17(3):285-290.

The effectiveness of several herbicides and herbicide combinations for desiccation, defoliation, and control of tropical woody plants at different times of year was investigated in Puerto Rico in 1966 and 1967. A number of mixtures gave control at low dosages, and further study was recommended.

94. Bowdish, B. S.
1902-1903. Birds of Porto Rico. Auk 19:356-366; 20:10-23.

95. Brau, Salvador.
1909. La fundación de Ponce. La Democracia, San Juan, P.R. p. 42.

The founding of Ponce, Puerto Rico.

96. Brau, Salvador.
1930. La colonización de Puerto Rico. 2d. ed. San Juan, Tip. Cantero, Fernández y Cía. 510 p.

The colonization of Puerto Rico.

97. Briggs, J. P., and J. P. Akers.
1965. Hydrogeologic map of Puerto Rico and adjacent islands. Water Resour. Bull. 22. In D. B. Bogart, T. Arnow, and J. W. Crooks. U.S. Geol. Surv. in coop. with the Commonw. of P.R., San Juan, P.R.

98. Briscoe, C. B.
1959. Early results of mycorrhizal inoculation of pine in Puerto Rico. Caribb. For. 20(3/4):73-77.

99. Briscoe, C. B.
1960. Arranque o extracción de arbolitos de Pino. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 3, 2 p. U.S. Dep. Agric. For. Serv., Tropical Forest Research Center, [now named Inst. of Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Note No. 3, entitled "Lifting pine seedling."

100. Briscoe, C. B.
1960. Lifting pine seedlings. U.S. Dep. Agric. For. Serv., Tropical Forest Notes No. 3, 2 p. U.S. Dep. Agric. For. Serv., Tropical Forest Research Center [now named Institute of Tropical Forestry], Río Piedras, P.R. [Discontinued Series].

Spanish version published as Apuntes Forestales Tropicales No. 3, entitled "Arranque o extracción de arbolitos de Pino."

101. Briscoe, C. B.
1961. Ensayos de plantación estadlsticamente válidos. Instituto de Dasonomfa Tropical (Inst. of Trop. For.), Río Piedras, P.R. Caribb. For. 22(3/4):64-68. [paper entitled "Statistically valid planting trials," presented at the second World Eucalyptus Conference, Brazil 1961].

102. Briscoe, C. B.
1962. Crecimiento en diámetro de los árboles en los cerros de la región caliza seca. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 12, 2 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomfa Tropical

(Inst. of Trop. For.), Río Piedras, P.R. [Discontinued series].

English version published as Trop. For. Note No. 12 entitled "Tree diameter growth in the dry limestone hills."

103. Briscoe, C. B.
1962. Early lifting of pine seedlings. U.S. Dep. Agric. For. Serv., Tropical Forest Notes No. 10, 2 p. U.S. Dep. Agric..For. Serv., Inst. of Trop. For. Serv., Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 10, entitled "Extracción adelantada de arbolitos de pino."

104. Briscoe, C. B.
1962. Extraccidn adelantada de arbolitos de Pino. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 10, 2 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomía Tropical [Inst. of Trop. For.], Río Piedras, P.R. [Discontinued series].

English'version published as Tropical Forestry Note No. 10, entitled "Early lifting of pine seedlings."

105. Briscoe, C. B.
1962. Medición del crecimiento de los drboles en los bosyues tropicales, Caribb. For. 23(1):15-20. [paper entitled "Measurement of tree growth in tropical forests," presented at the Tenth Pacific Science Congress, Hawaii, 19611.

106. Briscoe, C. B.
1962. Tree diameter growth in the dry limestone hills. U.S. Dep. Agric. For. Serv., Tropical Forest 'Note No. 12, 2 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 12, entitled "Crecimiento en diámetro de los drboles en los cerros de la región caliza seca."

107. Briscoe, C. B.
1965. Initial field testing for forest tree improvement. J. Oxford Univ. For. Soc. 5(13):16-21.

108. Briscoe, C. B.
1966. Minimizing experimental error in thinning research. Sixth World For. Cong., Madrid. 9 p.

109. Briscoe, C. B.
1966. Weather in the Luquillo Mountains of Puerto Rico. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-3, 250 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

From 1958 through 1962 the U.S. Army and the Forest Service recorded information on temperature, humidity, wind, light, and rainfall at 13 locations in and near the Luquillo Mountains of Puerto Rico. Selected aspects of the information collected are summarized in the 17 tables accompanying this paper.

110. Briscoe, C. B., and M. Chudnoff.
1964. Counting tree growth rings moderately difficult to distinguish. U.S. Dep. Agric. For. Serv., Res. Note ITF-1, 2 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

111. Briscoe, C. B., J.B. Harris, and D. Wyckoff.
1963. Variation of specific gravity in plantation-grown trees of bigleaf mahogany. Caribb. For. 24(2):67-74.

112. Briscoe, C. B., and F. B. Lamb.
1962. Leaf size in Swietenia. Caribb. For. 23(2):112-115.

113. Briscoe, C. B. y José Marrero.
1962. La repoblación forestal en las tierras arenosas de Puerto Rico. Rev. de Agr. de P.R., 49(1):129-136.

Reforestation in the sandy areas of Puerto Rico.

114. Briscoe, C. B., and R. W. Nobles.
1962. Crecimiento en altura de arbolitos de caoba. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 13, 2 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomfa Tropical (Inst. of Trop. For.), Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Note No. 13, entitled "Height growth of mahogany seedlings."

115. Briscoe, C. B., and R. W. Nobles.
1962. Height growth of mahogany seedlings. U.S. Dep. Agric. For. Serv., Tropical Forest Note No. 13. 2 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For.,. Río Piedras P.R. [Discontinued series] ,

Spanish version published as Apuntes Forestales Tropicales. No. 13, entitled "Crecimiento en altura de arbolitos de caoba."

116. Briscoe, C. B., and R. W. Nobles.
1966. Effects of pruning teak. U.S. Dep. Agric. For. Serv., Res. Note ITF-11, 6 p. U.S. Dep. Agric. For, Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

Teak plantations,, 8 to 10 years old, were pruned to improve log quality.

117. Briscoe, C. B., and J. A. Vozzo.
1963. The response of Honduras Pine to various photoperiods. Caribb. For. 24(1):53-55.

118. Briscoe, C. B., and F. H. Wadsworth.
1970. Stand structure and yield in the Tabonuco Forest of Puerto Rico. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-6, p. B 79-B 89. USAEC, Oak Ridge, Tn.

Permanent plots established in 1943 to study growth in the Tabonuco forest type in Puerto Rico'indicates that the relation of mortality to diameter at breast height for understory species is independent of the relation for canopy species.

119. Briscoe, C. B., and Raúl Ybarra-Coronado.
1971. Increasing growth of established teak. U.S. Dep. Agric. For. Serv., Res. Note ITF-13, 7 p. U.S. Dep. Agric. For. Serv., Inst. of Trop. For., Río Piedras, P.R. [Discontinued series].

Teak plantations, 3 to 16 years old, were thinned and fertilized in an effort to increase productivity.

120. Britton, N. L.
1906. Recent botanical exploration in Porto Rico. J. N.Y. Bot. Gard. 7:125-139, figs. 4-12.

Narrative of a collecting trip which included a visit to Culebra Island in 1906.

121. Britton, N. L.
1914. Botanical exploration in Porto Rico and islands adjacent. J. N.Y. Bot. Gard. 15:95-103, pl. 132-134.

Narrative of botanical collecting in 1914 on the mainland of Puerto Rico and on the islands Mona and Desecheo in the Mona Passage.

122. Britton, N. L.
1915. Further botanical exploration in Porto Rico. J. N.Y. Bot. Gard. 16:103-112.

Narrative of studies along the western and southern coasts of Puerto Rico and a visit to the island of Cayo Muertos.

123. Britton, N. L.
1915. The vegetation of Mona Island. Ann. Mo. Bot. Gard. 2:33-56, pl. 1, 2.

A description of Mona Island and a catalog of the species found there.

124. Britton, N. L.
1916. Unciescribed species from Porto Rico. Bull. Torr. Club 43:456-458.

Description of six tree species.

125. Britton, N. L.
1916. The vegetation of Anegada. Mem. N.Y. Bot. Gard. 6:565-580.

A description of this island and a catalog of species,

126. Britton, N. L.
1918. The flora of the American Virgin Islands. Brooklyn Bot. Gard. Mem. 1:19-118.

127. Britton, N. L.
1919. The scientific survey of Porto Rico and the Virgin Islands. J. N.Y. Bot. Gard. 20:220-221.

Record of the publication of Volume I, Part I of the Scientific Survey of Porto Rico and the Virgin Islands.

128. Britton, N. L.
1922. Botanical investigation in Porto Rico. J. N.Y. Bot. Gard. 23:49-59.

Narrative of collecting plants in many parts of the island.

129. Britton, N. L.
1923. Botanical exploration of Porto Rico and the Virgin Islands. J. N.Y. Bot. Gard. 24:93-99.

Narrative of collecting in parts of Puerto Rico and its island Cayo Icacos; on St. Thomas, and St. Croix in 1923.

130. Britton, N. L.
1923. Undescribed species from Porto Rico. Bull. Torr. Club 50:55-56.

A description of six tree species.

131. Britton, N. L.
1924. Descriptive flora of Porto Rico and the-virgin Islands. J. N.Y. Bot. Gard. 25:129-135.

Narrative of botanical and horticultural observations and collections on Puerto Rico and St. Thomas in 1924.

132. Britton, N. L.
1924. Undescribed species from Porto Rico. Bull. Torr. Club 51:10-12.

Descriptions of.seven tree species.

133. Britton, N. L.
1924. La vegetación de Cayo Icacos. Rev. de Agr. de P.R. 12:91-96.

Description of the small island, Cayo Icacos, and catalog of species found there.

134. Britton, N. L.
1925. Botany and horticulture of Porto Rico and the Virgin Islands. J. N.Y. Bot. Gard. 26:97-102.

Narrative of a collecting trip in Puerto Rico and St. Thomas in 1925.

135. Britton, N. L.
1925. El Plantel del Servicio Forestal de Puerto Rico. Rev. de Agr. de P.R. 14(2):83-84.

136. Britton, N. L.
1926, Further botanical investigation in Porto Rico. J. N.Y. Bot. Gard. 27:97-102.

Studies made in 1926, especially of plants introduced by the Forest Service and by the University of Puerto Rico Agricultural Experiment Station.

137. Britton, N. L.
1926. Tree-ferns in Porto Rico. J.N.Y. Bot. Gard. 27:88-90.

An account of the distribution of tree ferns in Puerto Rico.

138. Britton, N. L.
1926. An undescribed tree of Porto Rico. Bull. Torr. Club 53:471.

Description of Paralabatia portoricensis Britton & Wilson.

139. Britton, N. L.
1928. Forestry and agriculture in Porto Rico. J. N.Y. Bot. Gard. 29:101-104.

An account of the development of these subjects which includes studies of the plant collections at the Agricultural Experiment Station and the Forestry Station.

140. Britton, N. L.
1929. Further studies in Porto Rico. J. N.Y. Bot. Gard. 30:101-105.

A report on supplemental studies of native and introduced plants.

141. Britton, N. L.
1930. The native Cactaceae of Porto Rico and the Virgin Islands. J. Cactus & Succ. Soc. 1:226-231.

Discussion and descriptions of fifteen species of cacti, with references to the genus Consolea.

142. Britton, 'N. L.
1930. Scientific survey of Porto Rico and the Virgin Islands. J. N.Y. Bot. Gard. 31:161-167. [Also In Rev. de Obras Pub. de Puerto Rico 7:242-245].

The investigation and observations made from November 1929 to April 1930.

143. Britton, N. L., and Percy Wilson.
1924. Scientific Survey of Porto Rico and the Virgin Islands. Botany of Porto Rico and the Virgin Islands. v. 5, Part 1-4, 626 p. N.Y. Acad. Sci., New York.

Descriptions of orders, families , genera and species,. with keys, synonymy, and geographic distribution of the species, and their Spanish and English names. Perhaps the plant life of no other area of equal size in the world has been as adequately covered as the flora of Porto Rico has been in this work.

144. Britton, N. L., and Percy Wilson.
1925. Scientific Survey of Porto Rico and the Virgin Islands. Botany of Porto Rico and the Virgin Islands. Vol. 6, Parts l-4, 663 p. N.Y. Acad. Sci., New York.

Descriptions of orders, families, genera.and species, with keys, synonymy, and geographic distribution of the species, and their Spanish and English names . Perhaps the plant life of no other area of equal size in the world has been as adequately covered as the flora of Porto Rico has been in this work.

145. Broom, Ruth.
1945. Hace elogio del desarrollo forestal aquí en P.R. invitado a reunión de comité de la Comisión del Caribe. El Mundo [San Juan, P.R.], Nov. 2, 1945. p. 15.

Praise to the forestry development in Puerto Rico by a guest of the Committee of the Caribbean Commission.

146. Bruner, E. Murray.
1918. Report upon the preliminary examination of the timber and fuel resources of the Luquillo National Forest. U.S. For. Serv., Río Piedras, P.R. 20 p. [Unpublished].

147. Bruner, E. M. [Murray].
1919. Algunos de los problemas concernientes a la silvicultura en Puerto Rico. Rev. de Agr. de P.R. 2(5):12-16.

An article relating some of the problems concerning silviculture in Puerto Rico.

148. Bruner, E. Murray.
1919. El Bosque Nacional de Luquillo. Rev. de Agr. de P.R. 2(5):33-42.

Description of the Caribbean National Forest.

149. Bruner, E. Murray.
1919. Los manglares de Puerto Rico. Rev. de Agr. de P.R. 2(5):19-27.

The mangroves of Puerto Rico.

150. Bruner, E. Murray.
1920. La importancia de la silvicultura para los agricultores de Puerto Rico. Rev. de Agr. y Corn. [Puerto Rico] 5(3):19-24.

The importance of silviculture to the farmers of Puerto Rico.

151. Bruner, E. Murray.
1920. Programa del Servicio de Bosques. Rev. de Agr. de P.R. 4(1):39-44.

Program of the Forest Service.

152. Bruner, E. Murray.
1922. Informe de la situación de la silvicultura de Puerto Rico segtin ha sido requerido por el Comité Consultivo nombrado por la Junta de Comercio de los Estados Unidos. Rev. de Agr. de P.R. 8(6):33-38.

Report on the silvicultural situation in Puerto Rico as required by the Consultative Committee named by the U.S. Dep. of Comm.

153. Bruner, E. Murray.
1922. Timber resources of the Luquillo Mountains, including the Luquillo National Forest and adjoining privately owned lands. 20 p. U.S. For. Serv., Río Piedras, P.R. [Unpublished].

154. Brush, Virgil D.
1925. Condición de las plantaciones forestales en los bosques insulares de Maricao y Gubnica. Rev. de Agr. de P.R. 14(2):88-96.

Condition of the forest plantations of the insular forests of Maricao and Gubnica, Puerto Rico.

155. Brush, Virgil D.
1925. Progreso y desenvolvimiento del Plantel del Servicio Forestal Insular. Rev. de Agr. de P.R. 14(2):113-131.

The progress and development of the insular Forest Service in Puerto Rico.

156. Brush, V.[Virgil] D., and Louis S. Murray.
1916. Trees of Puerto Rico Appendix I, Bull. 354, p. 56-97. U.S. Dep. of Agric., Washington, D.C.

157. Brush, W. [Warren] D.
1938. Lignumvitae (Guajacum spp.) U.S. 14 p. Dep. Agric. For. Serv., Inf. Lflt. U.S. Gov. Print. Off., Washington, D.C.

158. Brush, W. [Warren] D.
1945. Balsa (Ochroma lagopus Sw) U.S. 14 p. Dep. Agric. For. Serv., Inf. Lflt. U.S. Gov. Print. Off., Washington, D.C.

159. Budowski, Gerardo.
1956. Regeneration systems in tropical American lowlands. Caribb. For. 17(3/4):76-91.

Spanish Translation In Boletín de la Sociedad Dasonómica de la América Tropical. Número Especial (La Habana, Cuba, julio 1956), passúm.

160. Budowski, Gerardo.
1956. Tropical savannas, a sequence of forest felling and repeated burning. Turrialba 6(1/2):23-33.

161. Buell, Peter F., and Pierre Dansereau.
1966. Analysis and mapping of the Roosevelt Roads area. Part II, p. 47-287. In Studies of the vegetation of Puerto Rico. Special Publ. No. 1 Univ. of P.R., Inst. Caribb. Sci., Mayaguez, P.R.

162. Buol, S. W., ed.
1973. Soils of-the Southern States and Puerto Rico. Southern Cooperative Series Bull. No. 174. A joint regional publication including appendices and map by the Agricultural Experiment Stations of the Southern States and P.R. Land Grant Universities with cooperative assistance by the SCS of the U.S. Dep. Agric.

163. Burkholder, P. R., and L. M. Burkholder.
1958. Studies on B vitamins in relation to productivity of the Bahia Fosforescente, Puerto Rico. Bull. Mar. Sci. Gulf and Caribb. 8:201-223.

164. Byer, Michael D. and Peter L. Weaver.
1977. Early secondary succession in an Elfin Woodland in the Luquillo Mountains of Puerto Rico. Biotrópica 9(1):35-47.

165. Cabrera, Alba Raquel, and Maggie Bobb.
1978. Medicos piden E.U. detenga siembra. Asoc. ve suicidio ecológico reforestación Pino Hondureño. El Mundo [San Juan, P.R.], Apr. 11, 1978. p. 15-A.

In this article, medical doctors of the island ask the U.S. qovernment to stop planting the Honduras pine as they claim it affects the ecology in a harmful way.

166. Calvesbert, R.[Robert] J.
1967. Climatology of meterological drought in Puerto Rico. In B. Floy, ed., proceedings of a conference on 'climatology and related fields in the Caribbean. p. 42-56. Univ. of the West Indies, Mona, and Jamaica.

167. Calvesbert, R.[Robert] J.
1970. Climate of Puerto Rico and U.S. Virgin Islands. Climatography of the U.S. No. 60-52, Climates of the States. 29 p. U.S. Dep. Comm., Washington, D.C.

168. Calvesbert, Robert J.
1973. The climate of Mona Island. In Mona and Monito Islands: an assessment of their natural and historical resources. V. II, App. A, p. A-l - A-11. Junta de Calidad Ambiental [Environ. Qual. Bd.] San Juan, P.R.

169. Campbell, D. S.
1947. The geography of the coffee industry of Puerto Rico. Ph.D. thesis. Dep. of Geog., Univ. of Chicago.

170. Candelas, G., G. Cintrón, and M. Díaz-Piferrer.
1967. Estudio ecológico de la Laguna Grande y el drea que la circunda. (Manuscript) Dep. of Biol., Río Piedras Campus, Univ. of Puerto Rico.

Ecological study of the Laguna Grande in Puerto Rico and the surrounding area.

171. Candelas, G., J. L. Suárez, and J. M. Valles.
1971. Estudio ecológico del manglar entre Río Mameyes y Punta Percha (Puerto Rico). Report for the Palmer Development Corp., Puerto Rico.

Ecological study of the mangroves between Río Mameyes and Punta Percha, Puerto Rico.

172. Canoy, Michael J.
1970. Deoxyribonucleic acid in rain forest leaves. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T, Odum and Robert F. Pigeon, eds.. Ch. G-6, p. G 69 - G 70. USAEC, Oak Ridge, Tn.

A study of DNA in the montane rain forest at El Verde, Puerto Rico used the Schmidt-Thannhauser extraction technique and Burton's modification of the Dische diphenylamine reaction.

173. Canoy, M.[Michael].
1974. Diversity and stability in a Puerto Rican Rhizophora mangle L. forest. In Proceedings of international Symposium on Biology and Management of Mangroves, Part I. Inst. Food and Agric. Sci., Univ. of Fla. Gainsville.

174. Caribbean National Forest, Forest Service, USDA.
[n.d.]. La Higuaca. Puerto Rico's endangered parrot. 4 p. U.S. Dep. Agric. For. Serv., Caribb. National For., Río Piedras, P.R. (also in Spanish: "La Higuaca. Cotorra Puertorriquefia en peligro de extinción.").

175. Caribbean National Forest, Forest Service, USDA.
1941. The Caribbean National Forest in Puerto Rico. Rev. de Agr. de P.R. 33(2):301-312.

176. Carlozzi, Carl A., and Alice A. Carlozzi.
1969. Conservation and Caribbean Regional progress. Review in J. For. 67(4):262.

177. Carrera, C., and A. E. Lugo.
1978. Los sistemas de mangles de Puerto Rico. Programa de la zona costanera, Depto. de Rec. Nat., San Juan, P.R. 102 p., 3 app., 32 figs., 17 tbls., 179 refs.

178. Carroll, Henry King.
1899. Report on the island of Porto Rico, its population, government, commerce, industries, productions, roads, tariff, and currency, with recommendation. 813 p. U.S. Treas. Dep., Doc. 2118, U.S. Gov. Print. Off., Washington, D.C.

179. Carter, Oliver R.
1965. Soil survey of the Lajas Valley Area, Puerto Rico. Río Piedras, Univ. of P.R. Agric. Exp. Stn., P.R.

180. Centro de Investigaciones Forestales Tropicales [Tropical Forest Research Center, now named Institute of Tropical Forestry].
1959. Labor forestal en Puerto Rico. Boletín Forestal. 4 p. For. Serv., U.S. Dep. Agric. Río Piedras, P.R.

The development of forestry in Puerto Rico by the Division of Forests, Fish and Wildlife of the P.R. Dep. Agric. and Comm., and the Inst. Trop. For., For. Serv., USDA.

181. Cerame-Vivas, Máximo [J].
1970. Desaparece manglar, arrecife. El Mundo [San Juan, P.R.], June 13, 1970, p. 10-B

The disappearance of the mangroves in the reefs of Puerto Rico.

182. Cerame-Vivas, M.[Máximo] J., Inc.
1974. Mangroves of Puerto Rico. P.F.Z. Properties, Inc., San Juan, P.R. 61 p.

The P.F.Z. Properties, Inc., in its plans to develop the Vacía Talega-Pinones-Torrecilla area in Puerto Rico, hired an environmental consulting firm to advise the company of the existing ecosystems'in the area. The report was published and includes many color photos, an appendix listing the algae, vegetation, invertebrates, fishes, herpetology, birds, and mammals, and a reference list.

183. Chalmers, W. S.
1958. Observations on some Caribbean forests. Caribb. For. 19(1/2):30-42.

184. Chapman, V. J.
1962. Respiration studies of mangrove seedlings, II. Respiration in air. Bull. Mar. Sci. Gulf and Caribb. 12:245-263.

185. Chudnoff, M.
1967. Post incising machine design. For. Prod. J. 17:33-34.

186. Chudnoff, M.
1969. Research needs. In Proc. of Conference on Tropical Hardwoods at State Univ., Coil. of For. at Syracuse Univ., Syracuse, N.Y., Aug. 18-21, 1969. State Univ., Coll. of For. at Syracuse Univ., Syracuse, N.Y.,. p. 10-l - 10-10.

187. Chudnoff, M.
1970. Water assay for treatability of wood. For. Prod; J. 20(9):103-107.

188. Chudnoff, M., R. S. Boone, and E. Goytía.
1967. Preservative treatments and service life of fence posts in Puerto Rico. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-4, 33p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Thia initial all-inclusive report on low investment non-pressure wood preservations techniques describes in detail the materials and treatment methods used, the chemical retentions, and soil and climate at each plot. It also reviews the condition of the posts up through a September 1963 inspection.

189. Chudnoff, M., R. S. Boone, and E. Goytía.
1969. Preservative treatments and service life of fence posts in P.R. (Progress Report). U.S. Dep. Agric. For. Serv., Res. Pap. ITF-10, 30p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Third comprehensive progress report on low investment non-pressure wood preservation techniques for fence posts. About 6,700 treated and non-treated control posts representing some 70 species are under study.

190. Chudnoff, M., and T. F. Geary.
1973. On the heritability of wood density in Swietenia macrophylla. Turrialba 23(3):359-362.

191. Chudnoff, M., and T. F. Geary.
1973. Terminal shoot elongation and cambial growth rhythm in Pinus caribaea. Commonw. For. Rev. 52(4), No. 154:317-324.

192. Chudnoff, M., and E. Goytía.
1967. Dimensional stabilization of tropical hardwoods with polyethylene glycol. Turrialba 17

193. Chudnoff, M., and E. Goytla.
1967. The effect of incising on drying, treatability, and bending strength of posts. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-5, 20p. U.S. Dep. Agric. Inst. Trop. For., Río Piedras, P.R. [Discontinued series]

A brief description of a commercially feasible post incising machine is given, Groundline incising together with a single universal hot-and-cold bath schedule was tested as a practical method of treating batches of mixed species.

194. Chudnoff, M., and E. Goytía.
1967. Spindle carving of tropical hardwoods. Turrialba 17(4):430-435.

195. Chudnoff, M., and E. Goytía.
1971. Treatability of Puerto Rican woods. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-11, 8p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

A simple but highly sensitive wafer assay was used to classify the treatability of the more common woods of Puerto Rico and the Virgin Islands. Sapwood only was tested to reflect the large number of small diameter trees available for posts and short poles.

196. Chudnoff, M., and E. Goytía.
1972. Preservative treatments and service life of fence posts in P.R. (1972 Progress Report). U.S. Dep. Agric. For. Serv., Res. Pap. ITF-12, 28p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

This fourth comprehensive progress report on low investment non-pressure wood preservation techniques describes in detail the materials and treatment methods used, the chemical retentions, and soil and climate at each-plot. It also reviews the condition of the posts-through the April 1972 inspection. Most of the posts have been in service for 13 years and some tentative as well as final conclusions are made.

197. Chudnoff, M., E. D. Maldonado, and E. Goytía.
1966. Secado de maderas latifoliadas tropicales en secadora solar. [For. Serv., Inst. Trop. For. Res. Pap. ITF-2 entitled: "Solar drying of tropical hardwoods."] Bull. 23, p. 43-64. Instituto Forestal Latino-americano de Investigación y Capacitación, 1967, Mérida, Venezuela.

Solar and air drying time of seven charges of Honduras mahogany of varying thicknesses and one mixed charge of 11 hardwoods species has been determined.

198. Chudnoff, M., and R. Wawriew.
1969. Effectiveness of groundline treatments of creosoted pine poles under tropical exposure, an interim report. Turrialba' 19(1):117-125.

Second interim report, 1970. Comunicaciones, Turrialba 20(3):367-368.

199. Chudnoff, Martin.
1971. Void volume wood: an any tree-whole tree use concept. For. Prod. J. 22(6):49-53.

200. Cintrón, B., J. González-Liboy, and A. E. Lugo.
1976. Floristic composition of the Guánica Forest with respect to litter production, p. 191-216. In E. Cardona (ed.). Segundo Simp. del Depto. de Rec. Nat., San Juan, P.R.

201. Cintrón, Gilberto.
1970. Niche separation of tree frogs in the Luquillo Forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-3, p. E 51 - E 53. USAEC, Oak Ridge, Tn.

Local distribution of tree frogs was studied in the vegetation of the Luquillo Forest at two stations. Examinations of stomach contents suggests that their food includes predominantly beetles and ants.

202. Cintrón, Gilberto.
1970. Variation in size and frequency of stomata with altitude in the Luquillo Mountains. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-9, p. H 133 - H 135. USAEC, Oak Ridge, Tn.

Measurements of stomata1 numbers and sized were made in leaves of the Luquillo Forest. Larger sized stomata and larger numbers of stomata were found in spedies inhabiting higher altitudes where the air remains close to saturation.

203. Cintrón, G. [Gilberto], A. Lugo, D. Pool, and G. Morris.
1977. Los manglares de las costas áridas de Puerto Rico e islas adyacentes. Memorias del II Simp. Latino-americano sobre Oceanografía Biológica 2:137-150. Univ. de Oriente, Cumaná, Venezuela.

204. Cintrón, Gilberto, Ariel Lugo, Douglas J. Pool, and Greg Morris.
1978. Mangroves of arid environments in Puerto Rico and adjacent islands. Biotropica 10(2):110-121.

205. Cintrón, José R.
1946. Problemas forestales. El Mundo [San Juan, P.R.], Dec. 1, 1946. p. 9.

Forestry problems in Puerto Rico.

206. Cintrón, José R.
1961. El Guayacdn: árbol maderable y ornamental. El Mundo [San Juan, P.R.], Dec. 25, 1961. p. 11

Lignumvitae: timber and ornamental tree.

207. Cintrón, José R.
1964. Arboles maderables y de sombra: la Jacana. El Mundo [San Juan, P.R.], May 11, 1964. p. 11.

The Jacana: a timber and shade tree.

208. Cintrón, Molero G.
1972. Storm damage and recovery in Puerto Rican mangrove swamp. Environmental Quality Board. Santurce, P.R.

209. Clark, H. L.
1943. A handbook of the littoral echinoderms of Porto Rico and the other West Indian Islands. Scientific Survey of Porto Rico and the Virgin Islands 16(1):1-147.

210. Clark, Víctor Seldom, and others.
1930. Porto Rico and its problems. p. 707. Brookings Inst., Washington, D.C.

211. Clegg, Albert G.
1963. Rainfall interception in a tropical forest. Caribb. For. 24(2):75-79.

212. Clements, Richard G., and José A. Colón.
1975. The rainfall interception process and mineral cycling in a montane rain forest in eastern Puerto Rico. In Mineral cycline in southeastern ecosystems, Proc. of a symposium at Augusta, Ga., May l-3, 1974, sponsored by Savannah River Ecology Lab., Inst. of Ecology, U. of Ga., and Div. of Biomedical and Env. Res., U.S. Atomic Energy Comm. Fred G. Howell, John B. Gentry, and Michael H. Smith, eds. p. 813-823. U.S. Energy Res. and Dev. Adm.

A comprehensive interception study was carried out in a montane rain forest in eastern Puerto Rico. Results indicate that the factors of intensity, duration, and overall distribution of storms by storm size must be taken into consideration when determining the fate of isotopes that reach the forest via rainfall.

213. Clements, Richard G., George E.'Drewry, and Robert J. Lavigne.
1970. The Rain Forest Project Annual Report. USAEC Report PRNG-147. 142 p. Puerto Rico Nuclear Center, Univ. of P.R., Río Piedras, P.R.

The findings of two new objectives of a seven-year Terrestrial Ecology Program are discussed: the effects of gamma radiation on a tropical forest ecosystem and the measurement of fall-out nuclides in the rain forest system.

214. Clifford, G.
1625. The voyage to Saint John de Porto rico, Purchas, His Pilgrims. Book 6, Part 4, p. 1150-1154. London.

215. Coleman, David C.
1970. Nematodes in the litter and soil of El Verde rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard. T. Odum and Robert F. Pigeon, eds. Ch. E-7, p. E 103 - E 104. USAEC, Oak Ridge, Tn.

Samples of litter and soil from the Puerto Rican rain forest were censused for nematodes in the Radiation, Control, and Cut Centers. Reasons for a marked decrease and for the extent of its duration throughout the year are unknown.

216. Coll y Toste, Cayetano.
1907. Prehistoria de Puerto Rico. San Juan, P.R., Tip. Boletín Mercantil. 298 p.

217. Coll y Toste, Cayetano.
1914. La propiedad territorial en Puerto Rico. Bol. Hist. de P.R. 1:239-310.

218. Coll y Toste, Cayetano.
1923. Historia de Puerto Rico, octava conferencia. Bol. Hist. de P.R. 10:169-180.

219. Coll y Toste, Cayetano.
1922-23. Mina de Luquillo. (del Archivo de Coll y Toste). Bol. Hist. de P.R. 9/10:27-32.

220. Colón, E. D.
1930. Datos sobre la agricultura de Puerto Rico antes. de 1898. Information on agriculture in Puerto Rico before 1898. San Juan, P.R. Tip. Cantero, Fernández & Co., Inc. 302 p.

221. Comisión Angloamericana del Caribe.
1944. Recomendaciones de la delegación de conservación de suelos, aguas y bosques en la cuarta sesión de la Comisión Angloamericana del Caribe. (Compendio de las providencias tomadas en la cuarta sesión de la Comisión Angloamericana del Caribe efectuada del 17 al 21 de agosto de 1943, en la ciudad de Carlota Amalia, en Santo Tomds, Islas Vírgenes). Caribb. For. 5(3):101-107.

Recommendations made by the delegation of soil, water, and forest conservation in the fourth session of the Angloamerican Commission of the Caribbean.

222. Cornstock, W. P.
1944. Insects of Porto Rico and the Virgin Islands. Lepidoptera. In Scientific Survey of Porto Rico and the Virgin Islands 12(4):421-622, N.Y. Acad. of Sci., New York.

223. Cook, M.[Melville] T., and H.[Henry] A.[Allan] Gleason.
1927. Plant ecology of Puerto Rico. In Scientific Survey of Puerto Rico and the Virgin Islands 7(1). 238 p., '88 pl. N.Y. Acad. of Sci., New York.

224. Cook, Melville T., and Henry Allan Gleason.
1928. Ecological survey of the flora of Puerto Rico. J. Dep. Agric. P.R. 12(1/2):3-139; 75 pl.

225. Cook, 0. F.
1901. A synopsis of the palms of Porto Rico. Bull. Torr. Bot. Club 28:525-569.

'226. Cook, 0. F., and G. N. Collins.
1903. Economic plants of Porto Rico. Contr. U.S. Nat. Herb. 8(1/6):57-269, pl. XIII-LX.

Introduction and list of economic plants, alphabetically arranged with notes and descriptions.

227. Córdova, J. P.
1946. Problemas sobre la erosión y uso de terreno más arriba de las represas de Dos Bocas y Caonillas. Rev. de Agr. de P.R. 37:251-259.

Problems of the erosion and use of the land above the Dos Bocas and Caonillas Dams.

228. Córdova, Juan P.
1949. ¿Qué clase de tierra se adapta al cultivo forestal?
la. Punto de vista del Servicio de Conservación de Suelos. En Los cursos de adiestramiento. Caribb. For. 10(4):277-280.

229. Córdova, Juan P.
1949. What kind of land is 'adapted to trees?
la. Point view of the Soil Conservation Service. In A farm forestry training program. Caribb. For. 10(4):239-242.

230. Córdova, Pedro Tomás de.
1831-33. Memorias geográficas, históricas, económicas y estadlsticas de la isla de Puerto Rico. San Juan; en la oficina del gobierno, a cargo de D. Valeriano de Sanmilldn. 6 vols.

Geographical, historical, economical, and statistical records of the island of Puerto Rico.

231. Córdova, Pedro Tomds de.
1838. Memoria sobre todos los ramas de la administración de la Isla de Puerto Rico. Madrid, Impresa de Yemes. 348

Records of all branches of the administration of the Island of Puerto Rico

232. Coufal, J. E.
1962. Dry matter weight and a root-shoot-leaf ratio for a selected plot and tree in a Puerto Rican Rain Forest. Student report, State Univ. of N.Y. at Syracuse and U.S Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

233. Cowley, G. T.
1970. Effect of radiation on the Microfungal populations of six litter species in the Luquillo Experimental Forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-4, p. F 25 - F 28. USAEC, Oak Ridge, Tn.

234. Cowley, G. T.
1970. Fleshy fungi in relation to irradiation and cutting in the Luquillo Experimental Forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-1, p. F 9 - F 13. USAEC, Oak Ridge, Tn.

In July and August of 1964, surveys of fleshy fungi were made within a 30-m radius in the Radiation and South Control Centers. It is suggested that the changes in fungi populations were due to increased exposure and to the,differences in available substrate rather than to direct effects of radiation.

235. Cowley, G. T.
1970. Vertical study of microfungal populations on leaves of Dacryodes excelsa and Manilkara bidentata. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-7, p. F 41 - F 42. USAEC, Oak Ridge, Tn.

Population numbers of microfungi on leaf samples of two principal tree species were variable, but there were detectable differences in the species composition of the microbial community according to substrate tree and height.

236. Crawford, G. L.
1941. Programa de conservación de suelo en Puerto Rico. In USDA Soil Conservation Service. Métodos modernos para conservación de suelos en Puerto Rico. Washington, D.C.

237. Crow, T. R.
1978. Common regressions to estimate tree biomass in tropical stands. Forest Science 24(1):110-114.

Regression analysis is often used to estimate tree biomass as a function of tree dimension, but most regressions are developed for a specific species and site. Broader applications may be valid in some cases. These results suggest that common regressions also exist for estimating aboveground biomass and total tree biomass.

238. Crow, T. R., and P. L. Weaver.
1977. Tree growth in a moist tropical forest of Puerto Rico. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-22, 17 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Measurements taken in 1957' and again in 1975 indicate slow rates of diameter growth for trees in a moist tropical forest of Puerto Rico.

239. Crum, H. A., and W. C. Steere.
1957. The mosses of Porto Rico and the Virgin Islands. In Scientific Survey of Porto Rico and the Virgin Islands 7(4):395-599. N.Y. Acad. of Sci., New York.

240. Curet Cuevas, Eliezer.
1976. El desarrollo económico de Puerto Rico: 1940-1972. Puerto Rico Management Aid Center, Inc., San Juan.

The economic development of Puerto Rico: 1940-1972.

241. Curran, C. H.
1928. Insects of Porto Rico and the Virgin Islands, Diptera. In Scientific Survey of Porto Rico and the Virgin Islands 11(1):1-118. N.Y. Acad. of Sci., New York.

242. Danforth, S. T.
1926. An ecological study of the Cartagena Lagoon, Puerto Rico, with special references to birds. J. Agric, of UPR 23(1). 136 p.

243. Danforth, S. T.
1931. Puerto Rican ornithological records. J. Agric. of UPR 15(1):33-106.

244. Danforth, S. T.
1935. Supplementary account of the birds of the Virgin Islands, including Culebra and adjacent islands pertaining to Puerto Rico, with notes on their food habits. J. Agric. of UPR 19(4):439-473.

245. Danforth, S. T.
1936. Los pdjaros de Puerto Rico. 198 p. Chicago., Rand McNally & Company.

The birds of Puerto Rico.

246. Danforfh, S. T.
1937. Ornithological investigations in Vieques Island, Puerto Rico, during December. J. Agric. of UPR 21(4):539-550.

247. Dansereau, Pierre.
1968. Cartographie des structures de vegetation à Porto Rico.
p. 423-4. Unesco, Paris.

Mapping vegetation types in Puerto Rico. In Aerial surveys and integrated studies: Proc. of the Toulouse Conf. (F.7 refs. from abstr.in Geogr. Abstr. 1970 2B, (395) O.R.S.) Eight vegetation types have been mapped from aerial photos, including lowland rain forest,seasonal evergreen forest, hill scrub, semi-deciduous forest, lower montane rain forest, and montane scrub.

248. Dansereau, Pierre, and Peter F. Buell.
1966. Studies on the vegetation of Puerto Rico. I. Description and integration of the plant communities. II. Analysis and mapping of the Roosevelt Roads area. Spec. Pub. No. 1. 287 p. Univ. of P.R., Inst. of Caribb. Sci., Mayaguez, P.R.

249. Darwin, W. N.
1961. Peladora de postes de cadena ajustada. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales, No. 8, 5 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomía Tropical. [Inst. Trop. For.] Río Piedras, P.R. [Discontinued series].

English version entitled "A Tight Chain Post Peeler", was originally written in January 1950 by W. N. Darwin, Chief of the Section of Forest Utilization, Div. of For. Relations of the Tennessee Valley Authority.

250. Dawkins, H. C.
1961. Estimating total volume of some Caribbean trees. Caribb. For. 22:62-63.

251. D'Axey, W. G.
1'967. Annotated check list of the dicotyledons of Tortola, Virgin Islands. Rhodora 69:385-450, map.

252. De Golía, Darwin, Paul.
1932. Porto Rico, what it produces and what it buys. U.S. Bur. For. and Dom.Comm. Trade Inf. Bull. 785. 61 p. U.S. Gov. Print. Off., Washington, D.C.

253. De León, Donald.
1941. Some observations on forest entomology in Puerto Rico. Caribb. For. 2(4):160-163.

254. Descartes, S. L.
1946. Historical account of recent land reform in Puerto Rico. In Caribb. Res. Counc., Caribb. Comm., Caribb. Land Tenure Symp. Proc. Port of Spain, Trinidad, B.W.I.

255. Desmarais, A. Paul, and Billy T. Helmuth.
1970. Effects of 137 Cs radiation on vegetation structure and optical density at El Verde. In A tropical rain forest: a study of irradiationand ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-2, p. D 77- D 102. USAEC, Oak Ridge, Tn.

The vegetation physiognomies of two centers in the El Verde rain forest were described in 1964. A second description of the Radiation Center was made after it had been exposed to radiation. Significant changes were detected in both vegetation physiognomy and optical density out to a distance of about 12 m from the center of the radiation site.

256. Desmarais, A. Paul, and Alfonso Vázquez.
1970. Upper canopy crown closure at El Verde. In A tropical rain forest: a study of irradiationand ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-10, p. B 123 - B 133. USAEC, Oak Ridge, Tn.

Coverage of tree crowns (canopy closure) was studied along with other basic structural attributes of the El Verde sites.

257. Díaz-Piferrer, M.
1967. The effects of an oil spill on the shore of Gudnica, P.R. Assoc. Island Mar. Labs. (fourth meeting) p. 12-13.

258. Dickinson, F. E., R. W. Hess, and F. F. Wangaard.
1949. Properties and uses of tropical woods, I. Trop. Woods 95. 145 p.

Includes tests of the following Puerto Rican woods: Buchenavia capitata, Hymenaea courbaril, Manilkara bidentata, and Tetragastris balsamifera.

,259. Dienes, G. J.
1970. A kinetic model of radiation response to field irradiation. In A tropical rain forest: a study of irradiation-&d ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. C-5, p. C 49 - C 52. USAEC, Oak Ridge, Tn.

A kinetic model of radiation response was used to compute the area1 distribution of radiation damage around a field radiation source. Biological components with faster repair rates were found to survive several times greater dosages. Curves predicted for survival vs. distance from the source have a similar and characteristic shape, being displaced toward the radiation source when recovery processes are rapid.

260. Dinwiddie, W.
1899. Puerto Rico, its conditions and possibilities. Harper & Bros., New York.

261. Doerr, A. H.
1952. Environment and economic activities in Southwestern Puerto Rico. In The Rural Land Classification Program of Puerto Rico. P. 163-191. (Northwest. Univ. Studies in Geog., No. 1), The William and Marian Haas Res. Fund, Evanston, Ill.

262. Domenech, M. V.
1899. Porto Rico, her mineral resources, their value and extent, and the reasons why they are not more developed. Mines and Miner. 19:529-532.

263. Dowler, C. C., W. Forestier, and F. H. Tschirley.
1967. Effect and persistance of herbicides applied to soil in Puerto Rican forests. Weed Sci. 16:45-50.

264. Dowler, C. C., and F. H. Tschirley.
1970. Effects of herbicides on a Puerto Rican rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-19, p. B 315 - B 323. USAEC, Oak Ridge, Tn.

Herbicides were applied to the soil and to the foliage in the Luquillo National Forest in Puerto Rico. Teak and mahogany planted in treated plots several months after treatment showed no herbicidal effect, which indicates that only a small amount of the herbicide reached the forest floor.

265. Dowler, C. C., F. H. Tschirley, R. W. Bovey, and H. L. Morton.
1970. Effect of the aerially-applied herbicides on Texas and Puerto Rico Forests. Weed Sci. 18(1):164-168.

Cites effects of 2,4-D, 2,4,5-T, Picloram and Paraquet dosages with relation to climate in Texas and Puerto Rico.

266. Drewry, George.
1970. Factors affecting activity of rain forest frog populations as measured by electrical recording of sound pressure levels. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-4, p. E 55 - E 68. USAEC, Oak Ridge, Tn.

As part of the instrumentation of the Puerto Rico Nuclear Center, a device was designed and assembled to record, from several locations within the forest, a 3-min integral of the fluctuating sound pressure level. The unfiltered machine was used to document changes in forest sound during and after a period of strong gamma irradiation and did detect differences attributable to radiation effects.

267. Drewry, George E.
1970. A list of insects from El Verde, Puerto Rico. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-10, p. E 129 -E 150. USAEC, Oak Ridge, Tn.

Twelve hundred species of insects were collected at the El Verde study area from 1963 to 1967. The species that have been identified are listed according to taxonomic groupings.

268. Duke, James A.
1970. Keys for the identification of seedlings of some prominent woody species in eight forest types in Puerto Rico. In A tropicql rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-15, p. B 239 -B 274. USAEC, Oak Ridge, Tn.

269. Duke, James A.
1970. Postirradiation woody seedlings. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-8, p. D 189 - D 192. USAEC, Oak Ridge, Tn.

A survey of seedlings was made of the El Verde study areas after the Radiation Center had been irradiated. Tabebuia heterophylla seedlings were dominant because a nearby parent tree had flowered during irradiation.

270, Duplaquet, L.
1960. Le Centre Tropical de Recherches Forestieres de Río Piedras, à Porto Rico. Tropical Forest Experiment Station, [now named Inst. of Trop. For.], Río Piedras, P.R. Rev. For. Franc. 12(7):445-7, 3 photos, 1 sketch map.

This is an account of the forests, research done and in progress, and the future program, based on a visit by the author.

271. Durland, W. D.
1924. Sivicultura (Puerto Rico). Rev. de Agr. de P.R. 12(3):159-163.

272. Durland, W. D.
1924. El desarrollo de la silvicultura (Puerto Rico) Rev. de Agr. de P.R. 12(5):335-339.

The development of silviculture in Puerto Rico is discussed.

273. Durland, W. D.
1925. Status of forestry in Puerto Rico. J. For. 23:913-918.

274. Durland, William D.
1929. Forest regeneration in Puerto Rico. Econ. Geog. 5(4):369-381.

275. Edmisten, Joe.
1970. Preliminary studies of the nitrogen budget of a tropical rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-21, p. H 211 - H 215. USAEC, Oak Ridge, Tn.

A mineral-cycle diagram comprising new measurements of nitrogen fixation, rain inflows, and waters percolating in soil for nitrogen at El Verde summarizes data to date and serves as a hypothesis for further study.

276. Edmisten, Joe.
1970. Soil studies in the El Verde rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-3, p. H 79 - H 87. USAEC, Oak Ridge, Tn.

Several physical and chemical properties of tropical rain forest soils at El Verde, Puerto Rico, were investigated before and after treatments with gamma radiation and after mechanical defoliation of the vegetation.

277. Edmisten, Joe.
1970. Some autecological studies of. Ormosia krugii. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-17, p. B 291 - B 298, USAEC, Oak Ridge, Tn.

Five experiments were done with seedlings of Ormosia krugii. Stem growth, leaf fall, and innate voltage of the seedlings were monitored for one month, after treatment for indications of radiation damage.

278. Edmisten Joe.
1970. Studies of Phytolacca icosandra. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-7, p. D 183 - D 188. USAEC, Oak Ridge, Tn.

Experiments were performed on Phytolacca icosandra, a roadside weed of Puerto Rico, to clarify the mechanisms responsible for the transport and germination of Phytolacca seeds. These studies support the theory of dispersal of seeds by birds.

279. Edmisten, Joe.
1970. Survey of Mycorrhiza and nodules in the El Verde Forest; In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-2. p. F 15 - F 20. USAEC, Oak Ridge, Tn.

Thirty-two species of rain forest dominants were surveyed for mycorrhiza. It is suggested that these fungus-root association5 act as nutrient traps; especially for anions.

280. Edmondson, Charles Howard.
1949. Reacción de maderas de América del Sur y del área del Caribe al ataque de taladradores marinos en aguas hawaiianas, Caribb. For. 10(1):41-42.

English version, Caribb For. 10(1):37-41.

281. Edmondson, Charles Howard.
1949. Reactions of woods from South America and Caribbean Areas to marine borers in Hawaiian waters. Caribb. For. 10(1):37-41.

Spanish version, Caribb. For. 10(1):41-42.

282. Eggers, H. F. A.
1876. St. Croix's flora. Vid. Medd. Kjovenhavn, p. 33-158, pl. 2.

Annotated catalog of species, based mainly on collection by the author, 1869-1874.

283. Eggers, H. F. A.
1879: The flora of St. Croix and the Virgin Islands. U.S. Natl. Mus. Bull. 13. 133 p.

284. Eggers, H. F. A.
1882. Die Poyales des oestlichen Porto Rico. Bot. Centr. 11:331-332.

Account of the Ptercarpus swamps, palo de pollo, of Puerto Rico.

285. Eggers, H. F. A.
1883. Porto Rico. Description of the vegetation of the Luquillo Mountains. Nature 29:129-130.

286. Enamorado-Cuesta, José.
1929. Porto Rico, past and present. 170 p. Eureka Print. Co., New York.

287. Englerth, George H.
[n.d.] Forest utilization in Puerto Rico: a problem analysis. 25 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Rio Piedras, P.R.

288. Englerth, George H.
1959. Air drying conditions for lumber in the San Juan Area, Puerto Rico. U.S. Dep. Agric. For. Serv., Trop. For. Notes No. 1, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 1, entitled "Condiciones para el secado al aire de la madera en el área de San Juan, Puerto Rico."

289. Englerth; George H.
1959. Condiciones para el secado al aire de la madera en el área de San Juan, Puerto Rico. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 1, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Note No. 1, entitled "Air drying conditions for lumber in the San Juan Area, Puerto Rico."

290. Englerth, George H.
1960. Durabilidad de postes sin tratar para cercas después de un año de prueba en Puerto Rico. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 5, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Notes No. 5, entitled "The service life on untreated posts in Puerto Rico after one year in test."

291. Englerth, George H.
1960. The service life of untreated posts in Puerto Rico after one year in test. U.S. Dep. Agric. For. Serv., Trop. For. Notes No. 5, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 5, entitled "Durabilidad de postes sin tratar para cercas después de un año de prueba en Puerto Rico."

292. Englerth, George H., and Ernesto Goytía Olmedo.
1960. Preservation of Puerto Rican fence posts treated by cold soaking and the hot-and-cold bath method. U.S. Dep. Agric. For. Serv., Trop. For. Notes No. 2, 4 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 2, entitled "Preservación de las maderas de Puerto Rico usadas para postes de cercas por los métodos de remojo frío y de baño caliente y frío."

293. Englerth, George H., and Ernest0 Goytía Olmedo.
1960. Preservacidn de las maderas de Puerto Rico usadas para postes de cercas por los métodos de remojo frío y de baño caliente y frío. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No 2, 4 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Note No. 2, entitled "Preservation of Puerto Rican fence posts treated by cold soaking and the hot-and-cold bath method."

294. Englerth, George H., and Edwin Maldonado.
1961. Bamboo for fence posts. U.S. Dep.'Agric. For. Serv., Trop. For. Note No. 6, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No: 6, entitled "Bambú para postes de cercas."

295. Englerth, George H., and Edwin Maldonado.
1961. Bambú para postes de cercas. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 6, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Center [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Note No. 6, entitled "Bamboo for fence posts."

296. Englerth, George H., and Ernesto Goytía Olmedo.
1962. The bow saw for cutting tropical woods. U.S, Dep. Agric. For. Serv., Trop. For. Note No. 11, 2 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 11, entitled "La sierra de arco para el corte de maderas tropicales,"

297. Englerth, George H., and Ernesto Goytía Olmedo.
1962. La sierra de arco para el corte de maderas tropicales. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 11, 3 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Notes No. 11, entitled "The bow saw for cutting tropical woods."

298. Erdman, Donald S.
1973. Mona Island terrestrial crustaceans. In Mona and Monito Islands: as assessment of their natural and historical resources. Vol. 2, App. H, p. H-l - H-2. Junta de Calidad Ambiental [Env. Quality Bd.]. San Juan, P.R.

299. Estrada Pinto, Alejo.
1970. Phenological studies of trees at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-14, p. D 237 - D 269. USAEC, Oak Ridge, Tn.

From 1963 to 1967 field notes and three series of regular counts were made to outline the patterns of flowering-, fruiting, and leaf fall of 60 principal tree species in normal forest and in areas subjected to gamma irradiation. Unusually heavy and lasting flowering and fruiting were observed in 1965 after irradiation.

300. Eucalyptus experience summarized.
1953. Caribb. For. 14 (l/2):17-20; 49-52. In Report U.S. Trop. For. Exp. Sta. 13, 1952.

Since 1940 more than 2,000 acres have been planted with Eucalytus robusta and E. kirtoniana in the state forest of Puerto Rico, and the seeds of additional species have been planted experimentally on different sites. Brief reports are presented on the progress of 14 species.

301. Evans, R. M.
1933. Puerto Rico. In U.S. Forest Service: A national plan for American forestry. p. 1646-1651. U.S. Gov. Print. Off., Washington, D.C.

302. Ewel, J. J., and J. L. Whitmore.
1973. The ecological life zones of Puerto Rico and U.S. Virgin Islands. U.S. Dep. Agric. For. Serv., Res. Pap. No. ITF-18, 72 p. + map. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Six life-zones are described in accordance with Holdridge's system: Subtropical dry forest, subtropical moist forest, subtropical wet forest, subtropical rain forest, subtropical lower montane wet forest, and subtropical lower montane rain forest. The paper is fully illustrated with photos of typical landscapes and representative trees species. Spanish synopsis - ITF-18-A.

303. Ewel, J. J., and J. L. Whitmore.
1973. Las zonas de vida de Puerto Rico y las Islas Vlrgenes Americanas: una sinopsis. U.S. Dep. Agric. For. Serv., Bol. de Invest. Núm 18-A, 9 p. + map. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Puerto Rico and the U.S. Virgin Islands were mapped in accordance with Holdridge's system and a discussion and descriptions of each of six life zones were written. The manuscript in English offers water balances, a description of the Holdridge theory of biotemperature, and greater detail in general. This shortened version in Spanish is intended as a field manual to be used with the map.

304. Ewel, John J.
1958. Height growth of bigleaf Mahogany. Caribb. For. 24(1):34-35.

305. Fassig, 0. L.
1909. Average rainfall of Puerto Rico. Monthly Weather Rev. 37:982-986.

306. Fassig, 0. L.
1911. The climate of Porto Rico. Assoc. Sucr. Geog. Am. 1:127.

307. Fassig, O. L.
1911. The normal temperature of Puerto Rico. Monthly Weather Rev. 39:299-302.

308. Fassig, O. L.
1916. Tropical rains, their duration, frequency, and intensity. Monthly Weather Rev. 44:329-337.

309. Fassig; O. L.
1928. San Felipe., the hurricane of September 13, 1928, at San Juan, Puerto Rico. Monthly Weather Rev. 56:350-352.

310. Feliciano, C.
1962. Notes on the biology and economic importance of the land crab Cardisoma guanhumi Latreille of Puerto Rico. 29 p. Special Contrib. Inst. Mar. Biol. Univ. of P.R., Mayaguez, P.R.

311. Fernández de Oviedo, Gonzalo.
1959. Natural history of the West Indies. 140 p. University of North Carolina Press, Chapel Hill.

This version of Gonzalo Fernández de Oviedo's Natural History of the West Indies is for persons interested in the early history of America who are not able to read Spanish. Oviedo's account appeared in Toledo in 1526, but no complete English version was hitherto made. A partial. but unsatisfactory translation and summary by Richard Eden - The decades of the new worlde or West India, containing the navigations of the Spaniards -was published in London in 1555 and was reprinted in 1577. An imperfect reprint of this was published again in London in 1625 by Samuel Purchas - Hakluytus Posthumus or Purchas His Pilgrimes, Containing a History of the World in Sea Voyages and Lande Travells by Englishmen and Others. This version, which was reprinted for the Hakluyt Society in 1902, is fragmentary,-inaccurate, unedited, and was merged with translations of similar works from the same period.

312. Fewkes, Jesse Walter.
1907. The aborigines of Porto Rico and neighboring islands. 25th Ann. Rept. Bur. Amer. Ethnology. p. 3-200

313. Flinter, George Dawson.
1834. An account of the present state of the island of Puerto Rico. 392 p. Longman, Rees, Orme, Brown, Greene, and Longman, London.

314. Foerster, J. W.
1971. The ecology of an elfin forest in Puerto Rico. 14. The algae of Pico del Este. J. Arnold Arbor. 52 (1):86-109.

315. Food and Agricultural Organization of the United Nations, FAO Comisión Forestal Latinoamericana.
1960. Datos de crecimiento de plantaciones forestales en Méjico, Indias Occidentales y Centro y Sur América. Segundo informe anual de la Sección de Forestación por el Comité Regional sobre Investigación Forestal. Caribb For. Suppl. 21 in Spanish.

English version, Caribb. For. Suppl. 21 in English.

316. Food and Agricultural Organization of the United Nations, FAO Latin American Forestry Commission.
1960. Records of forest plantation growth in Mexico, the West Indies, and Central and South America. Second annual report of the section on planting by the Regional Committee on Forest Research. Caribb. For. Suppl. 21 in English.

Spanish version, Caribb. For. Suppl. in Spanish.

317. Forbes, W. T. M.
1930. Insects of Porto Rico and the Virgin Islands: Heterocera or moths (Excepting the Noctuidae, Geometridae, and Pyralidae). Scientific Survey of Porto Rico and the Virgin Islands 12(1):1-171. N.Y. Acad. of Sci., New York.

318. Forbes, W. T. M.
1931. Supplementary report on the Heterocera of moths of Puerto Rico. J. Agric. of UPR 15(4):339-394.

319. Fowler, H. W.
1918. Some amphibians and reptiles from Porto Rico and the Virgin Islands. Carnegie Inst., Washington, D.C., Pap. Dep. Mar. Biol. 12:1-15.

320. Fox, J. E. D.
1962. Determination of wet and dry weight relations of a specimen of Ausubo (Manilkara bidentata) found in the Caribbean National Forest. Student Report, State Univ. of N.Y. at Syracuse and U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

321. Fram, M.
1971. Memo to Roberto Vázquez, Assistant Secretary, Area of Natural Resources, P.R. Dep. of Pub. Wks. on : Area to be preserved for biological studies near Camuy High School.

322. Fram, M.
1972. Guidelines of the Area of Natural Resources for the preservation of mangroves. Office of Wildlife, Area of Natural Resources, P.R. Dep. of Pub. Wks., San Juan.

323. Fram, M.
1972. Letter to Ricardo Cotte, Bureau of Sport Fisheries and Wildlife, U.S. Dep. Interior, over the signature of Roberto Vázquez, Area of Natural Resources, P.R. Dep. of Pub. Wks., entitled: Report on Carrizales Mangroves, Hatillo.

324. Fram, M.
1972. Tidal forest of Vieques. Report submitted to the Puerto Rico Environmental Quality Board. Area of Natural Resources, P.R. Dep. Pub. Wks., San Juan.

325. Friedman, Robert.
1974. Putting down roots for Arbor week. The San Juan Star [San Juan, P.R.], Nov.. 29, 1974.

Article on Arbor Day celebration with map and instructions on how to reach government tree nursery in Dorado, P.R., where public may purchase trees at low cost.

326. Fulford, M., B. Crandall, and R. Stotler.
1970. . The ecology of an elfin forest in Puerto Rico. 11. The leafy hepaticae of Pico del Oeste. J. Arnold Arbor. 51:56-69.

327. Fulford, M. H., B. Crandall, and R. Stotler.
1971. The ecology of an elfin forest in Puerto Rico. 15. A study of the leafy hepatic flora of the Luquillo Mountains. J. Arnold Arbor. 52:435-458.

328. Fürstenberg, P. von.
1968. Formen der Waldnutzung im spanischen Nord-und Mittel-amerida Während der Kolonialzeit (16.-18. Jahrh. [Forms of forest utilization in Spanish North and Central America during the colonial period (16th - 18th centuries).] Review of dissertation In Forstliche Fakultät der Georg-August-Universität zu Göttingen, Hann. Münden, 1966. Forstarchiv 39(8):186.

Covers the former viceregal domain of New Spain (i.e. most of Central America, plus parts of the U.S.A., Cuba, Puerto Rico, Haiti, and Jamaica), discussing utilization of wood and minor forest products, including forest pasture and milpa (shifting cultivation).

329. Gandía Córdova, R.
1926. Recursos minerales de la Isla de Puerto Rico: II. Rev. Obras Pub., Puerto Rico 3:762-767.

Mineral Resources of Puerto Rico.

330. Gannutz, T. P.
1970. A study of the lichens of an irradiated rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-12, p. D 227 - D 231. USAEC, Oak Ridge, Tn.

The lichen population of a tropical rain forest community was examined, and the effects of ionizing radiation on the lichen thalli were determined. The thesis that the crustose type lichens are more resistant to radiation than other forms of lichens was supported.

331. Gara, R. I., G. G. Allan, R. M. Wilkins, and J. L. Whitmore.
1973. Flight and host selection behaviour of the mahogany shoot borer, Hypsipyla grandella Zeller (Lepid., Phycitidae). Reprinted from Zeitschrift fur Angewandte Entomologic. p. 259-266. Verlag Paul Parey, Hamburg.

332. Gara, R. I., G. G. Allan, R. M. Wilkins, and J. L. Whitmore.
1976. Comportamiento en vuelo y selección de hospedero del barrenador de la Meliaceas, Hypsipyla grandella Zeller (Lepid., Phycilidae). In Studies on the shootborer Hypsipyla grandella (Zeller) Lep. Pyralidae. Centro Agrondmico Tropical de Investigacidn y Enseñanza, IICA. Misc. Publ. No. 101, V. II. Turrialba, Costa Rica, p. 116-121. (Translated from the original in Z. Angew. Ent. 72 (3):259-266. 1973)

333. García, Carmen M.
1977. Palmas del Mar preserve to be auxiliary 'forest. The San Juan Star [San Juan, P.R.], Apr. 24, 1977.

A 60 to 70 acre tropical forest located at a plush resort in Humacao, P.R., is expected to become the first auxiliary forest to be authorized by the Commonw. of P.R. under a 1975 law.

334. García-Piquera, Carmen.
1946. A Spanish glossary of forestry technology I-V. Caribb. For. 7(2):103-120.

335. García-Piquera, Carmen.
1947. A Spanish glossary of forestry technology II. Caribb. For. 8(1):45-64.

336. Garcia-Piquera, Carmen.
1948. A Spanish glossary of forestry.technology III. Caribb. For. 8(4):269-288.

337. García- Piquera, Carmen.
1949. A Spanish glossary of forestry technology IV. Caribb. For. 9(1):15-43.

338. García-Piquera, Carmen.
1950. A Spanish glossary of forestry technology V. , Caribb. For. 11(1):25-37.

339. García-Piquera, Carmen.
1955. Glosario de terminología forestal (Inglés-Español y Español-Inglés), monografía Núm. 5. Departamento de Agricultura y Comercio de Puerto Rico, San Juan.

Glossary of forestry terminology. (English-Spanish and Spanish-English).

340. Garver, Earl S., and Ernest B. Fincher.
1945. Puerto Rico, unsolved problem. 110 p. The Elgin Press, Elgin, 111.

341. Gates, D. M.
1969. The ecology of an elfin forest in Puerto Rico. 4. Transpiration rates and temperatures of leaves in cool humid environment. J. Arnold Arbor. 50(1)93-98

342. Gaztambide, Juan B.
1944. Enseñanza de los valores del bosque y de la dasonomía a los niiios de Puerto Rico. Caribb. For. 5(2):68-77.

Teaching the value of forests and forestry to the children of Puerto Rico.

343. Gaztambide, Juan B.
1951. Hay cinco razones importantes para mantenimiento de bosques. El Mundo [San Juan, P.R.], Feb. 11, 1951. p. 21.

The importance of the maintenance of forests.

344. Geary, T. F.
1969. Adaptability of Mexican and Central American provenances of Swietenia in Puerto Rico and St. Croix. Preliminary report. FAO-FTB-2/19.

345. Geary, T. F., and N. F. de Barros.
1973. Seed crop environment may influence progeny tests Commonw. For. Rev. 52:160-162.

Progeny of sixteen British Honduras superior phenotypes of Pinus caribaea var. hondurensis were compared in a Puerto Rico nursery. There were significant correlations involving seed yield, seed germination, germination vigor, and seedling height.

346. Geary, T. F. and C. B. Briscoe.
1972. Tree species for plantations in the granitic uplands of Puerto Rico. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-14, 8 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Thirty-two tree species were tested for adaptability in Puerto Rico's humid, granitic uplands, and recommendations made for timber plantations.

347. Geary, T. F., and R. Ibarra Coronado.
1973. Seed source variation in Puerto Rico and Virgin Islands grown mahoganies. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-17, 24 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Series were collected from natural stands of Swietenia macrophylla and Swietenia humilis in eighteen areas from Mexico through Panama and seedlings from the seeds were planted at thirteen locations in Puerto Rico and the Virgin Islands. Swietenia mahogani from naturalized stands in the Virgin Islands were included in the plantings.

348. Geary, T. F., and F. R. Macia Sanabria.
1973. Density of the juvenile wood of Pinus caribaea var. hondurensis grown in subtropical moist and wet life zones of Puerto Rico. Turrialba 23(4):477-480.

Wood density of juvenile cores and outer layers next to the bark was determined for Honduras pine growing in a Subtropical Moist and a Subtropical Wet Life Zone. Results showed the resin-free wood of the Moist Zone trees was denser than that of the Wet Zone trees.

349. Geary, T. F., R. W. Nobles, and C. B. Briscoe.
1972. Hybrid mahogany recommended for planting in the Virgin Islands. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-15, 4 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

A replicated trial on eleven sites tested the drought resistance and growth of hybrid, Honduras, and West Indies mahoganies. Ten years after planting the hybrid has survived and grown more than either of the parent species.

350. Geary, T. F., and J. A. Zambrana.
1971. Comparative adaptability of conifers in Puerto Rico. 5 p., tbls. In Selection and breeding to improve some tropical conifers. Symp. International Union of Forestry Research Organizations IUFRO Working Group on Breeding Trop. and Subtrop. Species. Gainesville, Fla.

351. Geary, T. F., and J.A. Zambrana.
1972. Must Honduras pine be weeded frequently in Puerto Rico? U.S. Dep. Agric. For. Serv., Res. Pap. ITF-16, 16 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.
. [Discontinued series].

This study concerns the least amount of weeding required on pine for good survival and a reasonable rate of growth.

352. Gerhart, G. A.
1930. Forestry notes from Puerto Rico.For.Leaves 22:144

353. Gerry, Eloise.
1947. Santa María (Calophyllum). 14 p. U.S. Dep. Agric. For. Serv., Inf. Lflt. (Mimeo Rpt. SR-4). U.S. Gov. Print. Off., Washington, D.C.

354. Gifford, John Clayton.
1905. The Luquillo Forest Reserve, Porto Rico (with appendix, of the Luquillo region, by John Clayton Gifford and Otis Warren Barrett). Bull. 54, 51 p. U.S. Dep. Agric. Bur. For. U.S. Gov. Print. Off., Washington, D.C.

355. Gill, A. M.
1969. The ecology of an elfin forest in Puerto Rico. 6. Aerial roots. J. Arnold Arbor. 50(2):197-209.

356. Gill, Tom.
1931. Tropical forests of the Caribbean. 318 p. [Reference on Puerto Rico, p. 127-146]. Trop. Plant Res. Found.

357. Gill-Bermejo Garcia, J.
1970. Panorama histórico de la agricultura en Puerto Rico. Instituto de Cultura Puertorriquefia, Escuela de Estudios Hispanoamericanos, Sevilla.

The history of agriculture in Puerto Rico.

358. Gilormini, J. A.
1939. El árbol teca. (Tectona grandis L.). Rev. de Agric.de P.R. 31(3): 352-354.

Description of the teak species.

359. Gilormini, J. A.
1939. Preparación y uso del mantillo o estiércol compuesto en viveros forestales. Caribb. For. 1(1):27-28.

Preparation and use of composts in forestry nurseries.

360. Gilormini, J. A.
1946. Orientando al agricultor en silvicultura. Caribb. For. 7(4):295-296, 328.

Orientation for the farmer regarding silviculture.

361. Gilormini, J. A.
1949. Manual para la propagación de árboles y el establecimiento de plantaciones forestales en Puerto Rico, segunda edición. 109 p. P.R. Dep. Agric. and Corn., Río Piedras, P.R.

Manual on the propagation of trees and the establishment of forest plantations in Puerto Rico and includes tables of common and scientific tree names, and some notes on utilization incidental to silviculture.

362. Gilormini, José A.
1949. 6. Problemas de propagación forestal. En Los cursos de adiestramiento. Caribb. For. 10(4):306-307.

English version, Caribb. For. 10(4):267-268.

363. Gilormini, José A.
1949. 6. Problems of the tree preparation for farm forestry. In A farm forestry training program. Caribb. For. 10(4):267-268.

Spanish version, Caribb For. 10(4):306-307.

364. Giusti, E. V., and M. A. López.
1967. Climate and stream flow of Puerto Rico. Caribb. J. Sci. 7:87-93.

365. Gleason, H. A., and Melville T. Cook.
1926. Plant ecology of Puerto Rico. In Scientific Survey of Puerto Rico and the Virgin Islands 7(1&2). 173 p. N.Y. Acad. Sci., New York.

A detailed account of the distribution of the natural vegetation in relation to climate, altitude, and soil is presented and is illustrated by photographs.

366. Glynn, P.W., L. R. Almodóvar, and I. G. González.
1964. Effects of Hurricane Edith on marine life in La Parguera, Puerto Rico. Caribb. J. Sci. 4:335-345.

367. Glynn, P. W.
1964. Common marine invertebrate animals of the shallow waters of Puerto Rico. In Historia Natural de Puerto Rico. p. 12-20. Univ. of P.R., Mayaguez, P.R.

368. Golley, F.[Frank] B.
1960. Ecologic notes on Puerto Rico mollusca. Nautilus 73:152-155.

369. Golley, Frank [B], Howard T. Odum, and Ronald F. Wilson.
1962. The structure and metabolism of a Puerto Rican red mangrove forest in May. Ecology 43:9-19.

370. Gomberg, H. T.
1970. Radioecology at the Puerto Rico Nuclear Center. . In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. A-l, p. A 3 - A 4. USAEC, Oak Ridge, Tn.

371. González-Liboy, J. A., B. Cintrón, K. Dugger, and A. Lugo.
1976. Habitat evaluation of a dry coastal forest. Final report, Pittman Robertson Project W-8 study IV. Dep. Nat. Res., San Juan, P.R. 2 vols.

372. González-Mas, A.
1962. The occurrence of Cyperus iria L. (Cyperaceae) in Puerto Rico. Caribb. J. Sci. 2(1):8.

373. González-Mas, Arturo.
1964. Cyperaceae of Puerto Rico. Ph.D. Thesis. La. State. Univ. and Agricultural and Mechanical College, Baton Rouge. 316 p.

374. Gray, R. W.
1944. La distribución anual y geogrdfica de lluvia en Puerto Rico. Almanaque Agrícola de Puerto Rico. p. 47-57. P.R. Dep. Agric. and Corn., San Juan.

Annual geographic pluvial distribution in Puerto Rico.

375. Green E. A.
1932. Santa María; a neotropical timber of the genus Calophyllum. Trop. Woods 30:9-16.

376. Gregory, L.E.
1940. Notes on the yarey palm of Puerto Rico and the straw industry derived from it.Caribb. For. 1(4):13-16.

Spanish summary, Caribb. For. 1(4):16.

377. Gregory, Luis, and Ismael Vélez.
1946. An ecological survey of The Polytechnic Institute Arboretum. Caribb. For. 7(1):1-25.

Spanish version, Caribb. For. 7(1):25-35. French summary, p. 35-36.

378. Gregory, Luis and Ismael Vélez.
1946. Reconocimiento ecológico del Arboretum del Instituto Politécnico. Caribb. For. 7(1):25-35.

English version, Caribb. For. 7(1):1-25. French summary, p. 35-36.

379. Grisebach, A. H. R.
1865. Die geographische verbreitung der pflanzen Westindies. Abhand Kon, Ges. Wiss. Gottingen 12(3):3-80.

The geographic distribution of West Indian plants.

380. Groff, G. G.
1900. Forest conditions in Porto Rico. For. Leaves 7:183.

381. Grosourdy, R. de.
1864. El médico botdnico criollo. 4 vols. Paris.

Medical and therapeutical botany of the West Indies.

382. Gunlach, J.
1887-1894. Fauna Puertorriquefia. Soc. Espan. Hist. Natur. An. V. 16-22.

383. Haas, William Herman.
1940. The American empire. 408 p. The Univ. of Chicago Press, Chicago.

384. Haber, W. A., and C. G. Moore.
1973. Aedes aegypti in the Puerto Rico rain forest: results of a one-year survey. Mosq. News 33(4):576-578.

385. Hacskaylo, Edward.
1971. Field innoculations with mycorrhizal fungi. In Proceedings of the first North American Conference on Mycorrhizae, Edward Hackskayio, ed. U.S. Dep. Agric., For. Serv., Misc. Publ. 1189, p. 187-196.

386. Hacskaylo, Edward.
1977. Persistence and fruiting of Ectomycorrizae fungi in Puerto Rico. (Abstr). Third North American Conference on Mycorrhizae, p. 54. U.S. Dep. Agric., For. Serv., SE For. Exp. Stn. [Athens, Ga., Aug. 19771.

387. Hadley, H. H., and C. B. Briscoe.
1966. Herbicides for forest plantations. U.S. Dep. Agric. For. Serv., Res. Note ITF-6, 6 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

MSMA, sodium cacodylate, diquat, aminotriazole, paraquat + surfactant, 2,4,-D amine, ametryne, and picram were tested for use as herbicides in forest plantations.

388. Hagloy, E. W.
1941. Subsistence homesteads on public forest lands of Puerto Rico. Rev. Agric., Ind. Comer. P.R. 33:317-322.

389. 'Hall, Roscoe M., Jr.
1970. Thermoluminescent dosimetry. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. C-3, p. C 37 - C 40. USAEC, Oak Ridge, Tn.

The procedures used to estimate gamma-radiation dosage with lithium fluoride capsules in the rain forest at El Verde, Puerto Rico, were tested.

390. Hall, W. M.
1938. Hicaco Dam cost estimate. San Juan, Puerto Rico Reconstruction Administration, Rural Electrification Division. [Mimeo].

391. Haman, M.
1917. Where pine and tropical hardwood meet. Pan Amer. Union B. 44:330-331. Trade in San Juan, Puerto Rico.

392. Hamilton, Gulielmus.
1825. Prodromus plantarum Indiae Occidentalis hucusque cognitarum. V. 8; p. 67. London.

Includes records of species from Puerto Rico, St. Thomas, and St. Croix.

393. Hamilton, S. H.
1909. Notes on some ore deposits of Porto Rico. Eng. Mining J. 58:518-519.

394. Hanson, E.
1935. Planning problems and activities in Puerto Rico. Preliminary Report to the Puerto Rico Reconstruction Administration and the National Resources Committee. San Juan, P.R. Reconstruction Administration. Nov. 23, 1935, and amended as of Feb. 17, 1936. [Mimeo].

395. Harrar, E. S., and D. G. Reid.
1943. Retention of creosote oil in the wood of Pinus occidentalis Swarts. Caribb. For. 4(3):129-131.

Spanish summary, p. 131.

396. Harrington, M. W.
1899. Fauna and flora of Porto Rico. Science II, 10:286-288.

This includes observations on some Puerto Rican plants.

397. Hart, Freck.
1977. Exploring El Yunque on new trails. Sunday San Juan Star magazine [San Juan, P.R.], July 31, 1977. p. 2-3.

398. Heatwole, H.
1970-1971. Survey of mangroves of Puerto Rico and supplement I to report on mangrove project: Las Mareas and Puerto Jobo.

Reports for Area of Nat. Resour., Dep. of Pub. Wks., P.R. San Juan.

399. Heatwole, Harold, Abel Rossy, Isabel Colorado, and others.
1970. Effects of radiation on a publication of the Puerto Rican tree snail, Caracolus caracolla. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-l, p. E 17 - E 24. USAEC, Oak Ridge, Tn.

A study of populations of the large snail Caracolus caracolla was made by capture, measurement, marking, and recapture before and after irradiation. Irradiation did not cause widespread mortality, although indirect evidence suggested increased mortality close to the source.

400. Helfenbein, Herman, Carlos G. González, Julio Rodriguez Piñán, José Muratti, Arthur Upson.
1946. Informe del Comité de Dasonomía. Conferencia Alrededor de los Problemas de la Montaña en Puerto Rico. Rev. de Agr. de P.R. 37:283-284.

Report by the Forestry Committee: Conference on the problems of the mountains in Puerto Rico.

401. Herndndez Agosto, Miguel A.
1951. La importancia del vivero forestal en el programa de conservación de suelos y aquas. Rev. de Agr. de P.R. 42(1-2):122-126.

The importance of the forestry nursery in the conservation program of the soils and water.

402. Herndndez Agosto, Miguel A.
1966. Conservación de los recuraos naturales de Puerto Rico, En La acjricultura de Puerto Rico: situación y posibilidades. [Informe al Gobernador Hon.Roberto Sánchez Vilella]. Rev. de Agr. de P.R. 53(1-2):19-24.

Conservation of the natural resources in the agriculture of Puerto Rico: situation and possibilities. [Report to the Governor of Puerto Rico].

403. Hibbin, T., and R. Picó.
1948. Industrial development of Puerto Rico and the Virgin Islands of the United States. p. 142-144. Port of Spain, Trinidad.

404. Hill, L. W.
1971. ITF Program evaluation. 20p. U.S. Dep. Agric, For. Serv., Inst. Trop. For., Río Piedras, P.R.

A publication discussing the future direction of environmental tropical forestry.

405. Hill, L. W.
1973. [Rev.] The Caribbean National Forest. 6 p. U.S. Dep. Agric., For. Serv., Inst. Trop. For., Río Piedras, P.R.

406. Hill, L. W. and D. B. Monteith.
1968. Forest influences applied to urban planning. Paper presented at Conf. on the Environment and Planning, Dec. 2-5, 1968. Univ. of P.R., Río Piedras, P.R. 20 p.

407. Hill, L. W., and D. B. Monteith.
1969. La influencia de los bosques en la planificación urbana. Plerus 4(2):57-74.

The influence of forests in urban planning.

408. Hill, R. T.
1899. Notes on the forest conditions of Porto Rico. Bull. U.S. Dep. Agric. Div. For. 25:1-48, pl. f-8.

Description of the forests as then existing and of the woods of some of the forest trees.

409. Hill, Robert.
1899. Mineral resources of Porto Rico. U.S. Geol.Ann. Report, p. 771-787. U.S. Gov. Print. Off., Washington, D.C.

410. Holdridge, L. R.
1934. A brief sketch of the Puerto Rican flora. Plants and Plant Science in Latin America. Waltham, Mass.

411. Holdridge, L. R.
1936. Caoba. Rev. de Agr. de P.R. Suplemento No. 3:25-30. Illus., 6 refs.

Mahogany.

412. Holdridge, L. R.
1937. Supervisor's annual planting report. Caribbean National Forest, Puerto Rico insular forests and Puerto Rico Reconstruction Admimistration. Río Piedras, P.R.

413. Holdridge, L. R.
1938. Supervisor's annual planting report. Caribbean National Forest, Puerto Rico insular forests, and Puerto Rico Reconstruction Administration. Río Piedras, P.R.

414. Holdridge, L. R.
1939. Forestry in Puerto Rico. Caribb. For. 1(1):7-11.

415. Holdridge, L. R.
1940. Calophyllum antillanum, a desirable tree for difficult planting sites. Caribb. For. 1(2):27-28.

416. Holdridge, L. R.
1940. The possibility of close cooperation for mutual benefit between agriculture and forestry in the American tropics. Caribb. For. 1(3):25-29.

417. Holdridge, L. R.
1940. A rapid method of extracting balsa seed. Caribb. For. 1(2):25.

418. Holdridge, L. R.
1940. Some notes on the mangrove swamps of Puerto Rico. Caribb. For. 1(4):19-29.

419. Holdridge, L. R.
1942. Arboles de Puerto Rico. Vol. I. U.S. Dep. Agric. For. Serv., Pub. Núm. 1, 105 p. U.S. Dep. Agric. For. Serv., Trop. For. Exp. Stn. [now named Inst. Trop. For.], Río Piedras, P.R.

Trees of Puerto Rico.

420. Holdridge, L. R.
1942. Trees of Puerto Rico. Vol. I U.S. Dep. Agric. For. Serv., Occ. Pap. No. 1, 105 p. U.S. Dep. Agric. For. Serv., Trop. For. Exp. Stn. [now named Inst. Trop. For.], Río Piedras, P.R.

421. Holdridge, L. R.
1942. Trees of Puerto Rico. Vol II. U.S. Dep. Agric. For. Serv., Occ. Pap. No. 2, 105 p. U.S. Dep. Agric. For. Serv., Trop. For. Exp. Stn. [now named Inst. Trop. For.], Río Piedras, P.R.

422. Holdridge, L. R.
1943. Arboles de Puerto Rico Vol. II. U.S. Dep. Agric. For. Serv., Pub. Núm. 2, 105 p. U.S. Dep. Agric. For. Serv., Trop. For. Exp. Stn. [now named Inst. Trop. For.], Río Piedras, P.R.

Trees of Puerto Rico.

423. Holdridge, L. R.
1945. A brief sketch of the Puerto Rican flora. In Plants and plant science in Latin America by Frans Verdoorn, Chronica Botanica Co. Waltham, Mass. p. 81-83.

424. Holdridge, L. R.
1970. A system for representing structure in tropical forest associations. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-12, p. B 147 -B 150. USAEC, Oak Ridge, Tn.

A procedure for construction of an idealized profile of mature trees is described, and an example from the study sites at El Verde, Puerto Rico, is given.

425. Holdridge, L. R., and Carlos Muñiz McCormick.
1937. Notes on poisonous and stinging haired plants of Puerto Rico. U.S. Dep. Agric. For. Serv. 14 p. Rfo Piedras, P.R.

Spanish version, Apuntes sobre las plantas venenosas y de pelos punzantes de P.R.

426. Holdridge, L. R., and José Marrero.
1940. Preliminary notes on the silviculture of the big-leaf mahogany. Caribb. For. 2(1):20-23.

427. Holler, J. R.
1966. Microfungi of soil root and litter of a Puerto Rican lower montane rain forest. Thesis. Dep. of Biol., Univ. of So. Carolina, Columbia.

428. Holler, James R., and G. T. Cowley.
1970. Response of soil, root, and litter microfungal populations to radiation. In A tropical rain forest, a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-6, p. F 35 - F 39. USAEC, Oak Ridge, Tn.

Microfungal populations were isolated from'the soil, root, and litter layers in both the Radiation and the South Control Centers of the Rain Forest Project before irradiation in the summer of 1964 and after irradiation in the summer of 1965. The total population in the soil of the Radiation Center after irradiation was significantly higher than that of the South Control Center, and the litter population of the North Cut Center was significantly higher than all other populations.

429. Hollick, Arthur.
1924. A review of the fossil flora of the West Indies, with description of new species. Bull. N.Y. Bot. Gard. 12:259-323, pls. 1-15.

This review includes descriptions and illustrations of specimens from Puerto Rico.

430. Hollick, Arthur.
1926. Fossil walnuts and lignite from Porto Rico. J. N.Y. Bot. Gard. 27:223-227.

This is a description and illustration of Juglans archaeo-antillana.

431. Hollick, Arthur.
1926. Paleobotanical exploration in Porto Rico. J. N.Y. Bot. Gard. 27:102-104.

Report on field work in 1926.

432. Hollick, Arthur.
1928. Paleobotany of Porto Rico. In Scientific Survey of Porto Rico and the Virgin Islands 7:177-238, pls. 51-88. N.Y. Acad. Sci., New York. .

A record of collections made in 1926, including historical and geological data, descriptions, and illustrations of tertiary species.

433. Horn, Claud L.
1945. Plant resources of Puerto Rico. In Plants and Plant Science in Latin America by Frans Verdoorn. p. 83-85. Chronica Botanica Co., Waltham, Mass.

434. Hottle, Walter D.
1930. La propagación y distribución de árboles en Puerto Rico. Rev. de Agr. de P.R. 25(9):118.

The propagation and distribution of trees in Puerto Rico.

435. Howard, Alexander L.
1934. A manual of the timbers of the world and their characteristics and uses. 672 p. MacMillan and Co. Ltd., London.

436. Howard, R. [Richard] A.
1968. The ecology of an elfin forest in Puerto Rico, 1. Introduction and composition studies. J. Arnold Arbor. 49(4):381-418. 22 refs.

This is the first of a series of papers by various collaborators, on an elfin forest on the undisturbed summit of Pico del Oeste in the Luquillo Mountains. Comparable studies are briefly reviewed, species of the vascular flora listed, and composition studies described.

437. Howard, R. [Richard] A.
1969. The ecology of an elfin forest in Puerto Rico, 8. Studies of stem growth and form and of leaf structure. J. Arnold Arbor. 50(2):225-267. 38 refs.

Briefly discusses observations under the heads: growth and form; monopodial and sympodial growth; dichotomous branching; dieback; bud protection; leaf size and morphology leaf development, number and persistence; factors of productivity of the leaves; and leaf damage.

438. Howard, Richard A.
1957. Studies in the genus Coccoloba, IV. The Species from Puerto Rico and the Virgin Islands and from the Bahama Islands. J. Arnold Arbor. 38:211-242.

439. Howard, Richard A.
1966. Notes on some plants of Puerto Rico. J. Arnold Arbor. 47(2):137-146.

440. Howard, Richard A.
1970. The summit forest of Pico del Oeste, Puerto Rico. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-20, p. B 325-B 328. USAEC, Oak Ridge, Tn.

These studies of aspects of climate, systematic botany, phenology, cytology, biochemistry, epiphytic life, growth, soils, and other features made within the dwarf summit forest on West Peak in the Luquillo Mountain Range mention the importance of liverworts, the prevalence of adventitious rooting, difficulties with seed germination under ordinary conditions, characteristic morphology of leaves, and the absence of synchronized leaf fall.

441. Howe, Marshall A.
1923. Botany of Puerto Rico and the Virgin Islands. J. N.Y. Bot. Gard. 24:188-189.

442. Howell, B.
[n.d.] Patterns of rural resettlement in Puerto Rico. Unpublished report available from the Centro de Investigaciones Sociales, Univ. de P.R., Río Piedras, P.R. [mimeo] .

443. Hutton, Robert S., and Reinhold A. Rasmussen.
1970. Microbiological and chemical observations in a tropical forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-8, p. F 43 - F 56. USAEC, Oak Ridge, Tn.

Counts were made of fungi and bacteria after standardized aerial exposures of plates at various heights on vertical towers in forests at El Verde, Puerto Rico, and at Ft. Clayton Canal Zone. The largest number of colonies of fungi and bacteria was found at the middle height of the canopy (50 ft), and the ratio.of bacteria to fungi was greater at this height.

444. Hyman, Margaret.
1970. El Cadamba: siembra se probó en El Yunque. El Mundo [San Juan, P.R.], June 27, 1970. p. 5-C.

The Kadam Tree: planting tested in the El Yunque forest (Caribbean National Forest).

445. Institute of Tropical Forestry, Forest Service, USDA.
1961. Annual Report Tropical Forest Research Center. Caribb. For. 22(1/2):1-11.

446. Institute of Tropical Forestry, Forest Service, USDA.
1962. Annual Report for 1961. Caribb. For. 23(1):1-14.

447. Institute of Tropical Forestry, Forest Service, USDA.
1963. Annual Report for 1962. Caribb. For. 24(1):1-17.

According to this report the program of the Institute during 1962 consisted of five broad lines of work: forest management research, forest products utilization research, applied forestry, technical forestry assistance, and forestry training in Puerto Rico.

448. Institute of Tropical Forestry, Forest Service, USDA.
1964. Annual Report for 1963. U.S. Dep. Agric. For. Serv. 24 p. Rio Piedras, P.R. ,

449. Institute of Tropical Forestry, Forest Service, USDA.
1965. Annual Letter for 1964. U.S. Dep. Agric. For. Serv. 3 p. Río Piedras, P.R.

450. Institute of Tropical Forestry, Forest Service, USDA.
1966. Annual Letter for 1965. U.S. Dep. Agric-. For. Serv. 7 p. Río Piedras, P.R.

451. Institute of Tropical Forestry, Forest Service, USDA.
1967. Annual Letter for 1966. U.S. Dep. Agric. For. Serv. 5 p. Rio Piedras, P.R.

452. Institute of Tropical Forestry, Forest Service, USDA, 1968. History of the Forest Service in Puerto Rico and the Virgin Islands. 2 p.

453. Institute of Tropical Forestry, Forest Service, USDA. 1968. Annual Letter for 1967. U.S. Dep. Agric. For. Serv. 14 p. Río Piedras, P.R.

454. Institute of Tropical Forestry, Forest Service, USDA. 1969. Annual Letter for 1968. U.S. Dep. Agric. For. Serv. 17 p. Río Piedras, P.R.

455. Institute of Tropical Forestry, Forest Service, USDA. 1970. Annual Letter for 1969. U.S. Dep. Agric. For. Serv. 17 p. Río Piedras, P.R.

456. Institute of Tropical Forestry, Forest Service, USDA. 1971. Annual Letter for 1970. U.S. Dep Agric. For. Serv. 18 p. Río Piedras, P.R.

457. Institute of Tropical Forestry, Forest Service, USDA. 1972. Puerto Rico más o menos [Puerto Rico more or less]. 16mm. color film, 20 mins. Inst. Trop. For., Río Piedras, P.R.

Available with Spanish or English soundtrack.

458. Institute of Tropical Forestry, Forest Service, USDA. 1972. Annual Letter for 1971. U.S. Dep. Agric. For. Serv. 21 p. Río Piedras, P.R.

459. Institute of Tropical Forestry, Forest Service, USDA. 1973. Annual Letter for 1972. U.S. Dep. Agric. For. Serv. 14 p. Río Piedras, P.R.

460. Institute of Tropical Forestry, Forest Service, USDA. 1974. Annual Letter for 1973. U.S. Dep. Agric. For. Serv. 13 p. Río Piedras, P.R.

461. Institute of Tropical Forestry, Forest Service, USDA. 1975. Annual Letter for 1974. U.S. Dep. Agric. For. Serv. 19 p. Río Piedras, P.R.

462. Institute of Tropical Forestry, Forest Service, USDA. 1976. Annual Letter for 1975. U.S. Dep. Agric. For. Serv. 16 p. Río Piedras, P.R.

463. Institute of Tropical Forestry, Forest Service, USDA. 1977. Annual Letter for 1976. U.S. Dep. Agric. For. Serv. 26 p. Río Piedras, P.R.

464. Institute of Tropical Forestry, Forest Service, USDA. 1978. Annual Letter for 1977. U.S. Dep. Agric. For. Serv. 8 p. Río Piedras, P.R.

465. Iornes, M. J.
1909. Shall I plant eucalypt? The Porto Rico Hort. News 2(2):1-2.

466. Iornes, M. J.
1909. Raising eucalypt seedlings. The Porto Rico Hort. News 2(3):3-4.

467. Iornes, M. J.
1909. Table of eucalypts for trial in Puerto Rico. The Porto Rico Hort. News 2(4):19.

468. Irizarry, Edith R. de, and F. K. S. Koo.
1970. Histological damage induced by gamma irradiation in shoot apices of Palicourea riparia. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. G-5, p. G 63 - G 67. USAEC, Oak Ridge, Tn.

The apical meristem of Palicourea riparia was studied cytologically and histologically. In general, it appears that the outer region was more sensitive to radiation than the inner region and that radiation injury increased with the dose.

469. Jackson, C. F.
1934. Informe sobre depósitos minerales en Puerto Rico. Rev. Obras Públicas de Puerto Rico 11:655-667.

Report on mineral deposits in Puerto Rico.

470. Jagels, F. P.
1963. The variation of rainfall, temperature, soil moisture, soil characteristics, and vegetation with elevation as these affect the computation of a water balance in a localized drainage area of the Luquillo Mountains. Unpublished course report. Inst. Trop. For., Río Piedras, P.R.

471. Johnson, Philip.
1970. Hemispherical photographs at El Verde. In A tropical rain forest: a study of irradiation-&d ecology at El Verde, Puerto Rico. Howard. T. Odum and Robert F. Pigeon, eds. Ch. D-20 p. D 309 - D 311. USAEC, Oak Ridge, Tn.

Hemispherical photographs of the canopy at El Verde are given for the radiation source and for a site 10 m south-east of the source on 'Feb. 7, 1965 (during irradiation), and on Jan. 23, 1966, a year later. Canopy-closure index decreased about 10% in the first year and was about 50% diminished by the end of the second year.

472. Johnson, Philip L., and David M. Atwood.
1970. Aerial sensing and photographic study of the El Verde Rain Forest. In A tropical rain forest: a study of irradiation-&d ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-5, p. B 63 - B 78. USAEC, Oak Ridge, Tn.

Aerial and ground photographs of the El Verde rain forest site were obtained over a two-year period. They recorded the consistency of the vegetational patterns in untreated sites and the changes that occurred following gamma irradiation.

473. Jones, C. F.
1952. The rural land classification program of Puerto Rico. In The rural land classification program of Puerto Rico. Northwestern Univ. Studies in Geog., No. 1. The William and Marian Haas Research Fund. p. l-76. Evanston, Ill.

474. Jordan, C. F.
1967. Recovery of a tropical rain forest after gamma irradiation. In Symposium on radio ecology; proceedings of the second national symposium. USAEC Report CONF-670503. p. 88-98. Ann Harbor, Mich.

475. Jordan, C. F.
1970. Flow of soil water in the lower montane tropical rain forest. In A tropical rain forest:. a study of irradiation and ecology at El Verde., Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-18, p. H 199 -H 200. USAEC, Oak Ridge, Tn.

Experiments with runoff pans at two depths in the soil at El Verde show that rainfall penetrates downward vertically through loose upper layers until it reaches denser layers below upon which it flows laterally and downhill.

476. Jordan, C. [Carl] F.
1970. Movement of ^{85}Sr. and ^{134}Cs by the soil water of a tropical rain forest. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-19, p. H 201 - H 204. USAEC, Oak Ridge, Tn.

Radioactive strontium and cesium were used to tag waters applied to rain forest plots under which were located lysimeters at litter level and at a S-in. depth within the mineral soil. Changes in the rate of release of these elements with time suggest the effectiveness of the litter layer in retaining minerals.

477. Jordan, C. [Carl] F., and J. R. Kline.
1976. Stronium-90 in a tropical rain forest: 12th-yr. validation of a 32-year prediction. Health Phys. 30(2):199-201.

478. Jordan, Carl F.
1970. Vegetative sprouting following irradiation of a tropical rain forest. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-19, p. D 305 - D 308. USAEC, Oak Ridge, Tn.

The importance of vegetative sprouting was studied in the El Verde Radiation Center 18 months after irradiation. Sprouting was less important in the recovery of the irradiated tropical rain forest in Puerto Rico from a short period of radiation than it was in the recovery of a temperate forest in Georgia.

479. Jordan, Carl F.
1970. A progress report on studies of mineral cycles at El Verde. In A tropical rain forest: a study of irradiationand ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-22, p. H 217 - H 219. USAEC, Oak Ridge, Tn.

Studies in progress on mineral cycles of some principal elements within the El Verde Forest are summarized using mineral-cycle diagrams to show magnitudes in data so far obtained and to indicate portions of the budget which require further analysis.

480. Jordan, Carl F., and George Drewry.
1969. The Rain Forest Project Annual Report. USAEC Report PRNC- 129. 144 p. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

The three objectives of the Rain Forest Project study are: to determine the effects of gamma radiation on the tropical ecosystem, to study the cycling of stable and radioactive isotopes through the ecosystem, and to investigate basic biological functions of the ecosystem in order to better understand phenomena related to the first two objectives. Studies of secondary succession in the forest opened up by radiation are continuing, and changes during the first three years of succession are reported here.

481. Jordan, D. G.
1973. A summary of actual and potential water resources Isla de Mona, P.R. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. D, p. l-8. Junta de Calidad Ambiental [Env. Quality Bd.], San Juan, P.R.

482. Kaye, C. A.
1959. Shoreline features and quaternary shoreline changes, Puerto Rico. U.S. Dep. Int., U.S. Geol. Surv. Prof. Pap. 317-B. 140 p., maps, pls.

483. Kaye, Clifford A.
1959. Geology of Isla de Mona, Puerto Rico, and notes on age of Mona Passage. U.S. Dep. Int., Coastal Geology of Puerto Rico Geological Survey Prof. Pap. 317-C, 48 p., maps.

484. Kepler, Angela Kay.
1975. Common ferns of Luquillo Forest, Puerto Rico. 125 p. Inter-Amer. Univ. Press, San Juan, P.R.

485. Kepler, Angela Kay.
1975 . Helechos comunes del bosque de Luquillo, Puerto Rico. 128 p. Inter-Amer. Univ Press, San Juan, P.R.

486. Kepler, Cameron B.
1970. Especie boricua que se extingue. El Mundo [San Juan, P.R.], Apr. 30, 1970. p. 23-C.

Extinct birds of Puerto Rico.

487. Kepler, Cameron B.
1971. First Puerto Rican record of the Antillean Palm Swift. Wilson Bull. 83(3):309-310.

488. Kepler, Cameron B., and Angela K. Kepler.
1970. Preliminary comparison of bird species diversity and density in Luquillo and Guánica forests. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds.. Ch. E-14, p. E 183 - E 191. USAEC, Oak Ridge, Tn.

In transect studies, diversity of birds was greater in the dry forest at Guánica, Puerto Rico, (38 species) than in the Luquillo Forest (18 species). Total bird density was also greater. In Appendix A are observations on the remaining flocks of the near extinct Puerto Rican parrot. In Appendix B the tody's life-history characteristics are compared in the Luquillo and Guánica forests.

489, Kepler, C. [Cameron] B., and K. C. Parkes.
1972. A new species of warbler (Parulidae) from Puerto Rico. Auk 89:1-18.

490. Kline, J. R., ed.
1967. Rain Forest Project. In Annual Report of Puerto Rico Nuclear Center, USAEC Report PRNC-121. p. 159-181. Univ. of Puerto Rico Nuclear Center, Río Piedras, P.R.

491. Kline, J. R.
1970. Retention of fallout radionuclide by tropical forest vegetation. In A tropical rain forest: a study of irradiation-&d ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-17, p. H 191 - H 197. USAEC, Oak Ridge, Tn.

Freshly fallen leaf litter and live-leaf samples pruned from trees were collected monthly at El Verde experimental site to measure the biological half-times for retention of four nuclides in tropical forest vegetation. The data show that some of the nuclides have been partially incorporated into the forest mineral cycle.

492. Kline, J. R., and C. F. Jordan.
1970. Tritium movement in soil of a tropical rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-8. p. H 129 - H 131. USAEC, Oak Ridge, Tn.

Tritiated water applied to the surface of soil in a tropical rain forest was found in free water of the litter and the top cm of soil as long as seven months after its application. It is concluded, therefore, that plant roots, even in the high-rainfall environment of a tropical rain forest, are exposed to tritiated water for a considerable time after release.

493. Kline, J. R., Carl F. Jordan, George E. Drewry, and others.
1967. The Rain Forest Project Annual Report. USAEC Rep. PRNC-103. 201 p. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

This is the annual report of work done on the Rain Forest Project at El Verde, P.R. The experimental emphasis includes detailed studies on radionuclide behavior in the tropical forest and studies on the recovery and succession in the irradiated area.

494. Kline, J. R., C. F. Jordan, and G. E. Drewry.
1968. The Rain Forest Project Annual Report. USAEC Rep. PRNC-119. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

A section of the montane rain forest on El Yunque Mountain was irradiated and many follow-up studies have been completed. Present effort is being directed to long term studies on recovery and succession of vegetation in'the irradiated area and to detailed investigations of mineral cycling and distribution in the tropical ecosystem.

495. Kline, J. R., and Nelson Mercado.
1970. Preliminary studies of radionuclide cycling in understory plants in the rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-20, p. H 205 -H 209. USAEC, Oak Ridge, Tn.

An experiment was carried out in the understory of the El Verde rain forest to determine the fate of several radionuclides applied to the forest floor in water-soluble carrier-free form. Uptake by plants was extremely slow for all the nuclides of this experiment. It was concluded from the slow movement of nuclides that the El Verde forest was not in a steady state with regard to turnover of its burden of fission products. The experiment supports the hypothesis that fission products in vegetation of this forest are the result of their interception and retention on leaf surfaces.

$96. Kline, J. R., and H. T. Odum.
1970. Comparisons of the amounts of fallout radionuclides in tropical forests. In A tropical rain forest: a study of irradiationand ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-15, p. H 181 - H 186. USAEC, Oak Ridge, Tn.

Leaves and forest litter were collected from 10 tropical forests in Puerto Rico, Dominica, Trinidad, and Central America for analyses of fallout radionuclide content. Highest isotope levels were found in the northernmost tropical forests at the highest elevations above sea level. The amounts of contamination showed a general decrease with decreasing latitude.

497. Kline, J. R., H. T. Odum, and J. C. Bugher.
1970. Effect of gamma radiation on leaching of ^{137}Cs and ^{54}Mn from tropical forest foliage and litter. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-16, p. H 187 - H 189. USAEC, Oak Ridge, Tn.

The effect Of gamma radiation on removal of fallout radionuclides by leaching from rain forest trees and litter was investigated. Samples Of canopy leaves were collected both before and after irradiation. The results from preirradiation and postirradiation collections show that radiation had no measurable effect on the rates of leaching of ^{137}Cs and ^{54}Mn from the forest canopies.

498. Klots, E. B.
1932. Insects Of Porto Rico and the Virgin Islands, Odonata. In Scientific Survey of Porto Rico and the Virgin Islands 14(1):1-104. N.Y. Acad. Sci., New York.

499. Knapp, Slaman A.
1901. A report on investigation of agricultural resources and capabilities of Puerto Rico. U.S. Senate, 56th Cong., 2d sess., Doc. 171. 32 p. U.S. Gov. Print. Off., Washington, D.C.

500. Kobuski, Clarence E.
1943. Studies in the Theaceae. XIV. Notes on the West Indian Species of Ternstroemia J. Arnold Arbor. 24:60-76.

501. Koenig, N.
1953. A ccmprehensive agricultural program for Puerto Rico. U.S. Gov. Print. Off., Washington, D.C. 299 p. .

502. Kolehmainen, S. E., and W. K. Hildner.
1974. Zonation of organisms in Puerto Rican red mangrove (Rhizophora mangle L.) swamps. Proc. Int. Symp. on Biol. and Mang. Mangroves, Pt I, Inst. Food and Agric. Sci., Univ. of Fla., Gainsville.

503. Kco, F. K. S., and E. Robles de Irizarry.
1965. Radiation genetics and radiation botany. In Rain Forest Project Annual Report. USAEC Report PRNC-61. Terrestial Ecology Program I. p. 88-94. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

504. Koo, F. K. S., and Edith R. de Irizarry.
1970. Nuclear volume and radiosensitivity of plant species at El Verde. In A tropical rain forest: a study of irradiation and ecology-& El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. G-l, p. G 15 - G 20. USAEC, Oak Ridge, Tn.

Nuclear volumes of 68 plant species were studied. The 100% growth-inhibition dose observed for twigs appears to agree with the predicted inhibition dose in the majority of instances, although these species as a whole tend to be more resistant than predicted.

505. Koo, F. K. S., Howard T. Odum, and Edith Robles de Irizarry.
1970. Effect of gamna radiation on chlorophyll A content in bromeliads. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-17, p. D 295 - D 298. USAEC, Oak Ridge, Tn.

Chlorophyll A and optical transmission density of leaves were measured in bromeliads which were removed from the El Verde forest, irradiated with gamma radiation and retained in moderate illumination in a green house. Chlorophyll and optical transmission density of leaves declined in the 60 days following irradiation with more decrease in plants receiving 75 kr or more. Significant correlation was found between chlorophyll A and transmission density of the leaves.

506. Koo, F. K. S., and R. C. Venator.
1970. Radiation effect on survival and growth of bromeliads. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-18, p. D 299 - D 303. USAEC, Oak Ridge, Tn.

The survival and continuing growth of bromeliads were studied in relatior to gamma irradiation with acute doses applied under greenhouse conditions and 3-month doses in the natural rain forest environment at El Verde. Bromeliads were resistant, with 85% of the plants surviving acute radiation of 48 kr. In the field after two years, 33% had survived 33 kr. New growth centers developed at 7.7 kr.

507. Kramer, William P.
1924. El bosque del acueducto. [Watershed] Rev. de Agr. de P.R. 12(5):315-323.

508. Kramer, William P.
1924. La casuarina. Rev. de Agr. de P.R. 12:15-16.

509. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de noviembre, 1923. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 12(1):49-50.

Summary of the work done by the P.R. Div. of For., during November 1924.

510. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de enero, 1924. [Div. For., Puerto Rico]. Depto. de Agrioultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 12(2):125-127.

Summary of the work done by the P.R. Div. of For., during January, 1924.

511. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de febrero, 1924. [Div. For., Puerto Rico]. Depto. de Agricltura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 12(3):192-194.

Summary of the work done by the P.R. Div. of For., during February 1924.

512. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de marzo, 1924. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 12(4):247-250.

Summary of the work done by the P.R. Div. of For., during March 1924.

513. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de mayo, 1924. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Ag-r. de P.R. 12(6):415-417.

Summary of the work done by the P.R. Div. of For., during May 1924.

514. Kramer, William P.
1924. Resume-n del trabajo realizado durante el mes de junio, 1924. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 13(1):55-57.

Summary of the work done by the P.R. Div. of For., during June 1924.

515. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de agosto, 1924. [Div. For., Puerto Rico] . Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 13(3):181-183.

Summary of the work done by the P.R. Div. of For., during August 1924.

516, Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de septiembre,1924 [Div. For., Puerto Rico] . Depto. de Agricultura y Trabajo,. Div. Forestal. Rev. de Agr. de P.R. 13(4):281-283.

Summary of the work done by the P.R. Div. of For., during September 1924.

517. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de octubre, 1924. [Div. For., Puerto Rico] . Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 13(5):349-351.

Summary of the work done by the P.R. Div. of For., during October 1924.

518. Kramer, William P.
1924. Resumen del trabajo realizado durante el mes de noviembre, 1924 [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 13(6):411-412.

Summary of the work done by the P.R. Div. of For., during November 1924.

519. Kramer, William P.
1925. El árbol de Chaulmogra. Rev. de Agr. de P.R. 14(2):137-147.

Description of the Chaulmoogra tree.

520. Kramer, William P.
1925. Imposición contributiva sobre terrenos fore&ales. Rev. de Agr. de P.R. 14(2):102-109.

The taxation of forest lands.

521. Kramer, William P.
1925. El Jardín Arbóreo de Arnold y el proyectado Jardín Arbóreo de Puerto Rico. Rev. de Agr. de P.R. 14(2):85-87.

The Arnold Arboretum and the botanical garden project for Puerto Rico.

522. Kramer, William P.
1925. Resumen del trabajo realizado durante el mes de diciembre, 1924 [Div. For., Puerto Rico] . Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 14(1):3-33.

Summary of the work done by the P.R. Div. of For., during December 1924.

523. Kramer, William P.
1925. Resumen del trabajo realizado durante el mes de enero, 1925. [Div. For., Puerto Rico] . Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 14(2):148-149.

Summary of the work done by the P.R. Div. of For., during January 1925.

524. Kramer, William P.
1925. Resumen del trabajo realizado durante el mes de febrero, 1925. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 14(3):224-228.

Summary of the work done by the P.R. Div. of For., during February 1925.

525. Kramer, William P.
1925. Resumen del trabajo realizado durante el mes de marzo, 1925. [Div. For., Puerto Rico]. Depto de Agricultura y Trabajo, Div. Forestal. Rev. de Agri. de P.R. 14(3):280-282.

Summary of the work done by the P.R. Div. of For., during March 1925.

526. Kramer, William P.
1925. Resumen de los trabajos verificados en abril, 1925. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 14(5)335-339.

Summary of the work done by the P.R. Div. of For., during April 1925.

527. Kramer, William P.
1925. Resumen de los trabajos verificados en mayo, 1925. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 14(6):374-377.

Summary of the work done by the P.R. Div. of For., during May 1925.

528. Kramer, William P.
1925. Resumen del trabajo efectuado por la División Forestal durante elmes de junio de 1925. Depto. de Agricultura y Trabajo, Div. For. Rev. de Agr. de P.R. 15(1):33-35.

529. Kramer, William P.
1926. Forestry work in the island of Porto Rico. J. For. 24:419-425.

530. Kramer, William P.
1926. Leyes forestales necesarias en Puerto Rico. Rev. de Agr. de P.R. 17(6):25-26.

The necessity of forestry laws in Puerto Rico.

531. Kramer, William P.
1926. Resumen del trabajo efectuado durante el mes de diciembre, 1925. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 16(1):27-28.

Summary of the work done by the P.R. Div. of For., during December 1925.

532. Kramer, William P.
1926. Resumen del trabajo efectuado durante el mes de enero, 1926. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 16(2):94-95.

Summary of the work done by the P.R. Div. of For., during January 1926.

533. Kramer, William P.
1926. Resumen del trabajo efectuado durante el mes de febrero, 1926. [Div. For., Puerto Rico]. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 16(3):154-155.

Summary of the work done by the P.R. Div. of For., during February 1926.

534. Kramer, William P.
1926. Resumen del trabajo efectuado durante el mes de marzo, 1926. [Div. For., Puerto Rico1 Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 16(4):208-209.

Summary of the work done by the P.R. Div. of For., during March 1926.

535. Kramer, William P.
1926. Resumen de los trabajos efectuados en el plantel del Servicio Forestal durante los meses de abril y mayo, 1926. Depto. de Agricultura y Trabajo, Div. Forestal. Rev. de Agr. de P.R. 16(6):301-305.

Summary of work done by the Forest Service during April and May 1926.

536. Kramer, William P.
1926. Resumen de los trabajos efectuados en el plantel del Servicio Forestal correspondiente al mes de junio, 1926. Depto. de Agricultura y Trabajo Forestal. Rev. de Agr. de P.R. 17(1):20-21.

Summary of work done in the Forest Service during June 1926.

537. Kramer, William P.
1926. Una estación experimental de silvicultura en perspectiva para Puerto Rico. Rev. de Agr. de P.R. 16(2):75-77.

A perspective for an experimental station for Puerto Rico.

538. Kramer, William P.
1928. Plan de repoblación forestal para Puerto Rico. Obras Públicas de P.R. 5(52):1578-1581.

Reforestation plan for Puerto Rico.

539. Kramer, William P.
1929. Los Estados Unidos necesitan bosques tropicales. Rev. de Agr. de P.R. 23(4):164-165.

The United States' need for tropical forests.

540. Kramer, William P.
1929-1930. Informe de la División Forestal, Depto. de Agricultura y Trabajo. Rev. de Agr. de P.R. 25(3):104-107 y 129.

Report of the Forest Division, Puerto Rico Dept. of Agriculture and Labor.

541. Kramer, William P.
1930. La agricultura y la silvicultura. Rev. de Agr. de P.R. 25(7):21, 40-41.

Agriculture and forestry in Puerto Rico.

542. Kramer, William P.
1930. Leyes de Puerto Rico: autorizando la adquisición de terrenos para fines forestales y la clasificación de ciertos terrenos como bosques auxiliares insulares. Rev. de Agr. de P.R. 25(3):123-125 y 130.

Puerto Rican laws that permit the acquisition of land for forests and the classification of land as auxiliary state forests.

543. Kramer, William P.
1930. Timber markets in Porto Rico. For. Worker 6(6):11-12.

544. Kumme, K. W. O., and C. B. Briscoe.
1963. Forest formations of Puerto Rico. Caribb. For. 24(2):57-66.

545. Kuntze, Otto.
1881. Um die erde. Leipzig, Germany.

Contains account of the author's visits to St, Thomas and Puerto Rico in 1874.

546. Kuntze, Otto.
1891-1893. Revisio Genarum Plantarum. 3 vols. Leipzig, Germany.

Contains records of specimens collected by the author in St. Thomas and Puerto Rico.

547. La Bastille, Anne, and Douglas J. Pool.
1978. On the need for a system of cloud-forest parks in middle America and the Caribbean. Environmental Conservation 5(3):183-190.

548. Lamb, F. Bruce.
1959. A selected, annotated bibliography on mahogany. Caribb. For. 20(1/2):17-37.

549. Lamb, F. Bruce.
1960. An approach to mahogany tree improvement. Caribb. For. 21(1/2):12-20.

550. Lamb, F. Bruce, C. B. Briscoe, and G. H. Englerth.
1960. Recent observations on forestry in Tropical America. Caribb. For. 21(1/2):46-59.

551. Lavandero, Carlos F.
1973. Note on the aesthetic importance of Mona Island. In Mona and Monito Islands: an assessment of their natural and historical resources. V. II, Appendix 0, 1 p. Junta de Calidad Ambiental [Env. Quality Bd.], San Juan, P.R.

552. Lavigne, R. J.
1977. Notes on the ants of Luquillo Forest, Puerto Rico. (Hymenoptera: Formicidae). Proc. Entomol. Soc. Wash. 79(2):216-237.

553. Ledrú, André Pierre.
1971, Viaje a la Isla de Puerto Rico en el año 1797. Traducido al espaiiol por Julio L. Vizcarrondo. 5ta. edición. San Juan, Editorial Coquí. 177 p. Series "Ediciones Borinquen".

This is latest Spanish edition of this book; the original in French was written in 1810. This contains narratives of observations on the vegetation of the islands, 1796-1798, and records of collections made.

554. Legrand, J. F.
1919. Consideraciones acerca de la destrucción de los bosques de P.R. El Mundo [San Juan, P.R.], June 14, 1919. p. 11.

An account of the destruction of forests in Puerto Rico.

555. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 3(2):5-15.

Useful plants of Puerto Rico.

556. Legrand, J. Federico.
1920. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 3(3):21-27.

Useful plants of Puerto Rico.

557. Legrand, J. Federico.
1920. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 3(4):5-11.

Useful plants of Puerto Rico.

558. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 3(5):1-9.

Useful plants of Puerto Rico.

Legrand, J. Federico.
1920. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 3(6):15-16.

Useful plants of Puerto Rico.

560. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 3(7):12-16.

Useful plants of Puerto Rico.

561. Legrand, J. Federico.
1920. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 4(1):20-26.

Useful plants of Puerto Rico.

562. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 4(2):5-10.

Useful plants of Puerto Rico.

563. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 4(4):17-24.

Useful plants of Puerto Rico.

564. Legrand, J. Federico.
1920. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 5(1):1-3.

Useful plants of Puerto Rico.

565. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 5(2):1-3.

Useful plants of Puerto Rico.

566. Legrand, J. Federico.
1920. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 5(4):1-11.

Useful plants of Puerto Rico.

567. Legrand, J. Federico.
1920. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 5(5):1-7.

Useful plants of Puerto Rico.

568. &grand, J. Federico.
1920. Plantas iitiles de Puerto Rico. Rev. de Agr. de P.R. 6(1):21-25.

Useful plants of Puerto Rico.

569. Legrand, J. Federico.
1920. Plantas Wiles de Puerto Rico. Rev. de Agr. de P.R. 6(4):11-20.

Useful plants of Puerto Rico.

570. Legrand, J.Federico.
1921. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 6(5):7-16.

Useful plants of Puerto Rico.

571. Legrand, J. Federico.
1921. Plantas útiles de Puerto Rico. Rev. de Agr. de P.R. 6(6):7-16.

Useful plants of Puerto Rico.

572. Legrand, J. Federico.
1921. Plantas Gtiles de Puerto Rico. Rev. de Agr. de P.R. 7(2):5-6.

Useful plants of Puerto Rico.

573. León, Jorge.
1966. Central American and West Indian species of Inga (Leguminosae). Ann. If... Bot. Gdn. 53(3):265-359.

574. Leopold, N. F.
1963. Checklist of birds of Puerto Rico and the Virgin Islands.. Univ. P.R. Agr. Exp. Stn. Bull. No. 168. Río Piedras, P.R. 119 p.

575. Liegel, Leon H.
1973. Woodland conservation in Puerto Rico-its past, present, and future.' MS thesis, State Univ. of New York Coll. of Environ. Sci. and For., Syracuse. 130 p.

576. Liegel, Leon H., and Gabriel A. del Toro.
[n.d.] Merits of conventional aerial photography in an intensive natural resources inventory in Puerto Rico. p. 178-191. P.R. Dept. of Natural Resources. Resources Inventory 74-122. San Juan, P.R.

577. Liegel, Leon H., and Gabriel A. del Toro.
1974. An intensive natural resources inventory aids land use planning and resources management in Puerto Rico. In Proc. of the Am. Soc. of Photogrammetry, Fall Conv., Sept. 10-13, 1974. p. 57-65.

578. Linás, Raúl.
1962. Recreación en áreas forestales del Estado. Rev. de Agr. de P.R. 49(1):103-113B.

This is an article on the development of recreation areas in the public forests of Puerto Rico which were created in the years from 1939 to 1962.

579. Liogier, A.
1965. Nomenclature changes and additions to Britton and Wilson's "Flora of Porto Rico and the Virgin Islands." Rhodora 67:315-361.

580. Liogier, Alain H.
1967. Further changes and additions to the flora of Porto Rico and the Virgin Islands. Rhodora 69:372-376.

581. Little, Elbert L., Jr.
1953. A new Byrsonima from Puerto Rico. Phytologia 4:417-422, illus.

582. Little, Elbert L., Jr.
1955. Notas sobre dendrología tropical. U.S. For. Serv., Trop. For. Res. Cent. (now named Inst. Trop. For.), Río Piedras, P.R. 27 p.

Notes on tropical dendrolcgy.

583. Little, Elbert L., Jr.
1955. Notes on tropical dendrology. U.S. For. Serv., Trop. For. Res. cent. (now named Inst. Trop. For.), Río Piedras. P.R. 28 p.

584. Little, Elbert L., Jr.
1955. Trees of Mona Island. Caribb. For. 16(1/2):36-53.

Notes on topography, climate, fauna, and history of the island; also, a brief survey of the vegetation and its range elsewhere, including an annotated list of 100 species of trees and large shrubs.

585. Little, Elbert L., Jr.
1969. Trees of Jost Van Dyke (British Virgin Islands). U.S. Dep. Agric. For. Serv., Res. Pap. ITF-9, U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Sixty-nine native tree species on Jost Van Dyke, one of the British Virgin Islands, and 18 other species are noted as introduced. This list, based on field work and collections on April 11-13; 1967, provides distribution records of species previously known from adjacent islands. It is also a contribution of the USDA Forest Service project on forest trees of the Caribbean area under the International Biological Program.

586. Little, Elbert L., Jr.
1970. Relationships of trees of the Luquillo Experimental Forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-13, p. B 47 - B 58. USAEC, Oak Ridge, Tn.

The tree flora of the Luquillo Mountains of Puerto Rico is compared withthatof otherpartsof Puerto Rico, of other islands, and of adjacent continents. Approximately 61 species are restricted to Puerto Rico, and are of special interest in the study of relations and evolution. These include 26 endemic to the Luquillo Mountains and environments.

587. Little, Elbert L., Jr., and Frank H. Wadsworth.
1964. Common trees of Puerto Rico and the Virgin Islands. U.S. Dep. Agric. For. Serv., Agric. Handb. 249, 548 p. U.S. Govt. Print. Off.', Washington, D.C.

The 250 most common tree species of Puerto Rico and the Virgin Islands are described and illustrated in this volume. They are grouped by plant families and within each family alphabetically by scientific names.

588. Little, Elbert L., Jr., Frank H. Wadsworth, and José Marrero.
1967. Arboles comunes de Puerto Rico y las Islas Virgenes. Editorial Universidad de Puerto Rico, Río Piedras, P.R. 827 p.

Spanish translation of "Common trees of Puerto Rico and the Virgin Islands", by Little and Wadsworth. Thisvolume describes and illustrates 250 of the most common tree species of Puerto Rico and the U.S. and British Virgin Islands.

589. Little, Elbert L., Jr., Roy 0. Woodbury, and Frank H. Wadsworth.
1974. Trees of Puerto Rico and the Virgin Islands. Second volume, U.S. Dep. Agric. For. Serv., Agric. Handb. 449. U.S. Gov. Print. Off., Washington, D.C. 1024 p.

This volume follows the publication of "Common Trees of Puerto Rico and the Virgin Islands" by Little and Wadsworth. This second volume treats 460 additional species and briefly describes 40 others, a total of 500. Thus, the two volumes together contain the text of 750 species and illustrations for 710 of them. The aim is to include all native species attaining tree size, even rarely, also the common and many uncommon trees introduced for various purposes. Information from the Introduction to volume 1 is repeated or revised here. Each volume can be used independently, and the second volume mentions in keys all species of the first.

590. Little, Elbert L., Jr., Roy 0. Woodbury, and Frank H. Wadsworth.
1976. Flora of Virgin Gorda (British Virgin Islands). Dep. Agric. For. Serv., Res. Pap. ITF-21, 36 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued. series].

The tropical flora of Virgin Gorda, third largest of the British Virgin Islands, is presented in this annotated list of 403 species of native and introduced vascular plants. The report provides information on plant distribution and contributes records of about 154 species not previously reported.

591. Little, Elbert L., Jr., and Roy 0. Woodbury.
1976. Trees of the Caribbean National Forest, Puerto Rico. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-20, 27 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Tree species of the Caribbean National Forest (the only tropical forest in the U.S. Forest System) in the Luquillo Mountains of northeastern Puerto Rico are discussed.

592. Littlefield, E. W.
1943. ¿Qué puede lograr la reforestacibn? (Taken from conference notes at the N.Y. Botanical Garden). Caribb For. 4(3):143.

Notes on what reforestation can do.

593. Lobeck, A. K.
1922. The physiography of Porto Rico. In Scientific Survey of Porto Rico and the Virgin Islands 1(4):302-375. N.Y. Acad. of Sci., New York.

594. Longwood, F. R.
[n.d]. A plan for a study of air drying, machining and related characteristics of Puerto Rican woods. U.S. Dep. Agric. For. serv., Inst. Trop. For., Río Piedras, P.R. 22 p.

595. Longwood, F. R.
1955. Industrial wood use in Puerto Rico. Caribb. For. 16(3/4):64-97.

596. Longwood, F. R.
1961. Puerto Rican woods: their machining, seasoning, and related characteristics. U.S. Dep. Agric. For. Serv., Agric. Handb. 205. U.S. Gov. Print. Off., Washington;' D.C. 98 p.

597. Longwood, F. R.
1962. Present and potential commercial timbers of the Caribbean. U.S. Dep. Agric. For. Serv., Agric. Handb. 207. U.S. Gov. Print. Off., Washington, D.C. 167 p.

598. López, B. A.
1970. The development of Vacía Talega. The San Juan Star [San Juan, P.R.],, Dec. 27, 1970. p. 1.

599. López Abrams, Betsy.
1973. $1,000 fine is planned for tree cutters. The San Juan Star [San Juan, P.R.], Nov. 23, 1973.

600. López Canales, Manuel.
1929. Plantad árboles: os dará provecho. Rev. de Agr. de P.R. 23(2):74-96.

Article on how we benefit from planting trees.

601. López de Velasco, Juan.
1571. Descripción de Puerto Rico en 1571. (Reprinted,1923). Bol. Hist. de Puerto Rico 10:86-95.

Description of Puerto Rico in 1571.

602. Loustalot, A. J., and C. Pagán.
1950. Local fever plants tested for presence of alkaloids. El Crisol, San Juan, P.R. 1949. (3-5). Chem. Abstr. 44:2179-2180.

603. Lovler, Ronnie.
1974. Seeing the trees and the forest. The San Juan Star [San Juan, P.R.], Feb. 12, 1974.

Report on the first high school course in environmental education given in Puerto Rico.

604. Lucchetti, A.
1945. Second general report on the utilization of water resources of Puerto Rico. P.R. Water Resour. Auth., San Juan, P.R.

605. Lugo, A. [Ariel] E.
1965. Photosynthetic studies of rain forest seedlings, Cecropia peltata, Anthocephalus cadamba., Dacryodes excelsa, and Sloanea berteriana. M.S. thesis, Univ. of P.R., Río Piedras, P.R. 37 p., 11 tbls., 25 figs.

606. Lugo, A. [Ariel] E.
1974. Some problem in Puerto Rico with the management of natural resources. C.I.A.A. 26(3):30-32.

607. Lugo, A. [Ariel] E.
1975. Manglares de agua dulce: ley o mito. Ch. 1. In A.E. Lugo y Div. de Educ., eds. Primer Simposio de Recursos Naturales. Depto. de Rec. Nat., San Juan, P.R. 116 p.

608. Lugo, A. [Ariel] E.
1976. La relación entre la contaminación del agua y las invasiones de plantas acudticas. p. 157-165. In E. Cardona, ed. Segundo Simposio de Recursos Naturales. Depto. de Rec. Nat., San Juan, P.R.

609. Lugo, A. [Ariel] E., and G. Cintrón.
1974. The mangrove forests of Puerto Rico and their management. In Proc. of International Symposium on Biology and Management of Mangroves, Vol. II, p. 825-846. Food and Agric. Sci., Univ. of Fla., Gainesville.

610. Lugo, A. [Ariel] E., and S. C. Snedaker.
1974. The ecology of mangroves. Ann. Rev. Ecol. Syst. 5:39-64.

This is a review with special reference to the mangroves of Florida and Puerto Rico, including previously unpublished observations on their physiogncxny, biomass, and cycling of matter and energy. Controversy over the causes of mortality of chemically defoliated mangroves in Vietnam is discussed as evidence of ecological complexity, and it is concluded that mangroves are open ecosystems representing special problems for research and management.

611. Lugo, Ariel [E.].
1970. Photosynthetic studies on four species of rain forest seedlings. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-7, p. I 81 - I 102. USAEC, Oak-Ridge, Tn.

Photosynthetic studies were made on seedlings of the rain forest species Cecropia peltata, Anthocephalus cadamba, Sloanea berteriana, and Dacryodes excelsa under various light conditions. The results were many andvaried.

612. Lugo, Ariel E., José A. González-Liboy, Barbara Cintrón, and Ken Dugger.
1978. Structure, productivity, and transpiration of a subtropical dry forest in Puerto Rico. Biotropica 10(4):278-291.

613. Lugo-López, M. A.
1953. Moisture relationships of Puerto Rican soils. Univ. of P.R., Agric. Exp. Stn., Tech. Pap. 9. 97 p. Río Piedras.

613a. Lugo-López, M. A., and J. A. Bonnet.
1951. Utilization of organic soils in Puerto Rico. J. Agric. Univ. of P.R. 35(2):157-165.

614. Lugo-López, M. A., J. A. Bonnet, and Jean García.
1953. The soils of the Island of Vieques. Bull. 108. 50 p. Univ. of P.R., Agric. Exp. Stn., Río Piedras.

This report covers a soil reconnaissance made on the Island of Vieques at various short periods beginning June 27, 1949. It contains soil-profile observations made in deep pits and road cuts, field-infiltration data, and laboratory data on the physical and chemical properties of the major soil types of the area. The report is supplemented with information compiled relative to physical geography, climate, geology, soils, agriculture, and present land use in the area.

615. Lugo-López, M. A., R. Pérez-Escolar, G. Acevedo, and J. Juárez, Jr.
1959. Nature and properties of major soils of Lajas Valley. Bull. 149. 60 p. Univ. of P.R., Agric. Exp. Stn., Río Piedras.

616. Lugo-López, M. A., and Luis H. Rivera.
1977. Updated taxonomic classification of the soils of Puerto Rico. 1977. Bull. 258. Univ. of P.R., Mayaguez Campus. Coll. of Agric. Sci., Agric. Exp. Stn., Río Piedras.

617. Luse, Robert.
1970. The phosphorus cycle in a tropical rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-12, p. H 161 - H 166. USAEC, Oak Ridge, Tn.

Concentrations and flows of phosphorus in the forest-floor zone of the El Verde rain forest were studied with radioactive tagging and by analysis of sane principal forest components. The radioactive phosphorus released from decaying leaves was almost quantitatively held by the zone of surface roots and humus, and was subsequently recycled to the plants.

618. Lyford, W. H.
1969. The ecology of an elfin forest in Puerto Rico, 7: soil, root, and earthworm relationships. J. Arnold Arbor. 50(2):210-224.

619. McCandless, I. B.
1961. Bird life in southwestern Puerto Rico I. Fall migration. Caribb. J. Sci. 1(1):3-12.

620. McCandless, I. B.
1962. Bird life in southwestern Puerto Rico II. The winter season. Caribb. J. Sci. 2(1):27-39.

621. McClelland, T. B.
1917. Some profitable and unprofitable coffee lands. Porto Rico Agric. Exp. Stn. Bull. 21. U.S. Gov. Print. Off., Washington, D.C.

622. McCormick, J. Frank.
1970. Direct and indirect effects of gamma radiation on seedling diversity and abundance in a tropical rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-10, p. D 201 - D 211. USAEC, Oak Ridge, Tn.

Studies were made of seedling density, diversity, and microenvironmental conditions before and after irradiation. Following irradiation, as the more-radiation-sensitive species disappeared, species diversity was reduced in proportion to the radiation exposure. The rain forest is less radiation sensitive than temperate forests that have been studied, and recovery is faster.

623. McCormick, J. Frank.
1970. Growth and survival of the Sierra Palm under radiation stress in natural and simulated environments. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-9, p. D 193 - D 199. USAEC, Oak Ridge, Tn.

Population samples of the sierra palm, Euterpe globosa Gaertn., were exposed to varying intensities of radiation in their natural rain forest environment and also in simulated growth-chamber and greenhouse environments. The conclusion that exposures in excess of 35 kr would be required to severely damage populations of this dominant species corresponds to the conclusion of a related study that 35 to 50 kr would be required to severely affect species diversity in the forest.

624. McCormick, J. Frank.
1970. Patterns of radiation exposure in the tropical rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. C-4, p. C 41 - C 47. USAEC, Oak Ridge, Tn.

The pattern of gamma radiation received in the rain forest at El Verde was monitored by 1450 lithium fluoride dosimeters dispersed in horizontal and vertical patterns during the 92-day exposure period. Although the geometry of the area exposed was extremely heterogeneous because of ravines, trees, and rocks, the radiation field became symmetrical beyond 30 m. Within the 30-m radius, rocks and trees provided up to 40-fold reduction in exposure dose to microhabitats.

625. McDonough, James.
1970. Ceiba vs. Palm is potential fight on official tree choice. The San Juan Star [San Juan, P.R.], Feb. 22, 1970.

626. McIntyre, D. H., and R. P. Briggs.
1967. Effects of the high seas of December 3-5, 1967 on shores and beaches in the San Juan Area, P.R. Rev. del Colegio de Ingenieros, Arquitectos y Agrimensores, Puerto Rico.

627. McMahan, Elizabeth A.
1970. Radiation and termites at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-8, p. E 105 - E 122. USAEC, Oak Ridge, Tn.

Comparisons of nest condition, tunnel occupancy, and behavior were made between rain forest termites in an irradiated area after exposure and others outside the area. All nests within 30 m of the cesium source were entirely abandoned after 24 months. Direct effects of radiation were presumed to be responsible rather than defoliation or mechanical disturbance.

628. McMahan, Elizabeth A., and Nancy F. Sollins.
1970. Diversity of Microarthropods after irradiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-11, p. E 151 - E 158. USAEC, Oak Ridge, Tn.,

An exploratory study comparing postirradiation diversity of litter microfauna in the South Control, Radiation, and North Cut Centers was carried out in March 1967, 24 months after irradiation. Radiation did not produce decreased diversity in the postirradiative growth.

629. McManus, Irene.
1976. The perils of parrots: interview with Dr. Noel Snyder, of U.S. Fish and and Wildlife Service. Am. For. 82(9):16-19; 58-64

630. McMillen, J. M.
1961. Kiln schedules for Puerto Rican yagrumo hembra. Caribb. For. 22(3/4):84-90.

Spanish summary, Caribb. For. 22(3/4):90.

631. Magruder, Joel.
1967. Al borde de la extinción. El Mundo[San Juan, P.R.], June 28, 1967. p. 4

Puerto Rican parrot at the borderline of extinction.

632. Maguire, Bassett, Jr.
1970. Aquatic communities in bromeliad leaf axils and the influence of radiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-6, p. E 95 - E 101. USAEC, Oak Ridge, Tn.

Faunas in the water held in the leaf axils of bromeliads were examined and association coefficients were calculated for combinations of species groups to characterize communities. Positive associations were found between harpacticoids and oligcchaetes and between cyclopoi copepods, ostracods, and nauplii but not with harpacticoid copepods and nauplii.

633. Malaret, Augusto.
1970. Lexicón de fauna y flora. Comisión Permanente de la Asociación de Academia de la Lengua Española, Madrid. 567 p.

This lexicon includes approximately 9,000 words used in Latin America to designate plants and animals and is limited to the names of those scientifically classified.

634. Malaret, René Jiménez.
1939. El dominio de la erosión de las tierras en Puerto Rico. Rev. de Agr. de P.R. 33:7-18.

The control of soil erosion in Puerto Rico.

635. Maldonado, Edwin D.
1962. Durabilidad de los postes tratados para su finca. Rev. de Agr. de P.R. 49(1):165-168.

Durability of treated posts for the farm.

636. Maldonado, Edwin D.
1962. Radiación solar para secar caoba en Puerto Rico. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 14, 5 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomía Tropical, [Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Notes No. 14, entitled "Solar radiationused to dry mahogany lumber in Puerto Rico."

637. Maldonado, Edwin D.
1962. Solar radiation used to dry mahogany lumber in Puerto Rico. U.S. Dep. Agric. For. Serv., Trop. Notes No. 14, 5 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 14, entitled "Radiación solar para secar caoba en Puerto Rico."

638. Maldonado, Edwin D., and George H. Englerth.
1961. Aserraderos y suplidores de madera en Puerto Rico. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 7, 3 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomía Tropical, [Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Notes No. 7, entitled "Sawmills and suppliers of wood in Puerto Rico."

639. Maldonado, Edwin D., and George H. Englerth.
1961. Sawmills and suppliers of wood in Puerto Rico. U.S. Dep. Agric. For..Serv., Trop For. Notes No. 7, 3 p. U.S. Dep Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 7, entitled "Aserraderos y suplidores de madera de Puerto Rico."

640. Maldonado, Ed-win D., and R. S. Boone.
1968. Shaping and planning characteristics of plantation-grown mahogany and teak. U.S. Dep. Agric. For. Serv., Res. Pap, ITF-7, 22 p. U.S. Dep. Agric. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

This study reports on some machining characteristics of Puerto Rico plantation-grown mahogany and teak. Also included is small-leaf (West Indies) mahogany from St. Croix, U.S. Virgin Islands. Shaping and planning were chosen for evaluation since these operations are decisive in exposed furniture parts.

641. Maldonado, Edwin D., and Edward C. Peck.
1962. Drying by solar radiation in Puerto Rico. For. Prod. J. 12:487-488.

642. Mann, R. I.
1972. Visual quality criteria and advance planning overview for Puerto Rico land use and natural resources inventory. Cornell Univ. Dep. of Aerial Photo Studies and P.R. Dep. of Pub. Wks., Area of Nat. Resour. Ithaca, N.Y. and San Juan, P.R.

643. Marchán, F. J.
1946. The lignin, ash, and protein content of some neotropical woods. Caribb. For. 7(2):135-138.

644. Margalef, R.
1962. Comunidades Naturales. Instituto de Biología Marina, Univ. de P.R., Mayaguez, P.R.

Paper on natural communities.

645. Margenat, Alfredo.
1959. Toro Negro y El Yunque, gobiemo federal e insular hacen permuta de bosques. El Mundo [San Juan, P.R.], Oct. 21, 1959. p. 23.

Federal and Commonwealth governments make exchange of Toro Negro and El Yunque (Caribbean National Forest) forests.

646. Márquez, Juan Luis.
1950. La vida en los bosques de Toro Negro. El Mundo, Puerto Rico Ilustrado [San Juan, P.R.], Apr. 22, 1950. p. 4-7.

Article about the Toro Negro forest, Puerto Rico.

647. Marrero, Joaquín F.
1962. Efecto de los bosques en la conservación de suelos y agua y en el control de la sedimentación en los lagos de Puerto Rico. Rev. de Agr. de P.R. 49(1):137-142.

Effects of the forestson the conservation of soils and water and the control of deposits in the lakes of Puerto Rico.

648. Marrero, José.
1939. Siembras combinadas de cosechas agrícolas y especies maderables. Rev. de Agr. de P.R. 31(2):244-252.

The combination of agricultural harvest and timber-yielding species.

649. Marrero, José.
1940. Conservación. Caribb. For. 1(2):17-24.

English summary of this article on conservation, Caribb For. 1(2):17-24.

650. Marrero, José.
1942. Celebración del Día del Arbol. Caribb. For. 3(2):89-90.

English summary of this article on celebration of Arbor Day, Caribb. For. 3(2):89-90. A forester states that the attitude of our children will decide the fate of our farm woodlands in the future.

651. Marrero, José.
1942. A seed storage study of Maga. Caribb For. 3(4):173-183.

Spanish summary, Caribb For. 3(3/4):183-184.

652. Marrero, José.
1942. Study of grades of broadleaved mahogany planting stock. Caribb. For. 3(2):79-87.

Spanish summary, Caribb. For. 3(2):87-88.

653. Marrero, José.
1943. A seed storage study of some tropical hardwoods. Caribb. For. 4(3):99-106.

Spanish summary, Caribb. For. 4(3):106.

654. Marrero, José.
1947. Efectos de la poda radicular de dos especies forestales, Caribb. For. 8(3):241-244.

The planting season in the tropics follows the rains. Unlike the temperate zones, temperature is not generally a limiting factor in plant survival. High temperature and high humidity result in active vegetative growth in the nursery. This has been considered an undesirable condition which might affect survival.

655. Marrero, José.
1947. La profundidad y tipo de cobertura térrea adecuados para las semillas de varias especies de maderas duras del trópico. Caribb. For. 8(3):228-235.

English version, Caribb. For. 8(3):213-227. French summary, Caribb. For. 8(3):235-236.

656. Marrero, José.
1947. The proper depth and kind of covering for seeds of several tropical hardwoods. Caribb. For. 8(3):213-227.

Spanish version, Caribb For. 8(3):228-235. French summary, Caribb. For. 8(3):235-236.

657. Marrero, José.
1947. A survey of the forest plantations in the Caribbean National Forest. M. F. thesis. School of For. and Conserv., Univ. of Mich., Ann 167 p.

658. Marrero, José.
1948. Forest planting in the Caribbean National Forest: past experience as a guide for the future. Caribb. For. 9(2):85-147.

This is an extract of a thesis submitted in partial fulfillment of the requirements for the degree of Master of Forestry at the Univ. of Mich., March 1947. Spanish version, Caribb For. 9(2):148-210. French summary, Caribb For. 9(2):210-212.

659. Marrero, José.
1948-1949. Repoblación forestal en el Bosque Nacional Caribe de Puerto Rico: experiencias en el pasado como guía para el futuro. Caribb. For. 9(2):148-210.

English version. Caribb. For. 9(2):85-147. French summary, Caribb. For. 9(2):210-212.

660. Maxrero, José.
1949. ¿Cuáles son los usos de las especies forestales de los arbolados en la finca? 3. En Los cursos de adiestramiento. Caribb. For. 10(4):288-292.

English version, Caribb. For. 10(4):249-253.

661. Marrero, José.
1949. Datos sobre semillas de árboles de Puerto Rico. Caribb. For. 10(1):31-35.

English version, Caribb. For. 10(1):11-30. French summary, Caribb. For. 10(1):35.

662. Marrero, José.
1949. ¿Qué especies forestales se adaptan a las tierras forestales de las fincas? 2. En Los cursos de adiestramiento . Caribb. For. 10(4):283-288.

English version, Caribb. For. 10(4):244-249.

663. Marrero, José.
1949. Tree seed data from Puerto Rico. Caribb. For. 10(1):11-30.

Spanish version, Caribb. For. 10(1):31-35. French summary, Caribb. For. 10(1):35.

664. Marrero, José.
1950. La reforestación de tierras degradadas de Puerto Rico. Caribb. For. 11(1):16-24.

English version, Caribb. For. 11(1):3-15.

665. Marrero, José.
1950.' Reforestation of degraded lands in Puerto Rico. Caribb. For. 11(1):3-15.

Spanish version, Caribb. For. 11(1):16-24.

666. Marrero, José.
1950. Resultados de la repoblación forestal en los bosques insulares de Puerto Rico. Caribb. For. 11(4):151-195.

English version, Caribb For. 11(3):107-147.

667. Marrero, José.
1950. Results of forest planting in the Insular Forests of Puerto Rico. Caribb. For. 11(3):107-147.

Spanish version, Caribb. For. 11(4):151-195.

668. Marrero, José.
1951. Forestación varía según las zonas. El Mundo [San Juan, P.R.], Feb. 25, 1951. p. 21.

Forestation varies with the zones.

669. Marrero, José.
1954. Especies del género Inga usadas como sombra de café en Puerto Rico. Caribb. For. 15(1/2):54-71.

Inga used as shade for coffee in Puerto Rico.

670. Marrero, José.
1949. What are the uses of farm forest tree species? 3. In A farm forestry training program. Caribb. For. 10(4):249-253.

Spanish version, Caribb. For. 10(4):288-292.

671. Marrero, José.
1949. What tree species are adapted to farm forest lands? 2. In A farm forestry training program. Caribb. For. 10(4):244-249.

Spanish version, Caribb. For. 10(4):283-288.

672. Marrero, José.
1961. El musgo esfagno en la propagación de arbolitos de pino. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 9, 2 p. U.S. Dep. Agric. For. Serv., Instituto de Dasonomía Tropical, Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Notes No. 9, entitled "Spagnum moss as a medium for rooting pine seedlings."

673. Marrero, José.
1961. Sphagnum moss as a medium for rooting pine seedlings. U.S. Dep. Agric. For. Serv., Trop. For. Notes No. 9, 2 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Spanish version published as Apuntes Forestales Tropicales No. 9, entitled "El musgo esfagno en la propagación de arbolitos de pino." Pine seedlings grown in sphagnum moss were much taller at planting time, an important aid to survival during the first year in the field. Although this study included only Honduras pine, hardwoods, among them mahogany (Swietenia macrophylla), blue mahoe (Hibiscus elatus), plumajillo (Schizolobium sp.), and primavera (Cybistax donnell-smithii), have also been grown successfully in sphagnum moss.

674. Marrero, José.
1961. Tam&o de las parcelas de ensayo en investigaciones de genética forestal. Caribb. For. 22(3/4):79-83. (Translation of "Plot Size in Forest Genetic Research" by Jonathan W. Wright and Dean Freeland, Jr.).

675. Marrero, José.
1962. Prácticas usadas en los viveros de pinos de Puerto Rico. Caribb. For. 23(2):87-99.

English sum-nary, Caribb. For. 23(2):87.

676. Marrero, José.
1965. Effect of a plastic mulch on weed growth and early height growth of Bonduras Pine. U.S. Dep. Agric. For. Serv., Res. Note ITF-4, 5 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Black polyethylene squares were used in two tests to reduce competition of weeds around newly planted trees. One test was on a wet site at 1800 feet elevation, the other on a moist site near sea level.

677. Marrero, José.
1965. Potting media for Bonduras Pine. U.S. Dep. Agric. For. Serv., Res. Note ITF-5, 7 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

An earlier Research Note reported *that studies showed Bonduras Pine seedlings growing on sphagnum moss grew almost twice as fast in height as seedlings in soil and 23% more than seedlings growing in a mixture of vermiculite and sandy loam.
A study was made comparing the following materials during 1962: (1) sphagnum moss (2) ground vermiculite (3) coca-peat (4) year-old mahogany sawdust (5) a mixture of one part coco-peat and three parts sawdust (6) a mixture of equal parts ofcoco-peat and sawdust. During 1963 comparisons were made between (1) a mixture of equal parts of vermiculite and mahogany sawdust (2) peat, and (3)sphagnum moss. Results of this study showed no statistical difference in the heights of the seedlings obtained.

678. Marrero, José.
1965. Survival growth of bagged and barerooted Honduras pine, ' cadam, and primavera. U.S. Dep. Agric. For. Serv., Res. Note ITF-3, 4 p. U.S. Dep. Agric. For. Serv.,. Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

To determine whether Honduras pine, cadam and primavera can be planted barefooted, plants were raised in polyethylene bags but at time of planting the potting material was removed from around the roots of half the plants. This study discusses the results.

679. Marrero, José, and Frank H. Wadsworth.
1951. Early results from the improvement of a farm woodlot. Caribb. For. 12(2):59-62.

Spanish version, Caribb. For. 12(2):62-66.

680. Marrero, José, and Frank H. Wadsworth.
1951. Resultados preliminares del mejoramiento del arbolado de una finca. Caribb. For. 12(2):62-66.

English version, Caribb. For. 12(2):59-62.

'681. Marrero, José, and Frank H. Wadsworth.
1958. Indicaciones para la repoblación forestal de las fincas de Puerto Rico. Caribb. For. 19(3/4):56-79.

This article discusses the need for afforestation, areas where degraded or abandoned agricultural land is available, soil types, species to be used, and seasons suitable for sowing or planting in different areas.

682. Martinez Nadal, Noemí G., and others.
1973. Toxicological effects of active principles of West Indian caoba, Swietenia mahaqoni. Caribb. J. Sci. 13(1/2):131-134.

683. Martinez Oramas, J.
1939. Supervisor's annual plant report: Caribbean National Forest, Puerto Rico insular forests and Puerto Rico Reconstruction Administration. Calendar year 1938. U.S. Dep Agric. For. Serv., Trop. For. Exp. Stn. [now named Inst. Trop. For.], Río Piedras, P.R.

684. Martínez Oramas, Joaqufn.
1942. Plantingwith tar-paperpots ondifficult sites in Puerto Rico. Caribb. For. 3(4):158-163.

685. Martorell, Luis F.
1939. Some notes on forest entomology I. Caribb. For. 1(1):25-26.

686. Martorell, Luis F.
1940. Notes on the biology of Mesocondyla concordalis Hubner and its parasites. Caribb. For. 2(1):18-19.

Spanish summary, Caribb. For. 2(1):19.

687. Martorell, Luis F.
1940. Some notes on forest entolomogy II. Caribb. For. 1(2):31-32.

688. Martorell, Luis F.
1940. Some notes on forest entomology III. Caribb. For. 1(3):23-24.

689. Martorell, Luis F.
1941. Biological notes on the sea-grape sawfly Schizocera krugii Cresson, in Puerto Rico. Caribb. For. 2(3):141-144.

690. Martorell, Luis F.
1941. Some notes on forest entomology IV., Caribb. For. 2(2):80-82.

691. Martorell, Luis F.
1943. Forest and forest entomology. Caribb. For. 4(3):132-134.

692. Martorell, Luis F.
1945. A survey of the forest insects of Puerto Rico. J. Agric. of UPR 29:70-608.

693. Martorell, Luis F.
1953. ¿Qué árbol sembraré? Caribb. For. 14(3/4):152-160.

Discusses the suitability of certain species for planting in gardens or on estates and presents a list of species classified according to their uses, i.e., for shade, ornament, fruit, or timber production.

694. Martorell, Luis F.
1961. ¿Qué árbol sembraré? Rev. de Agr. de P.R. 48(1):138-147.

695. Martorell, Luis F.
1962. Arboles omamentales. Rev. de Agr. de P.R. 49(1):143-152.

696. Martorell, Luis F.
1964. El Araucaria o Pino de Norfolk. El Mundo [San Juan, P.R.], July 6, 1964. p. 12.

The Araucaria or Norfolk Pine.

697. Martorell, Luis F.
1964. Arboles de Puerto Rico: el Higuerito. El Mundo [San Juan, P.R.], Feb. 24, 1964. p. 15.

Trees of Puerto Rico: the Higuerito (Calabash tree).

698. Martorell, Luis F.
1964. Arboles de Puerto Rico: El Palo de Muiieca. El Mundo [San Juan, P.R.], June 8, 1964. p. 14.

Trees of Puerto Rico: El Palo de Muñeca (manjack).

699. Martorell, Luis F.
1964. Arboles endémicos de Puerto Rico: El Cupeíllo. El Mundo [San Juan, P.R.], Sept. 14, 1964. p. 11.

Endemic trees of Puerto Rico: the Cupeíllo.

700. Martorell. Luis F.
1964. Arboles maderables y de sombra. La Moca. El Mundo [San Juan, P.R.], Apr. 20, 1964. p. 14.

Moca: a timber and shade tree.

701. Martorell. Luis F.
1968. Arboles de Bosques Enanos: Oreganillo o Tamarind0 de Loma. El Mundo [San Juan, P.R.], Dec. 21, 1968. p. 28.

Trees of the Elfin Forests: Oreganillo or Tamarindo de Loma.

702. Martorell, Luis F.
1968. Arboles del manglar: mangle de Botón o Botoncillo. El Mundo [San Juan, P.R.], Oct. 26, 1968. p. 42.

Button-mangrove.

703. Martorell, Luis F.
1969. El bucayo gigante o bucayo. El Mundo [San Juan, P.R.], Mar. 22, 1969. p. 10-B.

Bucaré tree.

704. Martorell, Luis F.
1969. El Jaguey Colorado o Higuillo Prieto. El Mundo [San Juan, P.R.], Sept. 6, 1969. p. 6-B.

705. Martorell, Luis F.
1973. The insects of Mona Island, P.R. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. J, p. J-l - J-7. Junta de Calidad Ambiental [Env. Quality Bd.], San Juan, P.R.

706. Matthews, Barbara M.
1967. An ecological guide to the littoral fauna of Puerto Rico. Dep. of Ed. Press. San Juan, P.R. 72 p.

707. Matos, Cruz A.
1971. Forum summary: environmental criteria for development planning. Caribbean Conservation Association. Environmental Newsletter 2(3):48-51.

708. Mattoon, W. R.
1940. Forest trees and forest regions of the United States. U.S. Dep. Agric., Misc. Pub. 217, p. 48-49.

709. Maury, Carlotta J.
1930. Correlation of Antillean fossil floras. Science 72(1862): 253-254.

710. Maxon, William R.
1926. Botany of Porto Rico and the Virgin Islands. Descriptive Flora-Pteridophyta. Sci. Surv. Port0 Rico & Virgin Islands 6:373-521.

Descriptions of orders, families, genera, and species, with keys, synonymy and geographic distribution of the species are included.

711. Maza, M. G. de la.
1889. Diccionario botánico de los nombres vulgares Cubanos y Puertorriqueños. 8 vols., 115 p. Havana, Cuba.

These volumes contain Spanish names for many plants of Puerto Rico.

712. Meléndez Muñoz, Miguel.
1963. Consideraciones dasonómicas: urgencia puertorriqueña de política forestal. El Mundo, suplemento [San Juan, P.R.], May 11, 1963.

The topic of this article is the urgency of a forestry policy for Puerto Rico.

713. Melgarejo, Juan.
1914. Memoria y descripción de la Isla de Puerto Rico. Mandada a hacer por S.M. el Rey D. Felipe II, en el año 1582. 13 p. + map Printed in San Juan [no date, no publisher. Mimeo copy. available at Puerto Rico Collection, UPR Library, Río Piedras.]

714. Mercado, Nelson.
1970. Leaf growth, leaf survival, leaf holes, color of cambium, and terminal bud condition. In A tropical-rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-15, p. D 271 - D 286. USAEC, Oak Ridge, Tn.

Following irradiation of the rain forest plot at El Verde, data were obtained on bud condition, cambium condition, percentage of leaf survival, rate of new leaf production, and leaf holes. Species sensitivity was not closely related to unclear volume.

715. Meyerhoff, H. A.
1932. Geología del distrito de Fajardo, Puerto Rico. Rev. Obras Pub., P.R. 9:197-200; 249-251.

Geology of the district of Fajardo, P.R.

716. Meyerhoff, H. A.
1933. Geology of Puerto Rico. Monograph of the University of Puerto Rico, Physical and Biological Sciences, Series B, No. 1, Univ. of P.R., Río Piedras. 36 p., map.

717. Miers, J.
1870. On the genera Goetzea and Espadea. Trans, Linn. Soc. 27:187-195.

Goetzea is an endemic genus of Puerto Rico.

718. Miller, K. R.
1969. Some economic problems of outdoor recreation planning in Puerto Rico. Abstr. of thesis, in Dissert. Abstr. 29B (8), (2697).

A model leading to more efficient allocation of resources and production of services in keeping with the needs of the Island's several cultures is developed in the cited thesis.

719. Miller, K. R., and C. R. Gifford.
1963. A floristic study of the Tabonuco type in the Luquillo Experimental Forest. Unpublished research report, U.S. For. Serv., Inst. Trop. For., Río Piedras, P.R.

720. Millspaugh, C. F.
1900. Plantae Utowanae. Field Mus. Publ. Bot. 2:1-110; 113-133; 25 pls.

An enumeration of plants collected on St. Thomas and in Puerto Rico and Culebra in January 1899.

721. Mitchell, Raoul c.
1954. A survey of the geology of Puerto Rico. Univ. of P.R. Agric. Exp. Stn. Tech. Pap. 13. Río Piedras. 167 p.

722. Mixer, Knowlton.
1926. Porto Rico, history and conditions., social, economic, and political. MacMillan and Co., New York. 329 p.

723. Monteith, D. B., and R. Ybarra-Coronado.
1969. Survival of bare-rooted Honduras pine in Puerto Rico. Turrialba19:291-292.

724. Mosquera Moreno, M. [Menandra], and J. L. Whitmore.
1976. Bibliografía sobre Hypsipyla. In Studies on the shootborer Hypsipyla grandella (Zeller) Lep. Pyralidae. Centro Agronómico Tropical de Investigación y Enseñanza, IICA Misc. Pub. 101, Vol. 2, Turrialba, Costa Rica, p. 130-138.

725. Mosquera Moreno, Menandra.
1972. Bibliografía sobre los manglares en Puerto Rico de 1923-1972. 10 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

Bibliography on the mangroves of Puerto Rico from 1923-1972. Mimeographed copies distributed by the Institute of Tropical Forestry, Río Piedras, P.R.

726. Muñoz, J. E.
1968. Timber management plan for the Luquillo Experimental Forest. [Unpublished]. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

727. Muiioz, J. E., and J. I. Angleró.
1968. La repoblación forestal en Puerto Rico. Servicio de Extensión Agrícola, Univ. de P.R., Río Piedras. 13 p.

The reforestation of Puerto Rico

728. Muñoz, J. E., and L. W. Bill.
1967. The use of herbicides for site preparation and their effects on tree survival. U.S. Dep. Agric. For. Serv., Res. Note ITF-12, 6 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Effects of Picloram herbicide on planted mahogany are discussed.

729. Muñoz, L. A.
1972. W.R.A. discounts fears of Jobos Bay damage. The San Juan Star [San Juan, P.R.], Feb. 1, 1972.

730. Murphy, Louis S.
1912. A preliminary report on the forest problems of Porto Rico. Porto Rico Bd. Comm. Agr. Rep. 1:48-61.

731. Murphy, Louis S.
1916. Forests of Porto Rico: past, present, and future. U.S. Dep. Agric., Bull. 354, 99 p., Washington, D.C.

Detailed discussion of forestry and its problems includes an annotated list of native trees.

732. Murphy, P. [Peter G.].
1967. Tree growth at El Verde and the effects of ionizing radiation. M.S. thesis. Syracuse Univ., Syracuse, N.Y.

733. Murphy, Peter G.
1970. Tree growth at El Vercie and the effects of ionizing radiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. ch. D-4, p. D 141 - D 171. USAEC, Oak Ridge, Tn.

The radial growths of 250 tree trunks of five principal species were measured monthly with vernier bands at El Verde from December 1963 to May 1966. Growth ranged from 0.36 cm annual increase in trunk diameter in Dacryodes excelsa to 0.18 cm in the lower story dominant Croton poecilanthus.

734. Murray, Robert Rose.
1920. Los trabajos de silvicultura empiezan a organizarse. El servicio forestal de P.R. quiere establecer una estación experimental forestal. El Mundo [San Juan, P.R.], Sept. 20, 1920. p. 7

Organization of forestry work. The Forestry Service of Puerto Rico wishes to establish a forestry experimental station.

735. Nevares, R., Jr.
1948. Datos de ingenierla y geología alrededor de la sedimentación de embalses en Puerto Rico. Rev. de Agr. de P.R. 42:169-189.

736. Nevling, L. I.
1969. The ecology of an elfin forest in Puerto Rico, 5. Chromosome numbers of some flowering plants. J. Arnold Arbor. 50(1):99-103.

737. Nevling, Lorin I., Jr.
1970. The ecology of an elfin forest in Puerto Rico, 12. A new species of Gonocalyx (Ericaceae). J. Arnold Arbor. 51(2):221-227

738. Nevling, Lorin I., Jr., and Roy Woodbury.
1966. Rediscovery of Daphnopsis helleriana. J. Arnold Arbor. 47(3):262-265.

739. New York Academy of Sciences.
1919. Scientific Survey of Porto Rico and the Virgin Islands. N.Y. Acad. Sci., New York.

This natural history survey of Porto Rico [Puerto Rico] and the Virgin Islands, conducted by The New York Academy of Sciences, was established in 1913 and carried out with the cooperation of the Puerto Rican govemnt. The results of this survey have appeared from time to time as investigations by specialists have been completed.

740. Nieves Rivera, Carlos.
1949. Por defender cotorra nativa. El Mundo [San Juan, P.R.], Sept. 4, 1949. p. 9.

Protecting the native parrot.

741. Noble, W. D.
1925. La fuerza motriz del Río Blanco. Rev. Obras Pub., P.R. 2:594-596.

The force of the Río Blanco River.

742. Nobles, R. W., and C. B. Briscoe.
1966. Height growth of mahogany seedlings, St. Croix, Virgin Islands. U.S. Dep. Agric. For. Serv., Res. Note ITF-10, 4 p. U.S. Dep Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series]

The results of this study were that small-leaf mahogany seedlings grew more rapidly than bigleaf, and their hybrids grew more rapidly than either for the first two years. However, between 4 and 7 years of age, both hybrids and bigleaf were significantly taller than small-leaf. Bigleaf suffered the most mortality, followed by small-leaf, then the two hybrids.

743. Nobles, R. W., and C. B. Briscoe.
1966. Killing unwanted West Indies mahogany trees by peeling and frilling. U.S. Dep. Agric. For. Serv., Res. Note ITF-8, 3 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Peeling and frilling killed approximately 70 percent of treated West Indies mahogany, usually within the first 15 months following treatment.

744. Nobles, R. W., and C. B. Briscoe.
1966. Mowing understory vegetation in a young teak plantation. U.S. Dep. Agric. For. Serv., Res. Note ITF-9, 2 p. U.S. Dep. Agric. For. Serv., Inst Trop. For., Río Piedras, P.R. [Discontinued series].

This study indicated mowing competing grass and brush improved accessibility and appearance and reduced fire hazard, but neither height nor diameter growth of the teak was affected.

745. Nobles, R. W., and C. B. Briscoe.
1966. Rootpruningofmahogany nursery stock. U.S. Dep Agric. For. Serv., Res. Note ITF-7, 4 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

According to this study, root pruning had no effect on growth or survival of'either young or held-over mahogany nursery stock.

746. Noll, John J.
1953. The silting of Caonillas Reservoir. Puerto Rico. 22 p. U.S. Dep. Agric. Soil Conserv. Serv. and Dep. Agric. and Comm., Commonw. of P.R.

The purpose of this study was to determine the rate of storage loss resulting from soil and other erosional debris washing into Caonillas Reservoir, to determine the principal sources of this material, and to make some broad recommendations for reducing the rate of sedimentation. The study also included a detailed sedimentation survey of the Reservoir and a detailed. soil conservation survey of the watershed.

747. Nolla, J. A. B., and G. L. Crawford.
1941. La conservación del suelo en Puerto Rico. 30 p. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R.

The conservation of soils in Puerto Rico.

748. Northwestern University.
1952. The rural land classification program of Puerto Rico. Northwest. univ., Dep. of Geog., Northwest. Univ., Evanston, Ill.

749. Núñez Meléndez, E.
1964. Plantas medicinales de Puerto Rico. Univ. de P.R., Estación Experimental Agrícola, Bol. 176, Univ. P.R., Río Piedras, P.R. 245 p..

Medicinal plants of Puerto Rico.

750. Ocasio, Juan Manuel.
1963. Trees may make land tax exempt. The San Juan Star [San Juan, P.R.], July 31, 1963.

Puerto Rico Department of Agriculture may seek Puerto Rico legislation next year to allow farmer's taxexemptionon any portion of land above 5 acres devoted to raising trees.

751. Odum, H. [Howard] T.
1964. Rain Forest project: work in progress, scientific results, and proposals for FY-65 and FY-66. Terrestrial ecology program I. USAEC Report PRNC-34. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P. R.

This is a renewal proposal for studies of the effects of gamma irradiation on the rain forest ecological system at El Verde, Puerto Rico.

752. Odum, H. [Howard] T., ed.
1965. The Rain Forest project annual report. PRNC-61. Terr. Ecol. Prog. I. 220 p. USAEC Report, P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

This is the annual report for work done on the rain forest project at El Verde, Puerto Rico. An account is given of the measurements taken in the various phases of work by resident staff and visiting participant

753. Odum, H. [Howard] T.
1970. The AEC rain forest program. In A tropical rain forest: a study of irradiation and ecology-& El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. C-l, p. C 3- C 22 USAEC, Oak Ridge, Tn.

This illustrated narrative describes the experimental design of the forest-irradiation experiment at El Verde, related studies, and the sequence of events in the AEC Rain Forest Program. Effects of the irradiation and the course of recovery were studied in the six years that followed.

754. Odum, Howard T.
1970. The El Verde study area and the rain forest system of Puerto Rico. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-l, p. B 3 - B 32. USAEC, Oak Ridge, Tn.

The setting and site history of the Rain Forest Project in the Luquillo Mountains of Puerto Rico are introduced with photographs, sectional data, and maps for reference. Base maps, details on facilities, and ari introductory trail description are provided to encourage new investigations at the El Verde Site.

755. Odum, Howard T.
1970. Introduction to Section F. Microorganisms and the effects of radiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-3, p. F 3 - F 7. USAEC, Oak Ridge, Tn.

756. Odum, Howard T,
1970. Introduction Section G. (Cytological studies within the irradiated forest). Microscopic order in the forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. G-3,p. G 3 - G 14. USAEC, Oak Ridge, Tn.

757. Odum, Howard T.
1970. The rain forest and man: an introduction. In A tropical rain forest: a study of irradiation and ecology-% El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. A-2, p. A 5 - A 11. USAEC, Oak Ridge, Tn.

758. Odum, Howard T.
1970. Rain forest structure and mineral-cycling homeostasis. In A tropical rain forest: a study of irradiation. and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-l, p. H 3 - H 52.

As an introduction to the section on mineral-cycling and soil studies, this chapter compares these properties in the forest at El Verde with the same properties in some tropical forests of Costa Rica, Panama, Trinidad, Hawaii, Dominica, and Brazil. A theory of control by changes of atmospheric saturation deficit with attitude is considered and new measurements of numbers of roots in soil pits were made to compare adaptations for absorption to evapotranspiration climate.

759. Odum, Howard T.
1970. Summary: an emerging view of the ecological system at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-10, p. I 191 - I 289. USAEC, Oak Ridge, Tn.

The Tabonuco forest at El Verde was measured for the parts, processes, and the effects of radiation stress.

760. Odum, Howard T., and Robert F. Pigeon, eds.
1970. A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Div. Tech. Info., USAEC, Oak Ridge, Tn.

This book of about 1500 pages gathers the results of a study begun in 1963 by the Atomic Energy Commission, and studies the effects of the gamna rays over a tropical rain forest (El Verde).

761. Odum, Howard T., Walter Abbott, Robert K. Selander, and others.
1970. Estimates of chlorophyll and biomass of the Tabonuco forest of Puerto Rico. In A tropical rain forest: a study of irradiation andecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-l, p. I 3 - I 19. USAEC, Oak Ridge, Tn.

Previously unpublished studies made in the Tabonuco forest type from 1957 to 1962 were used to characterize some overall properties of a forest prism including chlorophyll A and some principal classes of biomass. This study served as a planning guideline to more detailed studies of biomass, chlorophyll, and metabolism at El Verde from 1963 to 1967.

762. Cdum, H. [Howard] T., George Ann Briscoe, and C. B. Briscoe.
1970. Fallout radioactivity and epiphytes. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-13, p. H 167 - H 176. USAEC, Oak Ridge, Tn.

After relatively high levels of fallout retention were discovered in the epiphytic mossy forest of the Luquillo Mountains during 1962, a survey of the distribution of radioactivity in the rain forest system was made. High levels, up to 4138 counts per minute per gram, were found mainly in or on green plant tissue and the derived litter, with as much variability among leaves of the same tree as between trees.

763. Odum, H. [Howard] T., P. Burkholder, and J. Rivero.
1959. Measurements of productivity of turtle grass flats reefs, and the Bahía Fosforescente of southern P.R. Publ. Inst. Mar. Sci. Univ. Tex. 6:159-170.

764. Odum, Howard T., and Gilberto Cintrón.
1970. Forest chlorophyll and radiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-2, p. I 21 - I 33. USAEC, Oak Ridge, Tn.

Patterns of chlorophyll A distribution were studied. in trees of the El Verde forest before and after irradiation. Canparisons were also made between successional species, climax species, species in the mossy forest on the mountain top, and corals from a reef. Mean chlorophyll A per area of leaf was highest in species frcxn the mossy forest, intermediate in climax species in the El Verde forest, and least in successional species.

765. Odum, H. [Howard] T., B. J. Copeland, and R. Z. Brown.
1963. Direct and optical assay of leaf mass of the Lower Montane Rain Forest of Puerto Rico. Proc. Natl. Acad. Sci , U.S. 49:429-434.

766. Odum, Howard T., and George Drewry.
1970. The Cesium source at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. C-2, p. C 23 - C 36 USAEC, Oak Ridge, Tn.

A semiportable 10,000-curie cesium source was constructed for environmental irradiation in the rain forest. The total radiation exposure was 92.8 days (2228 hr). Qualitatively, most of the radiation at 500 m was less than 0.1 Mev.

767. Odum, Howard T., George Drewry, and J. R. Kline.
1970. Climate at El Verde, 1963-1966. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-22, p. B 347 - B 418. USAEC, Oak Ridge, Tn.

Hourly, daily, and monthly records of insolation, illumination, temperature, humidity, rainfall, wind, evaporation, and concentrations of carbon dioxide at El Verde are summarized for the period frcxn 1963 to 196

768. Odum, Howard T., George Drewry, and E. A. McMahan.
1970. Introduction to Section E. Animals and the effect of radiatic in A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, ed Ch. E, p. E 3 - E 15. USAEC, Oak Ridge, Tn.

769. Odum, Howard T., and C. F. Jordan.
1970. Metabolism and evapotranspiration of the lower forest in a giant plastic cylinder. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-9, p. I 165 - I 189. USAEC, Oak Ridge, Tn.

For the study of metabolism and evapotranspiration, a giant cylinder of plastic was hung on towers to enclose a prim of rain forest 67 ft. high by 60 ft. wide. Air sampling systems with electrical recorders continuously monitored the carbon dioxide and humidity of the inflowing air at the top of the cylinder and of the outflowing air from the large fan. The high respiration found in the lower forest indicates there is a large photosynthesis that goes immediately into the useful work of maintaing a complex, diverse ecosystem with little net deposition of organic matter.

770. Odum, Howard T., and Ariel Lugo.
1970. Metabolism of forest-floor microcosms. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-3, p. I 35 - I 56. USAEC, Oak Ridge, Tn.

Terrestrial microcosms were seeded with mineral soil, litter, forest-floor herbs, and small animals to simulate some properties of the rain forest floor. Data support the model of control of respiration and photosynthesis by limiting flow from one process, depending on the recent storage accumulating from the other process.

771. Odum, H. [Howard] T., A. Lugo, G. Cintrón, and others.
1970. Metabolism and evapotranspiration of some rain forest plants and soil. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon. Ch. I-8, p. I 103 - I 164. USAEC, Oak Ridge, Tn.

The metabolic rates of some principal forest components were measured with CO_2 analyzermthods; these components included sun and shade leaves of some principal trees, the forest floor, roots, trunk surfaces, and some animals. The very high respiration of all leaf surfaces, the roots, and the forest floor documents the vast work processes of the steady-state climax, with energy mainly derived from some excess net photosynthesis of canopy leaves below the uppermost layer.

772. Odum, Howard T., Allen M. Moore, and Lawrence A. Burns.
1970. Hydrogen budget and compartments in the rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-6, p. H 105 - H 122. USAEC, Oak Ridge, Tn.

The flow rates and compartmental storages of hydrogen in the rain forest system at El Verde were estimated from data on inflows and outflows collected. Although most forest compartmentshadaturnover of hydroyen every few days, the turnover ratio for wood was 9000 days.

773. Odum, H. [Howard] T., P. Murphy, G. Drewry, and others.
1970. Effects of gamma radiation on the forest at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-l, p. D 3 - D 75. USAEC, Oak Ridge, Tn.

A summarizing chronological account is given of defoliation regeneration and succession following irradiation in 1965, with documentation by photographs; counts of leaves, shoots, and seedlings; and instrumental records of optical density as an index to vegetation mass.

774. Odum, H. [Howard] T., and J. Ruiz-Reyes.
1970. Holes in leaves and the grazing control mechanism. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. HowardT.Odumand Robert F. Pigeon, eds. Ch. I-6, p. I 69 - I 80. USAEC, Oak Ridge, Tn.

As a measure of the relative role of herbivore consumption, monthly collections of leaf fall at 55 stations were sampled for the determinatio of the percentage of holes in leaves due to insects and other causes. The relatively small increase in herbivore action at El Verde suggests that regulatory action was effective.

775. Ogle, Carol June.
1970. Pollen analysis of selected sphagnum-bog sites in Puerto Rico. In A tropical rain forest: a studyofirradiationand ecology% El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-11, p. B 135 - B 145. USAEC, Oak Ridge, Tn.

Soil samples from three selected sphagnum-bog sites in the Luquillo Mountains of Puerto Rico were studied to provide a pollen analysis of the vegetation located near the bogs. Pollen from about half the species on nearby sites were predominant in the soil samples.

776. Ogle, Richard A.
1964. Organization and administration of the Puerto Rican Division of Forestry. M.S. thesis. State Univ. Coll. of For. at Syracuse Univ., Syracuse, N.Y. 148 p.

777. Oliver Lugo, F.
1919. Ventajas que se derivarán de la conservación y aumento de nuestros bosques. El Mundo [San Juan, P.R.], Aug. 30, 1919. 2 p.

Advantages of the conservation and increase of forestry in Puerto Rico.

778. Oliver Lugo, Fernando.
1919. Cómo remediar la desaparición de los bosques de P.R. El Mundo [San Juan, P.R.], Sept. 6, 1919. p. 3

How to avoid the disappearance of the forests in Puerto Rico.

779. Ortiz, V. [Víctor] R.
[n.d.] Los recursos forestales de Puerto Rico. P.R. Dep. Agric. Programa de los Recursos Forestales, San Juan, P.R. 8 p.

The forest resources of Puerto Rico.

780. Ortiz, Víctor.
1962. El programa de investigación forestal. Rev. de Agr. de P.R. 49(1):176-185.

The forest research program.

781. Ortiz, Víctor R.
1963. Preservation of Puerto Rican fence posts treated by pressure methods. Caribb. For. 24(2):91-93.

782. Osborne, H.
1935. Insects of Porto Rico and the Virgin Islands, Homoptera (excepting the Stemorhynchi). In Scientific Survey of Porto Rico and the Virgin Islands 14(2):11l-260. N.Y. Acad. Sci., New York.

783. Otárola, A., J. L. Whitmore, and R. Salazar.
1976. Análisis de 12 plantaciones de Toona ciliata var. australis. Turrialba 26(1):80-85.

Study of 12 Toona ciliata var. australis plantations.

784. Otero, J. I., R. A. Toro, and L. P. de Otero.
1945. Catdlogo de los nombres vulgares y científicos de algunas plantas puertorriqueñas. 2nd. ed. Univ. P.R. Agric. Exp. Stn. Bull. 37, Río Piedras, P.R.

Catalog of common and scientific names of some Puerto Rican plants.

785. Otero, José I., and Rafael A. Toro.
1931. Catálogo de los nombres vulgares y cientificos de algunas plantas puertorriqueñas. P.R. Dep Agric. and Labor, Insular Exp. Stn, Bull. 37. Río Piedras, P.R.

Catalog of common and scientific names of some Puerto Rican plants.

786. Ovington, J. D.
1965:. The Rain Forest Project Annual Report for 1965. Chemical analysis of trees at El Verde. p. 197-220. USAEC Report PRNC-61. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

787. Ovington, J. D., and J. S. Olson.
1970. Biomass and chemical content of El Verde lower montane rain forest plants. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-2, H 53 - H 77. USAEC, Oak Ridge, Tn.

The nondestructive estimation of the biomass and the nutrient inventory in the El Verde forest was based on sample weighing and analysis of over 100 trees and regressions that separately treated three groupings of dicotyledon trees and palms.

788. Pagán-Font, Francisco A.
1973. Preliminary assessment of the marine resources of Mona Island. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. F, p. F 1 - F-14. Junta de Calidad Ambiental [Env. Quality Bd.], San Juan, P.R.

789. Page, H. J.
1942. Problemas de suelo en la producción de cosechas tropicales. Caribb. For. 4(1):48.

Soil problems affecting the crops in the tropics.

790. Pate, W. W., and others.
1935. Reconnaissance erosion survey of Puerto Rico. Map prepared by the U.S.D.A., Soil Conserv. Serv., Bur. Chem. Soils, Washington, D.C.

791. Paz Salamandra, N.
1977. Biota en Guzmania berteroniana y Yriessia sientenisii (Familia Bromeliaceae), en el Bosque Pluvial de Luquillo, Puerto Rico. Actual Biol. (Colanbia) 6(19):2-7.

Biota including insects and neumatodes found in the Rain Forest of Luquillo.

792. Pendelton, R. L.
1955. El papel de los suelos tropicales en la alimentación del mundo. Turrialba 5(1):6-16.

The role of tropical soils in the feeding of the world.

793. Pennock, William.
1967. Ornamental trees for landscaping in Puerto Rico. Agric. Exp. stn., Univ. of P.R., Mayaguez Campus, Río Piedras. Misc. Publ. 64, 58 p.

794. Pereles, José.
1960. The acidity of selected Puerto Rican woods. Caribb. For. 21(1/2):41-44.

795. Pérez, José W.
1970. Relation of crown diameter to stem diameter in forests of Puerto Rico, Dominica, and Thailand. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-9, p. B 105 - B 122. USAEC, Oak Ridge, Tn.

Detailed structural data, including measured values of crown diameter and stem diameter, were collected for 28 forest stands. The data suggest that the regression line of best fit is a straight line on a log plot throughout the range of size. The assumptionthatrain forest palms, such as Euterpe globosa Gaertn., exhibit larger crowns as a function of height without commensurate increase in stem diameter was tested and found to be invalid.

796. Pérez Vázquez, Carlos.
1962. El manejo y ordenación de las tierras forestales públicas de Puerto Rico. Rev. de Agr. de P.R. 49(1):94-102.

The management and policy of the public forest lands of Puerto Rico.

797. Perkins, J.
1907. The Leguminosae of Porto Rico. U.S. Nat. Herb. Contr. 10:133-220.

798. Perry, Jerome J.
1970. The survival of actincxnycetes in a radiation field. In A tropical rain forest: a study of irradiation and ecology% El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-10, p. F 67 - F 68. USAEC, Oak Ridge, Tn.

Actincxnycetes were isolated from the soil in an area of the rain forest before and after irradiation. Quantification of the actinomycetes present in the soil suggests that there was some decrease in the total number after irradiation, which may be a secondary effect.

799. Persinos, G. J., S. K. Christie, J. M. Bidigner, and M. J. Lapiana.
1970. The ecology of an Elfin Forest in Puerto Rico. 13. Phytochemical screening and literature survey. J. Arnold Arbor., 51(4):540-546.

800. Petrichik, Bernard and Harriet.
1951. Flowering trees of the Caribbean. Rinehart & Co., New York. 125 p.

801. Petrunkevitch, A.
1929-1930. The spiders of Puerto Rico. Trans. Conn. Acad. Arts and Sci. 30:1-355; 31:1-191.

802. Peyton, J. S., and J. G. Peters.
1912. Forest timber and tree laws in general of Porto Rico. U.S. Forest Service, Washington, D.C. [unpublished].

803. Picó, Rafael.
1937. Studies in the economic geography of Puerto Rico. Univ. P.R. Bull. Series 8, No. 1. Río Piedras. 84 p.

804. Picó, Rafael.
1952. Evaluación de nuestros recursos naturales. Conferencia dictada ante la Séptima Convención de Trabajo Social en Puerto Rico, el 3 de mayo de 1952, San Juan. [Mimeographed].

Evaluation of Puerto Rico's natural resources.

805. Picó, Rafael.
1954. Geografía de Puerto Rico. Parte I: Geografía ffsica. 243 p. Editorial Universitaria, Río Piedras, P.R.

Physical geography of Puerto Rico.

806. Pic6, Rafael.
1962. Puerto Rico: planificación y acción. 312 p. Banco Gubernamental de Fomento para Puerto Rico. San Juan, P.R.

Planification for Puerto Rico.

807. Picó, Rafael.
1964. Geografía de Puerto Rico. Parte II: Geografía Económica. 220 p. Editorial Universitaria,, Río Piedras, P.R.'

Economic geography of Puerto Rico.

808. Picó, Rafael.
1969. Nueva geografía de Puerto Rico. 460 p. Editorial Universitaria, Río Piedras, P.R.

Updated text on geography of Puerto Rico.

809. Pic6, Rafael.
1974. The geography of Puerto Rico. 439 p. The Aldine Pub. Co., Chicago, Ill.

810. Plank, H. R.
1950. Insecticidal properties of some plants growing in Puerto Rico. U.S. Dep. Agric. Fed. Exp. Stn. Bull. 48, 39 p. U.S. Dep. Agric. Fed. Exp. Stn. [now called U.S. Dep. Agric. Mayaquez Inst. of Trop. Aqric.], Mayaguez, P.R.

811. Plank, H. R.
1948. Biology of the bamboo powder-post beetle in Puerto Rico, U.S. Dep Agric. Fed. Exp. Stn. Bull. 44, 29 p. U.S. Dep. Agric. Fed. Exp. Stn. [now called U.S. Dep. Aqric. Mayaguez Inst. of Trop. Aqric.], Mayaguez, P.R.

812. Plank, H. R.
1950. Studies of factors influencing attackand control of the bamboo powder-post beetle. U.S. Dep. Agric. Fed. Stn. Bull. 48, 39 p. U.S. Dep Agric. Fed. Exp. Stn. [now called U.S. Dep. Aqric. Mayaquez Inst. of Trop. Aqric.], Mayaguez, P.R.

813. Pool, D. [Douglas] J., A. E. Lugo, and S. C. Snedaker.
1975. Litter production in mangrove forests of South Florida and Puerto Rico. p. 213-237. In Proceedings of International Symposium on biology and management of mangroves. G. Walsh, S. Snedaker, and H. Teas, eds. Institute of Food and Agric. Sci., Gainesville, Fla.

814. Pool, Douglas J., Samuel C. Snedaker, and Ariel E. Lugo.
1977. Structure of mangrove forests in Florida, Puerto Rico, Mexico, and Costa Rica. Biotrópica 9(3):195-212.

Structural parameters of mangrove forests were measured at seven geographical locations in Florida, Puerto Rico, Mexico, and Costa Rica using the complexity index developed by Holdridge in 1967.

815. Porto Rico. [Puerto Rico].
1884. Regulations for the compromise sale of unappropriated government lands in the island of Porto Rico, approved on Apr. 17, 1884. 4 p.

816. Porto Rico. [Puerto Rico].
1902. Annual report of the Governor, 1901-02. U.S. Gov. Print. Off., Washington, D.C. 351 p.

817. Pox-to Rico. [Puerto Rico].
1907. Annual report of the Governor, 1906-07. U.S. Gov. Print. Off., Washington, D.C. 469 p.

818. Porto Rico. [Puerto Rico].
1919. Annual report of the Governor. U.S. War Dep. U.S. Gov. Print. Off., Washington, D.C. 741 p.

819. Porto Rico [Puerto Rico] Census.
1900. Census of Porto Rico, 1899. U.S. War Dep. U.S. Gov. Print. Off., Washington, D.C. 413 p.

820. Porto Rico [Puerto Rico] Commissioner of the Interior.
1914. Report on the trespassing of the lands of the Luquillo National Forest, Porto Rico. San Juan. 2 p. [Unpublished].

821. Preece, Margot.
1967. Luquillo forest areas restricted. The San Juan Star [San Juan, P.R.], Feb. 15, 1967.

Mountain peaks which contain virgin timber to be off limits for military maneuvers beginning in April.

822. Preece, Margot.
1973. Tiny, wierd-looking insects may hurt trees--but not you. The San Juan Star [San Juan, P.R.], Feb. 18, 19'73.

Chinche espinosa, or Thornbug Umbonia crassicomis causes black n-old to form on some trees.

823. Price, C.A.
1941. Conservación de suelo--un problema singular en Puerto Rico. In Métodos Modernos para conservación de suelos en Puerto Rico. USDA Soil Conserv. Serv., Washington, D.C.

Soil conservation--a problem in Puerto Rico.

824. Provanetti, Domingo.
1951. La siembra de árboles. El Mundo [San Juan, P.R.], Oct. 18, 1951. p. 6.

The planting of trees.

825. Puerto Rico.
1822-1898. Balanza mercantil de la isla de Puerto Rico. Intendencia General Hacienda, San Juan, P.R.

Balance of trade of Puerto Rico.

826. Puerto Rico.
1924. Consultas sobre asuntos forestales. Rev. de Agr. de P.R. 13(6):397-400.

Letters to various Puerto Rican Departments regarding forestry on the island.

827. Puerto Rico.
1966. Informe al Gobernador Honorable Roberto Sánchez Vilella sobre la agricultura de Puerto Rico: situacidn y posibilidades. Rev. de Agr. de P.R. 53(1/2):20-25.

Report to the Governor of Puerto Rico on the present and future of the agricultural situation in Puerto Rico.

828. Puerto Rico Aqueduct and Sewer Authority.
1969. Ccxnprehensive plan for water and sanitary facilities for rural areas in Puerto Rico: general socio-economic analysis. P.R. Aqueduct and Sewer Auth., San Juan.

829. [Puerto Rico. Arboles].
1946. Cosecha de árboles. Nuevo reto a nuestra conciencia de pueblo. El Mundo [San Juan, P.R.], June 13, 1946. p. 5.

Harvesting of trees: a new challenging thought for Puerto Ricans.

830. [Puerto Rico. Arboles].
1949. La poda de árboles. El Mundo, Editorial [San Juan, P.R.], Nov. 16, 1949. p. 6.

Tree pruning for urban beautification.

831. [Puerto Rico. Arboles].
1968. Arboles en Puerto Rico: El Capá Colorado. El Mundo [San Juan, P.R.], July 13, 1968. p. 26.

Trees in Puerto Rico: the red Manjack.

832. Puerto Rico, Autoridad de las Fuentes Fluviales.
[n.d.]. Siembre adecuadamente. 34 p. illus. San Juan.

Proper planting procedures.

833. [Puerto Rico. Aves].
1976. Aves extintas y en peligro de extinción. La Gran Enciclopedia de Puerto Rico. Vol. 10.

Extinct and endangered birds of Puerto Rico.

834. [Puerto Rico. Bosque de Luquillo].
1977. Bosque de Luquillo hace parte reserva biosférica. El Mundo [San Juan, P.R.], May 1, 1977. p. 14-C.

The Luquillo Experimental Forest is recognized as part of the international network of Biosphere Reserves by MAB - Programme on Man and the Biosphere, UNESCO.

835. [Puerto Rico. Bosque Nacional de Isla].
1946. El qobiemo recibe fondo federal $6,037 entregados por concept; explotación de Bosque Nacional de Isla. [El Mundo, P.R.], Jan. 18, 1946. p. 14.

The government receives federal funding of $6,037 for the development of a Puerto Rican national forest.

836. [Puerto Rico. Bosques].
1919. Los bosques de Puerto Rico. El Mundo [San Juan, P.R.], May 15, 1919. p. 9.

The forests of Puerto Rico.

837. [Puerto Rico. Bosques].
1948. Un silvicultor discute cuido de los bosques. El Mundo [San Juan, P.R.], Nov. 7, 1948. p. 27.

A silviculturist discusses the care of trees.

838. Puerto Rico Bureau of Economics and Statistics.
[n.d.] Statistical year book: supplement on trade statistics 1951-52. P.R. Plan. Bd., San Juan, P.R.

839. Puerto Rico Bureau of Economics and Statistics.
[n.d.] Statistical year book: supplement on trade statistics 1952-53. P.R. Plan. Bd., San Juan, P.R.

840. Puerto Rico Bureau of Economics and Statistics.
[n.d] Statistical year book: supplement on trade statistics 1953-54. P.R. Plan. Bd., San Juan, P.R.

841. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1954-55. P.R. Plan. Bd., San Juan, P.R.

842. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1956. P.R. Plan. Bd., San Juan, P.R.

843. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1957. P.R. Plan. Bd., San Juan, P.R.

844. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1958. P.R. Plan. Bd., San Juan, P.R.

845. Puerto Rico Bureau of Economic and Statistics.
[n.d.] External trade statistics 1959. P.R. Plan. Bd., San Juan, P.R.

846. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1960. P.R. Plan. Bd., San Juan, P.R.

847. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1961. P.R. Plan. Bd., San Juan, P.R.

848. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1962. P.R. Plan. Bd., San Juan, P.R.

849. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1963. P.R. Plan. Bd., San Juan, P.R.

850. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1964. P.R. Plan. Bd., San Juan, P.R..

851. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1965. P.R. Plan. Bd., San Juan, P.R.

852. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1966. P.R. Plan. Bd., San Juan, P.R.

853. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1967. P.R. Plan. Bd., San Juan, P.R.

a54. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1968. P.R. Plan. Bd., San Juan, P.R.

855. Puerto Rico Bureau of Econcxnics. and Statistics.
[n.d.] External trade statistics 1969. P.R. Plan. Bd., San Juan, P.R.

856. Puerto Rico Bureau of Economics and Statistics.
1972. External trade statistics 1970. P.R. Plan. Bd., San Juan, P.R.

a57. Puerto Rico Bureau of Econcxnics and Statistics.
[n.d.] External trade statistics 1971. P.R. Plan. Bd., San Juan, P.R.

858. Puerto Rico Bureau of Economics and Statistics.
1973. External trade statistics 1972. P.R. Plan. Bd., San Juan, P.R.

859. Puerto Rico Bureau of Economics and Statistics.
[n.d.] External trade statistics 1973. P.R. Plan. Bd., San Juan, P.R.

860. Puerto Rico Bureau of Econcxnics and Statistics.
1975. External trade statistics 1974. P.R. Plan. Bd., San Juan, P.R.

861. Puerto Rico Bureau of Economics and Statistics.
1977. External trade statistics 1975. P.R. Plan. Bd., San Juan, P.R.

862. Puerto Rico Bureau of Economics and Statistics.
1978. External trade statistics 1976. P.R. Plan. Bd., San Juan, P.R.

863. [Puerto Rico. Cadam].
1970. Esperanza del trópico. El Mundo [San Juan, P.R.], June 27, 1970. p. 5-C.

The Kadam tree: hope for the tropics.

864. [Puerto Rico. Caribbean National Forest].
1977. Forest unit plans classification. The San Juan Star [San Juan, P.R.], Sept. 4, 1977.

U.S. For..Serv. plans to classify 6,200 acres in the Caribbean National Forest as a wilderness area.

865. [Puerto Rico. Conservation].
1975. New law to aid conservation of island's 13 forest reserves. The San Juan Star [San Juan, P.R.], July 14, 1975.

Recent forest law will allow Puerto Rico Department of Natural Resources to revamp existing program and begin new projects for the conservation and development of the island's 13 forest reserves.

866. [Puerto Rico. Parrot].
1946. Se hace estudio de cotorras nativas. El Mundo [San Juan, P.R.], May 19, 1946. p. 9.

Study made on native parrots.

867. [Puerto Rico. Parrot].
1972. Cotorras puertorriquefias viajan en avión 747. El Mundo [San Juan, P.R.], Feb. 20, 1972. p. 5-A.

Puerto Rican parrots travel in a 747 airplane.

868. [Puerto Rico: Delegación de Conservación de Suelos, Aguas y Bosques].
1944. Recomendaciones de la Delegación de Conservación de Suelos, Aguas y Bosques en la Cuarta Sesión de la Comisión Anglo-americana del Caribe. Rev. de Agr. de P.R. 35(2):121-124.

Recommendations by the delegation of conservation of soils, waters, and forests.

869. [Puerto Rico. Departamento de Agricultura].
1943. Conservación de forestas en Puerto Rico. Labores realizadas por el Depto. de Agricultura. El Mundo [San Juan, P.R.], Sept. 13, 1943. p. 6.

Conservation of forests in Puerto Rico: work done by the Department of Agriculture.

870. [PuertoRico. Departamento de Agricultura].
1965. Las recursos forestales de Puerto Rico por Benjamin Seda, Jefe, Programa de Conservación de Recursos Forestales. P.R. Dep. Agric., San Juan.

The forest resources of Puerto Rico by the Chief of the Conservation of Forest Resources Program.

871. [Puerto Rico. Departamento de Agricultura].
1969. Anuario de estadísticas agrícolas de Puerto Rico. 1968/69. P.R. Dep. Agric., Río Piedras.

Yearbook of agricultural statistics of Puerto Rico, 1968/69.

872. Puerto Rico. Departan-mto de Agricultura.
1969. Bosques públicos de Puerto Rico. 22 p. P.R. Dep. Agric., San Juan, P.R.

The public forests of Puerto Rico.

873. Puerto Rico, Departamento de Agricultura, Area de Servicios Auxiliares y Operaciones Centralizadas.
1969. Programa de conservación de los recursos forestales: bosques públicos de Puerto Rico. P.R. Dep. Agric; San Juan.

Program for the conservation of resources in the public forests of Puerto Rico.

874. [Puerto Rico. Departamento de Agricultura y Comercio].
1945. Exposición de las normas y objetivos que rigen en lo concemiente a las tierras forestales del pueblo de Puerto Rico. Caribb. For. 6(4):177-183.

English version, Caribb. For. 6(4):171-177.

875. [Puerto Rico. Department of Agriculture].
1960. Over million trees set out this year. The San Juan Star [San Juan, P.R.], Nov. 21, 1960.

Puerto Rico Department of Agriculture, under its Forestry Technical Aid Program, plan over 1 million lumber producing trees, in addition to ornamental, fruit bearing, and shade trees.

876. [Puerto Rico Department of Agriculture].
1978, Conceptos, plan y programa para una agricultura moderna en Puerto Rico [New concepts, plan and program for agriculture in Puerto Rico]. 539 p., 1 map. P.R. Dep. Agric., San Juan.

This document was prepared at the request and under the direction of the Secretary of Agriculture for his final approval. It was edited by agronomist José Vicente-Chandler, who revised the drafts submitted by several of the island's scientists in agriculture and related fields.

877. Puerto Rico Department of Agriculture and Commerce.
1945. Constation de la Politique et Talhes ayant affaire aux forests qui appartiennent au peuple de Puerto Rico. Caribb. For. 6(3):183-189.

Commissioner of Agriculture and Commerce's statement pursuant to the authority vested in him by the Forest Law.

878. Puerto Rico Department of Agriculture and Commerce.
1945. Statement of policy and objectives governing the forest lands of the people of Puerto Rico. Caribb. For. 6(4):171-177.

Spanish version, Caribb. For. 6(4):177-183.

Commissioner of Agriculture and Commerce's statement pursuant to the authority vested in him by the Forest Law.

879. [Puerto Rico Dept. Agriculture and Commerce].
1948. Annual books on statistics of Puerto Rico 1946-47.

880. [Puerto Rico Dept. Agriculture and Commerce].
[n.d.] Annual book on statistics of Puerto Rico 1949-50. P.R. Dep. Agric., San Juan.

881. Puerto Rico Department of Agriculture and Commerce and U.S. Department of Agriculture, Forest Service.
1948. Insular forest atlas. 2 V. U.S. Dep. Agric. For. Serv., Río Piedras, P.R.

882. Puerto Rico Department of Agriculture, Office of Conservation of Forest Resources, and U.S. Department of Agriculture, Forest Service, Institute of Tropical Forestry, San Juan, P.R.
1967. 50th anniversary of forestry in Puerto Rico. U.S. Dep. Agric. For. Serv., Inst. Trop. For. Río Piedras, P.R. 7 p.

This is a chronology of the history of Puerto Rican forestry.

883. Puerto Rico Department of Natural Resources.
1973. Natural, cultural, and environmental resources inventory, Part I. p. A 31 - A 32. P.R. Dep. Nat. Resour., San Juan.

884. Puerto Rico Department of Natural Resources [Departamento de Recursos Naturales].
1974. Efecto a los sistemas naturales de la propuesta explotación minera. Informe preparado para el Secretario de Recursos Naturales de Puerto Rico. Dep. Nat. Resour., San Juan.

Effect on the ecology of Puerto Rico by the proposed mining development in Puerto Rico.

885. Puerto Rico Department of Natural Resources.
1974. New proposals are heard to protect trees. The San Juan Star [San Juan, P.R.], Jan. 10, 1974.

Puerto Rico Natural Resources Department began hearings on new regulations which would establish controls for cutting down trees.

886. Puerto Rico Department of Natural Resources.
1974. Plant communities of Mona Island. Pittman - Robinson Project W-8-17, Study III, Job 1, Final Report. 53 p., apps. and map. P.R. Dep. Nat. Resour., San Juan.

887. Puerto Rico Deparmnt of Natural Resources.
1974. The 1973 water resources assessment for Puerto Rico. Report based. on the work of the Interagency Technical Task Force on Water Resources. P.R. Dep. Nat. Resour., San Juan.

888. Puerto Rico Department of Natural Resources.
1974. Unit plan for the management of Carite Forest. 67 p. Dep. of Nat. Resour., San Juan.

889. Puerto Rico Department of Natural &sources.
1974. Unit plan for the management of Piiiones Forest. Task Force of Department of Natural Resources. 76 p. Dep. Nat. Resour., San Juan.

890. Puerto Rico Department of Natural Resources [Departamento de Recursos Naturales] .
1975. Bosque Río Abajo; taller forestal. División de Planificación de Bosques. 30 p. P.R. Dep. Nat. Resour., San Juan.

Río Abajo Forest: Forestry workshop.

891. Puerto Rico Department of Natural Resources.
1975 Summary of master plan: Carite Forest. A working document. December 1975. 19 p. P.R. Dep. Nat. Resour., San Juan.

892. Puerto Rico Department of Natural Resources.
1976. Increase slated in reforestation of public lands. The San Juan Star [San Juan, P.R.], Mar. 18, 1976.

Department of Natural Resources nurseries will have 1.3 million tres of different species this year, doubling last year's crop.

893. Puerto Rico Department of Natural Resources [Departamento de Recursos Naturales] .
1976. Mapas de bosques de Puerto Rico. 17 p. División de Planificación de Bosques. P.R. Dep. Nat. Resour., San Juan.

Maps of the forests of Puerto Rico.

894. Puerto Rico Department of Natural Resources.
1976. The master plan for the Commonwealth forests of Puerto Rico. Area of Planning and Evaluation. 259 p. Div. For. Plan., P.R. Dep. Nat. Resour., San Juan, P.R.

Includes sections on recreation, transportation, acquisition, staffing, and goals and policies.

895. Puerto Rico Department of Natural Resources.
1976. Potential recreation site selection for the lakes and lagoons of Puerto Rico. 64 p. Parks and Rec., Bur. Outdoor Rec., Dep. Nat. Resour., San Juan, P.R.

896. Puerto Rico Department of Natural Resources [Dep-to de Recursos Naturales] .
1977. Animales raros y en peligro de extinción en Puerto Rico. 68 p. Dep. Agric. Soil Conserv. Serv., San Juan, P.R.

Spanish translation of a committee report on rare and endangered animals in P.R., published in 1973 by the U.S. P.R. Dep. Nat. Resour., San Juan.

897. [Puerto Rico Department of Natural Resources Inventory Division and Cornell University Center for Aerial Photo Studies].
1973. Final Report - natural, cultural, and environmental resources inventory of Puerto Rico (NCERI). San Juan, P.R., and Ithaca, N.Y.

898. Puerto Rico, Economic Development Administration.
1952. Statistical year book: supplement on trade statistics. P.R. Econ. Dev. Adm., San Juan.

899. Puerto Rico. Environmental Quality Board.
1971. Environmental report 1971. P.R. Env. Qual. Bd., San Juan, P.R.

900. Puerto Rico. Environmental Quality Board.
1973. Mona and Monito Islands: an assessment of their natural and historical resources. vol. 1, 47 p. + photos and maps. Vol. 2, 177 p. Junta de Calidad Ambiental [Env. Qual. Bd.], San Juan, P.R.

This report presents the results of the Environmental Quality Board of Puerto Rico's assessment in July 1972 of Mona and Monito Islands.

. Puerto Rico. Environmental Quality Board.
1978. Vieques 1972 survey of the natural resources. 204 p. P.R. Env. Qual. Ed., San Juan, P.R.

The purpose of this survey was to assemble the necessary base data for constructive land use planning for Vieques Island. Four additional sections which discuss man's modification of his environment have been added.

902. [Puerto Rico. Forestry].
1962. Forestry Institute is given $50,000 to spur projects. The San Juan Star [San Juan, P.R.], Nov. 5, 1962.

Director of the Inst. Trop. For., USDA For. Serv., announced receipt of $50,000 as the first allotment of public work acceleration action assigned to Forest Service in Puerto Rico.

903. [Puerto Rico. Forestry].
1963. Forestry funds okayed. The San Juan Star [San Juan, P.R.], Feb. 5, 1963.

Director of the Inst. Trop. For., USDA For. Serv., announced receipt of $50,000 as the second allotment of public works acceleration action assigned. to Forest Service in Puerto Rico.

904. [Puerto Rico. Forestry].
1963. U.S. allocates P.R. $30,000 for forestry. The San Juan Star [San Juan, P.R.], Feb. 15, 1963.

Public works projects in national forests in 28 states and Puerto Rico.

905. [Puerto Rico. Institute of Tropical Forestry].
1962. U.S. Forestry Institute publishes handbooks. The San Juan Star [San Juan, P.R.], June 27, 1962.

Publication announcement of two new handbooks, "Puerto Rican Woods," and "Commercial Timbers of the Caribbean."

906. Puerto Rico. Junta de Calidad Ambiental [Environmental Quality Board]. 1971. Informe ambiental 1971. Junta de Calidad Ambiental, San Juan, P.R.

Environmental Quality Board Report 1971.

907. Puerto Rico. Junta de Calidad Ambiental [Environmental Quality Board]. 1972. Informe ambiental 1972. 75 p. Junta de Calidad Ambiental, San Juan, P.R.

Environmental Quality Board Report 1972.

908. Puerto Rico. Junta de Calidad Ambiental [Environmental Quality Board]. 1973. Informe ambiental 1973. Junta de Calidad Ambiental, San Juan, P.R.

Environmental Quality Board Report 1973.

909. Puerto Rico. Junta de Calidad Ambiental [Env. Qual. Bd.] 1973. Las Islas de Mona y Monito: Una evaluación de sus recursos naturales e históricos. Vol. 1, 47 p. + fotos y mapas. Vol. 2, 177 p. San Juan, P.R.

Growing interest in the development of Mona and Monito Islands during the past year has led to proposals which call for drastic modification of what has always been an essentially natural environment. Rational planning and decisions regarding the development of these islands requires a full assessment of their present values. The Environmental Quality Board of Puerto Rico undertook the assessment in July 1972. This report presents the results.

This assessment was assigned to a volunteer team of local scientists representing the disciplines which relate to the present environmental values of the area. Most of team members were already familiar with the islands, and one is stationed there. Four trips to the islands were made to collect additional information. The assessment team was directed by Frank H. Wadsworth. The photographs are individually credited. The two general maps were prepared by John J. Whelan.

910. Puerto Rico. Junta de Calidad Ambiental [Environmental Quality Board]. 1974. Informe ambiental 1974. 12 Chapters. Junta de Calidad Ambiental, San Juan, P.R.

Environmental Quality Board Report 1974.

911. Puerto Rico. Legislature. 1930. Committee on unemployment. Report of the investigative committee to investigate the industrial and agricultural uneasiness and restlessness causing unemployment in Porto Rico. Rendered to the Governor and the Legislature of Porto Rico. 3 vols. San Juan, Puerto Rico. Legislature.

912. Puerto Rico. Legislature. 1943-1945. Land Law of Puerto Rico. Law No. 26. Title III, Sect. 58 (as amended by Act No.160 of 1943 and Act No.57 of 1945). San Juan, P.R.

913. [Puerto Rico. Luquillo Forest].
1959. **Trees** for all in 28,000 acre area. The Island Times [San Juan, P.R.], Nov. 27, 1959.

History of the forest surrounding "El Yunque" peak.

914. [Puerto Rico. Mangroves] .
1942. Llorens Torres. Los Manglares. El Mundo [San Juan, P.R.], June 28, 1942. p. 6.

The mangroves of Llorens Torres, Puerto Rico.

915. [Puerto Rico. Mangroves] .
1955. Anuncian nuevo método para el aprovechamiento forestal de los manglares de Piiiones, conocidos también como Bosque de San Juan. El Mundo [San Juan, P.R.], Dec. 16, 1955. p. 14.

Announcement of a new method for the forest utilization of mangroves of Piñones; also known as the San Juan Forest.

916. [Puerto Rico. Mangroves] .
1972. Cuidado con Vacía Talega. El Mundo [San Juan, P.R.], Oct. 7, 1972. p. 6-A.

Plea to take care of the Vacía Talega area.

917. [Puerto Rico. Mangroves] .
1972. Pide proteger mangles quedan en la isla. El Mundo [San Juan, P.R.], Jan. 12, 1972. p. 10-A.

Request for protection of mangroves on the island.

918. [Puerto Rico. Honduras pine].
1967. Programa de reforestación; agricultura sembrard un millón de arbolitos de pino Hondureños. El Mundo [San Juan, P.R.], Dec. 14, 1967. p. 59.

Reforestation: agriculture program will plant a million small Honduras pine trees.

919. Puerto Rico Planning Board.
1969. Puerto Rico land use regulations. P.R. Planning Board, San Juan.

920. Puerto Rico. Puerto Rico and the Sea Committee.
1974. Puerto Rico and the sea. An action program for marine affairs. A report to the Governor. 129 p. Univ. of P.R. and the Em. Devel. Admin. of P.R., San Juan.

921. Puerto Rico Reconstruction Administration.
1940. Puerto Rico: a guide to the island of Boriquén. 409 p. The Univ. Soc., New York.

922. [Puerto Rico. Recursos Forestales].
1943. Forestal tuvo un aumento de 17,000 acres. El Mundo [San Juan, P.R.], Nov. 4, 1943. p. 4.

Forestry has an increase of 17,000 acres.

923. [Puerto Rico. Reforestation].
1968. Island group saving water by reforesting. The San Juan Star [San Juan, P.R.], Feb. 16, 1968.

Association of Soil and Water Conservationists, District of Puerto Rico, launch tree planting program.

924. Puerto Rico. Secretaría de Agricultura.
1966. Conservación de recursos naturales en Puerto Rico. En Informe al Hon. Gobernador Roberto Sánchez Vilella sobre "La Agricultura de Puerto Rico: situación y posibilidades." Rev. de Agr. de P.R. 53(1/2):19-24.

Conservation of the natural resources of Puerto Rico.

925. [Puerto Rico. Seedlings].
1966. More than eight million seedlings planted here. The San Juan Star [San Juan, P.R.], Nov. 14, 1966.

Since 1956 seedlings have been planted on more than 10,000 farms in Puerto Rico under a forestry management program that has resulted in some 3,000 acres of forest plantations on the island.

926. Puerto Rico. Servicio de Extensión Agrícola.
[n.d.] Instrucciones para apreciación de suelos en P.R. 12 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Instructions for the evaluation of soils in Puerto Rico.

927. Puerto Rico. Servicio de Extensión Agrícola.
[n.d.] Suelos más importantes de Puerto Rico. 8 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

The most important soils of Puerto Rico.

928. Puerto Rico. Servicio de Extensión Agrícola.
1970. Conservando la tierra y el agua a través de los Distritos de Conservación de suelos y agua. 8 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Conserving the soil and water by means of the Districts of Conservation of soils and water.

929. Puerto Rico. Servicio de Extensión Agrícola.
1972. Minerales, rocas y suelos. 3 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Minerals, rocks, and soils.

930. Puerto Rico. Servicio de Extensión Agrfcola.
1972. Roturación del subsuelo y abonamiento profundo. 2 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Breaking the subsoil and deep fertilization.

931. Puerto Rico. Servicio de Extensión Agrkola.
1973. Espeques duran más con Pentaclorofenol. 8 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrfcolas, Mayaguez, P.R.

The fenceposts last longer with Pentachloropenol.

932. Puerto Rico. Servicio de Extensión Agrícola.
1975. ¿Qué es un Distrito de conservación de suelos? 2 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

What is a soils conservation district?

933. Puerto Rico. Servicio de Extensión Agrfcola.
1976. Apuntes sobre suelos de P.R. 4 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrfcolas, Mayaguez, P.R.

Notes on Puerto Rican soils.

934. Puerto Rico. Servicio de Extensión Agrkola.
1976. Como propagar plantas por acodos. 8 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

How to propagate plants by layering.

935. Puerto Rico. Servicio de Extensión Agrkola.
1977. Apreciación de suelos. 28 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Soils evaluation.

936. Puerto Rico. Servicio de Extensión Agrkola.
1977. Charcas artificiales y siembra de peces. 4 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Artificial pools and implanting of fishes.

937. Puerto Rico. Servicio de Extensión Agrkola.
1977. Combate del comején común. 4 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrfcolas, Mayaguez, P.R.

Fighting the common termite.

938. Puerto Rico. Servicio de Extensión Agrfcola.
1977. Instrucciones en la toma de muestra de suelos para determinación de acidez. 1 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrfcolas, Mayaguez, P.R.

Bow to take samples of soils to determine the acidity.

939. Puerto Rico. Servicio de Extensión Agrícola.
1977. El murciélago y su combate. 2 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

The bat and how to fight it.

940. Puerto Rico. Servicio de Extensión Agrícola.
1977. La Polilla. 4 p. Univ. de P.R. Recinto de Mayaguez, Colegio de Ciencias Agrícolas, Mayaguez, P.R.

Termites

941. [Puerto Rico. Trees] .
1945. Two million trees planted in 1944. Feb. 15; 1945.

942. [Puerto Rico. Trees]. .
1970. Pour senators want Ceiba as official tree. The San Juan Star [San Juan, P.R.], Jan. 16, 1970.

943. [Puerto Rico. Trees] .
1973. City to plant 2,000 trees in "Green San Juan" program. The San Juan Star [San Juan, P.R.], Nov. 30, 1973.

San Juan's mayor announced that 2,000 trees could be planted in Santurce, and he urged the Legislature to have the municipality increase fines against persons who destroy them.

944. [Puerto Rico. Trees].
1974. 2nd. volume on P.R. trees published (Trees of Puerto Rico and the Virgin Islands, Vol. II). The San Juan Star [San Juan, P.R.], Oct. 11, 1974.

The trees of Puerto Rico and the Virgin Islands, both United States and British, are described in two volumes, of which this is the second (volume 2). "Common Trees of Puerto Rico and the Virgin Islands" by Little and Wadsworth is cited here as volume 1.

945. [Puerto Rico. Trees].
1975. A touch of green for the city scene. The San Juan Star [San Juan, P.R.], Aug. 2, 1975.

An organization made up of citizens interested in beautifying San Juan recently began planting trees and shrubs along main streets in the capital city.

946. [Puerto Rico. Trees] .
1975. Wise trees, magic trees.. The San Juan Star [San Juan, P.R.], Mar. 16, 1975.

Announcement regarding the Puerto Rico Conservation Trust's having published an artistic booklet in Spanish entitled "Sabios árboles, mágicos árboles" about the function of trees in Puerto Rico's ecological cycle.

947. Puerto Rico, Universidad de, Escuela de Derecho, Instituto de Derecho Urbano.
1967. La Conservación de recursos naturales. Univ. de P.R., Río Piedras, P.R.

Conference on the conservation of natural resources of Puerto Rico.

948. Puerto Rico, University of, and the Economic Development Administration of Puerto Rico.
1974. Puerto Rico and the sea: an action program for marine affairs. 129 p. Univ. of P.R., and the Econ. Dev. Adm. of P.R., San Juan, P.R.

A report submitted to the Governor of Puerto Rico in 1972.

949. [Puerto Rico. Urban forestry].
1969. Planners envision a cooler urbanite by planting trees. The San Juan Star [San Juan, P.R.], Mar. 18, 1969.

950. [Puerto Rico. Vacía Talega].
1974. Aquatic forest proposed for Vacía Talega. The San Juan Star [San JUan, P.R.], Jan. 14, 1974.

Hearings on the preservation of Vacía Talega mangrove swampland by converting the area into an aquatic forest to serve recreational needs are outlined. in this article.

951. Puerto Rico Water Resources Authority.
1972. Aguirre Power Plant Complex environmental report. P.R. Water Resour. Auth., San Juan, P.R. 198 p.

This environmental report provides a summary description of the project's environmental features, evaluation of the environmental effects attributable to the project's implementation, and a benefit-cost analysis.

952. [Puerto Rico. Yunquel .
1978. Public's ideas sought on benefits for Yunque. The San Juan Star [San Juan, P.R.], Aug. 1, 1978.

953. Quarterman, Elsie.
1970. Germination of seeds of certain tropical species. In A tropical rain forest: a study of irradiation and ecology at El Verde, PuertoRico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-5, p. D 173 - D 175. USAEC, Oak Ridge, Tn.

Seeds of three species were planted to test the effects of radiation on germination. Germination of irradiated Dacryodes seeds was severely reduced; that of Smilax was not. Seeds of Linocieraprovedtobe immature; germination of Dacryodes seeds was better in the shade.

954. Quiles Colón, Heriberto.
1962. La repoblación forestal en las fincas privadas. Rev. de Agr. de P.R. 49(1):114-122.

Reforestation on the private farms in Puerto Rico.

955. Quiñones, Luis R.
1943. Informe preliminar sobre la utilización prdctica de la corteza del mangle. Caribb. For. 5(1):44-47.

Preliminary report on the utilization of the bark of the mangroves.

956. Raffaele, Herbert.
1973. Assessment of Mona Island avifauna. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. K, p. K-l - K-32. Junta de Calidad Ambiental [Environmental Quality Board], San Juan, P.R.

957. Raffaele, Herbert.
1977. Animales raros y en peligro de extinción en Puerto Rico. 69 p. Departamento de Recursos Naturales, San Juan, P.R.

Rare animals in danger of extinction in Puerto Rico.

958. Rams, Francisco.
1866. Prontuario de disposiciones oficiales del gobiemo superior de la isla de Puerto Rico. Imp. de J. González Font, San Juan, P.R. 531 p.

The official disposition of the governmentof theislandof Puerto Rico.

959. Ramos López, Juan R.
1978. Visualizan 30 mil empleos. Plan reforestación satisfaceria demandas madereras de la Isla. El Mundo [San Juan, P.R.], Feb. 15, 1978. p. 3-A.

Reforestation plan would provide 30,000 jobs and satisfy demand for wood on the island.

960. Recher, Harry F.
1970. Population density and seasonal changes of the avifauna in a tropical forest before and after gamma irradiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-5, p. E 69 - E 93. USAEC, Oak Ridge, Tn.

From 1964 to 1966 bird populations were censused in 25 acres of lower montane rain forest at El Verde and in 9 acres of palm forest on Mt. Britton to the east. At El Verde bird densities were 6.7 to 9.1 per acre and at.Mt. Britton 5.8 to 7.7 birds per acre. Patterns of breeding were charted with season; they are discussed relative to pulses of food productivity available in insects, flowers, and fruits.

961. Recher, Hazy F., and Judy T. Recher.
1966. A contribution to the knowledge of the avifauna of the Sierra de Luquillo, Puerto Rico. Caribb. J. Sci. 6(3/4):151-161.

962. Record, Samuel J.
1927. The mods of Mexico, Central and South America and the West Indies. In International Critical Tables 2:39-42. McGraw-Hill, New York.

963. Record, Samuel J., and Robert W. Hess.
1943. Timbers of the new world.640 p. Yale Univ. Press, New Haven.

964. Record, Samuel J., and Clayton D. Mell.
1924. Timbers of Tropical America. 610 p. Yale Univ. Press, New Haven.

965. Reddy, C. V. K.
1956. Puerto Rico and its forests. Indian For. 82(10):501-510.

966. Reid, David.
1942. Creosote penetration in Tabonuco wood as affected by preliminary boiling treatments in organic solvents. Caribb. For. 4(1):23-24.

This paper deals specifically with the problems in the preservative treatment of tabonuco, Dacryodes excelsa Vahl., one of the more important Puerto Rican species. Spanish summary, Caribb. For. 4(1):34.

967. Ricciuti, Edward R.
1973. Parrot! Parrot! flickering out. Audubon 75(5):86-108.

968. Ricciuti, Edward R.
1974. The Puerto Rican parrot. In: To the brink of extinction. Edward R. Riccuiti. Ch. 1, p. 3-32. Harper and Row, New York.

This book tells the stories of seven species of wild animals that have been on the road to extinction, one of which is the Puerto Rican parrot.

969. Richards, Douglas D.
1962. E.U. contratará obreros en isla para dos obras. El Mundo [San Juan, P.R.], Oct. 29, 1962.

The U.S. Department of Agriculture assigns five million dollars for construction on forests in Puerto Rico.

970. Rivera, Angel.
1925. Puerto Rico y la silvicultura. Rev. de Agr. de P.R. 14(3):261-262.

Puerto Rico and silviculture.

971. Rivera, Julio.
1955. Servicio Forestal cumple 50 años de vida. El Mundo [San Juan, P.R.], Dec. 17, 1955. p. 7-A.

General description of the works done during this period.

. Rivera, Luis H.
1973. Soils of Mona Island. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. c, p. C-l - c-4. Junta de Calidad Ambiental [Env. Qual. Bd.] San Juan, P.R.

973. Rivera Brenes, L., B. F. Villalobos, and C. Romney-Joseph.
1969. Bosques públicos de Puerto Rico. Depto. de Agricultura, Area de Servicios Auxiliares y Operaciones Centralizadas, Programa de Conservación de los Recursos Forestales.

Public forests of Puerto Rico.

974. Rivera Landrón, Francisco.
1962. Repoblación forestal en la altura puertorriqueña. Rev. de Ag-r. de P.R. 49(1):122-128.

Reforestation in the mountains of Puerto Rico.

975. Roberts, Ray Carlton.
1942. Soil survey of Puerto Rico. USDA Bur. Plant Indus., Washington, D.C., and the Univ. of P.R., Agric. Exp. Stn., Río Piedras, P.R. U.S. Govt. Print. Off., Washington, D.C.

976. Rodríguez San Pedro, Joaquín.
1865. Legislación ultramarina. Vol. 4., 708 p. Impr. de los Señores Viote, Cubas y Vicente, Madrid.

Overseas legislation.

977. Rodríguez-Vidal, José A.
1959. Puerto Rican parrot (Amazona vittata vittata) study. Monograph of the Dep. of Agric. and Comm., No. 1. P.R. Fed. Aid Proj. W-7-R. P.R. Dept. of Agric. and Comm., Div. of Info., San Juan, P.R. 15 p.

978. Rodríguez-Vidal, José A.
1962. Viveros forestales. Rev. de Agr. de P.R. 49(1):156-164.

Forest nurseries in Puerto Rico.

979. Rojas Daporta, M.
1954. En crematorio: se han rescatado cerca de 40 cuerdas de mangle. El Mundo [San Juan, P.R.], Feb. 19, 1954. p. 22.

The rescue from destruction of 40 acres of mangroves in Puerto Rico.

980. Rojas Daporta, M.
1955. Varios departamentos gubernamentales se han unido para llevar a cabo la eliminación total de los manglares del Caño de Martín Peña. El Mundo [San Juan, P.R.], Jan. 18, 1955. p. 5.

Puerto Rican governmental departments unite to restrict elimination of the mangroves from the Martín Peña Canal.

981. Rojas Daporta, Malén.
1964. En la falda del Yunque Vivero produce anualmente más de un millón de arbolitos. El Mundo [San Juan, P.R.], Oct. 19, 1964. p. 4.

More than a million small trees have been produced in the Caribbean Forest nursery for free distribution for planting on private farms.

982. Rojas Daporta, Malén.
1965. Proyectan 4 nuevas zonas recreativas en El Yunque. El Mundo [San Juan, P.R.], Mar. 2, 1965.

Plans to establish 4 new recreation areas in the Caribbean National Forest.

983. Rojas Daporta, Malén.
1965. Realizan investigaciones de bosques primitivos en el área forestal de El Yunque. El Mundo [San Juan, P.R.], Mar. 25, 1965. p. 6-7.

Article on the multiple uses made of the Caribbean National Forest.

984. Roosevelt, Theodore.
1931. Nuevos bosques para Puerto Rico. Rev. de Agr. de P.R. 26(10):120-121.

New forests for Puerto Rico.

985. Rosario, José.
1935. Development of the Puerto Rican jíbaro and his present attitude toward society. 116 p. Univ. of P.R., Rfo Piedras.

986. Rouse, I.
1952. Porto Rican prehistory. In Scientific Survey of Porto Rico and the Virgin Islands 18(3):307-578. N.Y. Acad. Sci., New York.

987. Routte, E.
1971. The environment. The San Juan Star [San Juan, P.R.], May 30, 1971. p. 8.

988. Rushing, William N.
1970. A quantitative description of vegetation at El Verde sites. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-14, p. B 169 - B 237. USAEC, Oak Ridge, Tn.

Fran quantitative structural data collected on two forest sites, detailed maps of the area were drawn. Other vegetation data, both structuralandtaxonmic, also are available for the sampledareas.

989. Russell, Keith W., and H. A. Miller.
1977. The ecology of an elfin forest in Puerto Rico, 17. Epiphytic mossy vegetation of Pico del Oeste. J. Arnold Arbor. 58(1):1-24.

990. Samuels, George.
1966. A survey of the PH status of the soils of Puerto Rico. Tech. Pap. 42. Univ. of P.R., Agric. Exp. Stn., Río Piedras, P.R. 33 p.

991. Sánchez, J. C., E. H. Holsten, and J. L. Whitmore.
1976. Comportamiento de cinco especies de meliaceae en Turrialba, Costa Rica. [Behavior of five meliaceae species in Turrialba, Costa Pica]. In Studies on the shootborer Hypsipyla grandella (Zeller) Lep. Pyralidae. p. 97-103. Centro Agronómico Tropical de Investigación y Enseñanza, CATIE. Misc. Pub. 1 (IICA Miscellaneous Publication No. 101), V. 3, Turrialba, Costa Rica.

992. Santana, Pedro M.
1973. La Isla de Mona en los tiempos precolombinos. [Mona Island in pre-Columbian times]. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. M., p. M-l - M-9. Junta de Calidad Ambiental [Environmental Quality Board], San Juan, P.R.

993. Sawbey, C.
1939. Forestry and erosion in Haiti and Puerto Rico. Jamaica Bull. 21 (New Series). Dept. of Agric. and Sci., Jamaica. 10 p.

994. Schauss, W.
1940. Insects of Porto Rico and the Virgin Islands, Moths. In Scientific Survey of Port0 Rico and the Virgin Islands 12(2/3):177-417. N.Y. Acad. Sci., 'New York.

995. Schmidt, K. P.
1920. Contributions to the herpetology of Porto Rico. Ann. N.Y. Acad. Sci. 28:167-200.

996. Schmidt, K. P.
1928. Amphibians and land reptiles of Porto Rico. In Scientific Survey of Porto Rico and the Virgin Islands 10(1):1-160. N.Y. Acad. Sci., New York.

997. Schubert, T. [Thomas] H.
1977. Book review of: Whitmore, T. C. 1975. Tropical rain forests of the Far East 282 p. Clarendon Press, Oxford, England. In For. Sci. 23(1):80.

998. Schubert, Thomas H., and José A. Zambrana.
1978. Honduras or bigleaf mahogany: an ornamental and shade tree for avenues, road intersections, and large areas. (In Spanish on reverse side, "Caoba Hondureña o caoba de hojas grandes: árbol omamental y de sombra para avenidas, intersecciones y áreas extensas.") U.S. Dep. Agric. For. Serv., Urban Forestry Bull., Caribbean Area. 2 p.

999. Schubert, Thomas H., and José A. Zambrana.
1978. West Indies or small-leaf mahogany: an ornamental and shade tree for s&-confined areas and adverse conditions. (In Spanish on reverse side, "Caoba Dominicana o caoba hoja pequeña.") U.S. Dep. Agric. For. Serv., Urban Forestry Bull., Caribbean Area. 2 p.

1000. Schuchert, C.
1935. Historical geology of the Antillean Caribbean Region: the lands bordering the Gulf of Mexico and the Caribbean Sea. John Wiley & Sons, Inc., New York. 811 p.

1001. Seaver, F. J., and C. E. Chardón.
1926. Botany of Porto Rico and the Virgin Islands, Mycology. In Scientific Survey of Porto Rico and the Virgin Islands 8(1):1-208. N.Y. Acad. Sci., New York.

1002. Seda, Benjamín R.
1962. Principios generales para formular una polftica forestal para Puerto Rico. Rev. de Agr. de P.R. 49(1):87-93.

The forestry law of Puerto Rico, approved Nov. 22, 1917, establishing the base for a public forestry policy.

1003. Seda, Benjamín R.
1963. Los bosques y la lluvia. Rev. de Agr. de P.R. 50(2):88-90.

The forests and the rain.

1004. Seda, Benjamín R.
1964. El programa forestal de Puerto Rico. Rev. de Agr. de P.R. 51(1):102-108.

The forestry program of Puerto Rico.

1005. Shafer, J. A.
1914. Botanical exploration on the Island Vieques, Porto Rico. J. N.Y. Bot. Gar. 15:103-105.

This is a general account of the island and of its vegetation.

1006. Shafer, J. A.
1915. Collecting in the mountain region of eastern Porto Rico J. N.Y. Bot. Gar. 16:33-35.

1007. Sherman, E. A.
1928. Condiciones silvlcolas de Puerto Rico. Rev. de Agr. de P.R. 20(6):259-272.

Sivicultural conditions of Puerto Rico.

1008. Shlers, D.
1970. Jobos Bay ecology study announced. The San Juan Star [San Juan, P.R.], July 21, 1970. p. 6.

1009. Smedley, D.
1961. Climatologicaldata. Puerto Rico and the Virgin Islands. No. 60-52. U.S. Weather Bur., Washington, D.C.

1010. Smith, M. R.
1936. The ants of Puerto Rico. J. Agric. Univ. of P.R. 20(4):819-975.

1011. smith, R. F.
1965. The Rain Forest Project Annual Report for 1965. Vegetation structure of lower montane rain forest at El Verde. p. 47-60. USAEC Report PRNC-61. P.R. Nuclear Center, Univ. of Puerto Rico, Río Piedras, P.R.

1012. Smith, Richard M., and Fernando Abruña.
1955. Soil and water conservation research in Puerto Rico, 1938 to 1947. Bull. 124. 51 p. Univ. of P.R., Aqric. Exp. Stn., Río Piedras, P.R.

1013. Smith, Robert Ford.
1966. Vegetation structure of a Puerto Rican Rain forest. [Unpublished] 173 p.

Study done following the sequence of changes in forest structure during radiation and of changes in the first year following radiation as compared with those reported in some similar experiments done previously in temperate forests.

1014. Smith, Robert Ford.
1970. List of common plant species at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-4, p. B 59 - B 61. USAEC, Oak Ridge, Tn.

Plants frequently involved in the studies at El Verde are listed in this chapter.

1015. Smith, Robert Ford.
1970. Preliminary illustrated leaf key to the woody plants of the Luguillo Mountains. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-16, p. B 275 - B 290. USAEC, Oak Ridge, Tn.

A key with leaf drawings is provided for identification of the common woody plants of the Lùquillo Mountains, Puerto Rico, using vegetative characteristics.

1016. Smith, Robert Ford.
1970. The vegetation structure of a Puerto Rican forest before and after short-term gamma irradiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-3, p. D 103 - D 140. USAEC, Oak Ridge, Tn.

The structure of a stand of rain forest at El Verde was studied before and for one year after it had been subjected to three months of gamma radiation. Floristic analysis showed that a change in the soil fran relatively aerobic to anaerobic conditions was attributed to factors of drainage.

1017. Sollins, Phillip, and George Drewry.
1970. Electrical conductivity and flow rate of water through the forest canopy. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odumand Robert F. Pigeon, eds. Ch. H-10, p. H 137 - H 153, USAEC, Oak Ridge, Tn.

Throuqhfall, stemflow, and rainfall interception were studied to determin their relative importance as factors in the canopy water balance and the overall nutrient cycle of the forest.

1018. Soriano-Ressy, Mario, A. Paul Desmarais, and José W. Pérez.
1970. A ccxnparison of environments of rain forests in Dominica, British West Indies, and Puerto Rico. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-21, p. B 329 - B 346. USAEC, Oak Ridge, Tn.

Pedology, geology, and vegetation data were collected from seven Tabonuco forests to characterize rain forest systems found in the mountains of the Caribbean Islands. Three sites were established in matured virgin forests on the island of Dominica, British West Indies, and four sites ware established in forests that had experienced selective cuttings on the island of Puerto Rico.

1019. Sorrie, B.
1974 . Observations on the birds of Vieques Islands, Puerto Rico Caribb. J. Sci. 15(1/2):89-103.

1020. Sorsa, Veikko.
1970. Fern cytology and the radiation field. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. HowardT.Odumand Robert F. Pigeon, eds. Ch. G-3, p. G 39 - G 50. USAEC, Oak Ridge, Tn.

Postirradiation studies carried out on pteridophytes in the rain forest project area at El Verde have shown that these plants are unexpectedly resistant to the radiation emitted by a cesium source. Possiblysome structural characteristics prevent breaks in the chromosomes or leads to their repair.

1021. Spain. Ministry of Ultramar.
1884. Regulations for the compromise sale of unappropriated government lands in the Island of Porto Rico, approved on April 17, 1884. 4 p. [Copy of the regulations in Institute of Tropical Forestry files].

1022. Sposta, J. W.
1957. National forests are closely tied to Commonwealth economy. The Island Times [San Juan, P.R.], No. 102, Sept. 20, 1957.

Laborers carry out an integral-part of the improvement program on national forest land in Puerto Rico.

1023. Sposta, Joseph W.
1960. Chemical removal of inferior tropical tree species. U.S. Dep. Agric. Trop. For. Note 4, 2 p. U.S. Dep. Agric. For. Serv., Res. Cent. [now named Inst.-Trop. For,], Río Piedras, P.R. [Discontinued series].

The Spanish version is published as Apuntes Forest&es Tropicales No. 4 and is entitled "Eliminación de esoecies tropicales inferiores por medio de substancias químicas."

1024. Sposta, Joseph W.
1960. Eliminación de especies tropicales inferiores por medio de substancias químicas. U.S. Dep. Agric. For. Serv., Apuntes Forestales Tropicales No. 4, 2 p. U.S. Dep. Agric. For. Serv., Trop. For. Res. Cent. [now named Inst. Trop. For.], Río Piedras, P.R. [Discontinued series].

English version published as Tropical Forest Notes No. 4, entitled "Chemical removal of interior tropical tree species."

1025. Stahl, Agustín.
1875. El tortugo amarillo de Puerto Rico. Anales Soc. Esp. Hist. Nat. 4:19-40.

Account of economic plants of Puerto Rico, with special discussion of the Sapotaceae.

1026. Stahl., Agustín.
1883-1888. Estudios sobre la flora de Puerto Rico. 2nd. ed. Vol. 1, 373 p. Publicaciones de la Fed. Emer. Rel. Admin., San Juan, P.R.

Descriptions in Spanish of same plants of Puerto Rico, based mainly upon the author's collections frcxn 1865 to 1888. This is an uncompleted work.

1027. Stahl, Agustín.
1889. Los Indios Borinqueños [Puerto Rico]. Imprenta Acosta, San Juan.

The Borinquen Indians ('Puerto Rico).

1028. Steere, William C.
1970. Bryophyte studies on the irradiated and control sites in the rain forest at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-11, p. D 213 - D 225. USAEC, Oak Ridge, Tn.

Bryophytes appeared to be more resistant to ionizing radiation than higher plants. Among bryophtes leafy hepatics were more sensitive and mosses were more resistant.

1029. Stehlé, Henri.
1945. Forest types of the Caribbean Islands. Part I. Caribb. For. 6 (suppl.) :273-408.

This article has been translated from French and also has been translated into Spanish.

1030. Stehlé, Henri.
1945. Los tipos forestales de las islas del Caribe. Parte I. Caribb. For. 6 (suppl.):273-416.

This article has been translated from French and also has been translated into English.

1031. Stehlé, Henri.
1945. Les types forestiers des Iles Caraibes. [Forest types of the Caribbean Islands]. Caribb. For. 6(suppl.):273-474, 1945, Premier Suite, and Caribb. For. 7(suppl.):337-709, 1946, Deuxiene Partie.

1032. Stehlé, Henri.
1947. Liste complementaire des arbres et arbustes des Petites Antilles. Caribb. For 8:91-123.

List of trees and shrubs of the Lesser Antilles.

1033. Stein, A. H.
1957. Forest policy and legislation. Caribb. For. 18:68-87.

1034. Stejneger, L.
1904. The herpetology of Porto Rico. U.S. Nat. Herb. Rep. 1902:549-724.

1035. Stella, Tomás.
1965. Radiation for experimentation causes: hot spot in the rain forest. The San Juan Star [San Juan,P.R.], Jan. 17, 1965. p. 8-9.

An experiment of radiation at El Verde to study the effects of radiation in the living organisms is reported in this article.

1036. Stella, Tomás.
1976. Huge program eyes planting of 30,000 San Juan trees in '76. The San Juan Star [San Juan, P.R.], May 30, 1976.

The municipal government of San Juan will undertake to plant trees. The group will be composed of high school and college students plus 200 regular or temporary employees of the Municipal Public Works Department in planting saplings along the city's sidewalks and in front of homes.

1037. Stevens, F. L.
1916. Collecting plants in Porto Rico. J. N.Y. Bot. Gard. 17:82-85.

This is a record of botanical investigations made while Professor Stevens was dean of the College of Agriculture at Mayaguez, P.R.

1038. Stevenson, Tom.
1968. Consideraciones sobre raíces de los &boles. El Mundo [San Juan, P.R.], Oct. 26, 1968. p. 42.

Account on roots of the trees.

1039. Stiven, Alan E.
1970. Respiration in the snail Caracolus caracolla and an estimate of the relative density and biomass of litter snails. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-5, p. I 65 - I 67. USAEC, Oak Ridge, Tn.

The size-specific oxygen consumption of the dominant tree snail, Caracolus caracolla was estimated in August 1966, and the population oxygen consumption was computed for various possible population densitie The relative abundances of these species fitted well the MacArthur (1957 "broken stick" model, suggesting that in the relatively homogeneous-litter environment the niches of gastropod species are nonoverlapping and contiguous.

1040. Stone, R.
1899. Agriculture in Puerto Rico. U.S. Dep. Agric. Yearbook 1898. p. 505-514. U.S. Gov. Print. Off., Washington, D.C.

1041. swabey, c.
1939. Forestry and erosion in Haiti and Puerto Rico. Jamaica Dep. Sci. and Agric. Bull. 21 (New Series), Kingston. 10 p.

Land usage in the West Indies is dominated by limited land area, rapidly increasing population and dependence on agricultural crops, declining in value. In Haiti excessive deforestation has created land problems of major importance. The erosion problems of Puerto Rico are discussed also, a brief history of the U.S. Forest Service and its organization is given.

1042. Tamsitt, J. R., and Darío Valdivieso.
1970. Observations on bats and their ectoparasites. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odumand Robert F. Pigeon, eds. Ch. E-9, p. E 123 - E 128. USAEC, Oak Ridge, Tn.

Four species of bats from the rain forest of the El Verde experimental area, Luquillo National Forest, Puerto Rico are reported on, and the potential of the forest for studies in neotropical bat ecology and population dynamics is discussed.

1043. Taylor, N. Cavendish.
1864. Five months in the West Indies, Part II - Martinique, Dominica, and Porto Rico. Ibis 6:157-164.

1044. Teesdale, Laurence V., and James W. Girard.
1945. Wood utilization in Puerto Rico. U.S. For. Serv., For. Prod. Lab. Bull. TP-21. Madison, Wisc. 46 p. [mimeographed].

1045. Tordoff, Herbert.
1947. Forestry publicity through display. Caribb. For. 8(2):83-85. Spanish version, Caribb.For. 8(2):85-89.

1046. Tordoff, Berbert.
1947. Publicidad forestal valiéndose de la demostración. Caribb. For. 8(2):85-89.

English version, Caribb. For. 8(2):83-85.

1047. Toro Nazario, J. M.
1944. El primer día del árbol en Puerto Rico fue auspiciado por el último gobernador español. Rev. de Agr. de P.R. 35(1):46-52.

The first Arbor Day in Puerto Rico was initiated by the last Spanish Governor.

1048. Tosi, J. A., Jr..
1959. Forest land utilization in Western Puerto Rico. Ph.D. Diss., Clark Univ. University Microfilms, Inc., Ann Arbor, Mich. 511 p.

1049. Tower, w. v.
1909. Windbreaks. The Porto Rico Hort. News. 2(9):1-2.

1050. Tropical Forest Experiment Station [now named Institute of Tropical Forestry], Forest Service, USDA.
1943. Headquarters office and laboratory building completed. Caribb. For. 4(3):3.

1051. Tropical Forest Experiment Station [now named Institute of Tropical Forestry], Forest Service, USDA.
1945. Cooperation in forest research in the Caribbean. Caribb. For. 6(2):85-88.

The beginning of active cooperation in tropical forestry research and toward establishment of a Forest Research Center for the Caribbean Area has been accomplished between the comptroller for Development and Welfare of the British West Indies and the Trop. For. Exp. Stn., USDA For. Serv., Río Piedras, P.R.

1052. Tropical Forest Experiment Station [now named Institute of Tropical Forestry], Forest Service, USDA.
1940-1949. First 9 Annual Reports of the Trop. For. Exp. Stn.

The first 9 years' reports were unpublished; this reference refers to a bound collection located in the library of the Institute of Tropical Forestry, Río Piedras, P.R.

1053. Tropical Forest Experiment Station [now named Institute of Tropical Forestry], Forest Service, USDA, and the Agric. Exp. Stn., Univ. of P.R.
1941. A preliminary study of the parcelero system. Río Piedras, P.R. [unpublished].

At the time this system was adopted, there were 6 forest units belonging to the Federal Government on the island: Luquillo, Toro Negro, Guajataca, Carite, Susúa, and Guilarte (Prieto). The Luquillo unit was subdivided into 5 main projects. These are El Verde, Pizá, Ciénaga Alta, Sabana, and Del Valle. The Toro Negro unit was composed of three projects: El Guineo, Doña Juana, and Matrullas. The Río Abajo and the Isabela projects formed the Guajataca unit. Guavate and Patillas constituted what was known as the Carite unit. With the exception of the Luquillo unit, known as the Caribbean National Forest, and part of Toro Negro unit (Doria Juana), all the other units were bought after 1935 by the Puerto Rico Reconstruction Administration for reforestation purposes. Although these lands belonged to the Puerto Rico Reconstruction Administration, theywereunder the direct supervision of the Forest Service of the United States Department of Agriculture.

In the "Parcelero Policy" program, a plan made land available to laborers for planting and cultivating subsisting crops. Some of this land was to be used only for agriculture. They were also given forest land to plant and care for forest trees planted in rotation with subsistence crops. The final objective was to create a group of forest laborers who would grow crops for their own use and obtain their cash income from the sale of forest products.

1054. Tropical Forest Experiment Station [now named Institute of Tropical Forestry], Forest Service, USDA.
1948-49. Ninth Annual Report and Program. Caribb. For. 10:81-119.

1055. Tropical Forest Experiment Station, Tropical Region [now named Institute of Tropical Forestry], Forest Service, USDA.
1949. Tenth Annual Report. Caribb. For. 11(2):59-80.

Spanish version, Caribb. For. 11(2):81-104.

1056. Tropical Forest Experiment Station, Tropical Region [now named Institute of Tropical Forestry], Forest Service, USDA.
1950. Eleventh Annual Report. Caribb. For. 12(1):1-17.

Spanish version, Caribb. For. 12(1):17-35.

1057. Tropical Forest Ekperiment Station, Tropical Region [now named Institute of Tropical Forestry], Forest Service, USDA.
1951. Changes in crown class rapid in improved stands. In Eleventh Annual Report. 'U.S. Trop. For. Exp. Stn. Caribb. For. 12(1):8-9; 25-6.

1058. Tropical Forest Ekperiment Station, Tropical Region [now named Institute of Tropical Forestry], USDA.
1952. Twelfth Annual Report. Caribb. For. 13(1):1-21.

1059. Tropical Forest Experiment Station, Tropical Region [now named Institute of Tropical Forestry], USDA.
1953. Thirteenth Annual Report. Caribb. For. 14(1/2):1-33.

1060. Tropical Forest Ekperiment Station, Tropical Region [now named Institute of Tropical Forestry], Forest Service, USDA.
1954. Fourteenth Annual Report. Caribb. For. 16(1):1-13.

1061. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1955. Fifteenth Annual Report. Caribb. For. 16(1/2):1-11.

1062. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1956. Sixteenth Annual Report. Caribb. For. 17(1/2):1-11.

1063. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1957. Seventeenth Annual Report. Caribb. For. 18(1/2):1-11.

1064. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1958. Status of forestry and forest research in Puerto Rico and the Virgin Islands: The Eighteenth Annual Report. Caribb. For. 19(1/2):1-24.

1065. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1959. Annual Report for 1958. Caribb. For. 20(1/2):1-10.

1066. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1960. Annual Report for 1959. Caribb. For. 21(1/2):1-11.

1067. Tropical Forest Research Center [now named Institute of Tropical Forestry], Forest Service, USDA.
1961. Annual Report for 1960. Caribb. For. 22(1/2):1-11.

1068. Tropical Region [now named Institute of Tropical Forestry], Forest Service, USDA.
i94 9. The Caribbean Forest Atlas. U.S. Dep. Agric., For. serv., Río Piedras, P.R.

This atlas includes descriptive and factual information on the public acquisition and continuing status and ownership of land for national forest purposes in Puerto Rico, Information ccxnpiled during 1946-1948.

1069. Tschirley, Fred H., Clyde C. Dowler, and James A. Duke.
1970. Species diversity in two plant communities of Puerto Rico. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-7, p. B 91 - B 96. USAEC, Oak Ridge, Tn.

Species diversity of flora in the wet Tabonuco forest of the Luquillo Mountains on basalt was compared with that in the drier montane forest on serpentine at Maricao in western Puerto Rico. The floristic diversity on the drier Maricao soil that was derived from nutrient-poor rocks suggests that nutrients can be cycled and recycled through the extant plants to develop a rich forest.

1070. Tukey, H. B., Jr.
1970. Leaching of metabolism from foliage and its implication in the tropical rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-11, p. H 155 - H 160. USAEC, Oak Ridge, Tn.

Studies were made of the leaching of minerals (phosphorus, calcium, potassium, magnesium, zinc, manganese, iron, copper, boron, aluminum, and strontium) from healthy rain forest seedlings from El Verde, including sugar cane and banana. Little, if any, nutrients were leached from young, growing seedlings of tree species, and small amounts were leached from young banana trees, sugar cane, and the seedlings of the rain forest shrub Palicourea.

1071. Turner, Frederick B., and Clayton S. Gist.
1970. Observations of lizards and tree frogs in an irradiated Puerto Rican forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-2, p. E 25 - E 49. USAEC, Oak Ridge, Tn.

Populations of semiarboreal (Anolis gundlachi and A. evermanni) and a tree frog, Eleutherodactylus portoricensis (the coquí), were studied at El Verde, Puerto Rico, before one of the areas was exposed to gamma irradiation and again following the experiment.
Animals were killed by irradiation, and the density of all species was obviously reduced within 15 to 20 m of the source; however, young individuals apparently enjoyed better survival because of time spent below ground.

1072. Úbeda y Delgado, M.
1878. Isla de Puerto Rico: estado histórico, geográfico y estadístico. Establecimiento Tip. del Boletín, San Juan, P.R. 290 p.

Account of Puerto Rico's history, geography, and its condition in 1878.

1073. Underwood, L. M.
1901. Report on a trip to Port0 Rico. J. N.Y. Bot. Gard. 2:166-173.

This narrative of a botanical collecting trip is the first work done in Puerto Rico under the auspices of the New York Botanical Garden.

1074. U.S. Army Engineers, Division Corps of Engineers.
1971. National shore-line study, regional inventory report, South Atlantic-Gulf Region, Puerto Rico and the Virgin Islands. U.S. Army Engineers, Corps of Engineers, Atlanta, Ga. 64 p.

1075. U.S. Army Engineers Waterways Experiment Station, Corps of Engineers.
1960. Trafficability predictions in tropical soils. Puerto Rico study. Vicksburg, Miss. U.S. Army, Misc. Paper No. 4-355.

1076. U.S. Department of Agriculture.
1968. Highlights in the history of forest conservation. Agric. Info. Bull. 83 [rev.]. 40 p.

1077. U.S. Department of Agriculture, Forest Service.
1940. Caribbean National Forest. U.S. Dep. Agric. For. Serv., South. Reg., Atlanta, Ga. U.S. Gov. Print. Off., Washington, D.C. 29 p.

1078. U.S. Department of Agriculture, Forest Service.
1943. Latin American forest resource survey organized. Caribb. For. 4(2):76.

1079. U.S. Department of Agriculture, Forest Service.
1945. Statement of policy and objectives governing the forest lands of the people of Puerto Rico. Caribb. For. 6(4):171-177.

Spanish version, Caribb. For. 6(4):184-189.

1080. U.S. Department of Agriculture, Forest Service.
1945. Wood utilization in Puerto Rico. U.S. Dep. Agric. For. Serv., Tech. Pap. 21. 46 p. plus illus.

1081. U.S. Department of Agriculture, Forest Service.
1946. Legislation, progress in tropical forest. Caribb. For. 7(4):275-276.

1082. U.S. Department of Agriculture, Forest Service.
1946. Programa dasonómico para las tierras forestales de Puerto Rico. Caribb. For. 7(4):281-283.

English version, Caribb. For. 7(4):277-278.

1083. U.S. Department of Agriculture, Forest Service.
1946. Program for forestry and forest lands in Puerto Rico. Caribb. For. 7(4):277-278

Spanish version, Caribb. For. 7(4):281-283 .

1084. U.S. Department of Agriculture, Forest Service.
1946. El progreso de la legislación forestal en el Caribe. Caribb. For. 7(4):279-280.

English version, Caribb. For. 7(4):275-276.

1085. U.S. Department of Agriculture, Forest Service.
1946. Progress in tropical forest legislation. Caribb. For. 7(4):275-276.

Spanish version, Caribb. For. 7(4):279-280.

1086. U.S. Department of Agriculture, Forest Service.
1948. Resumen de la investigación forestal en Puerto Rico. Caribb. For. 9(1):70-83.

English version, Caribb. For. 9(1):57-69.

1087. U.S. Department of Agriculture, Forest Service.
1948. Summary of forest research in Puerto Rico. Caribb. For. 9(1):57-69.

A Spanish version, Caribb. For. 9(1):70-83.

1088. U.S. Department of Agriculture, Forest Service.
1950. Adiestramiento forestal en Puerto Rico bajo el programa del "Punto Cuatro." Caribb. For. 11(2):58.

Forestry training in Puerto Rico under the Point Four Program.

1089. U.S. Department of Agriculture, Forest Service, Caribbean National Forest.
[n.d.] Reader's guide to the Caribbean National Forest plans. Forestry training in Puerto Rico under the Point Four Program. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

1090. U.S. Department of Agriculture, Forest Service, Tropical Region. [now named. Institute of Tropical Forestry].
1947. Clasificación general de las especies madereras más importantes en los bosques naturales de Puerto Rico. [General classification of the most important woody species of the natural forests of Puerto Rico]. Rev. de Agr. de P.R. 38(2):135-136.

This classification, prepared by the Department of Agriculture, Forest Service, Tropical Region, is based on data from "Timbers of the World" by Record and Hess, Yale University Press, 1943; "Tropical Woods," Yale University 1925; some British publications; the experience and knowledge of local persons, and the use of these woods. There are listed approximately 200 tree species in the natural forests of Puerto Rico.

1091. U.S. Department of Agriculture, Soil Conservation Service.
[n.d.] Soils and their interpretations for various uses, Mayaguez Area, Puerto Rico. U.S. Dep.. Agric..Soil Conserv. Serv., San Juan, P.R. 59 p.

1092. U.S. Department of Agriculture, Soil Conservation Service.
1941. Soil Conservation in Puerto Rico and the Virgin Islands of the United States. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 141 p.

This is a handbook for soil conservation service technicians, vocational agricultural teachers, agricultural extension agents, and others in Puerto Rico and the Virgin Islands.

1093. U.S. Department of Agriculture, Soil Conservation Service.
1945. Land use capability classes and recommended treatment for interpretation of detailed utilitarian conservation survey of Puerto Rico. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 31 p.

1094. U.S. Department of Agriculture, Soil Conservation Service.
1951. Was de capacidad de terreno. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 152 p.

Land capability guides.

1095. U.S. Department of Agriculture, Soil Conservation Service.
1952. Breves apuntes sobre Puerto Rico. Los distritos de conservación de suelos. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 4 p.

The soils conservation districts in Puerto Rico.

1096. U.S. Department of Agriculture, Soil Conservation Service.
1961. Puerto Rico soil and water conservation needs inventory. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 69 p.

The inventory was prepared under the supervision of the Puerto Rico Conserv. Needs Comm., representing agencies and organizations with conservation responsibilities and interest.

1097. U.S. Department of Agriculture, Soil Conservation Service.
1967. Soil survey laboratory data. and descriptions for some soils of Puerto Rico and the Virgin Islands. Soil Serv.. Invest. Rep. No. 12. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 191 p.

This report was done in cooperation with the Univ. of P.R. Agric. Exp. Stn. and contains descriptions and laboratory data for 93 pedons sampled in Puerto Rico and the Virgin Islands. Three indices are provided to help the reader find the descriptions and data for specific pedons.

1098. U.S. Department of Agriculture, Soil Conservation Service.
1969. Puerto Rico. Conservation needs. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 2 p.

This is a summary of the 1968 conservation needs inventory.

1099. U.S. Department of Agriculture, Soil Conservation Service.
1973. Rare and endangered animals of Puerto Rico. Comm. Rep. published in cooperation with the P.R. Dep. Nat. Resour. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 60 p.

A committee of representatives of commonwealth, federal, and private agencies has prepared this report on the Island's rare and endangered animal species. The report deals with the degree of endangerment of these animals, a description of these species, the causes of endangerment, and guidelines for a plan of action to protect the animals.

1100. U.S. Department of Agriculture, Soil Conservation Service.
1974. Evaluación de las potencialidades para desarrollos recreativos al aire libre en el Distrito de Conservación de Suelos Cibuco. U.S. Dep. Agric, Soil Conserv. Serv., San Juan, P.R. 39 p

Evaluation of the potential development of the Cibuco District of conservation as a recreation area.

1101. U.S. Department of Agriculture, Soil Conservation Service.
1975. Evaluación de las potencialidades para desarrollos recreativos al aire libre en el Distrito de Conservación de Suelos Noreste. U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 68 p.

Evaluation of the potential development of the Northeastern Puerto Rico District of Conservation as a recreation area.

1102. U.S. Department of Agriculture, Soil Conservation Service, and the Department of Natural Resources, Commonwealth of Puerto Rico.
1975. Rare andendangeredplants of Puerto Rico. A committee report U.S. Dep. Agric. Soil Conserv. Serv., San Juan, P.R. 85 p.

This report is a list of rare and endangered plant species for Puerto Rico.

1103. U.S. Department of Agriculture, Soil Conservation Service, and the University of Puerto Rico, Agricultural Experiment Station.
1965. Lajas Valley Area, Puerto Rico. U.S. Dep. Agric. Soil Conser. Serv., San Juan, P.R. 170 p. plus maps.

1104. U.S. Department of Agriculture, Soil Conservation Service, University of Puerto Rico, Agricultural Extension Service, and others.
1949. Farm forestry training course in Puerto Rico. Caribb. For. 10(4):233-269.

Spanish version, Caribb. For. 10(4):270-276.

1105. U.S. Department of Agriculture, Soil Conservation Service, University of Puerto Rico, Agricultural Extension Service, and others.
1949. Un curso de adiestramiento en Puerto Rico, en materia de ciencia forestal aplicada a la finca. Caribb. For. 10(4):270-276.

English version, Caribb. For. 10(4):233-269.

1106. U.S. Department of Agriculture, Soil Conservation Service, and University of Puerto Rico, College of Agricultural Sciences.
1975. Soil survey of Mayaguez Area of Western Puerto Rico. Area of Mayaguez, Puerto Rico. U.S. Dep. Agric. Soil Consev. Serv., and Univ. P.R. Coll. of Agric. Sci., Mayaguez, P.R. 296 p. plus maps.

This soil survey contains information for use in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

1107. U.S. Department of Agriculture, Soil Conservation Service, and the University of Puerto Rico College of Agricultural Sciences.
1977. Soil survey of Humacao Area of Eastern Puerto Rico. U.S. Dep. Agric. Conserv. Serv., San Juan, P.R. 103 p. plus maps.

This soil survey contains information that can be used in managing farms, ranches, woodlands, and wildlife areas; in selecting sites for roads, ponds, buldings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

1108. U.S. Weather Bureau.
1965. Climatography of the United States. No. 86-45. Climatic summary of the United States supplement for 1951 through 1960. Puerto Rico and the United States Virgin Islands. U.S. Gov. Print. Off., Washington, D.C.

1109. Upson, Arthur T.
1945. All purpose transportation plan. Caribbean National Forest, U.S. For. Serv., Río Piedras, P.R. 51 p. [Unpublished].

1110. Upson, A. [Arthur] T.
1946. Forests and land tenure in Puerto Rico. In Caribbean Commission, Caribbean Land Tenure Symposium. p. 233-237. Washington, D.C.

1111. Upson, Arthur [T.].
1946. Investigaciones de silvicultura rural en Cambalache. El Mundo [San Juan, P.R.], Mar. 31, 1946. p. 10.

Rural silviculture research in Cambalache.

1112. Upson, Arthur [T.].
1949. Chronology of legislation and other events having a bearing on the creation, enlargement, improvement, and management of the Caribbean National Forest of Puerto Rico. In The Caribbean Forest Atlas, Inst. Trop. For., U.S. For. Serv., Río Piedras, P.R.

This atlas was prepared by ITF for its own use, is kept current, and includes relative notes on the P.R. Insular Forests.

1113. Upson, Arthur [T.], and Frank H. Wadsworth.
1948. The development of forest land management in Tropical America. In Proc. Inter-Am. Conf. Conserv. Renew. Nat. I&sour., Denver, co. U.S. Dep. State, Int. Org. & Conf. Ser. 2, Amer. Repubs. 4:582-588.

1114. Urban, I.
1892-1897. Additimenta ad cognitionem florae Indiae occdidentalis. Bot. Jahrb. 15:286-361; pl. 9; 19:562-681; 21:514-638; 24:10-152.

Descriptions of Puerto Rican species in many families of plants.

1115. Urban, I.
1897. Diagnosen neue Arten. Not. Pot. Cart. Berlin 1:319-328.

Includes descriptions of three new Brunfelsias of Puerto Rico.

1116. Urban I., ed.
1898-1928. Symbolae Antillanae: Fundamenta florae Indiae occidentalis. 9 Vol; Fratres Borntraeger, Berlin.

Contains many records and descriptions of plants of Puerto Rico and the Virgin Islands .

1117. Urban, I.
1903-1911. Flora portoricensis. symb. Bot. 4:1-771.

This is a catalogue of the Pteridophyta and Spermatophyta of Puerto Rico and includes detailed synonymy and distribution, a bibliography, and chapters on plant geography on the history of botanical investigation.

1118. Urban, I.
1924. Apuntes históricos de las investigaciones botánicas de la Isla. Rev. de Agr. de P.R. 12(2):97-107.

1119. Vahl, Martin.
1796-1807. Ecolgae Americanae, seu descriptiones plantarum praesertim Americae meridionalis nondum cognitarum. Folio, 3 fasc. pl. l-30, Copenhagen.

This includes descriptions and illustrations of some plant species from Puerto Rico, St. Thomas, and St. Croix.

1120. Van der Schalie, H.
1948. The land and freshwater mollusks of Puerto Rico. Univ. of Mich., Mus. Zool. Misc. Publ. No. 70. Ann Arbor.

1121. Van Zwaluwenberg, R. H.
1918. Report of the entomologist. P.R. Agric. Exp. Stn., 1916, 28 p. Washington, D.C.

1122. Vázquez García, Salvador.
1963. Conservación de los recursos renovables. Rev. de Agr. de P.R. 50(2):165-175.

Conservation of the renewable resources.

1123. Vázquez Pérez, Carlos J.
1962. El manejo y ordenación de las tierras forestales públicas de Puerto Rico. Rev. de Agr. de P.R. 49(1):94-102.

Management of the public forest lands of Puerto Rico.

1124. Velarde, J. A.
1946. The land authority of Puerto Rico. In Caribbean Research Council, Caribbean Comm., Caribbean Land Tenure Symp. Proc. Port of Spain, Trinidad, B.W.I.

1125. Velázquez, Imaro.
1974. Study urges forestry development program. The San Juan Star [San Juan, P.R.], Jan. 3, 1974.

This article is about 500,000 acres in Puerto Rico which are devoted to forestry for commercial use.

1126. Vélez, Manuel J., Jr.
1973. The terrestrial arthropoda (exclusive of insecta and crustacea) of Mona Island, Puerto Rico. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, app. I, p. I-l - I-14. Junta de Calidad Ambiental [Env. Qual. Bd.], San Juan, P.R.

1127. Venator, C. [Charles] R.
1972. Effect of gibberellic acid on germination of law-vigor Honduras Pine seeds. For. Sci. 18(4):331.

1128. Venator, C. [Charles] R.
1973. An abnormal short primary needle form of Pinus caribaea var. hondurensis. In Tropical provenance and progeny research and international cooperation. Proceedings of a joint meeting of IUFRO working parties S2.02.8 and S2.03.1, held in Nairobi, Kenya, Oct. 1973. J. Burley and D.G. Nikles, eds. p. 322-326. Oxford, Commonwealth Forestry Intitute.

1129. Venator, C. [Charles] R.
1973. International provenance trials of Pinus caribaea and P. oocarpa in Puerto Rico. In Tropical provenance and progeny research and international cooperation. Proceedings of a joint meeting of IUFRO working parties S2.02.8 and S2.03.1, held in Nairobi, Kenya, Oct. 1973. J. Burley and D.G. Nikles, eds. p. 26-28; 95-96. Oxford, Commonwealth Forestry Institute.

1130. Venator, C. [Charles] R.
1973. The relationship between seedling height and date of germination in Pinus caribaea var. hondurensis. Turrialba 23(4):473-475.

1131. Venator, C. [Charles] R.
1974. Hypocotyl length in Pinus caribaea seedlings: a tentative genetic variation parameter. Silvae Genet. 23(4):130-132.

1132. Venator, C. [Charles] R.
1974. Low cone yield in Pinus caribaea var. hondurensis not due to pollen abortion. Turrialba 24(1):107-108.

1133. Venator, C. [Charles] R.
1974. Vegetative regeneration of Pinus oocarpa Shiede seedlings fran storage organs. (Abstr.) Third Nor. Am. For. Biol. Workshop, Ft. Collins, Co. Sept. 9-12, 1974.

1134. Venator, Charles R.
1975. Directory of manufacturers and distributors of containers suitable for growing forest tree seedlings. U.S. Dep. Agric. For. Serv., Res. Note ITF-15, 8 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

1135. Venator, C. [Charles] R.
1976. Hypocotyl color: evidence for polymorphism in Pinus caribaea. Turrialba26(3):265-267.

1136. Venator, C. [Charles] R.
1976. A mutant Pinus caribaea var. hondurensis seedling incapable of developing normal secondary needles. Turrialba26(1):98-99.

1137. Venator, Charles R.
1976. Natural selection for drought resistance in Pinus caribaea Morelet. Turrialba26(4):381-387.

1138. Venator, C. [Charles] R.
1977. Formation of root storage organs and sprouts in Pinus oocarpa seedlings. Turrialba27(1):41-45.

1139. Venator, C. [Charles] R., C. D. Bowes, and L. Telek.
1974. Chlorophyll: carotenoid ratio as a parameter to predict plant adaptability. (Abstr,.) Genetics No. 77 (Supp. 1):S 68.

1140. Venator, C. [Charles] R., C. D. Bowes, and L. Telek.
1977. Chlorophyll and caratenoid contents of Pinus caribaea seedlings and inferences for adaptability. Turrialba 27(2):169-173.

1141. Venator, C. [Charles] R., and F. Macfas Zanabria.
1973. A problem of empty seed in Pinus caribaea in Puerto Rico. Turrialba23(2):236-238.

1142. Venator, C [Charles] R., and J. E. Muñoz.
1974. Containerized tree production in the tropics. In Proc. of the North American Containerized Forest Tree Seedling Symp., Great Plains Agric. Counc. Publ. No. 68, p. 334-335.

1143. Venator, C. [Charles] R., J. E. Muñoz, and N. F. de Barros
1977. Root immersion in water; a promising method for successful bare-root planting of Honduras pine. Turrialba 27(3):287-291.

1144. Venator, C. [Charles] R., and A. Rodríguez.
1977. Using styroblock containers to grow Pinus caribaea var. hondurensis Barr. & Golf. nursery seedlings. Turrialba 27(4):393-396.

1145. Venator, C. [Charles] R., and J. A. Zambrana.
1975. Extraction and germination of Kadam seed. U.S. Dep. Agric. For. Serv., Res. Note ITF 14-A, 3 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

1146. Venator, Robert [Charles R.], and F. K. S. Koo.
1970. Inherent and radiation-induced cytological abnormalities in Palicourea riparia Benth. In A tropical rain forest: a study of irradiation and ecology at El Verde. Howard T. Odum and Robert F. Pigeon, eds. Ch. G-2, p. G 21 - G 38. USAEC, Oak Ridge, Tn.

Cytological studies were made of Palicourea riparia Benth., a small tree dispersed within the gamma-radiation field of the rain forest at El Verde, Puerto Rico. Under natural conditions this species was found to have a relatively high frequency of cytological abnormalities. After three months of chronic gamma irradiation, there was a significant increase in meiotic abnormalities, which decreased with a passage of time.

1147. Virkki, Niilo.
1970. Karotype rearrangements and malformation of gonads in the walkingsticks (Phasmatoptera) of the El Verde radiation center. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. G-4, p. G 51 - G 62. USAEC, Oak Ridge, Tn.

Before irradiation, only one karyotype rearrangement was found and it was in an unknown species. After 3 months' irradiation, six specimens with autosomal centric fusion were encountered. Only whole-arm transpositions were found, and there were no heteromorphic bivalents, in contrast to earlier reports on walkingstick chromosomes.

1148. Vivaldi, Santiago A.
1945. Nuestros bosques y sus beneficios. Rev. de Agr. de P.R. 36 (1) :52-55.

Puerto Rico's forests and their benefits.

1149. Vivaldi, Santiago A.
1949. Problema de distribución de material de vivero forestal entre los agricultores. F. En Los cursos de adiestramiento. Caribb. For. 10(4):308-309.

English version, Caribb. For. 10(4):308-309.

1150. Vivaldi, Santiago A.
1949. Problems of distribution of forest nursery stock to farmers. In A farm forestry training program. F. Caribb. For. 10(4):268-269.

Spanish version, Caribb. For. 10(4):308-309.

1151. Vivaldi, Santiago, A.
1949. ¿Qué clase de tierra se adapta al cultivo forestal? 1 C. El punto de vista del Servicio de Extensión Agrícola. En Los cursos de adiestramiento. Caribb. For. 10(4):281-282.

English version, Caribb. For. 243-244.

1152. Vivaldi, Santiago A.
1949. What kind of land is adapted to trees? 1 C. Point of view of the Agricultural Extension Service. In A farm forestry training program. Caribb. For. 10(4):243-244.

Spanish version, Caribb. For. 10(4):281-282.

1153. Vivaldi, Santiago A.
1953. Arboles en la finca. Caribb. For. 14(3/4):146-151.

This is a paper presented at the Symp. Am. Soc. Agric. Sci., Nov. 14, 1952, Río Piedras, P.R.

1154. Vozzo, J. A. and Edward Hacskaylo.
1971. Inoculation of Pinus caribaea with Ectomycorrhizal fungi in Puerto Rico. For. Sci. 17(2):239-245.

1155. Wadsworth, Frank H.
1943a. The evaluation of forest tree species in Puerto Rico, as affected by the local forest problem. Caribb. For. 4(2):54-58.

1156. Wadsworth, Frank H.
1943b. The forests of Puerto Rico, past, present, and proposed. Unpublished paper presented before Sci. Club of Polytech. Inst., San Germán, P.R.

1157. Wadsworth, Frank H.
1943c. The Las Cobanitas Campeche Plantation. Caribb. For. 4(3):140-143.

1158. Wadsworth, Frank H.
1943d. Pomarrosa, Jambosa jambos (L.) Millsp. and its place in Puerto Rico. Caribb. For. 4(4):183-194.

1159. Wadsworth, Frank H.
1943e. Roble, a valuable forest tree in Puerto Rico. Caribb. For. 4(2):59-76.

1160. Wadsworth, Frank H.
1944a. The development of a María plantation on a poor site. Caribb. For. 5(4):207-212.

1161. Wadsworth, Frank H.
1944b. The first year in the Cambalache Experimental Forest. Caribb. For. 6(1):34-38.

Spanish version, Caribb. For. 6(1):38-43. French summary, Caribb. For. 6(1):43-44.

1162. Wadswrth, Frank H.
1944c. The management policy of the Caribbean National Forest, as it effects minimum stumpage rates. [Unpublished memorandum].

1163. Wadsworth, Frank H.
1944d. Primer aniversario del Bosque Experimental de Cambalache, Caribb. For. 6(1):38-43.

English version, Caribb. For. 6(1):43-44.

1164. Wadsworth, Frank H.
1945a. El Bosque Experimental Cambalache, una ventaja para la comunidad campesina. Rev. de Agr. de P.R. 36(2):139-140.

The Experimental Cambalache Forest, an advantage for the rural community.

1165. Wadswrth, Frank H.
1945b. Computed and mechanical properties of Puerto Rican woods. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. 11 p.

1166. Wadsworth, Frank H.
1945c. La dasonomía en la región cafetelera de Puerto Rico. Caribb. For. 6(2):75-80.

English version, Caribb. for. 6(2):71-75. French summary, Caribb. For. 6(2):80-81.

1167. Wadsworth, Frank H.
1945d. Forestry in the coffee region of Puerto Rico. Caribb. For. 6(2):71-75.

Spanish version, Caribb. For. 6(2):75-80. French summary, Caribb. For. 6(2):80-81.

1168. Wadswrth, Frank H.
1945e. Further notes on the regeneration and growth of Tabebuia Miersia Caribb. For. 6(4):267-269.

Spanish version, Caribb. For. 6(4):269-271. French summary, Caribb. For. 6(4):272.

1169. Wadsworth, Frank H.
1945f. Notas adicionales sobre la regeneración y crecimiento de Tabeuia pallida Miers. Caribb. For. 6(4):269-271.

English version, Caribb. For. 6(4):267-269. French summary, Caribb. For. 6(4):269-271.

1170'. Wadsmrth, Frank H.
1945g. Las potencialidades dasonómicas de la Isla de Mona. Caribb. For. 6(4):231-242.

English version, Caribb. For. 6(4):219-231. French summary, Caribb. For. 6(4):243-244.

1171. Wadsworth, Frank H.
1945h. The potentialities of forestry on Mona Island. Caribb. For. 6(4):219-231.

Spanish version, Caribb. For. 6(4):231-242. French summary, Caribb. For. 6(4):243-244.

1172. Wadsworth, Frank H.
1947a. Abordando el estudio de la silvicultura en la América tropical y su aplicación en Puerto Rico. Caribb. For. 8(4):257-267.

English version, Caribb. For. 8(4):245-256. French summary, Caribb. For. 8(4):268.

1173. Wadsmrth, Frank H.
1947b. An approach to silviculture in Tropical America and its application in Puerto Rico. Caribb. For. 8(4):245-256.

Spanish version, Caribb. For. 8(4):257-267.

This paper considers the management of these lands for forest production.

1174. Wadsworth, Frank H.
1947c. El crecimiento en los bosques higrofíticos de la parte montañosa inferior (bosque pluvial intermedio o subhygrophytia). de Puerto Rico. Caribb. For. 8(1):35-43.

English version, Caribb. For. 8(1):27-35. French summary, Caribb. For. 8(1):43.

1175. Wadsworth, Frank H.
1947d. El desarrollo de Swietenia mahagoni Jacq. en Santa Cruz. Caribb. For. 8(2):162-164.

English version, Caribb. For. 8(2):161-162. 'French summary, Caribb. For. 8(2):164.

1176. Wadsworth, Frank H.
1947e. The development of Swietenia mahagoni Jacq. on St. Croix. Caribb. For. 8(2):161-162.

Spanish version, Caribb. For. 8(2):162-164. French summary, Caribb. For. 8(2):164.

1177. Wadsworth, Frank H.
1947f. Efecto del bosque sobre clima y abasto de agua contribuye más alacantidadde agua subterránea que cualquierotro tipo de vegetación. Incentivo para bosques. El Mundo [San Juan, P.R.], Sept. 7, 1947. p. 7.

Effect of the forest over the climate and supply of water. Trees contribute more to thequantityof subterraneanwater thanothertypes of vegetation.

1178. Wadsmrth, Frank H.
1947g. Growth on the lower montane rain forest of Puerto Rico. Caribb. For. 8(1):27-35.

Spanish version, 8(1):35-43.

This article is based on a paper presented before the Journal Club, Mayaguez, P.R., on Oct. 21, 1946.

1179. Wadsmrth, Frank H.
1947h. The second year in the Cambalache Experimental Forest. Caribb. For. 8(1):65-70.

Spanish version, Caribb. For. 8(1):70-76. French summary, Caribb. For. 8 (1) :76-77.

1180. Wadsworth, Frank H.
1947i. Segundo aniversario del Bosque Experimental Cambalache. Caribb. For. 8(1):70-76.

English version, Caribb. For. 8(1):65-70. French summary, Caribb. For. 8(1) 76-77.

1181. Wadsworth, Frank H.
1947j. El tercer aniversario del Bosque Experimental Cambalache. Caribb. For. 8(3):207-212.

English version, Caribb. For. 8(3):203-207. French summary, Caribb. For. 8(3):212.

1182. Wadsmrth, Frank H.
1947k. The third year in the Cambalache Experimental Forest. Caribb. For. 8(3):203-207.

Spanish version, Caribb. For. 8(3):207-212. French summary, Caribb. For. 8(3):212.

1183. Wadsmrth, Frank H.
1948a. Cinco años de investigación forestal en la costa norte de Puerto Rico. Caribb. For. 9(4):376-380.

English version, Caribb. For. 9(4):373-376. French summary, Caribb. For. 9(4):380.

1184. Wadsmrth, Frank H.
1948b. El clima en las montañas de Luquillo y lo que significa para el pueblo de Puerto Rico. Caribb. For. 9(4):336-344.

English version, Caribb. For. 9(4):321-335. French summary, Caribb. For. 9(4):344.

1185. Wadsworth, Frank H.
1948c. The climate of the Luquillo Mountains and its significance to the people of Puerto Rico. Caribb. For. 9(4):321-335.

Spanish version, Caribb. For. 9(4):336-344. French summary, Caribb. For. 9(4):344.

1186. Wadsworth, Frank H.
1948d. Five years of forest research on the north coast of Puerto Rico. Caribb. For. 9(4):373-376.

Spanish version, Caribb. For. 9(4):376-380. French sum-nary, Caribb. For. 9(4):380

1187. Wadsworth, Frank H.
1948e. Fueron premiados por trabajos científicos (El clima de las montañas de Luquillo y su significado para el pueblo de P.R.). El Mundo[San Juan, P.R.], Oct. 2, 1948. p. 7.

Prizes for the scientific, works (The climate of the mountains of Luquillo and their meaning for Puerto Rico).

1188. Wadsworth, Frank H.
1948f. The influence of forest upon climate and water behavior. Caribb. For. 8(4):289-293.

Spanish version, Caribb. For. 8(4):294-298. French summary, Caribb. For. 8(4):299.

1189. Wadsworth, Frank H.
1948g. La influencia climatológica e hidrológica de los bosques. Caribb. For. 8(4):294-298.

English version, Caribb. For. 8(4):289-293. French summary, Caribb. For. 8 (4):299.

1190. Wadsworth, Frank H.
1949a. Angel Monserrate's forest. Caribb. For. 10(1):1-7.

Spanish version, Caribb. For. 10(1):7-10. French sum-nary, Caribb. For. 10 (1):10.

1191. Wadsworth, Frank H.
1949b. El bosque de Angel Monserrate. Caribb. For. 10(1):7-10.

English version, Caribb. For. 10(1):1-7. French summary, Caribb. For. 10(1):10.

1192. Wadsworth, Frank H.
1949c. ¿Cómo deben ordenarse los arbolados en las fincas? 4. En Los cursos de adiestramiento. Caxibb. For. 10(4):292-298.

English version, Caribb. For. 10(4):253-258.

1193. Wadsworth, Frank H.
19496. ¿Cuáles serán las ganancias a derivarse de la ciencia forestal aplicada a la finca? 5. En Los cursos de adiestramiento. Caribb. For. 10(4):298-306.

English version, Caribb. For. 10(4):259-266.

1194. Wadsworth, Frank H.
1949e. The development of the forest land resources of the Luquillo Mountains, Puerto Rico. Ph.D. thesis. Univ. of Mich., Ann Arbor, Mich. 481 p.

1195. Wadsworth, Frank H.
1949f. How should farm forests be managed? In A farm forestry training program. Caribb. For. 10(4):253-259.

Spanish version, Caribb. For. 10(4):292-298.

1196. Wadsworth, Frank H.
1949g. ¿Qué clase de tierra se adapta al cultivo forestal? 1 b. Punto de vista de los Servicios Forestales. En Los cursos de adiestramiento. Caribb. For. 10(4):281-282.

English version, Caribb. For. 10(4):243-244.

1197. Wadsworth, Frank H.
194911. Some indicators of the influence of forest upon stream flow in Puerto Rico. [Unpublished]. U.S. Dep. Agric. Forest Service, Río Piedras, Puerto Rico. 14 p.

1198. Wadsworth, Frank H.
1949i. What kind of land is adapted to trees? 1 b. Point of view of the Forest Service. In A farm forestry training program. Caribb. For. 10(4):243-244.

Spanish version, 10(4):281-282.

1199. Wadsworth, Frank H.
1949j. What will be the returns from farm forestry? 5. In A farm forestry training program. Caribb. For. 10(4):259-266.

Spanish version, Caribb. For. 10(4):298-306

1200. Wadsworth, Frank H.
1950a. Notas sobre los bosques climáticos de Puerto Rico y su destrucción y conservación con anterioridad al 1900. Caribb. For. 11(1):47-56.

English version, Caribb. For. 11(1):38-47.

1201. Wadsworth, Frank H.
1950b. Notes on the climax forests of Puerto Rico and their destruction and conservation prior to 1900. Caribb. For. 11(1):38-47.

Spanish version, Caribb. For. 11(1):47-56.

1202. Wadsworth, Frank H.
1951a. ¿Cómo puede ayudar el técnico forestal al cafetalero? Rev. del Café 6(11):11-15.

How the forestry technician can help the coffee planter.

1203. Wadsworth, Frank H.
1951b. El cultivo forestal como una práctica de conservación de suelos en Puerto Rico. Rev. de Agr. de P.R. 42(1/2):127-132.

The forestry culture as a practice for the soil conservation in Puerto Rico.

1204. Wadsworth, Frank H.
1951c. Forest management in the Luquillo Mountains. I. The setting. Caribb. For. 12(3):93-114.

Spanish version, Caribb. For. 12(3):115-132.

1205. Wadsworth, Frank H.
1951d. Ordenación forestal en las montañas de Luquillo. I. El lugar. Caribb. For. 12(3):115-132.

English version, Caribb. For. 12(3):93-114.

1206. Wadsworth, Frank H.
1952a. Forest management in the Luquillo Mountains. II. Planning for multiple land use. Caribb. For. 13(2):49-61.

Spanish version, Caribb. For. 13(2):62-74.

1207. Wadsworth, Frank H.
1952b. Forest management in the Luquillo Mountains. III. Selection of products and silvicultural policies. Caribb. For. 13(3):93-119.

Spanish version, Caribb. For. 13(3):120-142.

1208. Wadsworth, Frank H.
1952c. Ordenación forestal en las montañas de Luquillo. II. Planeando el uso múltiple del terreno. Caribb. For. 13(2):62-74.

English version, Caribb. For. 13(2):49-61.

1209. Wadsworth, Frank H.
1952d. Ordenación forestal en las montañas de Luquillo. III. Selección de productos y normas selviculturales. Caribb. For. 13(3):120-142.

English version, Caribb. For. 13(3):93-119.

1210. Wadsworth, Frank H.
1953a. New observations of tree growth in Tabonuco Forest. Caxibb. For. 14(3/4):106-111.

1211. Wadsworth, Frank H.
1953b. Our efforts to conserve trees. Caribb. For. 14(3/4):140-145.

This paper was presented at the Symp. Am. Soc. Agric. Nov. 14, 1952, Río Piedras, P.R.

1212. Wadsworth, Frank H.
1954. The Dacryodes-Sloanea association of the West Indies. In Proc. 4th. World For. Cong., Dehra Dun, India. p. 119-29.

1213. Wadsworth, Frank H.
1958. Status of forestry and forest research in Puerto Rico and the Virgin Islands. Caribb. For. 19(1):1-24.

1214. Wadsmrth, Frank H.
1959a. Effects of the 1956 hurricane on forests in Puerto Rico. Caribb. For. 20(3/4):38-51.

1215. Wadsworth, Frank H.
1959b. Growth and regeneration of white mangrove in Puerto Rico. Caribb. For. 20(3/4):59-71.

1216. Wadsworth, F'rank H.
1959c. Suggestions for a forestry program for the Commonwealth of Puerto Rico.. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. 29 p.

1217. Wadsworth, Frank H.
1960. The regeneration of tropical forests by planting. Caribii. For. 21(3/4):82-89.

1218. Wadsworth, Frank H.
1962. Los bosques de Puerto Rico. Rev. de Agr. de P.R. 49(1):78-86.

The forests of Puerto Rico.

1219. Wadsmrth, Frank H.
1965a. Tropical forest regeneration practices. Duke Univ. For. Symp. Proc., New Haven, Conn., Bull. 19, p. l-29.

1220. Wadsworth, Frank H.
1965b. Tropical forest regeneration practices. [Mimeo]. U.S. Dep. Agric..For. Serv., Inst. Trop. For., Río Piedras, P.R. 25 p.

1221. Wadsworth, Frank H.
1966a. Forest resources of the tropical world. Sixth World For. Cong., Madrid. 15 p.

1222. Wadsworth, Frank H.
1966b. Problemas dasonómicos en los trópicos húmedos en América. En Reporte de revisión internacional sobre problemas de la agricultura en los trópicos húmedos de América Latina. 4 p. Lima, Perú.

The forest problems of the humid American tropics. International revision report.

1223. Wadsmrth, Frank H.
1967. A design for planned use of our rural land resources. In Ponencias y comentarios, conferencia sobre la conservación de recursos naturales. p. 55-75. Inst. of Urban Law, Univ. of Puerto Rico, Río Piedras, P.R.

1224. Wadsworth, Frank H.
1968a. Conclusiones de un estudio de las investigaciones dasonómicas en Latinoamérica, Boletín Forestal y de Industrias Forestales para América Latina, No. 57, FAD, Santiago de Chile.

1225. Wadsworth, Frank H.
1968b. Investigaciones públicas de dasonomía en Latinoamérica, su estado y sus necesidades. U.S. Dep. Agric. For. Serv., Boletín de Investigación ITF-6, 19 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

La evidencia de los problemas que confront-a la investigación dasonómica de la América Latina condujo a una encuesta de las 16 instituciones mayores. Se encontró que sus programas de investigación eran amplios y tenían muchos aspectos en común. La orientación de los programas es deficiente. Bay muy pocas oportunidades de adiestramiento.

English version, U.S. Dep. Agric. For. Serv., Res. Pap. ITF-6, 27 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

1226. Wadsworth, Frank H.
1968c. [Testimony]. Proc. Pub. Meet., Natl. Estuarine Pollut. Study, Fed. Water Pollut. Control Admin. p. 78-81.

1227. Wadsworth, Frank H.
1968d. Public forest research in Latin America, its status and needs. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-6, 27 p. U.S. Dep Agric. For. Serv., Inst. Trop. For., Río Pie&as, P.R. [Discontinued series].

Evidence of problems confronting forestry research in Latin America led to this survey of the 16 major institutions. The research programs were found to be broad and overlapping, program orientation is weak, training opportunities are too few, and regional coordination of research is needed, and these institutions appear ready for it. Stronge support of expert advisors, voluntary coordination of programs and a series of regional training courses are suggested.

Spanish version, Investigaciones públicas de dasonomía en Latinoamérica, su estado y sus necesidades. U.S. Dep. Agric. For. Serv., Bol. de Investigación ITF-6, 19 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R.

1228. Wadsworth, Frank H.
1968e. Techniques for surveys and the ecological exploitation of tropical forests. Symp. on Conserv. of Nature and Restor. of the Natural Env. of Man. Brazil. Found. for Conserv. Nature, Río de Janeiro. Oct. 26-31, 1968.

1229. Wadsworth, Frank H.
1969a. Records of forest plantation growth in Mexico, the West Indies, and Central and South America. Caribb. For. 21(supp.):38

1230. Wadsworth, Frank H.
1969b. Uso planificado de recursos naturales. El Mundo [San Juan, P.R.], July 5, 1969. p. 8-A.

Planned use of the natural resources of Puerto Rico.

1231. Wadsworth, Frank H.
1969c. Uso planificado recursos de los terrenos rurales. El Mundo [San Juan, P.R.], May 24, 1969. p. 3-A; Mar. 21, 1969. p. 8-A.

Planned use of the rural lands.

1232. Wadsworth, Frank H.
1969d. Uso planificado recursos nuestros terrenos rural&.. El Mundo [San Juan, P.R.], June 28, 1969. p. 8-A.

Planned used of our rural lands.

1233. Wadsworth, Frank H.
1970. Review of past research in the Luquillo Mountains of Puerto Rico. In A tropical rain forest: a study of irradiation and ecology?% El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch.B-2, p. B 33 - B 46. USAEC, Oak Ridge, Tn.

This chapter reviews the major biologic and geographic investigations that have beenmadein the Luquillo Mountains of Puerto Rico. The results of the most extensive and continuous investigations, especially those in forestry, are summarized in some detail.

1234. Wadsworth, Frank H.
1971a. Environmental criteria for development planning--agriculture and land use. Caribb. Conserv. Ass. Env. Newsletter 2(3):7-17.

1235. Wadsworth, Frank H.
1971b. Forestry potential and its development in Central America. Cent. Am. Workshop on Dev. and the Env. Cent. Pun. Res. Inst. for Ind. (ICAITI) and Nat. Acad. Sci. (NAS). Doc. IV-4. 21 p.

1236. Wadsworth, Frank H.
1971c. Import substitution: forestry. Industrial Puerto Rico 8(4):22-25,54-55.

1237. Wadsworth, Frank H.
1971d. La perspectiva de los bosques en el ambiente Puertorriqueño. Simposio sobre el control de la calidad ambiental, Servicio de Extensión Agrícola, Univ. de P.R. Rev. del Café 26(8):39-40 y 26(10):40-42.

Article on how Puerto Rican forests affect the islands's environment.

1238. Wadsworth, Frank H.
1972a. El estado de las investigaciones dasonómicas en Latinoamérica. En Séptimo Congreso Forestal Mundial, Buenos Aires. 4-8 Oct., 1972. Pap. 7 CFM/C:I/4G.

Status of forestry research in Latin America.

1239. Wadsworth, Frank H.
1972b. An evaluation of the mangroves west of Jobos Bay, Puerto Rico. (The natural History Society of Puerto Rico). In Aguirre Power Complex Env. Rep., P.R. Water Resour. Auth., Sect. 12, App. C, p. 165-185, P.R. Water Resour., San Juan, P.R.

1240. Wadsworth, Frank H.
1972c. Management of mountain habitat on a densely populated tropical island. In Second World Conf. on Nat. Parks. Yellowstone and Grand Teton Nat. Parks. Background paper for Session 7 (3A). 8 p.

1241. Wadsworth, Frank H.
1972d. Status of forestry research in Latin America. In Seventh World For. Cong., Buenos Aires. 4-8 Oct., 1972. Pap. 7 CFM/C:I/4G.

1242. Wadsworth, Frank H.
1973a. The historical resources of Mona Island. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, app. N, p. N-1 - N-37. Junta de Calidad Ambiental [En.. Qual. Bd.], San Juan, P.R.

1243. Wadsworth, Frank H.
1973b. El manejo de las reservas forestales chilenas de Malleco y Malalcahuello. 39 p. Food and Agric. Org. of the U.N., Rome.

1244. Wadsworth, Frank H.
1974. Mejoramiento de las bases técnicas para la silvicultura en Chile. 45 p. Food and Agric. Org. of the U.N., Rome.

1245. Wadsworth, Frank H.
1975. Natural forests in the development of the humid American tropics. In Use of ecological guidelines for development in the American humid tropics, proceedings of international meeting held at Caracas, Venezuela, 20-22 Feb., 1974. International Union for Conservation of Nature and Natural Resources, IUCN Publications New Series No. 31, Paper No. 8 of Sess. III, p. 129-139.

1246. Wadsworth, Frank H.
1976a. A forestry program for the Instituto Superior de Agricultura, Santiago de los Caballeros, Dominican Republic. Report on Consultancy, March 14-18, 1976, through the U.S. Agency for Int. Dev., Dom. Rep.

1247. Wadsworth, Frank H.
1976b. Public forestry research in Latin America. 12th. Sess. of the Food and Agric. Org. of the U.N. Latin Am. For. Comm., 3rd. Sess. of the Comm. on For. Res., Havana, Cuba. 11 p.

1248. Wadsworth, Frank H.
1977a. ¿Arboles extranjeros superiores a boricuas? El Mundo [San Juan, P.R.], Sept. 18, 1977. p. 10-A.

Are exotic trees better than Puerto Rican trees?

1249. Wadsworth, Frank H.
1977b. Autosuficiencia de madera: otra oportunidad para P.R. El Mundo [San Juan, P.R.], Sept. 25, 1977. p. 8-A.

Selfsufficiency of wood: another opportunity for Puerto Rico.

1250. Wadsworth, Frank H.
1977c . la reforestación de la Isla. ¿Está terminada? El Mundo [San Juan, P.R.], Sept. 11, 1977. p. 12-A.

The reforestation of the island of Puerto Rico.

1251. Wadsworth, Prank H., and J. A. Bonnet.
1951a. Soil as a factor in the occurrence of two types of montane forest in Puerto Rico. Caribb. For. 12(2):67-70.

Spanish version, Caribb. For. 12(2):70-74.

1252. Wadsworth, Frank H., and J. A. Bonnet.
1951b. El suelo como un factor para la existencia de dos tipos de bosque montano en Puerto Rico. Caribb. For. 12(2):70-74.

English version, Caribb. For. 12(2):67-70.

1253. Wadsworth, Frank H., and George H. Englerth.
1959. Effects of the 1956 hurricane on forests in Puerto Rico. Caribb. For. 20(1/2):38-51.

1254. Wadsworth, Prank H., B. J. Huckenpahler, and Carl F. Ehelebe.
1955. Informe sobre el curso corto de dasonomía tropical celebrado en Puerto Rico. Caribb. For. 16(1/2):24-35.

English version, Caribb. For. 16(1/2):12-23.

1255. Wadsworth, Frank H., B. J. Huckenpahler, and Carl F. Ehelebe.

1955. A report on the tropical forestry short course held in Puerto Rico. Caribb. For. 16(1/2):12-23.

Spanish version, Caribb. For. 16(1/2):24-35.

1256. Wadsworth, Frank H., and José Marrero.
1953a. Experiencias de la Companhia Paulista con Eucalipto. Su importancia para Puerto Rico. Caribb. For. 14(1/2):79-91.

English version, Caribb. For. 14(1/2):65-78.

Canpanhia Paulista's (Brazil) experiences with Eucalyptus and its importance for Puerto Rico.

1257. Wadsworth, Prank H. and José Marrero.
1953b. The significance to Puerto Rico of Companhia Paulista experience with Eucalyptus. Caribb. For. 14(1/2):65-78.

Spanish version, Caribb. For. 14(1/2):79-91.

This is a review of the work of the Companhia Paulista in Brazil. It discusses experiences to date with Eucalyptus in Puerto Rico and makes some recommendations for future work.

1258. Wadsworth, Frank H., and T. H. Schubert.
1977. Especies adaptables a suelos forestales disponibles en Puerto Rico. Revista/Review Interamericana 7(2):320-332.

1259. Wadsworth, Frank H., and Emilio Solís.
1949. Population and employment problems in the Toro Negro Forest. Caribb. For. 10(1):59-68.

Spanish version, Caribb. For. 10(1):69-79. French summary, Caribb. For. 10 (1) :79-80.

1260. Wadsworth, Frank H., and Emilio Solís.
1949. Problemas de población y de empleo en el Bosque de Toro Negro. Caribb. For. 10(1):69-79.

English version, Caribb. For. 10(1):59-68. French summary, Caribb. For. 10(1):79-80.

1261. Wadsworth, Robert K. [Kenneth].
1970. Point-quarter sampling of forest type--site relations at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. B-8, p. B 97 - B 104. USAEC, Oak Ridge, Tn.

The effects of elevation and terrain steepness on species distribution were studied to test a theory that these factors control the distribution of two forest types (Tabonuco and Colorado) which interfinger at this altitude. The point-quarter technique proved promising as a measure of species groups that represent more than half of the forest.

1262. Wadsworth, Robert Kenneth.
1977. A study of diameter distributions of an uneven aged tropical forest by means of a transition matrix model. Ph.D. Thesis. Univ. of Washington, Seattle. 162 p.

1263. Wagner, Richard J., Anstiss B. Wagner, and Richard A. Howard.
1969. The ecology of an Elfin Forest in Puerto Rico. 9. Chemical studies of colored leaves. J. Arnold Arbor. 50(4):556-565.

1264. Water Information Center, Inc.
1974. Climates of the States. Vol. 1 Eastern States plus Puerto Rico and the Virgin Islands. Nat. Oceanic and Atmos. Adm., U.S. Dep. Comm., Port Washington, N.Y.

1265. Watson, Henry.
1970. Branch elongation and the radiation field. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-16, p. D 287 - D 294. USAEC, Oak Ridge, Tn.

Five thousand limb tips of ground-story plants were tagged and measured in both the Radiation and South Control Centers of the El Verde forest after irradiation. The dosage at which growth in the Radiation Center egualedthatin the Control Centerwas taken as a measure of species sensitivity.

1266. Watson, Robert.
1970. Distribution of epiphytic algae on palm fronds. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. D-13, p. D 233 - D 236. USAEC, Oak Ridge, Tn.

Epiphytic algae on the fronds of the palm Euterpe globosa were studied in the Puerto Rican Nuclear Center rain forest program at El Verde, Puerto Rico. Considerable variation in epiphytic algae in the two areas observed was attributed to the indirect radiation effect of a sunny microenvironment rather than to the direct effect of radiation.

1267. Weaver, P. [Peter] L.
1963. Variation of water balance factors as affected by topography in the Luquillo Rain Forest. [Unpublished course report]. U.S. For. Serv., Inst. Trop. For., Río Piedras, P.R.

1268. Weaver, P. [Peter] L.
1972. Cloud moisture interception in the Luquillo Mountains of Puerto Rico. Caribb. J. Sci. 12(3/4):129-144.

1269. Weaver, P. [Peter] L.
1975. Transpiration rates in the elfin forest of the Luquillo Mountains of Puerto Rico. Caribb. J. Sci. 15(1/2):21-30.

1270. Weaver, Peter L.
1972. The dwarf forest of Pico del Este and the Luquillo Mountains. Revista Interamericana Review 2(2):174-186.

1271. Weaver, Peter L.
1974. Unit plan for the management of Piñones State Forest. For. Task Force, Dep. Nat. Resour., San Juan, P.R. 76 p.

1272. Weaver, Peter L.
1976. Ecological aspects and value of dwarf forest vegetation to Puerto Rico. FAO, Rome.

Voluntary paper submitted to the Technical Conference on Tropical Moist Forests, originally due to be held September 22 - October 3, 1975, and eventually cancelled. FAO, Rome. [Unpublished; repro. may be obtained from FAO Lib. and Doc. Div., att. DIS/Library].

1273. Weaver, P. [Peter] L., M. [Michael] D. Byer, and D. Bruck.
1973. Transpiration rates in the Luquillo Mountains of Puerto Rico. Biotropica5(2):123-133.

1274. Weaver, Peter L., and Luis 0. Nieves.
1978. Periodic annual DBH increment in a subtropical moist forest dominated by Syzygium jambos (L) Alston. Turrialba 28(3):253-256.

1275. Weaver, Peter L., Luis 0. Nieves, and Thomas R. Crow.
1976. Roosevelt Roads. Survey of Mangrove forest and the Río Daguao Watershed. Ecosystems Mgmt., Inst. Trop. For., U.S. Dep. Agric. For, Serv., Río Piedras, P.R. 34 p. plus illus.

A report contracted by and submitted to the U.S. Navy.

1276. Weinbren, M. P., and B. M. Weinbren.
1970. A study of natural virus cycles *before, during, and after irradiation. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-9, p. F 57 - F 65. USAEC, Oak Ridge, Tn.

In study of viruses made in 10 species of mosquitoes in the year preceding and following gamma irradiation, no arboviruses were found, but Coxsackie virus was found in rats and mosquitoes immediately following irradiation.

1277. Weinbren, M. P., and B. M. Weinbren.
1970. Observations on the mosquito population in the irradiated forest at El Verde. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-12, p. E 159 - E 167. USAEC, Oak Ridge, Tn.

A study was made of the mosquito population in the tropical rain forest at El Verde before and after radiation source. Canparison of the records of mosquito recovery indicates that the mosquito populations were initially depressed to a similar extent by both radiation and cutting, but the rate at which the different species could be recovered differed markedly from one area to another.

1278. Weinbren, M. P., B. M. Weinbren, W. B. Jackson, and others.
1970. Studies on the roof rat (Rattus rattus) in the El Verde Forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. E-13, p. E 169 - E 181. USAEC, Oak Ridge, Tn.

Population field studies of the black roof rat were made in the Radiation and South Control Centers at El Verde, both before and after radiation treatment of the areas. More rats were caught in areas in which there was less human activity.

1279. Wellwood, R. W.
1946. The physical-mechanical properties of certain West Indian timbers. I-II. Caribb. For. 7(2):151-173; 7(3):191-228.

Spanish version, Caribb. For. 7 (2):174-189; 7(3):229-251.

1280. Wellwood, R. W.
1946. Las propiedades físico-químicas de ciertas maderas de las Indias Occidentales. Caribb. For. 7 (2):174-189; 7(3):229-251.

English version, Caribb. For. 7 (2):151-173; 7(3):191-228.

1281. Wetmore, A.
1916. Birds of Porto Rico. U.S, Dep. Agric. Bull. 326, U.S. Print. Off., Washington, D.C.

1282. Wetmore, A.
1927. Birds of Porto Rico and the Virgin Islands. In Scientific Survey of Porto Rico and the Virgin Islands 9(3/4):245-571. N.Y. Acad. Sci., New York.

1283. White, David G.
1948. Bamboo culture and utilization in Puerto Rico. U.S. Dep. Agric. Circ. 29. U.S. Dep. Agric., Federal Agric. Exp. Stn., Mayaguez, P.R.

1284. White, David G., Milton Cobin, and Pedro Seguinot Robles.
1946. Relación entre el método de curar la Bambusa tuldoides y su durabilidad. Caribb. For. 7(3):267-272.

English version, Caribb. For. 7(3):253-267. French summary, Caribb. For. 7(3):273.

1285. White, David G., Milton Cobin, and Pedro Seguinot Robles.
1946. The relation between curing and durability of Bambusa tuldoide Caribb. For. 7(3):253-267.

Spanish version, Caribb. For. 7(3):267-272. French summary, Caribb For. 7(3):273.

1286. White, H. H.
1963. Variation in stand structure correlated with altitude in the Luquillo Mountains. Caribb. For. 24(1):46-52.

1287. Whitmore, Jacob L.
1971. Cedrela provenance trial in Puerto Rico and St. Croix. Nursery phase assessment. Turrialba21(3):343-349.

1288. Whitmore, Jacob L.
1972. Pinus merkusii, unsuitable for plantations in Puerto Rico. Turrialba 22(3):351-353.

1289. Whitmore, Jacob L.
1973. Myths regarding Hypsipyla and its host plants. In Proc. of the First Symp. on Integrated Control of Hypsipyla. Instituto Interamericano de Ciencias Agrícolas--Centro Tropical de Enseñanza e Investigación (IICA-CTEI), Turrialba, Costa-Rica.

1290. Whitmore, Jacob L.
1973. International provenance trials of: Pinus kesiya (including P. merkusii also); P. mnerkusii; Cedrela; and Eucalyptus in Puerto Rico. In Proc. of the IUFRO Joint Meet. on Trop. Provenance and Progeny Res. and Int. Coop., Nairobi. J. Burley and D. Nikles, eds. Commonw. For. Inst., Oxford, England.

1291. Whitmore, Jacob L.
1973. Wood density variation in Costa Rican balsa. Wood Sci. 5(3):223-229.

1292. Whitmore, Jacob L.
1974. Cedrela provenance trial in Puerto Rico and St. Croix: three years after outplanting. Presented at I Congreso Brasilero de Florestas Tropicais, Vicosa.

1293. Whitmore, Jacob L.
1977. Classification of ecosystems in land management planning. In Forests for people: a challenge in world affairs. Proc., Soc. Am. For. 1977 Ann. Meet. Albuquerque, N.M. p. 299-303.

1294. Whitmore, Jacob L.
1978. Bibliography on Eucalyptus deglupta Bl. U.S. Dep. Agric. For. Serv. Res. Note ITF-17, 17 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

This bibliography is presented as, an aid and stimulus to future research in the neotropics on E. deglupta. References included in For. Abstr. are so noted for easy access to the abstracted information (i.e., FA 16-3370 indicates For. Abstr., Vol. 16, Abstr. 3370).

1295. Whitmore, Jacob L.
1978. Cedrela provenance trial in Puerto Rico and St. Croix: establishment phase. U.S. Dep. Agric. For. Serv. Res. Note ITF-16, 11 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Three years after outplanting, a provenance trial of Spanish cedar was evaluated. Of the five sites considered, none proved appropriate for plantations of this species. The relative importance of the two main problems of Spanish cedar plantation establishment, site sensitivity and borer attack is discussed.

1296. Whitmore, J. [Jacob] L.
1978. Forestry potential. In Vieques-1972 Survey of the natural resources. Commonw. of Puerto Rico. Off. of the Governor. Environ. Qual. Bd. Ch. 8, p. l-7.

1297. Whitmore, Jacob L., and T. F. Geary.
1971. Pinus merkusii provenance trial in Puerto Rico. In Selection and breeding to improve some tropical conifers. Symp., Int. Union of For. Res. Orgs. (IUFRO) Work. Grp. on Breed. Trop. and Subtrop. Species, Gainesville, Fla., 1971.

1298. Whitmore, Jacob L., and G. S. Hartshorn.
1969. Literature review of common tropical trees. Contrib. 8, Trop. For. Ser., Inst. For. Prod., Coll. For. Resour., U. of Wash., Seattle. 113 p.

1299. Whitmore, Jacob L., and Gilberto Hinojosa.
1977. Mahogany (Swietenia) hybrids. U.S. Dep. Agric. For. Serv., Res. Pap. ITF-23, 8 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

This study concludes that Swietenia macrophylla x mahagoni is the same as S. aubrevilleana Stehlé & Cusin and is a hybrid worthy of widespread adaptability trials.

1300. Whitmore, J. [Jacob] L., and F. Macías.
1975. Eucalyptus provenances tested in Puerto Rico: two years after outplanting. For. Sci. 21(4):410-412.

1301. Whitmore, Jacob L., and S. Medina-Gaud.
1974. White peachscale attack on toon in Puerto Rico. J. Agric. Univ. P.R. 58(2):276-278.

1302. Whitmore, Jacob L., and A. Otárola T.
1976. Acrocarpus fraxini folius Wight, especie de rápido crecimiento inicial, buena forma y madera de usos múltiples. Turrialba 26(2):201-204.

Acrocarpus fraxini folius Wight is a species of rapid growth, good form, and many uses.

1303. Whitmore, R. A.
1948. Dres. Green y Whitmore dan conferencias. Discutieron reducción de nitrógeno en plantas; fecundación artificial. El Mundo [San Juan, P.R.], May 31, 1948. p.12.

Doctors Green and Whitmore give conference relating to the reduction of nitrogen in plants; artificial fertilization.

1304. Wiegert, Richard G.
1970. Effects of ionizing radiation on leaf fall, decomposition, and the litter microarthropods of a montane rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-4, p. H 89 - H 100. USAEC, Oak Ridge, Tn.

The effects of ionizing-radiation stress were analyzed with respect to three major components of the detritus-decomposer food web in a Puerto Rican montane rain forest: the rate of leaf fall, the decomposition rate of leaf litter, and the density of soil-litter microarthropods. No imnediate effect of the radiation stress on the disappearance of litter from mesh bags was detected, and the radiation stress has no apparent effects on the microarthropod fauna of the soil and litter.

1305. Wiegert, Richard G.
1970. Energetics of the nest-building termite, Nasutitermes costalis (Holmgren), in a Puerto Rican forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. I-4, p. I 57 - I 64. USAEC, Oak Ridge, Tn.

Density, respiratory energy loss, and secondary production by nest-building termites were studied in a Puerto Rican montane rain forest. Several tentative conclusions were drawn: the number of termites per nest is related not to the volume but to the surface area of the nest, worker and soldier termites had a "normal" calorific equivalent of about 5700 cal/g, but nymphs and winged reproductives in the nest had 6700 to 6800 cal/g dry wt., and the relation of oxygen consumption to body weight in these termites was similar to that found in other studies of insect respiration.

1306. Wiegert, Richard G., and Peter Murphy.
1970. Effect of season, species, and location on the disappearance rate of leaf litter in a Puerto Rican rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-5, p. H 101 - H 104. USAEC, Oak Ridge, Tn.

A two-year experiment was designed to test for the significance of species, location, and seasonal differences in disappearance rates of rain forest tree leaf litter. A factorial analysis of variance showed that disappearance rates differed significantly between trees (location), leaf species, and seasons, with a significant interaction between leaf species and season.

1307. Wiewandt, Thomas Alan.
1973. Mona amphibians, reptiles, and mammals. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. L, p. L-l - L-13. Junta de Calidad Ambiental [Env. Qual. Bd.], San Juan, P.R.

1308. Wiewandt, Thomas Alan.
1977. Ecology, behavior, and management of the Mona Island ground iguana, Cyclura stejneqeri. Ph.D. thesis. Cornell Univ., Ithaca., N.Y. 338 p.

1309. Williams, L.
1967. Forests of Southeast Asia, Puerto Rico, and Texas. CR 12-67. U.S. Dep. Agric., Agric. Res. Serv., Washington, D.C. 410 p.

1310. Willoughby, W. F.
1904. Mineral industries in Porto Rico. U.S. Dep. Com. Bur. Census Hull. 6. Washington, D.C.

1311. Wilson, H. M.
1899. Water resources of Port0 Rico. U.S. Geol. Surv. Water Supply Pap. 32. Washington, D.C.

1312. Wilson, Percy.
1902. Report of a trip to Porto Rico. J. N.Y. Bot. Card. 3:178-179.

This is an account of botanical collecting, especially in the Sierra de Luquillo.

1313. Wilson, Percy.
1917. The vegetation of Vieques Island. Bull. N.Y. Bot. Card. 8:379-410.

A brief description of the island, record of collectors, and catalogue of species are included in this article.

1314. Winters, H. F., and N. Almeyda.
1953. Ornamental trees in Puerto Rico. Caribb. For. 14(3/4):97-105.

This is an annotated list of species suitable for Puerto Rico, including palms, bamboos, and evergreens.

1315. Wisdom, Harold W.
1963. Trends in wood and paper imports into Puerto Rico. (Prepared as a special report for the 1962 Syracuse Forestry Summer Course, N.Y. State Univ., Coll. of For. at Syracuse, in cooperation with the U.S. For. Serv., Inst. Trop. For. Caribb. For. 24(2):80-86.

1316. Wisdom, Harold W.
1968. Public forestry investment criteria for Puerto Rico. Abstr. of thesis, in Dissert. Abstr. 1968.28B(10), (3953). (O.R.S.)

This thesis describes a cost/benefit model developed to provide criteria for choosing between investment alternatives, and it discusses the model's use in Puerto Rico in the choice among alternatives in forestry, recreation, and watershed management and in private forestry investment incentives.

1317. Witkamp, Martin.
1970. Aspects of soil microflora in a gamma-irradiated rain forest. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. F-5, p. F 29 - F 33. USAEC, Oak Ridge, Tn.

Microbial densities and activity were measured just before and after 3 months of irradiation and again 7 and 13 months after the period of irradiation; Comparisons of rock-shielded and exposed sites from 3 to 140 m from the radiation source showed no direct radiation effects on microflora. Seven months later breakdown rates and population densities were still higher in the defoliated area than in the forest with leaves remaining, and maximum activity was located in the highest accumulation of litter just around the source.

1318. Witkamp, Martin.
1970. Mineral retention by epiphyllic organisms. In A tropical rain forest: a study of irradiation and ecology at El Verde, Puerto Rico. Howard T. Odum and Robert F. Pigeon, eds. Ch. H-14, p. H 177 - H 179. USAEC, Oak Ridge, Tn.

Leaf surfaces with epiphylls dipped in nuclide solutions retained from 6 to 1726 ppm of the nuclide. It is argued that retention by epiphylls of minerals from precipitation may be a significant process in the mineral cycle of rain forests.

1319. Wolcott, George N..
1923. Insectae Portorricensis. J. Agric. Univ. of P.R. 7:311.

1320. Wolcott, George N.
1924. The comparative resistance of woods to the termite Cryptotermes brevis Walker. Bull. 33. P.R. Dep. Agric. and Labor, Insular Exp. Stn., Río Piedras, P.R. 15 p.

1321. Wolcott, George N.
1924. Entomología económica puertorriqueña. Boletín No. 32. Depto. de Agr. y Trabajo, Estación Experimental Insular, Río Piedras, P.R. 176 p.

Puerto Rican economic entomology.

1322. Wolcott, George N.
1936. Insectae Borinquensis. J. Ag-ric. Univ. of P.R. 20(1):509.

1323. Wolcott, George N.
1940. The entomologist looks at Maga. Caribb. For. 1(2):29-30.

1324. Wolcott, George N.
1924. An outbreak of the scale insect, Asterolecanium pustulans, Cockerell on Maga, Montezuma speciosissima. Caribb. For, 2(1):6-7.

1325. Wolcott, George N.
1941. The dispersion of the Cottony cushion scale in Puerto Rico in eight years. Caribb. For. 2(3):132-135.

1326. Wolcott, George N.
1943. How to make mod unpalatable to the West Indian dry-wood termite, Cryptotermes brevis Walker. I. With inorganic compound: Caribb. For. 4(4):145-156.

Spanish summary, Caribb. For. 4(4):156-157.

1327. Wolcott, George N.
1943. Lady-beetles don't behave. Caribb. For. 4(2):81-82.

1328. Wolcott, George N.
1944. How to make wood unpalatable to the West Indian dry-mod termite, Cryptotems brevis Walker. II. With organic compounds Caribb. For. 5(4):171-179.

Spanish summary, Caribb. For. 5(4):179-180.

1329. Wolcott, George N.
1945. Arboles para las carreteras de Puerto Rico. 'Caribb. For. 6(3):120-128.

English version, Caribb. For. 6(3):115-120.

1330. Wolcott, George N.
1945. Cómo lograr que la madera no sea apetecible al termes de la madera seca, Cryptotermes brevis Walker. III. Caribb.For.6(4):256-266.

English version, Caribb.For. 6(4):245-256.

1331. Wolcott, George N.
1945. How to make wood unpalatable to the West Indian dry-wood termite, Cryptotermes brevis Walker. III. Caribb. For. 6(4):245-256.

Spanish version, Caribb. For. 6(4):256-266.

1332. Wolcott, George N.
1945. Trees for roadside planting in Puerto Rico. Caribb. For. 6(3):115-120.

Spanish version, Caribb. For. 6(3):120-128. French summary, Caribb. For. 6(3):128-129.

1333. Wolcott, George N.
1946. Factores en la resistencia natural de las xnaderas al ataque de los terms. Caribb. For. 7(2):139-149.

English version, Caribb. For. 7(2):121-134.

1334. Wolcott, George N.
1946. Factors in the natural resistance of woods to termite attack. Caribb. For. 7(2):121-134.

Spanish version, Caribb. For. 7(2):139-149.

1335. Wolcott, George N.
1946. A list of woods arranged according to their resistance to the attack of the West Indian dry-wood termite, Cryptotems brevis Walker. Caribb. For. 7(4):329-334.

This list is adapted from that given in "What to do about polilla" (Wolcott, G.N., 1946, Bull. 68, Agric. Exp. Stn., Univ. of P.R. at Río Piedras, P.R. 29 p.), which includes minor changes of position of some woods.

Spanish version, Caribb. For. 7(4):335-336. French summary, Caribb. For. 7(4):336.

1336. Wolcott, George N.
1946. Lista de las maderas de acuerdo con su resistencia al ataq-ue del termes de la madera seca, Cryptotems brevis Walker. Caribb. For. 7(4):335-336.

English version, Caribb. For. 7(4):329-334. French summary, Caribb. For. 7(4):336.

1337. Wolcott, George N.
1947. The performance of termite repellents. J. Econ. Entomol. 40(1):124-129.

1338. Wolcott, George N.
1947. Termite repellents: a summary of laboratory tests. Univ. of P.R. Agric. Exp. Stn. Bull. 73, Río Piedras, P.R. 18 p.

1339. Wolcott, George N.
1948. The insects of Puerto Rico. J. Agric. Univ. of P.R. 32:975.

1340. Wolcott, George N.
1948. The resistance to dry-wood termite attack of some Central American woods. Caribb. For. 9(1):53-54.

Spanish version, Caribb. For. 9(1):54-55. French summary, Caribb. For. 9(1):56.

1341. Wolcott, George N.
1948. La resistencia de algunas maderas centro-americanas al ataque del termes de la madera seca. Caribb. For. 9(1):54-55.

English version, Caribb. For. 9(1):53-54. French sum-nary, Caribb. For. 9(1):56.

1342. Wolcott, George N.
1949. The compounds of copper most effective in making wood resistant to the attack of the West Indian dry-wood termite, Cryptotermes brevis Walker. Caribb. For. 10(3):197-200.

Spanish version, Caribb. For. 10(3):200-203.

1343. Wolcott, George N.
1949. Los compuestos de cobre que logran mayor efectividad en infundirle resistencia a la madera contra la polilla, Cryptotermes brevis Walker. Caribb. For. 10(3):200-203.

English version, Caribb. For. 10(3):197-200.

1344. Wolcott, George N.
1949. The most effective termite repellents. J. Econ. Entomol. 42(2):273-275.

1345. Wolcott, George N.
1950. An index to the termite resistance of woods. Dull 85. Agric. Exp. Stn., Univ. of P.R., Río Piedras. 26 p.

1346. Wolcott, George N.
1955. The insects of "Almendron" Prunus occidentalis 5 W. Caribb. For. 16(3/4):98.

1347. Wolcott, George N., and Luis F. Martorell.
1942. The accidental introduction of a beneficial insect (Chalcolepidius silvermanni) into Puerto Rico. Caribb. For. 3(2):58-60.

1348. woodard, T. H., and S. G. Heidel.
1964. Inventory of published and unpublished chemical analyses of surface waters in the continental United States and Puerto Rico, 1961. U.S. Geol. Surv. Water Supply Pap. 1786. U.S. Gov. Print. Off., Washington, D.C.

1349. Woodbury, Roy O.
1973. The vegetation of Mona Island. In Mona and Monito Islands: an assessment of their natural and historical resources. Vol. 2, App. G, p. G-l - G-2. Junta de Calidad Ambiental [Environ. Qual. Ed], San Juan, P.R.

1350. Woodbury, Roy O., and Elbert L. Little, Jr.
1976. Flora of Buck Island Reef National Monument (U.S. Virgin Islands). U.S. Dep. Agric. For. Serv., Res. Pap. ITF-19, 27 p. U.S. Dep. Agric. For. Serv., Inst. Trop. For., Río Piedras, P.R. [Discontinued series].

Duck Island, an uninhabited island about 1 mile long and less than half as wide, is located in the Caribbean Sea only 1 2/3 miles north of the eastern part of St. Croix and about 5 miles northeast of Christiansted, U.S. Virgin Islands. It supports a rich and representative land flora of the seasonal or relatively dry forest, tropical zone, totaling 228 listed species of seed plants but no ferns.

1351. Wuodbury, Roy, Luis F. Martorell, and José G. García-Tudurí.
1977. The flora Of Mona and Monito Islands. Puerto Rico (West Indies). Bull. 252. Agric. Exp. Stn., Univ. of P.R., Río Piedras. 60 p.

1352. Woodbury, Roy, Herbert Raffaele, Mitchelle Fram, and Leon Liegel.
1975. Rare and endangered plants of Puerto Rico. A committee report. U.S. Dep. Agric., Soil Conserv. Serv., and P.R. Dep. of Nat. Res., San Juan, P.R. 85 p.

1353. Wright, George W., and H. C. Bryant.
1935. Park possibilities in Puerto Rico. Rev. de Obras Públicas [Puerto Rico] 12:1017-1021.

1354. Wydler, H.
1830. Plantarum quarundam descriptions. Linnaea 5:423-425.

This article includes a description of Goetzea, an endemic genus of Puerto Rico.

1355. Zambrana, José A.
1978. Asociaciones de suelos de Puerto Rico y su potencial para siembra de árboles. Depto. de Agric. de los E.U., Servicio Forestal, Boletín Forestal, Area del Caribe, Río Piedras, P.R. 1 p., table, and map.

1356. Zambrana, José A., and Thomas H. Schubert.
1977. Black olive or Gregre: an ornamental and shade tree for confined. areas and adverse conditions. (In Spanish on reverse side, "Ucar: árbol ornamental y de sombra para áreas confinadas y condiciones adversas.") U.S. Dep. Agric. For. Ser., Urban Bull., Caribb. Area., Río Piedras, P.R. 2 p.

1357. Zon, Raphael, and William N. Sparhawk.
1923. Porto Rico. In Forest resources of the world: Vol. 2, p. 651-657. McGraw-Hill Book Co. Inc., New York.

HIGHLIGHTS OF FORESTRY IN PUERTO RICO AND U.S. VIRGIN ISLANDS

0 "Eighth Law" of Spain, first legal provision contemplating tree planting on granted land in the "Indies".

0 Introduction of West Indies Mahogany to the Danish West Indies (now U.S. Virgin Islands) subsequently widely planted along roadsides and fencerows.

4 First Puerto Rican forest conservation law.

9 Public forestry commission established in Puerto Rico by Spain, first comprehensive forest law.

0 First Spanish public forestry appropriation for Puerto Rico.

8 Crown lands of Puerto Rico passed from Spain to the United States.

3 U.S. proclaimed Luquillo Forest Reserve.

7 The Luquillo Forest Reserve was changed to Luquillo National Forest.

6 First boundary survey of Luquillo Forest completed; area 12,443 acres.

7 First Supervisor of Luquillo Forest appointed. Insular Forest Service also created within the Puerto Rico Department of Agriculture and Labor, placed under same supervisor.

7 Virgin Islands purchased from Denmark by the United States.

B-19 P. R. Government reserved mangroves at San Juan, Ceiba, Aguirre, Boquerón, and the upland forests of Maricao, Gubnica, and Mona and Monito Islands, totalling nearly 34,000 acres.

1920 Beginning of large-scale program of trial plantings with exotic and native tree species. First tree nursery established.

1921 Insular Forest Service began program of tree distribution to landowners

1928 Position of Extension Foreste established in University of Puerto Rico Extension Service

1930-32 U.S. Bureau of Efficiency reforestation program in Virgin Islands.

1 9 3 1 Public purchase of lands for forestry begun in Puerto Rico Total area now 98,000 acres.

1931 First forest plantations (Mahogany) established within the Luquillo National Forest.

1932 First policy statement of the Luquillo National Forest.

1933 Emergency Conservation Prograr began, and with Civilian Conservation Corps (CCC) program that succeeded it in 1937 accomplished extensive work in reforestation, forest road construction, and recreational and administrative improvements within both Federal and State Forests.

1934 Major reforestation program within public forests was begun. In the next twelve years, over 18,000 acres planted with 53 tree species, 28 of which were native species.

1935 The Luquillo National Forest was renamed the Caribbean National Forest to accommodate the Toro Negro Purchase Unit in Central Puerto Rico where 1,500 acres were subsequently purchased by U.S. Forest Service.

5 Third Forest Service set up under Puerto Rico Reconstruction Administration of the U.S. Department of the Interior but administered by the Forest Service of USDA; established Carite, Río Abajo, Guajataca, Guilarte, and Susúa Forests, and expanded Toro Negro Unit, purchasing 21,750 acres.

7 First systematic timber inventory made of the Caribbean National Forest.

3 Tropical Forest Experiment Station (now Institute of Tropical Forestry) established in Puerto Rico. First 24 volumes of The Caribbean Forester published. Scientific testing of site adaptability program begun, since has tested more than 100 native species and more than 350 introducted species.

0 Mona Island withdrawn from Insular Forest System.

3 Puerto Rico Reconstruction Administration Forest Service discontinued and its lands at Carite, Río Abajo, Guajataca, Guilarte and Susúa transferred to Puerto Rico Forest Service, and those at Toro Negro to the U.S. Forest Service.

5 All public forests, including the Caribbean National Forest, made insular wildlife refuges.

3 First timber management plan completed for the Caribbean National Forest.

9 Land Authority of Puerto Rico transferred what is now the Cambalache Forest to the Department of Agriculture and Commerce. These lands were then ceded to the Puerto Rico Forest Service, a part of this department.

1 The Ensenada section of the Gudnica Forest comprising 1,600 acres, and the area now called Vega Forest transferred from the Land Authority to the Puerto Rico Forest Service.

1952 First island-wide forest inventory undertaken by Puertc Rico Forest Service.

1953 Virgin Islands Corporation forestry program begun. 147-acre Estate Thomas Experimental Forest reserved in St. Croix.

1953 Puerto Rico Forest Service separated from U.S. Forest Service.

1953 First of international tropical forestry short courses held at the Institute of Tropical Forestry.

1956 Cooperative Forest Management program begun by Federal and State governments to intensify technical forestry assistance to private landowners, wood processors, and forest products consumers.

1956 Caribbean National Forest administratively designated also Luquillo Experimental Forest to recognize the growing importance of research work there.

1959 Successful introduction of Caribbean pine (Pinus caribaea) in Puerto Rico, since proven adaptable to mucl of the island.

1967 Virgin Islands Territorial Government initiated its own forestry program in cooperation with U.S. Forest Service.

1968 Formal research efforts to save the Puerto Rican parrot begun in the Caribbean National Forest. Wild population then 27 birds.

1970 Toro Negro Unit transferred to Puerto Rico Forest System in exchange for lands added tc the Luquillo Unit of the Caribbean National Forest.

1973 The Caribbean National Forest and Cooperative State and Private programs separated from

research activities and administered by Southern Region (Atlanta) of the National Forest System.

973 Administration of the State Forests transferred from the Puerto Rico Department of Agriculture to the P.R. Department of Natural Resources.

975 The Commonwealth enacts Law 133 - The Puerto Rico Forest Act giving the Department of Natural Resources new powers to administer the forests of Puerto Rico.

976 The P.R. Department of Natural Resources completed first master plan for its forest lands.

976 Luquillo Experimental Forest designated by the United States as part of the international network of Biosphere Reserves.

977 The Institute of Tropical Forestry transferred from the Office of the Chief of the U.S. Forest Service to the Southern Forest Experiment Station (New Orleans), as its Tropical American Forest Management Research Unit.

AUTHOR INDEX

Aaron, John M. 1
Abbad y Lasierra, Iñigo 2
Abbot, Walter 761
Abruña, Fernando 1012
Acevedo, G. 615
Acosta, José de 3
Addor, Eugene E. 4
Agriculture Experiment Stations, of the Land Grant Universities, Southern Region 5
Ahern, G. P. 6
Ahlers, David 7
Akers, J. P. 97
Albanese, Lorelei a
Alexander, William Henry 9, 10
Alexopoulos, Constantine J. 11
Allan, G. G. 331, 332
Almeyda, N. 1314
Almodóvar, L. R. 12,13; 366
Almy, C. C., Jr. 14
Alvarez García, Luis A. 15,16
Anderson, David E. 17
Angleró, José I. 18,19; 727
Anglo-American Caribbean Commission 20
Antony, H. E. 21,22
Aráez y Fernando, R. 23
Arena, C. 24
Arnow, T. a5
Arrarás, J. D. 25
Arrieta, Rubén 0. 26
Ascorbe, F. J. 27
Atwood, David M. 472
Austin, H. M. 28
Báez, Vicente 29
Bagué, Jaime 30,31
Baillon, H. 32
Balmer, William E. 33
Bannister, Barbara A. 34
Barber, H. G. 35
Barber, M. C. 36
Barbour, William R. 37
Barker, E. Eugene 38
Barres, H. 39,40
Barrett, 0. W. 41-44
Barrett, Wilfredo, H. G. 45
Barros, N. F. de 345; 1143
Bartlett, Federico P. 46
Bascopé, R. 47
Batchelder, R. B. 4 8
Bates, Charles 49-58
Baynton, H. W. 59,60
Beard, John Stewart 61-64
Beinroth, Friedrich 65,66
Bell, C. A. 67
Bell, c. c. 68
Bell0 y Espinosa, Domingo 69
Benedict, F. F. 70
Benner, Thomas E. 71
Berkey, C. P. 72,73
Bevan, Arthur 74-76
Biaggi, Virgilio 7 7
Bidigner, J. M. 799
Biebl, R. 12; 78,79
Bloom, Sanford G. 80
Bobb, Maggie al,82; 165
Bock, Carl A. 83,84
Bogart, D. B. a5
Bonnet, Juan A. 86-89; 613a, 614; 1251 1252
Boone, R. S. 90-92; 188, 189; 640
Bovey, R. W. 93; 265

Bowdish, B. S. 94
Brau, Salvador 95,96
Briggs, J. P. 97
Briggs, R. P. 626
Briscoe, C. B. 98-119; 346; 349; 387; 544; 550; 742-745; 762
Briscoe, George Ann 762
Britton, N. L. 120-144
Broom, Ruth 145
Brown, R. Z. 765
Bruck, D. 1273
Brunner, E. Murray 146-153
Brush, Virgil D. 154-156
Brush, Warren D. 157,158
Bryant, H. C. 1353
Budowski, Gerardo 159,160
Buell, Peter F. 161; 248
Bugher, J. c. 497
Buol, S, W. 162
Burkholder, L. M. 163
Burkholder, P. R. 163; 763
Burns, Lawrence A. 7 7 2
Byer, Michael D. 164; 1273
Cabrera, Alba Raquel 165
Calvesbert, Robert J. 166-168
Campbell, D. S. 169
Candelas, G. 170,171
Canoy, Michael J. 172,173
Caribbean National Forest, Forest Service, USDA 174,175
Carlozzi, Alice A. 176
Carlozzi, Carl A. 1 7 6
Carrera, C. 177
Carrión Torres, C. 14
Carroll, Henry King 178
Carter, Oliver R. 179
Centro de Investigaciones Forestales Tropicales (Tropical Forest Research Center, now named Institute of Tropical Forestry) 180
Cerame-Vivas, Máximo J. 181,182
Chalmers, W. S. 183
Chapman, V. J. 184
Chardón, C. E. 1001
Christie, S. K. 799
Chudrloff, Martin 90-92; 110; 185-199
Cintrón, Barbara 200; 371; 612
Cintrón, Gilberto 170; 201-204; 609; 764; 771
Cintrón, José E. 205-207
Cintrón, Molero G. 208
Clark, H. L. 209
Clark, Victor Seldom '"210
Clegg, Albert G. 211
Clements, Richard G. 212,213
Clifford, G. 214
Cobin, Milton 1284,1285
Coleman, David C. 215
Coll y Toste, Cayetano . 216-219
Collins. G. N. 226
Colón, E. D. . 220
Colón, José A. 212
Colorado, Isabel 399
Comisión Angloamericana del caribe 221
Comstock, w. P. 222
Cook, Melville T. 223,224; 365
Cook, 0. F. 225,226
Copeland, B. J. 765
Córdova, Juan P. 227-229
Córdova, Pedro Tomás de 230,231
Cornell University, Center of Aerial Photo Studies 897
Coufal, J. E. 232
Cowley, G. T. 233-235; 428
Crandall, B. 326,327
Crawford, G. L. 236; 747
Crooks, J. W. 85
Craw, Thomas R. 237,238; 1275

Crum, H. A. 239
Curet Cuevas, Eliezer 240
Curran, C. H. 241
Danforth, S. T. 242-246
Dansereau, Pierre 161; 247,248
Darwin, W. N. 249
Dawkins, H. C. 250
D'Axey, W. G. 251
de Acosta, José (see Acosta, José de)
de Barros, (see Barros de, N. F.)
de Córdova, Pedro Tomás (see Córdova, Pedro Tomás de)
De Golia, Darwin Paul 252
de Grosourdy, R. (see Grosourdy, R. de)
de la Maza, M. G. (see Maza, M. G. de la)
de León, Donald 253
del Toro, Gabriel A. (see Toro, Gabriel A. del)
Descartes, s. L. 254
Desmarais, A. Paul 255,256; 1018
Díaz Colón, J. D. 93
Díaz-Piferrer, M. 170; 257
Dickinson, F. E. 258
Dienes, G. J. 259
Dinwiddie, W. 260
Doerr, A. H. 261
Domenech, M. V. 262
Dowler, Clyde C. 93; 263-265 1069
Drewry, George 213; 266,267; 480; 493,494; 766-768; 773; 1017
Dugger, Ken 371; 612
Duke, James 268,269; 1069
Duplaquet, L. 270
Durland, William D. 271-274
Edmisten, Joe 275-279
Edmondson, Charles Howard 280,281
Eggers, H. F. A. 282-285
Ehelebe, Carl F. 1254,1255
Enamorado-Cuesta, José 286
Englerth, George H. 287-297; 550; 638,639; 1253
Erdman, Donald S. 298
Estrada Pinto, Alejo 299
Eucalyptus experience summarized 300
Evans, R. M. 301
Ewel, John J. 302-324
Fassig, 0. L. 305-309
Feliciano, C. 310
Fernández de Oviedo, Gonzalo 311
Fewkes, Jesse Walter 312
Fincher, Ernest B. 340
Flinter, George Dawson 313
Foerster, J. W. 314
Food and Agricultural Organization of the United Nations, FAO, Comisión Forestal Latinoamericana 315,316
Food and Agricultural Organization of the United Nations, FAO, Latin American Forestry Commission 315,316
Forbes, W. T. M. 317,318
Forestier, W. 263
Fowler, H. W. 319
Fox, J. E. D. 320
Fram, Mitchelle 321-324; 1352
Friedman, Robert 325
Fulford, M. H. 326,327
Furstenberg, P. von 328
Gandía Córdova, R. 329
Gannutz, T. P. 330
Gara, R. I. 331,332
García, Carmen M. 333
García, Jean 614
García-Piquera, Carmen 334-339
García-Tudurí, José G 1351
Garver, Earl S. 340
Gates, D. M. 341
Gaztambide, Juan B. 342,343

Geary, T. F. 190,191; 344-351; 1297
Gerhart, G. A. 352
Gerry, Eloise 353
Gifford, C. R. 719
Gifford, John Clayton 354
Gill, A. M. 355
Gill, Tom 356
Gill-Bermejo García, J. 357
Gilormini, José A. 358-363
Girard, James W. 1044
Gist, Clayton S. 1071
Giusti, E. V. 364
Gleason, Henry Allan 223,224; 365
Glynn, P. W. 366,367
Golfari, Lamberto 45
Golley, Frank B. 368,369
Gomberg, H. T. 370
González, Carlos G. 400
González, I. G. 366
González-Liboy, José A. 200; 371; 612
González-Mas, Arturo 372,373
Goytía Olmedo, Ernesto 92; 188,189; 192-197; 292,293; 296,297
Grabau, Warren E. 4
Gray, R. W. 374
Green, E. A. 375
Gregory, L. E. 376
Gregory, Luis 377,378
Griseback, A. H. R. 379
Groff, G. G. 380
Grosourdy, R. de 381
Gundlach, J. 382
Haas, William Herman 383
Haber, W. A. 384
Hacskaylo, Edward 385,386; 1154
Hadley, H. H. 387
Hagloy, E. W. 388
Hall, Roscoe M., Jr. 389
Ball, W. M. 390
Haman, M. 391
Hamilton, Gulielmus 392
Hamilton, S. 'H. 393
Hanson, E. 394
Harrar, E. S. 395
Harrington, M. W. 396
Harris, J. B. 111
Hart, Freck 397
Hartshorn, G. S. 1298
Heatwole, H. 398
Heatwole, Harold 399
Heidel, S. G. 1348
Helfenbein, Herntan 400
Helmuth, Billy T. 255
Hernández Agosto, Miguel A. 401,402
Hess, R. W. 258
Hess, Robert W. 963
Hibbin, T. 403
Hildner, W. K. 502
Bill, L. w. 404-407; 728
Bill, R. T. 408
Hill, Robert 409
Hinojosa, Gilberto 1299
Holdridge, L. R. 410-426
Holler, J. R. 427
Holler, James R. 428
Hollick, Arthur 429-432
Holsten, E. H. 991
Horn, Claud L. 433
Hottle, Walter D. 434
Howard, Alexander L. 435
Howard, Richard A. 436-440; 1263
Howe, Marshall A. 441
Howell, B. 442
Howes, C. D. 1139, 1140
Huckenpahler, B. J. 1254,1255
Hutton, Robert S. 443
Hyman, Margaret 444

Ibarra-Coronado, R. [Raúl]
(see also Ybarra-Coronado, R. [Raúl) 119; 347; 723

Institute of Tropical Forestry, Forest Service, USDA
(see also Experiment Station; Tropical Forest Research Center; Tropical Region) 180; 445-464; 882; 905; 1050-1068; 1090

Instituto de Dasonomía Tropical
(Institute of Tropical Forestry, Forest Service, USDA) 180; 445-464; 882; 905; 1050-1068; 1090

Iornes, M. J. 446-467

Irizarry, Edith Robles de 468; 503-505

Jackson, C. F. 469

Jackson, W. B. 1278

Jagels, F. P. 470

Johnson, Philip L. 471,472

Jones, C. F. 473

Jordan, Carl F. 474-480; 492-494; 769

Jordan D. G. 481

Juárez, J., Jr. 615

Kaye, C. A. 482

Kaye, Clifford A. 483

Kepler, Angela Kay 484,485; 488

Kepler, Cameron B. 486-489

Kinzel, A. 79

Kline, J. R. 477; 490-497; 767

Klots, E. B. 498

Knapp, Slaman A. 499

Kobuski., Clarence E. 500

Koening, N. 501

Kolehmainen, S. E. 502

Koo, F. K. S. 468; 503-506; 1146

Kramer, William P. 507-543

Kumme, K. W. 0. 544

Kuntze, Otto 545,546

La Bastille, Anne 547

Iamb. F. Bruce 112; 548-550

Lapiana, M. J. 799

Lavandero, Carlos F. 551

Lavigne, Robert J. 213

Ledrú, André P. 553

Legrand, J. Federico 554-572

León, Jorge 573

Leopold, N. F. 574

Liegel, Leon H. 575-577; 1352

Linás, Raúl 578

Liogier, Alain H. 579,580

Little, Elbert L., Jr. 581-591 1350

Littlefield, E. W. 592

Lobeck, A. K. 593

Longwood, F. R. 594-597

López, B. A. 598

López Abrams, Betsy 599

López, M. A. 3 6 4

López Canales, Manuel 600

López de Velasco, Juan 601

Loustalot, A. J. 602

Lovler, Ronnie 603

Lucchetti, A. 604

Lugo, Ariel E. 177; 200; 203-204; 371; 605-612; 770,771; 813,814

Lugo López, M. A. 88; 613,613a; 616

Luse, Robert 617

Lyford, W. H. 618

McCandless, I. B. 619,620

McClelland, T. B. 621

McCormick, J. Frank 622-624

McDonough, James 625

McIntyre, D. H. 626

McMahan, E. A. 768

McMahan, Elizabeth A. 627,628

McManus, Irene 629

McMillen, J. M. 630

Macías Zanabria, F. R. 348; 1141; 1300

Magruder, Joel 631
Maguire, Bassett, Jr. 632
Malaret , August0 633
Malaret, René Jiménez 634
Maldonado, Edwin D. 197; 294,295; 635-641
Mann, R. I. 642
Marchán, F. J. 643
Margalef, R. 644
Margenat, Alfredo 645
Márquez, Juan Luis 646
Marrero, Joaquín F. 647
Marrero, José 113; 426; 588; 648-681;1256,1257
Martínez Nadal, Noemí G. 682
Martínez Oramas, Joaquín 683,684
Martorell, Luis F. 685-705; 1347; 1351
Matthews, Barbara M. 706
Matos, Cruz A. 707
Mattoon, W. R. 708
Maury, Carlota J. 709
Maxon, William R. 710
Maza, M. G. de la 711
Medina-Gaud, S. 1301
Meléndez Muiioz, Miguel 712
Melgarejo, Juan 713
Mell, Clayton D. 964
Mercado, Nelson 495; 714
Meyerhoff, H. A. 715,716
Miers, J. 717
Miller, H. A. 989
Miller, K. R. 718,719
Millspaugh, C. F. 720
Mitchell, Raoul c. 721
Mixer, Knowlton 722
Monteith, D. B. 723; 406,407
Moore, Allen M. 772
Moore, C. G. 384
Morris, Gregory L. 203,204
Morton, H. L. 265
Mosquera Moreno, Menandra 724,725
Muñiz McCormick, Carlos 425
Muñoz, Juan E. 726-728; 1142,1143
Muñoz, L. A. 729
Muratti, José 400
Murphy, Louis S. 730,731
Murphy, Peter G. 732,733; 773; 1306
Murray, Louis S. 156
Murray, Robert Rose 734
Neváres, R., Jr. 735
Nevling, L. I. 736
Nevling, Lorin I., Jr. 737,738
New York Academy of Sciences 739
Newton, H. K. 6
Nieves, Luis 0. 1274,1275
Nieves Rivera, Carlos 740
Noble, W. D. 741
Nobles, R. W. 114-116; 349; 742-745
Noll, John J. 746
Nolla, J. A. B. 747
Northwestern University 748
Núñez Meléndez, E. 749
Ocasio, Juan Manuel 750
Odum, Howard T. 369; 496,497;505; 751-774
Ogle, Carol June 775
Ogle, Richard A. 776
Oliver Lugo, Fernando 777,778
Olson, J. S. 787
Ortiz, Víctor R. 779-781
Osborne, H. 782'
Otárola, A. 783; 1302
Otero, J. I. 784
Otero, José I. 785
Otero, L. P. de 784

Ovington, J. D. 786,787
Pagán, C. 602
Pagán, F. A. 13
Pagán-Font, Francisco A. 788
Page, H. J. 789
Pate, W. W. 790
Parkes, K. C. 489
Paz Salamandra, N. 791
Peck, Edward C. 641
Fendelton, R. L. 792
Pennock, William 793
Pereles, José 794
Pérez, José W. 795; 1018
Pérez-Escolar, R. 615
Pérez Vázquez, Carlos 796
Perkins, J. 797
Perry, Jerome J. 798
Persinos, G. J. 799
Peters, J. G. 802
Petrichik, Bernard 800
Petrichik, Harriet 800
Petrunkevitch, A. 801
Peyton, J. S. 802
Pic6, Rafael 403; 803-809
Pigeon, Robert F. 760
Plank, H. B. 810-812
Pool, Douglas J. 203,204; 547; 813,814
Porto Rico. (misc.) 815-820
Preece, Margot a21 ,a22
Price, C. A. a23
Provanetti, Domingo a24
Puerto Rico (misc.) 825-837
Puerto Rico Aqueduct and Sewer Authoruty 828
[Puerto Rico. Arboles] a29-831 94 l-946
Puerto Rico, Autoridad de las Fuentes Fluviales a32
[Puerto Rico. Aves] a33
[Puerto Rico. Bosque de Luquillo] a34
[Puerto Rico. Bosque Nacional de Isla] a35
[Puerto Rico. Bosques] 836,a37
Puerto Rico, Bureau of Economics and Statistics 838-862
[Puerto Rico. Cadam] 863
[Puerto Rico. Caribbean National Forest] 864
[Puerto Rico. Conservation] 865
[Puerto Rico. Parrot] 866,867
Puerto Rico: Delegación de Conservación de Suelos, Aguas y Bosq-ues 868
Puerto Rico, Departamento de Agricultura 869-882; 924
Puerto Rico, Departamento de Agricultura, Area de Servicios Auxiliares y Operaciones Centralizados a73
Puerto Rico, Departamento de Agricultura y Comercio 874; 877-881
Puerto Rico, Department of Agriculture 869-882; 924
Puerto Rico, Department of Agriculture and Commerce 874; 877-881
Puerto Rico, Department of Agriculture, Office of Conservation of Forest Resources 882
Puerto Rico, Department of Natural Resources 883-897; 1102
Puerto Rico, Economic Development Administration 898; 948
[Puerto Rico. El Yunque] ,952
Puerto Rico, Environmental Quality Board [Junta de Calidad Ambiental] 899-901; 906-910
[Puerto Rico. Forestry] 902-904
[Puerto Rico. Institute of Tropical Forestry 905

Puerto Rico. Junta de Calidad Ambiental [Environmental Quality Board 899-901; 906-910
[Puerto Rico. Legislature] 911,912
[Puerto Rico. Luquillo, Forest] 913
[Puerto Rico. Mangroves] 914-917
[Puerto Rico. Honduras pine] 918
Puerto Rico Planning Board 919
Puerto Rico. Puerto Rico and the Sea Committee 920
Puerto Rico Reconstruction Administration 921
[Puerto Rico. Recursos Fbrestales] 9 2 2
[Puerto Rico. Reforestation] 923
Puerto Rico. Secretaría de Agricultura 924
[Puerto Rico. Seedlings] 925
Puerto Rico, Servicio de Extensión Agrícola 926-940; 1103-1105
[Puerto Rico. Trees] 829-831; 941-946
Puerto Rico, Universidad de, Escuela de Derecho, Instituto de Derecho Urban0 947
Puerto Rico, University of, and the Economic Development Administration 948
Puerto Rico, University of, Agricultural Experiment Station 1053; 1103
Puerto Rico, University of; Agricultural Extension Service 926-940;1104,1105;
Puerto Rico, University of, College of Agricultural Sciences 1106,1107
[Puerto Rico. Urban Forestry 949
[Puerto Rico. Vacía Talega] 950
Puerto Rico, Water Resources Authority 951
[Puerto Rico, Yunque] 952
Quarterman, Elsie 953
Quiles Colón, Heriberto 954
Quiñones, Luis R. 955
Raffaele, Herbert 956,957; 1352
Raines, Gilbert 80
Rams, Francisco 958
Ramos López, Juan 959,
Rasmussen, Reinhold A. 443
Recher, Harry F. 960,961
Recher, Judy T. 961
Record, Samuel J. 962-964
Reddy, C. V. K. 965
Reid, D, G, 395
Reid, David 966
Ricciuti, Edward R. 967,968
Richards, Douglas D. 969
Rivera, Angel 970
Rivera, Julio 971
Rivera, Luis H. 616; 972
Rivera Brenes, L. 973
Rivera Landrón, Francisco 974
Rivero, J. 763
Roberts, Ray Clayton 975
Robles, Edith de Irizarry (see also Irizarry, Edith Robles de) 468; 503- 505
Rodríguez, A. 1144
Rodríguez Piñán, Julio 400
Rodríguez San Pedro, Joaquín 976
Rodríguez-Vidal, José A. 977,978
Rojas Daporta, M. 979,980
Rojas Daporta, Malén 981-983
Romney-Joseph, C. 973
Roosevelt, Theodore 984
Rosario, José 985
Rossy, Abel 399
Rouse, I. 986
Routte, E. 987
Ruiz-Reyes, J. 774
Rushing, William N. 4; 988
Russell, Keith W. 989

Salazar, R. 783
Samuels, George 990
Sánchez, J. C. 991
Santana, Pedro M. 992
Sawbey, C. 993
Schauss. W. 994
Schmidt, K. P. 995,996
Schubert, Thomas H. 997-999; 1258; 1356
Schuchert, C. 1000
Seaver, F. J. 1001
Seda, Benjamín 1002-1004
Seguinot Robles, Pedro 1284,1285
Selander, Robert K. 761
Shafer, J. A. 1005,1006
Sherman, E. A. 1007
Shlers, D. 1008
Smedley, D. 1009
Smith, M. R. 1010
Smith, R. F. 1011
Smith, Richard M. 1012
Smith, Robert Ford 1013-1016
Snedaker, Samuel 610; 813,814
Solís, Emilio 1259,1260
Sollins, Nancy F. 628
Sollins, Phillip 1017
Soriano-Ressey, Mario 1018
Sorrie, B. 1019
Sorsa, Veikko 1020
Spain, Ministry of Ultramar 1021
Sparhawk, William N. 1357
Sposta, Joseph W. 1022-1024
Stahl, Agustín 1025-1027
Steere, W. C. 239
Steere, William C. 1028
Stehlé, Henri 1029-1032
Stein, A. H. 1033
Stejneger, L. 1034
Stella, Tomás 1035,1036
Stevens, F. L. 1037
Stevenson, Tom 1038
Stiven, Alan E. 1039
Stone, R. 1040
Stotler, R. 326,327
Suárez, J. L. 171
swabey, c. 1041
Tamsitt, J. R. 1042
Taylor, N. Cavendish 1043'
Teesdale, Laurence V. 1044
Telek, L. 1139,1140
Tordoff, Herbert 1045,1046
Toro, Gabriel A. del 576,577
Toro Nazario, J. M. 1047
Toro, R. A. 784
Toro, Rafael A. 785
Tosi, J. A., Jr. 1048
Tower, W. V. 1049
Tropical Forest Experiment -Station (now named Institute of Tropical Forestry, Southern Forest Experiment Station, Forest Service, USDA 1050-1060
Tropical Forest Experiment Station, Tropical Region (now named Institute of Tropical Forestry, Forest Service, USDA 1055-1060
Tropical Forest Research Center, (now named Institute of Tropical Forestry, Southern Forest Experiment Station, Forest Service, USDA 180; 1061-1067
Tropical Region (now named Institute of Tropical Forestry, Southern Forest Experiment Station, Forest Service, USDA 1055-1060; 1068
Tschirley, Fred H. 263-265; 1069
Tukey, H. B. 1070
Turner, Frederick B. 1071
Ubeda y Delgado, M. 1072
Underwood, L. M. 1073

U.S. Army Engineers Division, Corps of Engineers 1074,1075

U.S. Army Engineer Waterways Experiment Station, Corps of Engineers 1075

U.S. Department of Agriculture 881,882; 1076-1107

U.S. Department of Agriculture, Forest Service 881,882; 1077-1090

U.S. Departmentof Agriculture, Forest Service, Caribbean National Forest 1089

U.S. Department of Agriculture, Forest Service, Institute of Tropical Forestry 882; 1077-1090

U.S. Department of Agriculture, Forest Service, Tropical Region (now named Institute of Tropical Forestry, Southern Forest Experiment Station 1090

U.S. Department of Agriculture, Soil Conservation Service 1091-1107

U.S. Weather Bureau 1108

Univexsidad de Puerto Rico, Escuela de Derecho, Instituto de Derecho Urbano 947

university of Puerto Rico and the Economic Development Administration 948

university of Puerto Rico, Agricultural Experiment Station 1053; 1103

University of Puerto Rico, Agricultural Extension Service 926-940; 1104,1105

University of Puerto Rico, College of Agricultural Sciences 1106,1107

Upson, Arthur T. 400; 1109-1113

Urban, I. 1114-1118

Vahl, Martin 1119

Valdivieso, Darío 1042

Vallés, J. M. 171

Van der Schalie, H 1120

Van Zwaluwenberg, R. H. 1121

Vdzquez, Aifonso 256

Vázquez García, Salvador 1122

Vázquez Pérez, Carlos J. 1123

Velarde, J. A. 1124

Velázquez, Imaro 1125

Vélez, Ismael 377,378

Vélez, Manuel J., Jr. 1126

Venator, Charles R. (see also erroneouslistings as "Venator, R. C." and/or "Venator, Robert") 506; 1127-1146

Venator, Robert and/or Venator, R. C. (erroneous listings--see' also correct listing as Venator, Charles R.) 506

Villalobos, B. F. 973

Virkii, Niilo 1147

Vivaldi, Santiago A. 1148-1153

von Furstenberg, P. (see Furstenberg, P. von)

Vozzo, J. A. 117; 1154

Wadsworth, Frank H. 118; 587-590; 679-681; 1113; 1155-1260

Wadsworth, Robert Kenneth 1261,1262

Wagner, Anstiss B. 1263

Wagner, Richard J. 1263

Wangaard, F. F. 258

Water Information Center Inc. 1264

Watson, Henry 1265

Watson, Robert 1266

Wawriew, R. 198

Weaver, Peter L. 164; 238; 1267-1275

Weinbren, B.M. 1276-1278

Weinbren, M. P. 1276-1278

Wellwood, R. W. 1279,1280

Wetmore, A. 1281,1282

White, David G. 1283 - 1285

White, H. H. 1286

Whitmore, Jacob L. 302,303; 331,332; 724; 783; 991; 1287-1302

Whitmore, R. A. 1303

Wiegert, Richard G. 1304-1306

Wiewandt, Thomas Alan 1307,1308

Wilkins, R. M. 331,332

Williams, L. 1309

Willoughby, W. F. 1310

Wilson, H. M. 1311

Wilson, Percy 143,144; 1312,1313

Wilson, Ronald F. 369

Winters, H. F. 1314

Wisdom, Harold W. 1315,1316

Witkamp, Martin 1317,1318

Wolcott, George N. 1319-1347

Woodard, T. H. 1348

woodbury, Roy 0. 589-591; 738; 1349-1352

Wright, George W. 1353

Wyckoff, D. 111

Wydler, H. 1354

Ybarra-Coronado, Raúl (see also Ibarra-Coronado R. [Raúl] 119; 347; 723

Zambrana, José A. 33; 350,351; 998,999; 1145; 1355,1356

Zon, Raphael 1357

SUBJECT INDEX

1. FORESTS AND FORESTRY. GENERAL, INCLUDING ANNUAL REPORTS MANUALS, GLOSSARIES

25, 30, 38, 41, 42, 46, 52, 135, 145, 148, 151, 152, 155, 175, 180, 183, 186, 205, 214, 216-218, 220, 230, 231, 240, 260, 267, 273, 286, 311-313, 324, 334-340, 352, 354, 356, 357, 380, 383, 404, 405, 408, 412-414, 445-464, 480, 490, 493, 494, 499, 509-518, 522-537, 540, 601, 625, 650, 683, 722, 731, 734, 739, 776, 780, 803-805, 807-809, 816-820, 825-827, 834, 836, 838-863, 870-872, 877-582, 893, 898, 899, 905-908, 910-912, 921, 942, 951, 958, 965, 971, 973, 985-987, 997, 1027, 1040, 1043-1047, 1050-1068, 1072-1074, 1077, 1086-1089, 1104, 1105, 1109, 1110, 7134, 1148, 1156, 1161, 1163, 1164, 1179-1183, 1186, 1213, 1216, 1218, 1221, 1222, 1224-1227, 1238, 1241, 1242, 1246, 1247, 1254, 1255, 1294, 1298, 1309, 1310, 1312, 1315, 1348, 1357

2. GENERAL SITE FACTORS. CLIMATE, SOIL, GEOLOGY

1, 2, 3, 5, 9, 10, 20, 23, 46, 48, 55, 56, 65, 66, 72, 73, 85-89, 97, 102, 106, 109, 113, 162, 166-168, 170, 171, 179, 208, 211, 212, 214, 216-221, 227-229, 260-262, 275, 276, 305-309, 311, 329, 364, 366, 374, 380, 393, 402, 406, 407, 409, 427-432, 440, 469, 470, 475, 481-483, 544, 575, 593, 601, 613-616, 626, 642, 721, 735, 758, 767, 775, 789, 792, 803-805, '807-809, 883, 884, 900, 901, 909, 924, 926, 927, 929, 930, 935, 938, 972, 975, 990, 992, 1000, 1003, 1009, 1018, 1072, 1074, 1091, 1093, 1094, 1097, 1106-1108, 1151, 1152, 1160, 1177, 1184, 1185, 1187-1189, 1196-1198, 1230, 1233, 1242, 1251, 1252, 1258, 1267-1270, 1272, 1273, 1286, 1293, 1306, 1355

3. WATERSHED MANAGEMENT. HYDROLOGY: EROSION, SOIL CONSERVATION, WATER CONSERVATION

5, 20, 65, 80-85, 88, 89, 179, 181, 221, 227, 236, 364, 390, 401, 402, 406, 407, 414, 470, 475, 481, 507, 575, 592, 604, 626, 634, 647, 649, 729, 741, 746, 747, 772, 777, 778, 790, 823, 828, 864, 865, 868, 869, 873, 887, 923, 924, 928, 932, 933, 946, 947, 993, 1003 1012, 1041, 1074-1076, 1092-1096, 1098, 1100, 1101, 1103, 1122' 1177 1184 1185, 1187-1189, 1197, 1200, 1201, 1211, 1223, 1228; 1233; 1267; 1311, 1316, 1317

BOTANY. TAXONOMY, SPECIES DESCRIPTIONS

2, 3, 7, 29, 32, 45, 47, 69, 120-134, 136-144, 149, 156-158, 177, 190, 203, 204, 206, 207, 225, 226, 239, 251, 282, 283, 285, 311, 353, 358, 367, 372, 373, 375, 376, 379, 381, 392, 396, 398, 410, 411, 415, 419-423, 425, 429-434, 439, 441, 484, 485, 500, 508, 519, 545, 546, 548, 553, 573, 579491, 633, 697-704, 710, 711, 720, 725, 731, 738, 784, 785, 797, 800, 831, 863, 900, 901, 909, 942, 944, 998, 999, 1001, 1005, 1006, 1014, 1015, 1018, 1025, 1026, 1028-1032, 1037, 1090, 1102, 1114-1119, 1158, 1159, 1233, 1264, 1298, 1299, 1313, 1350, 1351, 1354

ZOOLOGY. TAXONOMY, SPECIES DESCRIPTIONS

2, 3, 14, 21, 22, 28, 35, 77, 94, 174, 209, 222, 241, 243-246, 253, 267, 298, 311, 317-319, 382, 396, 487, 489, 498, 552, 574, 633, 685-692, 705, 782, 788, 801, 811, 812, 900, 901, 909, 939, 940, 956, 961, 994-996, 1010, 1018, 1019, 1034, 1099, 1120, 1121, 1233, 1281, 1282, 1307, 1319, 1322, 1339

PLANT ECOLOGY

4, 8, 11, 12, 13, 15, 16, 27, 34, 36, 38, 41, 59-65, 67, 70, 78, 79, 80-82, 98, 149, 161, 164, 170-173, 177, 181, 182, 184, ZOO, 203, 204, 211-213, 215, 223, 224, 232-235, 237, 238, 247, 248, 255-257, 259, 268-270, 275-279, 284, 299, 302, 303, 314, 321-324, 326, 327, 330, 333, 341, 342, 348, 355, 365, 369, 370, 371, 377-379, 385, 386, 389, 398, 418, 424, 427, 428; 436-438, 440, 443, 465, 468, 471, 472, 474-480, 490-497, 502-506, 547, 551, 554, 586, 603, 605, 607-612, 617, 618, 622-624, 632, 644, 668, 682, 693, 694, 709, 719, 725, 732, 733, 736, 737, 751-767, 769-775, 786, 787, 791, 798, 799, 813, 814, 834, 886, 914, 946, 949, 951, 953, 983, 986, 988, 989, 10.08, 1011, 1013-1018, 1020, 1035, 1038, 1069, 1070, 1102, 1146, 1148, 1174, 1175, 1178, 1184, 1185, 1187, 1194, 1196, 1198, 1210, 1212, 1215, 1228, 1233, 1239, 1245, 1258, 1261, 1263, 1265, 1266, 1268-1270, 1272-1274, 1276-1278, 1293, 1303-1306, 1317, 1318, 1323, 1346, 1349, 1352

ANIMAL ECOLOGY

17, 38, 81, 82, 163, 170, 171, 174, 182, 201, 202, 213, 215, 242-244, 257, 266, 302, 303, 310, 321, 333, 342, 367, 368, 384, 399, 480, 486, 488, 490, 494, 551, 552, 603, 619, 620, 627, 629, 631, 706, 724, 740, 751, 757, 760, 768, 774, 812, 833, 834, 866, 867, 896, 936, 951, 957, 960, 961, 967, 968, 977, 983, 1008, 1018, 1035, 1039, 1042, 1071, 1099, 1126, 1147, 1148, 1228, 1233, 1276-1278, 1293, 1305, 1308, 1320, 1321, 1323-1328, 1330, 1331, 1333-1338, 1340-1347

SILVICULTURE. NATURAL FORESTS

13, 15, 16, 30, 40, 41, 58-64, 93, 105, 106, 112, 147, 152, 159, 160, 264, 265, 271, 272, 274, 331, 332, 414, 434, 550, 777, 778, 837, 913, 970, 983, 991, 1007, 1023, 1024, 1090, 1166, 1167, 1172-1175, 1178, 1190, 1191, 1194, 1200, 1201, 1211, 1217, 1219, 1220, 1233, 1244, 1245, 1262

9. SILVICULTURE. PLANTATIONS, INCLUDING AGRO-FORESTRY

19, 26, 30, 39, 40, 50, 51, 53, 54, 57, 58, 76, 93, 99-108, 111-119, 139, 147, 150, 152, 154, 165, 228, 229, 264, 265, 271, 272, 274, 300, 304, 316, 328, 331, 332, 344-347, 349-351, 359-363, 387, 401, 412-417, 426, 434, 444, 465-467, 541, 549, 550, 592, 648, 651-681, 684, 693, 694, 696, 723, 727, 728, 742-745, 777, 778, 783, 829, 832, 837, 875, 892, 902-904, 918, 922, 923, 925, 934, 941, 954, 970, 974, 978, 981, 983, 984, 991, 1007, 1023, 1024, 1049, 1053, 1057, 1111, 1125, 1127-1145, 1149-1155, 1157, 1160, 1166-1169, 1172, 11.73, 1176, 1192-1196, 1198, 1199, 1202, 1203, 1211, 1217, 1219, 1220, 1223, 1229, 1233-1235, 1237, 1244, 1246, 1248, 1250, 1256-1258, 1283, 1287-1290, 1292, 1295, 1297, 1299-1301, 1355

10. ARBORICULTURE FOR ORNAMENTAL PURPOSES

7, 18, 33, 38, 49, 58, 134, 206, 207, 325, 353, 358, 406, 407, 521, 599, 600, 603, 693-695, 793, 800, 824, 830, 832, 875, 885, 941, 943, 945, 946, 949, 998, 999, 1036, 1314, 1329, 1332, 1356

11. FOREST INJURIES AND PROTECTION, INCLUDING HURRICANE DAMAGE; CONTAMINATION

15, 16, 23, 24, 55, 56, 71, 93, 165, 181, 208, 257, 264, 265, 280, 281, 309, 322, 331, 332, 387, 414, 554, 608, 626, 728, 812, 822, 869, 885, 916, 917, 937, 940, 947, 950, 951, 979, 980, 991, 1049, 1122, 1211, 1214, 1253, 1301, 1320, 1324-1328, 1330, 1331, 1333-1338, 1340-1345, 1347

12. FOREST MENSURATION. INCREMENT; DEVELOPMENT AND STRUCTURE OF STANDS. SURVEYING AND MAPPING; INVENTORY; GROWTH MODELLING

37, 110, 153, 161, 250, 316, 472, 576, 577, 642, 708, 731, 739, 779, 883, 897, 1029-1031, 1078, 1228, 1229, 1262, 1275

13. FOREST MANAGEMENT

26, 68, 74, 81, 82, 148, 159, 173, 175, 177, 180, 181, 264, 265, 333, 354, 388, 400, 401, 405, 414, 416, 538, 547, 550, 554, 575, 592, 606, 609, 621, 645, 646, 649, 657-659, 664-668, 681, 683, 726, 730, 776-778, 796, 802, 813, 820, 821, 829, 864, 869, 873, 875, 876, 888-891, 894, 913, 916, 917, 950, 952, 959, 969, 981, 983, 993, 1004, 1068, 1079, 1082, 1083, 1088, 1089, 1109, 1110, 1112, 1113, 1123, 1125, 1162, 1164, 1170-1173, 1192, 1193, 1195, 1204-1209, 1211, 1216, 1217, 1219, 1220, 1223, 1230, 1233-1235, 1240, 1243, 1246, 1256, 1257, 1259, 1260, 1271, 1293, 1316

14. RECREATION

8, 38, 68, 74, 148, 175, 333, 342, 354, 397, 400, 405, 547, 578, 603, 646, 718, 895, 914, 946, 950, 982, 983, 1100, 1101, 1148, 1164, 1240, 1316, 1353

FOREST PRODUCTS. WOOD: STRUCTURE AND PROPERTIES; UTILIZATION; WOOD PRESERVATION; ECONOMICS OF FOREST PRODUCTS INDUSTRIES; MINOR FOREST PRODUCTS

6, 43, 44, 90-92, 111, 146, 153, 169, 185-190, 192-199, 206, 207, 226, 240, 249, 252, 258, 261, 280, 281, 287-297, 320, 328, 348, 375, 376, 381, 391, 395, 403, 539, 543, 550, 555-572, 592, 594-597, 602, 621, 630, 635-641, 643, 749, 781, 794, 795, 810, 838-863, 875, 915, 931, 940, 955, 959, 962-964, 966, 983, 1025, 1080, 1148, 1162, 1164, 1165, 1236, 1249, 1256, 1257, 1279, 1280, 1283-1285, 1291, 1296, 1316

5. SOCIO-ECONOMICS OF FORESTRY. LAND-USE POLICY; REGULATION OF FORESTRY, INCLUDING LEGISLATION

7, 8, 24-26, 30, 31, 38, 41, 42, 46, 48, 65, 74-76, 81-84, 95, 96, 139, 145, 146, 148, 150-153, 155, 159, 165, 170, 171, 175-178, 180-182, 205, 210, 220, 230, 240, 252, 254, 260-262, 273, 301, 340, 343, 354, 380, 388, 394, 400, 402, 405-407, 414, 416, 435, 442, 473, 499, 501, 520, 538, 539, 541, 542, 547, 550, 575, 592, 598, 599, 606, 621, 642, 645, 664-667, 681, 707, 718, 722, 748, 750, 796, 802, 806, 815, 820, 821, 834, 835, 864, 865, 874, 876-878, 885, 894, 900-904, 909, 911, 912, 916, 917, 919, 920, 924, 948, 950, 952, 958, 959, 1002, 1004, 1021, 1022, 1033, 1047, 1048, 1053, 1068, 1079, 1081-1085, 1110, 1112, 1124, 1125, 1170, 1171, 1223, 1230-1232, 1234, 1235, 1250, 1302, 1315, 1316, 1353

SPECIES INDEX

Aceite de Maria 415, 453, 475, 1160
African tuliptree 346
Algarrobo 258
Almendrillo 1346
Almendrón 1346
Alsophila bryophila Tryon 137
Andira inermis (W. Wright) H. B. K. 700
Andira jamaicensis (W. Wright) Urban 700
Angelin Tree 700
Anthocephalus cadamba (Roxb.) 'Miq. 346, 444, 605, 611, 678, 863, 1145
Anthocephalus ehinensis (Lam.) A. Rich ex Walp. 346, 444, 605, 611, 678, 863, 1145
Araucaria angustifolia (Bert.) 0. Kuntze 346
Araucaria brasilana A. Rich. 346
Araucaria excelsa (Lamb.) R. Br. 696
Araucaria heterophylla (Salisb.) Franco 696
Australian beefwood 364
Ausubo 235, 258, 320

Balata 235, 258, 320
Balsa 417
Bamboo 294, 295, 1283, 1284, 1285
Bambii 294, 295, 1283, 1284, 1285
Bambúa 294, 295, 1283, 1284, 1285
Bambusa tuldoides 1284, 1285
Bambusa vulgaris Schrad. 294, 295, 1283
Bastard Mahogany 700
Beakpod eucalyptus 300, 346
Bejuco escambrón 953
Big-leaf mahogany 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 745, 998, 1299
Black olive 1356
Blue mahoe 346, 673
Bois immortelle 703
Bombax pentandrum L. 625, 942
Botoncillo 702
Buttonwood 702
Brasileño 346
Brucayo 703
Búcar 703
Bucaré 703
Bucaré gigante 703
Bucarp gigante 703
Buceras bucida Crantz 1356
Buehenavia capitata (Vahl) Eichl. 258
Bucida buceras L. 1356
Bucida capitata Vahl. 258
Bullet-wood 235, 258, 320
Bully-tree 138, 207
Button-tree 702
Button-mangrove 702
Byrsonima wadsworthii Little 581

bbage angel in 700
bbage bark 700
caillo 605, 611
cao motillo 605, 611
cao roseta 605, 611
caotillo 605, 611
chimbo 468, 1146
dam 346, 444, 605, 611, 678, 863, 1145
labash 697
lophyllum 353, 375, 415, 453, 475, 1160
lophyllum antillanum Britton 353, 375, 415, 453, 475, 1160
lophyllum brasiliense var. antillanum (Britton) Standl. 353, 375, 415, 453, 475, 1160
lophyllum brasiliense Camb. 353, 375, 41.5, 453, 475, 1160
lophyllum brasiliense Jacq. 353, 375, 415, 453, 475, 1160
lophyllum calaba Jacq. 353. 375, 415, 453, 475, 1160
lophyllum jacquinu Fawc. & Rendle 353; 375; 415; 453; 475; 1160
ndl ewood 118, 235, 605, 611, 719, 733, 759, 766, 953, 966, 1210, 1212, 1261
ña India 294, 295, 811, 1283, 1284, 1285
oba 15, 26, 45, 90, 91, 92, 112, 114, 115, 190, 304, 346, 347, 349, 351, 426, 447, 548, 549, 636, 637, 640, 652, 673, 682, 728, 742, 743, 745, 918, 998, 999, 1176, 1299
oba de Venezuela 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 745, 998, 1299
oba dominicana 347, 640, 682, 742, 743, 745, 999, 1175, 1176, 1299
aba de Honduras 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 745, 998, 1299
oba hondureña 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 74.5, 998, 1299
oba de Santo Domingo 347, 682, 1176
pa 346
pá coloradp 831
pá prieto 346
r ibbean pine 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676,678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
r ibbean Pine 26, 45, 91, 117, 191, 745, 346, 348, 351, 673, 676, 678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
ryophyllus jumbos (L.) Stokes 1158, 1274
suarina 364
suarina equisetifolia 'L. 364

Cecropia *asperrima* Pittier 346, 605, 611
Cecropia peltata L. 346, 605, 611
Cedar 16, 1287, 1290, 1292, 1295
Cedrela 16, 1287, 1290, 1292, 1295
Ceiba 625, 942
Ceiba anfractuosa (DC.) Maza 625, 942
Ceiba pentandra (L.) Gaertn. 62.5, 942
Cerdana alliodora Ruiz & Pav. 346
Cerezo 831
Cerezo del Pals 831
Ciprés mexicano 346
Clusia krugiana Urban 699
Coccoloba 438
Colorado 1261
Common calabash tree 697
Conocarpus erectus L. 702
Corcho 417
Cordia alliodora (Ruiz & Pav.) Oken 346
Cordia nitida Vahl 831
Coubaril 258
Cow bean tree 346
Croton poecilanthus Urban 733
Cupeillo 699
Cupressus benthamii Endl. 346
Cupressus lindleyi Klotzsch 346
Cupressus Zusitaniea Mill. 346
Cupressus lusitanica Mill. cv. *Benthamii* 346
Cyathea aquilina (Christ) Domin 137
Cyathea arborea (L.) J. E. Smith 137
Cyathea escuquensis (Karst.) Domin 137
Cyathea portoricensis 137
Cyathea tenera (J. E. Sm.) Moore 137
Cyathea wilsonii (Hook.) Proctor 137
Cybistax donnell-smithii (Rose) Seibert 346, 673, 678
Cyperus iria L. 372, 373
Cyrilla antillana Michx 1261
Cyrilla racemiflora L. 1261

Dacryodes exce Zsa Vahl. 118, 235, 605, 611, 719, 733, 759, 761, 953, 966, 1210, 1212, 1261
Dacryodes hexandra (Hamilt,) Griseb 118, 235, 605, 611, 719, 733, 759, 761, 953, 966, 1210, 1212, 1261
Daphnopsis helleriana Urban 738
Dominican mahogany 347, 640, 682, 742, 743, 745, 999, 1175, 1176, 1299
Dormilón 346

rpod tree 346
iajagua 346, 673
:terolobium cyclocarpum (Jacq.) Gris. 346
:terolobium samon (Jacq.) Prain 346
'ythrina micropteryx Poepp. 703
'ythrina poeppigiana (Walp.) O. F. Cook 703
ıcalypt 300, 346, 465-467, 1256, 1257, 1290, 1294
ıcal ipto de Alcanfor 300, 346
ıcal ipto de Pantano 300, 346
ıcalyptus 300, 346, 465-467, 1256, 1257, 1290, 1294
ıcalyptus deglupta Bl. 1294
ıcalyptus kirtoniana 300, 346
ıcalyptus multiflora Poir. 300 346
ıcalyptus robusta J. E. Smith 300, 346
ıcalyptus tericornis Sm. 346
ıcalyptus xpatentinervis R. T. Bak. 346
wgenia jumbos L. 1158, 1274
ıterpe globosa Gaertn. 623, 795, 1266

icus sintenisii Warb. 704

eoffrea inermis W. Wright 700
iant Thibet 346
oetzea elegans Wydler 1354
ranadillo 258
rayumo hembra 346, 605, 611
regre 1356
regory wood 1356
uaiacum officinale L. 206
uanacaste 346
uango 346
uano 417
uayaco 206
uayacán 206

:at palm 376
lat palmetto 376
'edivigia balsamifera Sw. 258
lelecho gigante 137
'ibiscus elatus Sw. 346, 673
'ibiscus tiliaceus L. 346, 673
liguer ita 697
Iiguerito 697
Iiguero 697
liguillo prieto 704
Ionduras mahogany 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 745, 998, 1299
Ionduras pine 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
Iorsetail casaurina 364
Iueso bl anco 953
Iymenaea courbaril L. 258

nga 669

acana 138, 207
'aguey Colorado 704
'aguey prieto 704
'ambosa jumbos (L.)Millsp. 1758, 1274
'ambosa vulgaris DC. 1158, 1274
'uglans archaeoantillana 430

(adam 346, 444, 605, 611, 678, 863, 1145
(apock 625, 942
(haya nyasica Stapf. 346
(haya senegalensis (Desr.) A. Juss. 346

;aguncularia recemosa (L.) Gaertn. f. 79, 1215
;aurocerasus occidentalis (Sw.) Roem. 1346
;ignumvitae 206
;inociera domingensis (Lam.) Knobl. 953
;lagrumo hembra 346, 605, 611
;ocust tree 258
;ucuma multiflora A. DC. 138, 207

Maesopsis eminii Engl. 346
daga colorada 651
Maga grandiflora (DC.) Urban 651
daga wood 651
Mahó 346, 673
Mahoe 346, 673
Mahogany 15, 26, 45, 90, 91, 92, 112, 114, 115, 190, 304, 346, 347, 349, 351, 426, 447, 548, 549, 636, 637, 640, 652, 673, 682, 728, 742, 743, 745, 918, 998, 999, 1176, 1299
Ma j agua 346, 673 ,
Ma j agua brava 738
Maj agua excelsa 346, 673
Majó 346. 673
Mambúa 294; 295, 811, 1283, 1284, 1285
Mangle 173, 369
Mangle blanco 79, 1215
Mangle bobo 79, 1215
Mangle botón 702
Mangle Colorado 173, 369
Mangle de chifle 173, 369
Mangl e zapat ero 173, 369
Mangrove 173, 369
Mangroves 12, 13, 28, 78, 79, 81, 82, 171, 173, 181, 182, 184, 203, 204, 322, 323, 369, 398, 418, 607, 609, 610, 702, 725, 813, 814, 914-917, 950, 955, 979, 980, 1215, 1239, 1275
Manilkara nitida (Sessé & Moc.) Dubard 235, 258, 320
Manilkara balata (Aubl.) Dubard 235, 258, 320

ınilkara bidentata (A. DC.) Chev. 235, 258, 320
ınilkara riedleana (Pierre) Dubard 235, 258, 320
anjack 698
snzanilla 1354
aría 415, 453, 475, 1160
asa 258
atabuey 1354
atillo 277
at0 227
exican cypress 346
imusops balata auth. 235, 258, 320
imusops bidentata A.D.C. 235, 258, 320
imusops dommgensis (Pierre) Huber 235, 258, 320
imusops riedleana Pierre 235, 258, 320
imusops sieberi A. DC. 235, 258, 320
oca 700
oca blanca 700
ontezuma grandiflora (DC.) Urban 651
ontezuma speciosissima Sesse & Moc. 651
otillo 605, 611
ountain immortelle 703
ountain mahoe 346, 673
ountain palm 623, 795, 1266
uñeco 831

ephelea portoricensis (Spreng.) Tryon 137
orfolk pine 696
orfolk Island pine 696

'chroma bicolor Rowlee 477
'chroma boliviana Rowlee 417
chroma lagopus SW. 417
ehroma lagopus var. *bicolor* (Rowlee) Standl. & Steyerm 417
chromo limonensis Rowlee 417
'chromo obtusa Rowlee 417
chroma grandiflora Rowlee 417
ehroma pyramidale (Cav.) Urban 417
'chroma peruviana Johnst. 417
'chroma tomentosa Willd. 417
'chroma velutina Rowlee 417
'reganillo 701
'reja de Mono 346
'*rmosia krugii* Urban 277
'xhorn buc ida 1356

Pachylobus hexandrus (Hamilt.) Engler 118, 235, 605, 611, 719, 733, 759, 761, 953, 966, 1210, 1212, 1261
Palicourea riparia Benth. 468, 1146
Palma de abanico 376
Palma de cogollo 376
Palma de sierra 623, 795, 1266
Palma de sombrero 376
Palms 34, 225, 376, 623, 625, 795, 1266, 1314
Palo de aceite 258
Palo Colorado 1261
Palo de boya 703
Palo de cachimbo 468, 1146
Palo de goma 831
Palo de Maria 415, 453, 475, 1160
Palo de matos 2 7 7
Palo de muñeca 698
Palo de peronias 277
Palo de pollo 284
Paralabatia portorieensis Britton & Wilson 138
Pariti elatum (Sw.) D. Don 346, 673
Pariti tiliaceum (L.) St. Hil. 346, 673
Peronia 277
Pine 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1x4-
Pin0 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 6.76-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
Pin0 ant illano 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
Pinus hondurensis Loock. 20, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
Pino hondureño 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154
Pinus caribaea Morelet 26, 45, 91, 117, 191, 345, 346, 348, 351, 673, 676-678, 723, 918, 1127, 1129, 1131, 1135, 1137, 1140, 1141, 1143, 1154

.no australiano 364, 704
.no de Austria 364
.no de Norfolk 696
:nus douglasiana Martinez 346
:nus elliotti v. *elliottii* Engelm. 346
:nus kesiya Royle ex Gordon 346, 1290
:nus massoniana 346
:nus merkusii 346, 1288, 1290, 1297
:nus michoacana Martinez 346
:nus montezuma Lamb. 346
:nus occidentalis Sw. 346, 395
:nus oocarpa var. *ochoteranai* 346
:nus oocarpa 346, 1129, 1133, 1138
:nus pseudostrobus Lindl. 346
:nus tæda L. 346
:thecellobuim saman (Jacq.) Benth. 346
.antanus occidentalis L. 346
:antarum quarundam 1354
.umajillo 673
)marrosa 1158, 1274
)mme rose 1158, 1274
)uteria dictyoneura (Griseb.) Radlk. spp. *fuertesii* (Urban) Cron. 138
)uteria multiflora (A.DC.) Eyma 138, 207
'estola montana (R. Graham) Nichols 623, 795, 1266
:ieto 269, 1159, 1168, 1169
:imavera 346, 673, 678
'unus occidentalis Sw. 1346
:erocarpus officinalis Jacq. 284
ıerto Rico palmetto 376

ıintree 346
:d manjack 831
zizophora mangle L. 173, 369
zizophora mangle var. samoensis Hochr. 173
zizophora samoensis (Hochr.) Salvoza 173
)ble 269, 1159, 1168, 1169
)ble blanco 269, 1159, 1168, 1169
)ble de costa 269, 1159, 1168, 1169
)ble de mona 269, 1159, 1168, 1169
)ble prieto 269, 1159, 1168, 1169
)ble de yugo 269, 1159, 1168, 1169
)se apple 1158, 1274
)seodendron donnell-smithii (Rose) Miranda 346, 673, 678
)seta 605, 611

Sabal causiarum (0. F. Cook) Beccari 376
Sabinón 733
Samán 346
Samanea saman (Jacq.) Merrill 346
Santa María 415, 453, 475, 1160
Schizolobium sp. 673
Sierra palm 623, 795, 1266
Silk cotton tree 625, 942
Sloanea berteriana Choisy 605, 611
Small leaf mahogany 347; 640, 682, 742, 743-745, 999, 1175, 1176, 1299
Smilax coriacea Spreng. 953
Spanish elm 346
Spathodea campanulata Beauv. 346
Straw hat palm 376
Swamp cyrilla 1261
Swietenia belizenis 190, 304, 347, 673
Swietenia candollei Pittier 190, 304, 347, 673
Swietenia humilus 347
Swietenia, krukovii 190, 347, 673
Swietenia macrophylla G. King 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 745, 998, 1299
Swietenia mahagoni (L.) Jacq. 347, 640, 682, 742, 743, 745, 999, 1175, 1176, 1299
Syzygium jambos (L.) Alston 1158, 1274

Tabebuia dominicensus Urban 269, 1159, 1168, 1169
Tabebuia donnell-smithii Rose 346, 673, 678
Tabebuia heterophylla (DC.) Britton 269, 1159, 1168, 1169
Tabebuia heterophylla susp. *pallida* (Miers) Stehlé 269, 1159, 1168, 1169
Tabebuia lucida Britton 269, 11.59, 1168, 1169
Tabebuia pallida (Lindl.) Miers 269, 1159, 1168, 1169
Tabebuia pallida susp. *dominieensis* (Urban) Stehlé 269, 1159, 1168, 1169
Tabebuia pallida susp. *heterophylla* (DC.) Stehlé 269, 1159, 1168, 1169
Tabebuia pentaphylla auth., Hemse. 269, 1159, 1168, 1169
Tabonuco 118, 235, 605, 611, 719, 733, 759, 761, 953, 966, 1210, 1212, 1261
Tamarindo de Loma 701
Taxodium mucronatum Tenore 346
Teak 116, 117, 119, 346, 358, 640, 744
Teca 116, 117, 119, 346, 358, 640, 744
Tectona grandis L. f. 116, 117, 119, 346, 358, 640, 744
Terminalia buceras C. Wright 1356
Ternstroemia 500
Tetragastris balsamifera var. *lancifolia* Swart. 258
Tetragastris balsamifera 258
Toon 783, 1301
Toona ciliata var. *australis* (F.v.M.)C.D.C. 783, 1301

ree ferns 137
rumpet tree 346, 605, 611
'rumpet wood 346, 605, 611
'ul ipán africano 346

Icar 1356

'enezuelan mahogany 190, 304, 347, 426, 636, 637, 640, 652, 673, 728, 742, 745, 998, 1299

Jater gregre 1356
'einmannia pinnata L. 701
Iest- Indian locust 258
Jest Indies laurelcherry 1346
Jest Indies mahogany 347, 640, 682, 742, 743, 745, 999, 1175, 1176, 1299

Jhite-cedar 269, 1159, 1168, 1169
Vhite mangrove 79, 1215

'agrumo 346, 605, 611
'agrumo hembra 346, 605, 611
'ar ey 376
'arey palm 376
'ellow pal icourea 468, 1146
'ellow sanders 258

Mosquera, Menandra and JoAnne Feheley, compilers.

1984. Bibliography of forestry in Puerto Rico.

U.S.Dept.Agric.,For. Serv., Gen. Tech. Rep. SO-51 , 196 p.
South. For. Exp. Stn., New Orleans, La.

Lists 1,357 publications, with annotations and subject and author indexes, issued about Puerto Rico's forestry and related activities. Also included is an appendix, chronologically listing the forestry highlights from 1513 through 1978.

Oxford: 902:945.4(048.1)(729.5)

Retrieval Terms: tropical forestry, tropical silviculture, tropical ecology, tropical ecosystems, tropical woods, tropical soils, Institute of Tropical Forestry, Caribbean National Forest, Puerto Rico

Incluye 1,357 referencias (con anotaciones e índices de materia y autor) publicadas acerca'de la dasonomía y actividades relacionadas en Puerto Rico. También incluye un apéndice de una lista cronológica de los eventos importantes de dasonomia desde 1513 hasta el Go 1978.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1984-769-089:46