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FORESTRY IN SOUTH AUSTRALIA

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FORESTRY IN SOUTH AUSTRALIA.

STATEMENT

PREPARED FOR THE

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FORESTRY IN SOUTH AUSTRALIA.

Statement prepared by the Conservator of Forests, Adelaide.

PART I.

GENERAL DESCRIPTION OF THE COUNTRY.

SOUTH AUSTRALIA has only a very limited area of forest country, owing to the absence of high mountain ranges and the deficient and uncertain character of the rainfall, added to which the long continuance of high temperature during the summer greatly discounts the value of such rains as do fall. The most extensive area of forest occurs in the Mount Lofty Ranges, situated near the Gulf of St. Vincent, with an altitude of 1,000 to 2,000 feet, approximately 100 miles from north to south, and about 25 miles wide from east to west. Here the rainfall ranges from 20 to 35 and sometimes 40 inches per annum, and in many instances timber of fine merchantable character has been produced; but the bulk of this land has passed into private hands. The Stringybark (*Eucalyptus obliqua*), Red Gum (*Eucalyptus rostrata*), Blue Gum (*Eucalyptus leucoxylon*), Pink Gum (*Eucalyptus fasciculosa*) occur here.

The soils are mainly light sand overlying clay subsoil, sometimes of an ironstone gravel character, with quartzite occurring occasionally, and also sandstone towards Mount Lofty.

Another area of fair forest country occurs in the Flinders Ranges, which run east of the Gulf of Spencer, starting about Crystal Brook and stretching north to Quorn for about 60 miles, with a breadth of about 10 miles on average. The rainfall here runs 21 to 30 inches approximately, the soil being sometimes light and sandy and at others good clay loam, the prevailing rocks being quartzite and slate. The altitude ranges from 1,000 to 3,000 feet, the height of Mount Brown and Mount Remarkable, the principal peaks in the chain. Here the prevailing trees are Box Gum (*Eucalyptus hemiphloia*), Blue Gum (*Eucalyptus leucoxylon*), Red Gum (*Eucalyptus rostrata*) and Sugar Gum (*Eucalyptus corynocalyx*). The well-known Wirrabara Forest is situated in these ranges.

Frosts are usually severe enough in all these districts to cut off tender gums when planted too early, but are seldom harsh enough to cut off young pines. Other ranges from 500 feet to 1,000 feet occur here and there, but never carried anything but scattered Sheoak (*Casuarina quadrivalvis*), Peppermint (*Eucalyptus odorata*) and stunted Blue Gum (*Eucalyptus leucoxylon* variety *panperita*). Wide plains occur between these ranges frequently overlying limestone, and there the uncertain rainfall, often only 12 inches annually, has prevented any other growth than dwarf eucalyptus or "mallee" as they are called, such as *Eucalyptus dumosa*, *E. gracilis*, *E. oleosa*, *E. uncinata*, none of which usually exceed 10 to 20 feet high. Yorkes Peninsula, which runs for over 100 miles between the Gulf of St. Vincent and the Gulf of Spencer, all consists of a shallow surface soil, 6 to 9 inches over solid bed of limestone, and nothing but mallee, dwarf Sheoak and Ti tree (*Melaleuca curvifolia*) occur there.

Eyres Peninsula, on the Port Lincoln side of Spencer's Gulf, is another vast area of thousands of square miles of similar country occasionally varied by ironstone gravel areas.

In the south-east, 250 miles from Adelaide, wide stretches of sandy country overlying dolomite limestone at a slight elevation give a chance for the occurrence of considerable areas of Brown Stringybark (*Eucalyptus capitellata*), and in other damper low-lying parts Red Gum (*Eucalyptus rostrata*), occurs over wide areas in open park like growth. Speaking generally, South Australia possesses but limited opportunities for developing existing forests by natural regeneration; but, on the other hand, she has been compensated by the success which has crowned her efforts for over forty years in constructive forestry, as her pine plantations have never been excelled by any other State, even if they have been equalled.

PART II.

DESCRIPTION OF MAIN TYPES OF FOREST GROWTH.

The dominating type of forest growth in South Australia is that of the *Eucalyptus* genus natural order Myrtaceæ, the principal species of which are the Red Gum (*Eucalyptus rostrata*), the Blue Gum (*Eucalyptus leucoxylon*), the Pink Gum (*Eucalyptus fasciculosa*), the Sugar Gum (*Eucalyptus corynocalyx*), the Box Gum (*Eucalyptus hemiphloia*), the Stringybark Gum (*Eucalyptus obliqua* and *E. capitellata*), the Manna Gum (*Eucalyptus viminalis*), all of which are described in detail in connection with paragraph 4. These all occur only where the rainfall is ample for timber production. A few other eucalypts of fair size also occur to a limited extent, such as *Eucalyptus rubida*, *E. cambagei*, *E. ovata*, *E. pauciflora*, *E. odorata*, *E. cosmophylla*, but they are of negligible value as timber trees. Immense level areas, known all over the State as "Mallee" scrub, possessing an arid climate, with very low rainfall and extensive tracts in more elevated country, carry several species of dwarf eucalypts, such as *Eucalyptus oleacea*, *E. dumosa*, *E. incrassata*, *E. calycogona*, *E. gracilis*, *E. Gillii*, *E. Behriana*, *E. santalifolium*, *E. cneorifolia* and *E. uncinata*. These seldom exceed a height of 10 or 20 feet, and are of little value for other than simple local requirements, such as firewood, &c., with exception of some species, which in favourable localities enable the distillation of eucalyptus oil on a limited scale. Another species, of the natural order Myrtaceæ, which also occurs frequently and sometimes as under-forest and at others mixed with Sheoak, is the Ti tree (*Melaleuca curvifolia*), which commonly occurs on limestone areas, but it is not fit for any but minor purposes.

The Sheoak (*Casuarina quadrivalvis*), Bulloak (*C. Lehmannii*), Scruboak (*C. lepidophloia*), Blackoak (*C. glauca*), of the natural order Casuarineæ, usually occurs as a kind of under-forest when among the larger timbers, and in pure masses in the more arid parts of the State. The various "Wattles," Acaciæ, such as the Golden Wattle (*Acacia pycnantha*), the Black Wattle (*A. decurrens*), the Silver Wattle (*A. Retinodes*), Blackwood (*A. Melanoxylon*), of the natural order Leguminosæ, sub-order Mimosæ, usually grow as under-forest trees among the bigger timber; but some species, such as the "Mulga" (*Acacia aneura*), *A. sentis*, *A. cambagei*, form pure stretches in the dry interior of the continent.

The native pines, natural order Coniferae, *Callitris robusta* and *C. propinqua* are sometimes found mixed with larger trees as under-forest growth, but also frequently in pure patches in the drier parts of the State. On the wetter forest areas the forest floor usually carries a good growth of low vegetation a few feet high, generally composed of a few Acaciæ, such as *A. myrtifolia*, *A. verticillata*, *A. oxycedrus*, *A. armata*, *A. obliqua*, *A. continua*, *A. rupicola*, *A. spinscens*, in addition to which the natural order Proteaceæ is well represented by such dwarf shrubs as *Hakea ulicina*, *H. cycloptera*, *H. rostrata*, *H. rugosa*, *Isopogon*, *Ceratophylus*, *Grevillea*, *Lavandulacea*, *Banksia ornata* and a dwarf form of *Banksia marginata*; while the natural order Myrtaceæ supplies such shrubs as *Leptospermum scoparium*, *L. laevigatum*, and around the permanent water springs, *L. lanigerum*, also a few minor species of Ti tree, such as *Melaleuca decussata*, *M. squarrosa* and *M. gibbosa*; and in some special districts the beautiful scarlet bottle-bush (*Callistemon coccineus*) brightens up the usually dull surroundings growing in damp depressions; while *Callistemon paludosus*, with its pale greenish-yellow filaments, ornaments the banks of running streams in the mountain localities.

Herbaceous growths of varied species from many natural orders, such as Leguminosæ, Dilleniaceæ, Compositæ, Epacrideæ and others, also occur, too numerous to indicate here.

The remarkable grass tree, or "Blackboys," natural order Liliaceæ *Xanthorrhœa minor*, *X. semiplana* in the wetter localities and *X. quadrangulata* in the drier northern forests form the undergrowth over thousands of acres, both in fairly close timber, also in the more open park or savannah areas; and in special limited spots on Mount Lofty Ranges and Kangaroo Island the imposing *X. tateana*, with its scape of interesting starlike flowers, towers frequently to over 25 feet in height, the main stem being above the height of a horseman. In the northern drier forests under-vegetation is usually deficient, except for patches of *Xanthorrhœa quadrangulata* and a few scrubby acaciæ.

PART III.

AREA COVERED BY EXISTING FORESTS.

The area of State forests is 159,991½ acres, which consists of 15,883 acres of plantations; 94,434 acres lightly wooded with scrubby unprofitable growth, only of value for grazing and protection from erosion; 49,674 acres fairly timbered, carrying 100 cubic feet and upwards per acre; no data exist to show the other areas and percentages asked for.

PART IV.

PRINCIPAL TIMBER TREES OF SOUTH AUSTRALIA.

RED GUM (*Eucalyptus rostrata*), Schlecht.

Large tree, frequently over 100 feet high, from 5 to 10 feet in diameter breast high; timber, dark red; very durable in ground; proof against white ants when of best quality; splitting fairly, but often interlocked in grain; unsurpassed for piles, sleepers, bridge-work, shipbuilding and many other purposes; selected timber supplies beautiful veneers; weight about 50 to 60 lb. per cubic foot when seasoned.

BLUE GUM (*Eucalyptus leucoxylon*), Mueller.

Large tree, varying in height from 80 to 100 feet, diameter from 3 to 5 feet breast high; timber, pale yellow to brown red, dense, strong and durable; about 60 to 65 lb. per cubic foot when seasoned; admirably suited for felloes, naves and wheelwrights' timber generally, for which it has no superior, also makes excellent sleepers, fence-posts, piles and telegraph poles.

PINK GUM (*Eucalyptus fasciculosa*), Mueller.

Tree of moderate growth, 30 to 60 feet high, 2 to 4 feet diameter breast high; timber very dense and heavy, exceedingly durable in the ground, stands great transverse strain, therefore used in cross-beams to carry screw in wine and oil presses; combines all the best qualities of the two preceding timbers, but its distribution is very limited and the quantity available very small; bright pink in colour when first split, but rapidly turns dull red on exposure; weight per cubic foot, seasoned, 65 to 70 lb.

BOX GUM (*Eucalyptus hemiphloia*), Mueller.

Tree of fair size, from 50 to 90 feet high, 2 to 4 feet diameter breast high; timber dense, heavy and interlocked, usually pale yellow, sometimes pinkish brown; makes excellent felloes, naves, spokes, shafts, piles, sleepers, also good mauls, but often "pipey"; weight about 60 to 70 lb. per cubic foot when seasoned.

SUGAR GUM (*Eucalyptus corynocalyx*), Mueller.

A fine tree, from 80 to 120 feet high, diameter 3 to 5 feet breast high; timber yellowish brown in colour, very dense and heavy; old matured timber, weighing 80 lb. per cubic foot green and about 65 to 70 lb. seasoned, makes good piles, mining timber, fencing material and sleepers and telegraph poles, but shorter in grain than preceding timbers; selected specimens furnish superior veneers.

BROWN STRINGYBARK (*Eucalyptus capitellata*), Smith.

A fine tree, usually 50 to 100 feet high, diameter 2 to 4 feet breast high; timber pale yellow in younger to brown in old matured trees; well suited for posts and rails, telegraph poles, building material, gate making, &c., regarded as equal to hickory for buggy work and framing of vehicles, drays, &c.; preponderates in the south-east of South Australia; seasoned weight about 50 to 60 lb. per cubic foot.

STRINGYBARK (*Eucalyptus obliqua*), l'Herit.

A fine tree, often of somewhat larger size than the preceding, the timber, though serviceable, is not equal to the foregoing; it usually has more gum veins, makes good mining timber, fencing posts, gate timber and house-building material, when selected.

This tree occurs mainly in the Mount Lofty Ranges, where it attained in the early days very fair dimensions, ere the forest was picked over; seasoned weight about 50 to 60 lbs. per cubic foot.

MANNA GUM (*Eucalyptus viminalis*), Labill.

Fair sized tree, from 50 to 80 feet high, diameter 2 to 3 feet breast high, timber yellowish brown, interlocked suitable for rough boards and fencing posts; often not durable in the ground for any length of time, though in some cases it has lasted twenty years. About 50 to 55 lbs. per cubic foot when seasoned.

NATIVE PINE (*Callitris robusta*).

Moderate sized tree, 20 to 50 feet high. Timber, pale yellow, makes good telegraph poles and posts, and when large enough serves for slabs for rough sheds; grows in the northern part of the State.

(*Callitris propinqua*.)

Similar in most details to the preceding and used for the same purposes, usually found south of Adelaide and in the Murray district. Not generally so reliable as the northern species, though standing well in many cases; good sawn timber has been obtained from this pine when of large enough size, but the timber is too brittle and short-grained and subject to shakes.

PART V.

OWNERSHIP OF FORESTS.

The area belonging to the State is 159,991½ acres. There are no areas under the control of municipal bodies or other corporate bodies except possibly a few small plots set apart as ornamental gardens. There are no details procurable showing any areas owned privately.

PART VI.

RELATIONSHIP OF THE STATE TO THE FORESTS.

(a.) *Legislation*.—The Forest Act of 252/1882 provides that the control of forests shall vest in the Commissioner of Forests with ample powers to deal with all circumstances which may arise.

(b.) *Administrative Methods of Forest Development*.—A very efficient system of fire protection has been in progress for many years, which is constantly being extended as plantations are increased and forest areas are extended. The planting of waste and poorly timbered areas has for over forty years been a prominent feature in the Forest Department's operations, and though the hardwoods planted have only gradually yielded produce of value, seeing that at least fifty years are needed to mature them, the Pine plantations have proved beyond all fear of contradiction the high value to be attained with them. Recently a plantation of 19.2 acres has been sold and clear-felled by the purchaser, and after every stick down to 3 inches diameter has been accurately measured, the return shown has been 98,000 super to the acre, as the result of thirty-seven years' growth, giving average annual increment of 222 cubic feet per acre.

(c.) *Assistance given to Forestry*.—This Department has distributed during the thirty-eight years 10,140,000 trees to private applicants and Corporations and has always readily given, both in catalogues issued annually and by letter, all expert advice at any time asked for.

PART VII.

THE FOREST AUTHORITY.

The Forest Department is administered by the Conservator of Forests, subject to the control of the Commissioner of Forests, who is a member of the Government, and he is assisted by a forest inspector and foresters and assistant foresters, foremen and nurserymen in the various forests and by a staff consisting of chief clerk and other clerical officers in the departmental centre in the city of Adelaide. The

subordinate officers obtain their training on the reserves, and the higher officers are now trained at the University, though formerly they gained all their knowledge by practical work in the forests. The Conservator's annual report embraces all the important features of the year's operations and shows the details of expenditure.

PART VIII.

FORESTRY ACTIVITIES OF MUNICIPAL AND CORPORATE BODIES, PRIVATE COMPANIES AND PRIVATE INDIVIDUALS.

Municipal and corporate bodies, private companies and private individuals have only planted the trees granted under the system of free distribution of tree stock from the nurseries of the Forest Department.

PART IX.

PROFESSIONAL AND OTHER SOCIETIES INTERESTED IN FORESTRY.

No special interest worth mentioning has been taken by professional and other societies in the utilisation of forest products.

PART X.

EDUCATION, RESEARCH AND EXPERIMENTAL WORK.

A forestry course at the Adelaide University has been established for some years, the details of which are set out in prospectus, copy of which is attached hereto.

The Lecturer in Forestry has carried out some useful work of an experimental character in connection with the artificial seasoning of timber for sleepers, but it is rather too early yet to determine the results accurately.

PART XI.

ANNUAL INCREMENT AND UTILISATION OF HOME-GROWN TIMBER.

The exploitation of timber in various forest districts has been carried on in such an irregular intermittent way by so many little "spot" mills outside of State control that no records have ever been obtainable on which any satisfactory returns can be founded as to utilisation of home-grown timber, and as no proper timber surveys have been made of the natural forests, estimates of timber procurable have usually been founded upon general inspections of the forests by men of practical experience, such as saw-millers and saw-pitmen, whose opinion is usually fairly correct.

PART XII.

FOREST INDUSTRIES.

The State Forest Department at present employs fifty mill hands, more or less, for such periods as its mills are intermittently working in the business of carting case material.

From 1903, when this work began, to the end of the 30th June, 1919, 850,961 cases have been cut, of a gross value of 34,392*l.* at the place of preparation; no pulping or wood distillation has been undertaken.

PART XIII.

EXPORTS AND IMPORTS OF TIMBER.

(a.) This State exports no timber, but imports what hardwoods she needs from Western Australia and Tasmania.

(b.) Data for imports are of no value owing to their imperfect character, as much of the timber received comes through other States, and is not recorded as an importation into this State at all.

PART XIV.

SUMMARY AND OUTLOOK.

As the necessary information on the points raised is wanting, it is not possible to estimate how far the quantity annually used exceeds the annual increments, though it is safe to say that it far exceeds the amount annually produced. It is therefore expected that importations of hardwoods will continue, but it is anticipated that the pine plantations now established with those that will be created under a vigorous forest policy will ultimately overtake the demand for softwoods and prove equal to the State's requirements.

N.B.—Owing to the deficiency of the necessary data it has not been possible to deal with Tables I-VII in the way desired.

WALTER GILL,
Conservator of Forests.

Adelaide, South Australia, May 19, 1920.

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