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DESERTIFICATION :
A World Bibliography

A U S T R A L I A

Compiled and Edited by

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University of Arizona

for

23rd International Geographical Congress, Moscow, 1976
Pre-Conference Meeting of the IGU Working Group on Desertification
Desert Research Institute, Ashkhabad, Turkmen SSR

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University of Arizona
OFFICE OF ARID LANDS STUDIES
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As Editor, my greatest obligation in the preparation of this bibliography for publication is to Mrs. Jean Mills, Research Assistant, Office of Arid Lands Studies, who virtually lived for five months in the University of Arizona Libraries verifying information submitted by the several regional contributors, and then barricaded herself in her office while she reconciled a variety of styles to the format of our computer program that stores and retrieves from the data base comprising the Arid Lands Information System (ALIS).

The technical staff — Lynn Lybeck, Systems Analyst, Julie V. Garrettson in charge of terminal operations, and Eleanor Smith who assisted her with data entry — produced the document you hold in your hands, all of them sharing the often tedious work of modifying the computer program where necessary, entering the information on the terminal, reading proof three times, and doing the preliminary preparation of printouts for the photoreduction and photoreproduction that enabled us to compress these hundreds of citations into manageable size. My deepest thanks to all, not least for the interest they took in the project and in the subject as well. I hope each thinks of himself as a minor authority on desertification.

The backup support of the University of Arizona, and particularly that of the Office of Arid Lands Studies, is greatly appreciated. Our Director, Dr. Jack D. Johnson, stabilized the disruptions to the Office, inevitable in a project of this magnitude, by his enthusiastic cooperation. Mary Michael, Information Specialist, and Helen Kassander, Research Assistant, helped us meet our deadline by relinquishing their share of the technical staff's time over a period of months.

I am grateful to my colleague, Dr. Andrew W. Wilson, University of Arizona Department of Geography, Regional Development, and Urban Planning, and Vice-Chairman of the IGU Working Group on Desertification, for his counsel and advice during the year we worked on the bibliography, and to Professor Jack W. Mabbutt, Chairman, Department of Geography, University of New South Wales, Kensington, and Chairman of the IGU Working Group, for his willingness to allow me to go forward on the project in my own way. His keen eye and impeccable judgment sharpened my own approach to the undertaking.

To the collaborators throughout the arid world, as noted elsewhere herein, those recognized authorities on the regions represented by their citation contributions, who responded bravely to all my anguished cables to hurry, hurry, my very best thanks. The bibliography is really theirs, expressing as it does their understanding of particular environments and the impact of desertification thereon.

-Patricia Paylore

Tucson

July 4, 1976

EDITOR'S PREFACE

This bibliography is a selection of largely recent information on worldwide desertification, a greatly expanded listing from that which accompanied a paper on the subject first published by the University of Arizona's Office of Arid Lands Studies in 1973*. It has been compiled and edited for the 23rd International Geographical Congress, Moscow, 1976, more particularly for the Pre-Conference Meeting of the IGU Working Group on Desertification in Ashkhabad, July 1976, since it was under its aegis that the task was undertaken in the summer of 1975.

The Working Group came into being at the IGU's Montreal Congress, 1972, as a successor to the former Commission on the Geography of Arid Lands. Its stated aim was "to collect evidence on the nature and causes of environmental changes constituting an extension of deserts into marginal areas or an intensification of desert conditions within arid regions." Two subsequent field meetings of the Working Group were held: in Alice Springs in the early winter of 1974; and in Cambridge, England, in the early fall of 1975. When the Editor was co-opted to the Working Group, it was agreed that she would depend to a large degree on contributions from various regional collaborators for coverage of specific areas. Those persons are listed here, many of whom are also authors of the brief introductory remarks which precede most sections of the bibliography itself:

Worldwide:	Ronald F. Peel, University of Bristol
Saharan Region and Sahel:	A. T. Grove, Cambridge University (English)
	Monique Mainguet, Reims University (French)
	Horst Mensching, University of Hamburg)
	F. N. Ibrahim, University of Hamburg) (German)
	Wolfgang Meckelein, University of Stuttgart)
East Africa:	Leonard Berry, Clark University, Worcester
Southern Africa:	Peter D. Tyson, University of Witwatersrand
Middle East:	Peter Beaumont, University of Durham
USSR:	Michael Petrov, Leningrad University
Pakistan:	Mushtaqur Rahman, Iowa State University
India:	H. S. Mann, Central Arid Zone Research Institute, Jodhpur
Australia:	J. A. Mabbutt, University of New South Wales
South America:	Hans J. Schneider, University of New South Wales
North America:	Andrew W. Wilson, University of Arizona

Many of the Regional Organizers have been assisted by local correspondents, who are in effect Corresponding Members of the Working Group.

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* Sherbrooke, W. C. / Paylore, P. (1973) World Desertification: Cause and Effect. A Literature Review and Annotated Bibliography. University of Arizona, Office of Arid Lands Studies, Arid Lands Resource Information Paper 3. 168 p.

The following framework was suggested to the regional contributors early in the project, as a guide to selection of references. While not all items are represented in each gathering, the presence of citations dealing with any of these concepts can be determined from the index for each region.

A. Natural Trends:

1. Climatic changes in the historical period
2. Hydrologic changes
3. Changes in landforms due to the action of water
4. Changes in landforms due to the action of wind
5. Changes in soils
6. Changes in natural vegetation

B. Man's Influence on the Processes of Desertification:

1. Agriculture, dryland or irrigated
2. Pastoralism, rural settlement, and nomadism
3. Forestry, with emphasis on collection of fuel
4. Urbanization
5. Population changes
6. Mining (including oil and gas) and pipeline construction
7. Transportation, including construction of roads, railways, airfields
8. Tourism and recreation

C. Preservational Measures:

1. Studies of status and trend of the environment
2. Regional assessments of natural resources
3. Studies of natural hazards
4. Establishment of natural parks and reserves
5. Other controls of land use

D. Preventive and Remedial Measures:

1. Climate: climatic stress, rainmaking, evaporation suppression, shelterbelts
2. Water supplies: inventories of water resources, water balance or hydrologic cycle, improvement of supplies for drinking, stock or irrigation; water harvesting schemes
3. Erosion control: stabilization of dunes and drift sands, monitoring of processes, measures against water and wind erosion
4. Improvement of desert vegetative cover: surveys of the extent of degradation, range and grazing studies, revegetation of bare areas, pasture improvement, afforestation
5. Control of land use: pastoral, dryland / irrigated agriculture
6. Control of population and settlement: nomads, rural settlement, urban planning, communications
7. Development of alternative resources: regional development, mining, industry tourism, recreation, health care

It was also suggested that we attempt to keep within a timeframe of the past decade. This was done to a large extent, but earlier papers of a classic nature are still included where it is generally agreed that their presentation has not been improved upon.

Because of the massive infusion of bibliographic information, which (even with what, at times, must have appeared to be brutal editorial cuts) still far exceeds the total number of references envisaged when we began, we have had to be arbitrary in the manner in which we have handled some of the information. Where we have departed radically from the format employed to display the greatest percentage of information, such as the USSR, we have appended an explanation following the regional contributor's Introduction. We have included several hundred documents from our own Arid Lands Information System (ALIS) to enhance the coverage submitted by our regional colleagues.

Much work was done at Arizona to bring these hundreds of references into the format required by our computer program. Many references were dropped because of lack of adequate information to identify and locate copies should users so require. For those without the services of skilled documentalists and/or bibliographers to call upon, it has always seemed to us that our meticulous and sometimes fussy insistence on full bibliographical information is the sine qua non of good bibliography. In this respect, while much of the documentation in this bibliography was very difficult indeed, we believe that the smallest percentage humanly possible is included that has not been verified by our staff. We trust, therefore, that because of this care, users will find the full documentation more readily accessible than they would otherwise.

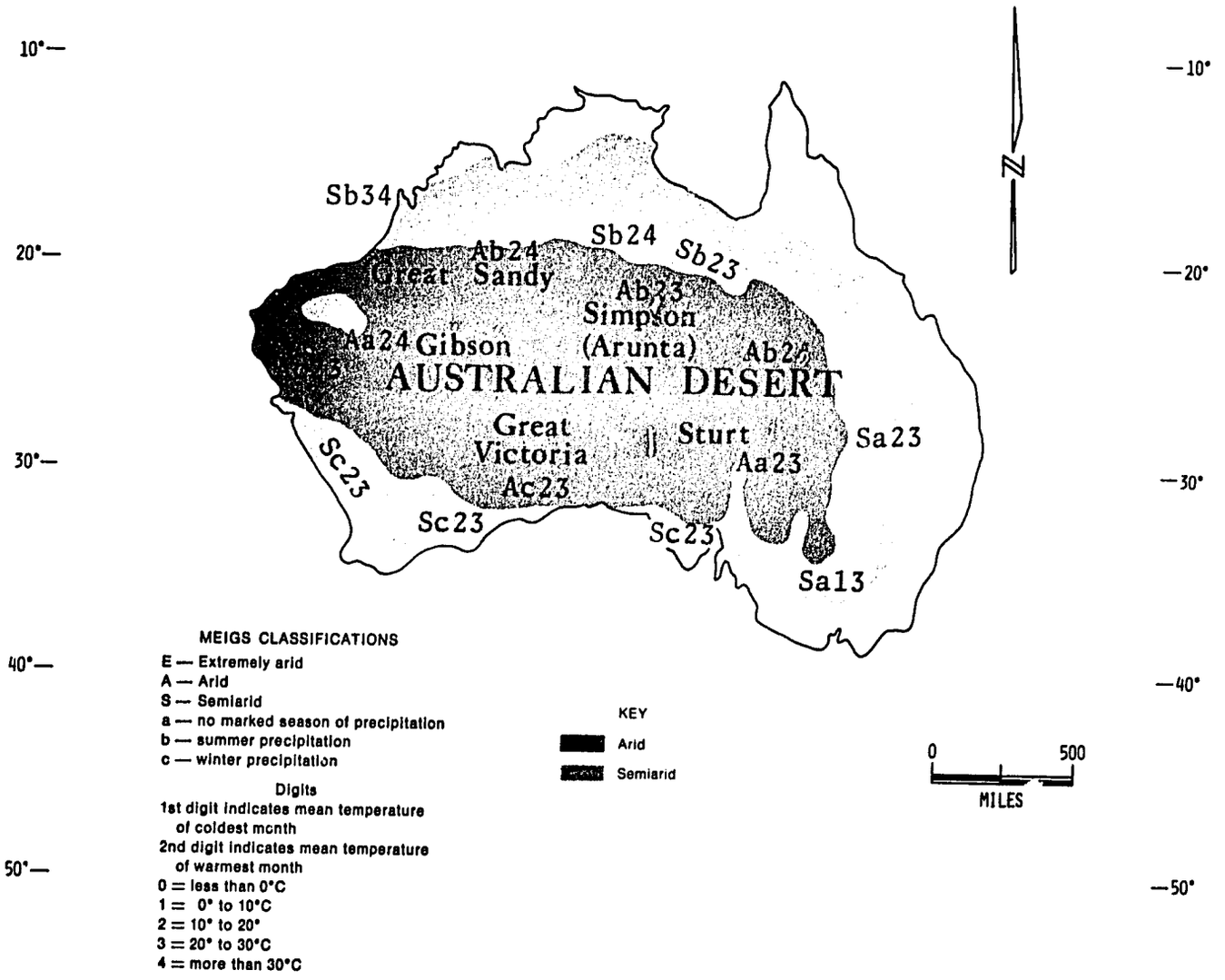
Indexing (except for the USSR) was done from the Thesaurus of Arid Lands Terminology (c1974), developed and used by the Office of Arid Lands Studies for its computerized data bank; and to make the use of the bibliography less cumbersome, subject keywords and authors appear as computerized lists following each section. The documentation from the USSR was sorted out into ten overall categories, and no indexing of individual citations was undertaken.

An effort was made to eliminate all references that did not contribute to an understanding of the phenomenon of desertification itself, rather than to permit the bibliography to become a general arid lands compilation. That we did not always succeed must be attributed not only to our inability to distinguish at times, but also to the disagreements and confusion existing among desert experts as to exactly what constitutes desertification. For those users who miss their favorite citations - their own or others - we ask you to take this constraint into account.

The Editor takes full responsibility for the choice of references carried, and for all shortcomings of coverage or format. I hope the latter will be outweighed by the work's overall usefulness at this critical time in the world's understanding of a biological and physical process that is affecting the lives of millions.

AUSTRALIA

Reprinted from DESERTS OF THE WORLD: An Appraisal of Research into Their Physical and Biological Environments. McGinnies, Goldman, and Paylore, eds., c1968, by permission University of Arizona Press.



Arid Lands of Australia (after Meigs)

Professor J. W. Mabbutt
Chairman, School of Geography
University of New South Wales
Kensington, N. S. W.
Australia

AUSTRALIA

The polar regions apart, Australia is the driest of the continents, whether judged by mean annual rainfall (470 mm) or by the relative extent of its arid zone (65-75 percent, according to definition). Nevertheless, the Australian deserts are only moderately arid, have been subjected to pastoral use for barely a century, and are only lightly settled (population 325,000 in 5.5 million sq km). While there is a good general cover of vegetation for these reasons, nevertheless localized heavy grazing, particularly in the early settlement, has combined with periodic droughts to cause deterioration of native pastures, locally to a severe degree. Changes have involved depletion of trees and edible shrubs and perennial grasses in mixed communities, and a relative increase in inedible shrubs and annuals of low pastoral value. These constitute a lessened durability of pastures during dry seasons, when browse from trees and shrubs is important, reduced protection to the soil surface and to germinating plants, and reduced productivity. The vegetation changes have been accompanied by loss of topsoil through wind and water erosion, particularly on light-textured calcareous soils and salt-affected or layered soils with a marked texture contrast. This general deterioration is reflected in lowered stocking rates, now between one-half and one-third of the peak numbers earlier in this century.

In areas of dry-land agriculture, major problems have been soil erosion and crop failure during drought, with eventual retreat of the agricultural boundary in many areas. Salinization of soils following clearing is a regional problem in the wheatlands of Victoria and Western Australia. Irrigation agriculture on a large scale is restricted to the southeastern margin of the arid zone, where salinity and waterlogging have occurred on the heavier soils.

The picture is one of deterioration not only of marginal lands but of better or more accessible areas within the arid zone, such as river frontages. Sand country is generally lightly stocked, although depredation by rabbits has been important in the south of the arid zone. Sand drift and dune advance tend to be localized problems near settlements and tracks.

All this is reflected in a bibliography mainly concerned with the deterioration and recovery of rangeland pastures and more localized soil problems of erosion and salinization. In lightly settled country of low productivity, physical methods of reclamation are rarely possible, and emphasis is on improved pastoral management. The abstracts are mainly from the more important recent literature or from older classics that have not yet been supplanted. The citations refer to more indirect discussions of the problems, to related material of a background nature, and to early sources that remain useful. The relatively few items from such a large area is a reflection of the low intensity and short history of pastoral land use — and of related research — rather than wise management.

AUSTRALIA

1

ANONYMOUS

1973

THE MULGA LANDS OF AUSTRALIA.

TROPICAL GRASSLANDS 7(1). 170 P.

THIS VOLUME IS DEVOTED TO PAPERS PRESENTED AT A SYMPOSIUM DESIGNED TO SUMMARIZE RECENT BIOLOGICAL RESEARCH RELATED TO THE PRODUCTIVITY AND MAINTENANCE OF MULGA ECOSYSTEMS. A NUMBER OF PAPERS DEALING WITH THE GROWTH AND SURVIVAL OF MULGA, RESEEDING AND PLANT INTRODUCTION WERE PRESENTED ALONG WITH POSITIONAL PAPERS ON THE TAXONOMY, THE DISTRIBUTION AND THE PRODUCTIVE CAPACITY OF MULGA LANDS. THE EFFECT OF MAN-INDUCED CHANGES ON GROUND COVER WAS DISCUSSED IN RELATION TO FUTURE STABILITY AND PRODUCTIVITY.

MULGA SCRUB/ECOSYSTEMS/PLANT ECOLOGY/PLANT COVER/HUMAN BEHAVIOR

2

AUSTRALIA, BUREAU OF AGRICULTURAL ECONOMICS, CANBERRA

1969

AN ECONOMIC SURVEY OF DROUGHT AFFECTED PASTORAL PROPERTIES: NEW SOUTH WALES AND QUEENSLAND 1964-65 TO 1965-66.

SAME AS AUTHOR. WOOL ECONOMIC RESEARCH REPORT 15.

QUEENSLAND/NEW SOUTH WALES/DROUGHTS/PASTURES/ECONOMIC IMPACT/SURVEYS

3

AUSTRALIAN AGRICULTURAL COUNCIL, CANBERRA

1971

SALINITY SYMPOSIUM, MILDURA, VICTORIA: WORKING PAPERS.

SAME AS AUTHOR. (RESTRICTED DISTRIBUTION)

VICTORIA/SALINITY

4

BEADLE, N.C.W.

1948

THE VEGETATION AND PASTURES OF WESTERN NEW SOUTH WALES, WITH SPECIAL REFERENCE TO SOIL EROSION.

NEW SOUTH WALES DEPARTMENT OF CONSERVATION, SYDNEY. 281 P.

DETERIORATION OF THE WESTERN DIVISION OF NEW SOUTH WALES IS INDICATED BY LARGE FLUCTUATIONS IN ANNUAL STOCKING RATES AND IN PARTICULAR BY THE DECLINE IN SHEEP NUMBERS SINCE 1901. THE AUTHOR ESTABLISHES A CORRELATION BETWEEN RAINFALL VARIATION AND PERCENTAGE LOSS OF STOCK, WHICH IN BOTH CASES INCREASE FROM SOUTH TO NORTHWEST. NO SUCH CORRELATION EXISTS BETWEEN STOCKING RATE AND RAINFALL FOR EITHER THE SAME OR PRECEDING YEAR AND THIS SUGGESTS THAT PASTURE DETERIORATION HAS ASSUMED SUCH PROPORTIONS THAT STOCKING RATES CAN NEVER APPROACH THE HIGH VALUES OF LAST CENTURY. THE AUTHOR IDENTIFIES THE MAIN FACTORS CAUSING EROSION IN WESTERN NEW SOUTH WALES AS LOW RAINFALL WITH PERIODIC DROUGHT AND DESTRUCTION OF THE VEGETATION COVER BY OVERSTOCKING. SPECIFIC CAUSES OF EROSION INCLUDE OVERGRAZING, TIMBER REMOVAL AND DEATH, PARTICULARLY IN THE NORTH, DROUGHT AND RABBITS. THE MAIN TYPES OF EROSION OCCURRING IN THE AREA INCLUDE WIND EROSION (SCALDING, SAND DUNES AND WIND SHEETING) AND WATER EROSION (SHEET AND GULLY EROSION). NATURAL REGENERATION ON SCALDS IS EXTREMELY SLOW AND RECLAMATION CAN BEST BE ACHIEVED BY PLOUGHING AND SOWING RAPIDLY-GROWING PLANT SPECIES. BARE SAND SURFACES REQUIRE COLONIZATION BY PERMANENT VEGETATION WHICH IS DEPENDENT ON MANY FACTORS AND NECESSITATES THE EXLUSION OF STOCK. TWO MAJOR FACTORS DETERMINING THE PROTECTION OF SOILS NOT ERODED AT PRESENT ARE DENSITY OF TIMBER AND RATE OF STOCKING. TIMBER-COVER IS THE MAJOR FACTOR PREVENTING WIND EROSION IN GRAZING COUNTRY AND IN MOST OF WESTERN NEW SOUTH WALES WHERE THIS PROTECTION IS INADEQUATE THE ONLY CHANCE OF REGENERATION IS BY NATURAL ESTABLISHMENT OF NATIVE SPECIES. THIS IS A SLOW PROCESS AND CAN ONLY BE EFFECTED BY GREATLY REDUCING OR COMPLETELY REMOVING STOCK FROM THE AREAS IN QUESTION.

NEW SOUTH WALES/SOIL EROSION/LIVESTOCK/OVERGRAZING/SHEEP(DOMESTIC)/ VARIABILITY(ENVIRONMENTAL)/PASTURES/DEGENERATION/CARRYING CAPACITY/ CLIMATIC-VEGETAL RELATIONSHIPS/LAND RECLAMATION/REVEGETATION/DROUGHTS/ LAGOMORPHA/TIMBER/WIND EROSION/GULLY EROSION/SHEET EROSION

5

BEARD, J.S.

1968

DROUGHT EFFECTS IN THE GIBSON DESERT.

ROYAL SOCIETY OF WESTERN AUSTRALIA, JOURNAL AND PROCEEDINGS, 51(2):39-50. MAP.

ON A RECENT EXPEDITION THROUGH PART OF THE GIBSON DESERT AND ADJACENT AREAS IT WAS OBSERVED THAT MOST OF THE VEGETATION HAD BEEN SEVERELY AFFECTED BY DROUGHT DURING SOME RECENT PERIOD, WITH WIDESPREAD DEATH AND DIEBACK. REGENERATION HAD SINCE TAKEN PLACE. BRIEF DETAILS OF THE PRINCIPAL VEGETATION TYPES AND OF THE EFFECTS OF DROUGHT ARE GIVEN. THE LATTER ARE SHOWN NOT TO HAVE BEEN CAUSED BY FIRE AND ARE TRACED TO THREE YEARS OF DROUGHT IN 1961-1964. IT IS SUGGESTED THAT INFREQUENT SEVERE DROUGHTS CAUSE CYCLIC DEATH AND REGENERATION IN THESE ARID AREAS, PRODUCING MORE OR LESS EVEN-AGED STANDS.

DROUGHTS/AUSTRALIA/GIBSON DESERT/WESTERN AUSTRALIA/MULGA SCRUB/SAND DUNES/SANDS/CLIMATIC-VEGETAL RELATIONSHIPS/OALS

6

BETTENAY, E./BLACKMORE, A.V./HINGSTON, F.J.

1964

ASPECTS OF THE HYDROLOGIC CYCLE AND RELATED SALINITY IN THE BELKA VALLEY, WESTERN AUSTRALIA.

AUSTRALIAN JOURNAL OF SOIL RESEARCH 2(2):187-210.

CLEARING OF NATIVE VEGETATION IN THE WESTERN AUSTRALIAN WHEAT BELT HAS INCREASED SOIL SALINITY, AND IT IS ESTIMATED (1963) THAT 123,000 HA OF FORMERLY FERTILE LAND ARE NOW SALT-AFFECTED, PARTICULARLY THROUGH SEEPAGE ON LOWER SLOPES AND SALTING ON VALLEY FLOORS. CLEARING HAS LED TO DECREASED WATER USAGE BY PLANTS, AND MORE SOIL AND SURFACE WATER NOW REACHES THE VALLEY FLOORS. THIS AFFECTS SALINITY BY INCREASING SEEPAGE AND EXTENDING THE AREA AND DURATION OF CAPILLARY CONTACT BETWEEN A CONFINED SALINE AQUIFER AND THE SOIL SURFACE, RESULTING IN UPWARD MOVEMENT OF WATER AND ACCUMULATION OF SALTS IN AREAS PREVIOUSLY SALT-FREE.

WESTERN AUSTRALIA/SALINE SOILS/HYDROLOGY/CLEAR-CUTTING/DEGENERATION

7

BIRD, A.R.

1953

A STUDY OF THE FACTORS RESPONSIBLE FOR THE FLUCTUATIONS OF SHEEP NUMBERS IN THE CHARLEVILLE DISTRICT OF SOUTH-WESTERN QUEENSLAND 1939-1949.

UNIVERSITY OF QUEENSLAND, DEPARTMENT OF AGRICULTURE, PAPERS 1(2):43-85.

AUSTRALIA/QUEENSLAND/SHEEP(DOMESTIC)/GRAZING

8

BLACKBURN, G.

1974

SALINITY CYCLES IN AUSTRALIA, WITH SPECIAL REFERENCE TO THE MURRAY BASIN.

INTERNATIONAL CONGRESS OF SOIL SCIENCE, 10TH, MOSCOW, 1974, TRANSACTIONS 10:27-34.

WESTERN AUSTRALIA/BASINS/SALINITY

9

BLAKE, S.T.

1937

THE PLANT COMMUNITIES OF WESTERN QUEENSLAND AND THEIR RELATIONSHIPS, WITH SPECIAL REFERENCE TO THE GRAZING INDUSTRY.

ROYAL SOCIETY OF QUEENSLAND, PROCEEDINGS 49:156-204

QUEENSLAND/GRAZING/PLANT COMMUNITIES/VEGETAL RELATIONSHIPS

10

BOND, H.G.

1955

THE 1951-1952 DROUGHT IN NORTHERN TERRITORY, AUSTRALIA.

WEATHER 10(1):3-12.

DROUGHTS/NORTHERN TERRITORY

11

BUSHFIRES COUNCIL, DARWIN, NORTHERN TERRITORY

1971

TROPICAL AND ARID FIRE SYMPOSIUM, 1971, PROCEEDINGS.

SAME AS AUTHOR. 89 P.

DISCUSSES THE INCIDENCE AND CONSEQUENCES OF FIRES IN PARTS OF ARID AUSTRALIA. THE COMMONEST CAUSE IS LIGHTNING ASSOCIATED WITH SUMMER STORMS. THE INCIDENCE DEPENDS ON THE TYPE AND AMOUNT OF VEGETATION AND IS HIGHER AFTER SEASONS WITH GOOD RAINS. PROBABLY FOR THIS REASON, FIRES ARE COMMONER IN THE NORTH OF THE ARID ZONE WITH MORE FREQUENT SUMMER RAINS AND BETTER RAINFALLS. SPINIFEX GRASSLANDS ARE NATURALLY SUSCEPTIBLE TO FIRE AND FIRING IS PRACTICED TO ALLOW THE GROWTH OF PALATABLE SPECIES, AT REGULAR INTERVALS OF 5-6 YEARS IN THE NORTHWEST OF THE ARID ZONE. FIRES MAY BE FOLLOWED BY SAND DRIFTING AND 65 KM OF TRACK WAS CLOSED NORTHWEST OF ALICE SPRINGS FOLLOWING A FIRE IN 1969. IN ACACIA (MULGA) WOODLANDS FIRE INCIDENCE DEPENDS ON GROUND COVER. MAJOR FIRES LED TO EXTENSIVE DEATH OF MULGA IN THE SOUTHERN HALF OF THE NORTHERN TERRITORY IN 1921-1922 AND 1929. PERIODIC FIRE APPEARS TO BE A DETERMINANT OF REGENERATIO OF MULGA AND ASSOCIATED SHRUBS, BUT RESPONSE MAY BE SLOW DEPENDING ON PERIODIC RAINFALL AND IN SOME CASES NO SIGNIFICANT SHRUB REGROWTH HAS OCCURRED TEN YEARS FOLLOWING A LARGE FIRE. THIS CAN LEAD TO SOIL DRIFTING. SALTBUSH COUNTRY APPEARS GENERALLY NOT TO BE VULNERABLE TO FIRE. FIRE CONTROL IN IMPORTANT IN REGENERATION SCHEMES SUCH AS THE ORD RIVER CATCHMENT REGENERATION PROJECT.

BURNING/SUMMER PRECIPITATION/LIGHTNING/STORMS/CONTROLLED BURNING/GRASSES/ SPINIFEX/MULGA SCRUB/REVEGETATION

12

CHAPMAN, T.G.

1962

HYDROLOGY SURVEY AT LORNA GLEN AND WILUNA, WESTERN AUSTRALIA.

CSIRO, DIVISION OF LAND RESEARCH AND REGIONAL SURVEY, TECHNICAL PAPER 18. 47 P.

A FEASIBILITY STUDY OF THE EXPLOITATION OF A SMALL, ENCLOSED HYDROLOGIC SYSTEM IN A DESERT REGION, WITH THE OBJECT OF PRODUCING PERENNIAL CROPS SUCH AS LUCERNE AND ANNUAL CROPS SUCH AS COTTON TO SUPPLEMENT NATURAL GRAZING. DISCUSSES THE POSSIBILITY OF IRRIGATION BY PUMPING FROM A LOCAL AQUIFER, TO LOWER THE WATERTABLE SUFFICIENTLY TO DIMINISH LOSSES BY EVAPORATION FROM NEARBY PLAYA FLOORS. IT IS PLANNED TO SUPPLEMENT THE AQUIFER THROUGH ARTIFICIAL RECHARGE BY THE CONSTRUCTION OF EARTH DAMS ACROSS FLOODWAYS. EXCESS RECHARGE WOULD BE USED TO FLUSH THE SYSTEM OF ACCUMULATED SALTS.

WESTERN AUSTRALIA/HYDROLOGY/GRAZING/IRRIGATION PRACTICES/AQUIFERS/ CROP PRODUCTION/WATER MANAGEMENT

13

CHARLEY, J.L./COWLING, S.W.

1968

CHANGES IN SOIL NUTRIENT STATUS RESULTING FROM OVERGRAZING AND THEIR CONSEQUENCES IN PLANT COMMUNITIES OF SEMI-ARID AREAS.

ECOLOGICAL SOCIETY OF AUSTRALIA, PROCEEDINGS 3:28-38. SWRA W70-07761.

IT IS ARGUED THAT LIMITATION OF ESSENTIAL NUTRIENTS AND NOT WATER ARE THE LIMITING FACTORS IN PLANT BIOMASS IN ARID REGIONS. NITROGEN CONTENT IN THE SOIL IS LARGELY A FUNCTION OF NODULATING LEGUMES AND INPUT IS LIMITED BY ACTIVE PLANT GROWTH. ARID REGIONS HAVE LESS NITROGEN THAN HUMID REGIONS AND AUSTRALIA HAS LESS THAN OTHER ARID REGIONS. SOIL ORGANIC MATTER IS LOW IN DESERTS BECAUSE SPARSE RAINFALL LIMITS DECAY PERIODS. SOIL PHOSPHORUS IS LITTLE AFFECTED BY CLIMATIC FACTORS OR NATURAL INPUT AND IS MAINLY GOVERNED BY THE PHOSPHORUS CONTENT OF PARENT MATERIAL. SOILS AT THE LOWER END OF THE FERTILITY SPECTRUM SHOW THE GREATEST RELATIVE ACCUMULATION OF NUTRIENTS NEAR THE SURFACE AND ORGANIC CARBON, TOTAL NITROGEN AND AVAILABLE PHOSPHORUS AND NITRATE PRODUCTION FALL AWAY SHARPLY WITH INCREASING DEPTH. MEASUREMENTS IN A SALTBUSH COMMUNITY SHOWED THAT THE TOTAL LEAF AND FRUIT LITTER FALL FOR A YEAR WAS GREATER THAN THE WEIGHT OF LEAF HELD IN THE COMMUNITY, INDICATING A HIGH RECYCLING RATE. IN AN OVERGRAZED AREA WITH A SOIL TRUNCATION OF 10 CM DUE TO EROSION IT WAS ESTIMATED THAT 35 PERCENT OF TOTAL CIRCULATING NITROGEN, 45 PERCENT OF ORGANIC MATTER AND GREATER THAN 22 PERCENT OF AN ALREADY LOW PHOSPHORUS IS LOST. EFFORTS TO FURROW THE AREA AND ELIMINATE GRAZING DID NOT INCREASE PLANT PRODUCTION. IT WAS CONCLUDED THAT PROBABLY NOT LACK OF RAINFALL BUT LOW PHOSPHORUS LIMITED NITROGEN PRODUCTION AND THE WHOLE SYSTEM OF NUTRIENTS IS DELICATELY BALANCED BY A HIGH RECYCLING PROCESS WHICH IS EASILY DISTURBED. (OALS)

DESERT PLANTS/ORGANIC MATTER/NITROGEN/PHOSPHORUS/ON-SITE DATA COLLECTIONS/ SOIL-WATER-PLANT RELATIONSHIPS/NUTRIENT REQUIREMENTS/EROSION/PRODUCTIVITY/ AUSTRALIA/ATRIPLEX/BIOMASS/LIMITING FACTORS/LITTER/PERTURBATION/OALS

14

CHIPPENDALE, G.M.

1963

PASTURE DETERIORATION IN CENTRAL AUSTRALIA.

AUSTRALIAN INSTITUTE OF AGRICULTURAL SCIENCE, JOURNAL 29(2):84-89.

THE ARTICLE DEALS WITH THE POSSIBLE CAUSES OF DENUDATION OF NATURAL VEGETATION IN CENTRAL AUSTRALIA. OVERGRAZING, PARTICULARLY DURING SEVERE DROUGHT, HAS LED TO WIND DRIFT OF SOILS AND EROSION BY WATER. EDIBLE TREES ARE BEING REDUCED IN NUMBER, AND REGENERATING SEEDLINGS ARE RARE IN STOCKED COUNTRY. OTHER CAUSES OF DENUDATION ARISING FROM SETTLEMENT, SUCH AS ROAD PLACEMENT, ARE SIGNIFICANT IN SOME AREAS. NON-SYSTEMATIC OBSERVATIONS CAN BE MISLEADING AND THERE IS A NEED FOR SCIENTIFIC PASTURE ASSESSMENT AND RANGE MANAGEMENT.

RANGES/SOIL EROSION/WIND ACTION/NORTHERN TERRITORY/SOUTH AUSTRALIA/ OVERGRAZING/DENUDATION/SETTLEMENTS

15

CHIPPENDALE, G.M.

1963

THE EFFECTS OF GRAZING OF TOPFEED IN CENTRAL AUSTRALIA.

AUSTRALIAN JOURNAL OF EXPERIMENTAL AGRICULTURE AND ANIMAL HUSBANDRY 3:30-34.

NORTHERN TERRITORY/SOUTH AUSTRALIA/GRAZING

16

CONACHER, A.J.

1971

THE SIGNIFICANCE OF VEGETATION, FIRE AND MAN IN THE STABILISATION OF SAND DUNES NEAR THE WARBURTON RANGES, CENTRAL AUSTRALIA.

JOURNAL OF EARTH SCIENCES 5:92-94.

HUMAN BEHAVIOR/SAND DUNES/BURNING/EROSION CONTROL/SOUTH AUSTRALIA

17

CANACHER, A.J.

1975

THROUGHFLOW AS A MECHANISM RESPONSIBLE FOR EXCESSIVE SOIL SALINISATION IN NON-IRRIGATED, PREVIOUSLY ARABLE LANDS IN THE WESTERN AUSTRALIAN WHEATBELT: A FIELD STUDY.

CATENA 2:31-68.

AREAS OF EXCESSIVE SOIL SALINITY ARE ASSOCIATED WITH SPECIFIC SOIL/GEOMORPHIC CONDITIONS. VALLEY-SIDE SLOPES ARE LOW-ANGLED; INTERFLUVES HAVE SANDY SOILS ABOVE LATERITE OR GRAVEL; VALLEY SIDES ABOVE THE SCALDS ARE EROSIONAL OR TRANSPORTATIONAL AND THEIR SOILS SHOW A SHARP DECREASE IN PERMEABILITY AT ABOVE PLOUGH DEPTH. THE SCALDS RANGE IN SIZE FROM 0.02-64.4 HA AND ARE MAINLY IN VALLEY BOTTOMS ON COLLUVIAL OR ALLUVIAL MATERIALS ABOVE A MARKED HARDPAN. LAYERING IN THESE VALLEY-BOTTOM MATERIALS PRODUCES PERCHED SOIL-WATER TABLES AT SHALLOW DEPTHS. SOLUBLE SALTS MOVE TOWARDS THE VALLEY BOTTOMS BY VARIOUS PROCESSES. THE SALINE WATER IS PREVENTED FROM PERCOLATING TO DEPTH BY THE IMPERVIOUS UNDERLYING HARDPAN AND WATERLOGGING OCCURS. EVAPORATION IN SUMMER CONCENTRATES THE SALTS AT THE SURFACE. LOWERING OF THE GROUNDWATER TABLE IS IMPRACTICABLE AS A FORM OF REHABILITATION AND THE ESTABLISHMENT OF SALT-TOLERANT PLANTS ON SCALDS MAY BE SUCCESSFUL BUT PREVENTS A RETURN TO NORMAL FARMING. LOW GRADIENTS AND IMPERVIOUS SOILS PRESENT PROBLEMS TO DRAINGE OF SCALDS. THE CONSTRUCTION OF INTERCEPTOR BANKS APPEARS A LIKELY SOLUTION.

WESTERN AUSTRALIA/SALINITY/SALINE SOILS/GEOMORPHOLOGY/SALINE WATER/DRAINAGE/ SOIL DENSITY/LAND RECLAMATION/WATER TABLE/SOIL WATER MOVEMENT

18

CONDON, R.W.

1954

SAND DRIFT CONTROL ON COOMEALLA IRRIGATION AREA.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 10:109-115.

SAND CONTROL/NEW SOUTH WALES

19

CONDON, R.W.

1961

EROSION AND MANAGEMENT PROBLEMS IN WESTERN NEW SOUTH WALES.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 17:86-102.

MUCH OF THE SERIOUS EROSION AND PASTURE DEGRADATION IN WESTERN NEW SOUTH WALES CAN BE TRACED BACK TO A DROUGHT IN 1902 AND CONDITIONS PRIOR TO THAT TIME. HEAVY STOCKING AND RABBIT PLAGUES ADVERSELY AFFECTED PASTURES AND SOILS FROM 1880 AND 1890. SOILS IN THE AREA ARE CLASSIFIED INTO GROUPS WHICH ARE DISCUDSSED IN TERMS OF THEIR ERODIBILITY AND CONDITION. MANAGEMENT METHODS APPROPRIATE TO THE PARTICULAR CIRCUMSTANCES OF EACH GROUP ARE DESCRIBED. SPECIAL MANAGEMENT PROBLEMS SUCH AS DROUGHT MANAGEMENT, THE LOCATION AND NUMBER OF STOCK WATERING POINTS AND THE RELEVANCE OF DEFERRED GRAZING TECHNIQUES ARE ALSO DISCUSSED.

NEW SOUTH WALES/SOIL EROSION/RANGES/DROUGHTS/DEGENERATION/LAND MANAGEMENT/ OVERGRAZING/LAGOMORPHA/SOIL TYPES/GRAZING SYSTEMS/LIVESTOCK

20

CONDON, R.W.

1961

SOILS AND LAND FORM OF THE WESTERN DIVISION OF NEW SOUTH WALES.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 17:31-46.

NEW SOUTH WALES/LANDFORMS/SOIL TYPES

21

CONDON, R.W.

1968

ESTIMATION OF GRAZING CAPACITY ON ARID GRAZING LANDS. IN G.A. STEWART, ED., LAND EVALUATION, PAPERS OF A CSIRO SYMPOSIUM ORGANIZED IN COOPERATION WITH UNESCO 26-31 AUGUST 1968, P.112-124.

MACMILLAN OF AUSTRALIA. SWRA W70-01206.

DETERIORATION IN THE CONDITION OF SOILS AND PASTURES IN ARID AUSTRALIA IS REFLECTED IN THE FACT THAT SHEEP NUMBERS IN THE 32 MILLION HECTARES OF THE WESTERN DIVISION OF NEW SOUTH WALES WERE REDUCED FROM 15 MILLION TO 4 MILLION FOLLOWING THE DROUGHT OF 1901-1902 AND HAVE SUBSEQUENTLY RARELY EXCEEDED 8 MILLION UNTIL THE LATE 1950'S. DETERIORATION HAS OCCURRED AS A RESULT OF EXCESSIVE OPTIMISM IN THE DEVELOPMENT AND MANAGEMENT OF THE LAND, POSSIBLY BECAUSE OF THE EXCELLENT RESPONSE OF PASTURES TO GOOD RAINS. INEVITABLE LONG DROUGHTS ACCOMPANIED BY EXCESSIVE GRAZING PRESSURE HAVE LED TO A DECLINE IN CONDITIONS AND IN SERIOUS EROSION FROM WHICH RECOVERY MAY BE SLOW OR IMPOSSIBLE. A METHOD OF ESTIMATING THE GRAZING CAPACITY OF ARID LANDS IS PRESENTED. IT REQUIRES THE SELECTION OF A STANDARD LAND CLASS FOR WHICH THE GRAZING CAPACITY IS KNOWN OR CAN BE DETERMINED WITH REASONABLE ACCURACY AND THE ESTABLISHMENT OF WEIGHTING VALUES FOR THE VARIOUS FACTORS WHICH INFLUENCE GRAZING CAPACITY SUCH AS SOILS, TOPOGRAPHY, DENSITY OF TREES AND SHRUBS, PASTURE TYPE, GENERAL CONDITION AND RAINFALL. IN WESTERN NEW SOUTH WALES AVERAGE RAINFALL HAS BEEN FOUND TO BE THE MOST IMPORTANT OF THESE RATING FACTORS. THE SCALE HAS GENERALLY SHOWN REASONABLE AGREEMENT WITH OFFICIAL ASSESSMENTS OF LANDS IN GOOD CONDITION BUT A LOWER VALUE THAN PREVIOUS OFFICIAL ASSESSMENTS IN DEGENERATED PASTURE LANDS.

GRAZING/CARRYING CAPACITY/AUSTRALIA/LAND USE/LAND CLASSIFICATION/NEW SOUTH WALES/SHEEP(DOMESTIC)/SOIL EROSION/OVERGRAZING/DEGENERATION/RANGES/LAND MANAGEMENT/RAINFALL/CLIMATIC-VEGETAL RELATIONSHIPS/OALS

22

CONDON, R.W./NEWMAN, J.C./CUNNINGHAM, G.M.

1969

SOIL EROSION AND PASTURE DEGENERATION IN CENTRAL AUSTRALIA. I: SOIL EROSION AND DEGENERATION OF PASTURE AND TOP FEED. II: PREVENTION AND CONTROL OF SOIL EROSION AND PASTURE DEGENERATION. III: THE ASSESSMENT OF GRAZING CAPACITY. IV: SOIL EROSION AND PASTURE DEGENERATION.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 25:47-92, 161-182, 225-250, 295-321.

A SURVEY OF RANGE CONDITION AND EROSION PROBLEMS IN CENTRAL AUSTRALIA. THE AREA IS DESCRIBED IN LAND SYSTEMS AND THEIR COMPONENTS, THE PASTURES ASSOCIATED WITH THE LAND SYSTEMS ARE GROUPED, AND THE EXTENT AND SEVERITY OF EROSION AND THE DETERIORATION OF PASTURES ARE DESCRIBED. METHODS WHICH SHOULD BE ADOPTED TO CONTROL EROSION AND TO PROMOTE PASTURE REGENERATION ARE DISCUSSED IN PART II. THE PRINCIPLES OF CONSERVATIVE MANAGEMENT, WHICH INCLUDE THE ASSESSMENT OF PROPER STOCKING RATES ARE DESCRIBED, TOGETHER WITH CULTURAL AND STRUCTURAL TECHNIQUES FOR OVERCOMING SOIL EROSION. PART III DEALS WITH THE ASSESSMENT OF STOCKING RATE FOR EACH PASTURE TYPE IN THE STUDY AREA. THE METHOD USED INCLUDES SUITABLE ADJUSTMENTS FOR DROUGHT PERIODS. PART IV DISCUSSES THE NEED TO RECOGNIZE A LIMIT TO THE CAPACITY OF ARID GRAZING LANDS. TABLES FOR THE ASSESSMENT OF STOCK NUMBERS ON WATER POINTS ARE PROVIDED. THE INFLUENCE OF PAST STOCKING HISTORY ON THE CONDITION OF CENTRAL AUSTRALIAN RANGELAND IS DISCUSSED.

RANGES/EROSION/EROSION CONTROL/CONSERVATION/RANGE MANAGEMENT/DROUGHTS/GRAZING/CARRYING CAPACITY/CLIMATIC-VEGETAL RELATIONSHIPS/LAND RECLAMATION/LIVESTOCK/SOIL TYPES

23

CSIRO, DIVISION OF LAND RESOURCES MANAGEMENT

1954 - 1970

LAND RESEARCH SERIES.

SAME AS AUTHOR.

A SERIES OF REPORTS ON THE NATURAL RESOURCES OF REGIONS OF AUSTRALIA WHICH ARE MAPPED AND DESCRIBED BY THEIR CONSTITUENT LAND SYSTEMS BASED ON CLIMATE, GEOLOGY, LANDFORMS, SOILS AND NATURAL VEGETATION. THE LAND SYSTEMS ARE GROUPED INTO PASTURE LANDS, WHICH ARE AREAS WITH SIMILAR ASSOCIATIONS OF NATURAL PASTURES. THE CONDITION AND TREND OF THESE PASTURES ARE DESCRIBED AND SUGGESTIONS MADE FOR IMPROVED RANGELAND MANAGEMENT. REPORTS RELEVANT TO ARID AUSTRALIA ARE: NO. 3 (1954) THE BARKLY REGION, 1947-1948, NO. 5 (1960) PASTURE LANDS OF THE NORTHERN TERRITORY, NO. 6 (1962) ALICE SPRINGS AREA, NORTHERN TERRITORY, 1956-1957, NO. 7 (1963) WILUNA-MEEKATHARRA AREA, W.A. 1958, NO. 9 (1964) WEST KIMBERLEY AREA, W.A., AND NO. 28 (1970) ORD-VICTORIA AREA, W.A. AND N.T. OF THE FOREGOING, NUMBERS 5, 6 AND 7 DEAL IN GREATEST DETAIL WITH THE DEGRADATION OF NATURAL PASTURES IN RELATION TO PASTORAL SETTLEMENT AND LAND USE.

NORTHERN TERRITORY/ALICE SPRINGS/NATURAL RESOURCES/CLIMATE/GEOLOGY/LANDFORMS/SOIL TYPES/VEGETATION/PASTURES/RANGE MANAGEMENT/SETTLEMENTS/LAND USE/WESTERN AUSTRALIA/MAPS

24

CULL, J.K.

1963

SOME AGRICULTURAL AND PASTORAL PROBLEMS OF CENTRAL WESTERN QUEENSLAND.

QUEENSLAND DEPARTMENT OF AGRICULTURE AND STOCK, CHARLEVILLE, WESTERN QUEENSLAND AGROSTOLOGY CONFERENCE, PROCEEDINGS. 8 P.

QUEENSLAND/AGRICULTURE/LIVESTOCK/PASTURES

25

CUNNINGHAM, G.M.

1974

REGENERATION OF SCALDED DUPLEX SOILS IN THE COOLABAH DISTRICT, NEW SOUTH WALES.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 30:157-169.

NEW SOUTH WALES/LAND RECLAMATION/SOIL TYPES

26

DAHLKE, J.

1975

EVOLUTION OF THE WHEAT BELT IN WESTERN AUSTRALIA: THOUGHTS ON THE NATURE OF PIONEERING ALONG THE DRY MARGIN.

AUSTRALIAN GEOGRAPHER 13(1):3-14.

WESTERN AUSTRALIA/TRITICUM/AGRICULTURE

27

DEACON, E.L.

1953

CLIMATIC CHANGE IN AUSTRALIA SINCE 1890.

AUSTRALIAN JOURNAL OF PHYSICS 6:209-218.

CLIMATIC CHANGE/CLIMATE

28

DUNCAN, R.C.

1972

TECHNOLOGICAL CHANGE IN THE ARID ZONE OF NEW SOUTH WALES.

AUSTRALIAN JOURNAL OF AGRICULTURAL ECONOMICS 16(1):22-32.

NEW SOUTH WALES/TECHNIQUES/SOCIAL ASPECTS

29

EVERIST, S.L./MOULE, G.R.

1952

STUDIES IN THE ENVIRONMENT OF QUEENSLAND. 2: THE CLIMATIC FACTOR IN DROUGHT.

QUEENSLAND JOURNAL OF AGRICULTURAL SCIENCE 9:185-199.

QUEENSLAND/ENVIRONMENT/DROUGHTS/CLIMATE/ENVIRONMENTAL EFFECTS

30

FARHER, J.N./EVERIST, S.L./MOULE, G.R.

1947

STUDIES IN THE ENVIRONMENT OF QUEENSLAND. 1: THE CLIMATOLOGY OF SEMI-ARID PASTORAL AREAS.

QUEENSLAND JOURNAL OF AGRICULTURAL SCIENCE 4:21-59.

QUEENSLAND/ENVIRONMENT/CLIMATOLOGY/GRASSLAND BIOME/SEMIARID CLIMATE

31

FIETZ, T.R.

1970

ENGINEERING ASPECTS OF EVAPORATION REDUCTION FOR SMALL SURFACE WATER STORAGES.

WATER RESEARCH FOUNDATION OF AUSTRALIA, LIMITED REPORT 33. 18 P.

EVAPORATION CONTROL/TECHNIQUES/WATER STORAGE

32

FITZGERALD, K.

1960

SOIL CONSERVATION IN THE KIMBERLEY AREA OF WESTERN AUSTRALIA.

WESTERN AUSTRALIA JOURNAL OF AGRICULTURE 1:949-956.

WESTERN AUSTRALIA/SOIL CONSERVATION

33

FITZGERALD, K.

1967 - 1968

THE ORD RIVER CATCHMENT REGENERATION PROJECT.

WESTERN AUSTRALIA JOURNAL OF AGRICULTURE 8(11):446-452, 9(3):90-95.

THIS IS PRIMARILY A PASTORAL AREA WITH AN INDUSTRY BASED ON OPEN-RANGE GRAZING UTILIZING NATURAL WATERS. ORIGINALLY THE COUNTRY WAS GRASSLAND OR GRASS-SAVANNA WOODLAND. CONTINUOUS UNCONTROLLED GRAZING UNDER OPEN-RANGE CONDITIONS HAS LED TO DEGRADATION OF PASTURES AND TO SEVERE EROSION INCLUDING SHEET AND GULLY EROSION AND WIND EROSION WITH DUST STORMS. FIRE AND DROUGHT HAVE ALSO PLAYED A PART. SURFACE COMPACTION HAS REDUCED WATER PENETRATION OF THE SOIL AND RE-ESTABLISHMENT OF GRASSES HAS BEEN PREVENTED. DEGRADATION OF PASTURES AND CONSEQUENT SOIL EROSION HAVE BEEN PARTICULARLY MARKED ADJACENT TO THE RIVERS AND REFLECT THE QUALITY OF PASTORAL MANAGEMENT. DEGRADATION IS WORST IN THE ORD RIVER CATCHMENT WHERE EROSION POSES A SILTATION THREAT TO A PROPOSED MAJOR IRRIGATION DAM. A MAJOR RESTORATION PROGRAM WAS UNDERTAKEN TO RE-ESTABLISH PERENNIAL VEGETATION AND CONTROL EROSION AND REDUCE SILT LOAD IN THE RIVERS. THE PROGRAM HAS INCLUDED PROTECTIVE FENCING, GRAZING CONTROL, STRIP AND CHECKERBOARD PLOUGHING, RESEEDING, WATER SPREADING AND CONTOUR RIPPING. FORMER CONSERVATIONAL PRACTICES TO COMBAT WIND EROSION, SUCH AS THE ESTABLISHMENT OF A SHALLOW-ROOTED VEGETATION COVER, WERE INADEQUATE IN THIS RESPECT.

WESTERN AUSTRALIA/ORD RIVER/CATCHMENTS/OVERGRAZING/EROSION/DEGENERATION/DEPOSITION(SEDIMENTS)/ENVIRONMENTAL EFFECTS/EROSION CONTROL/LAND RECLAMATION

34

FOLEY, J.C.

1947

A STUDY OF METEOROLOGICAL CONDITIONS ASSOCIATED WITH BUSH AND GRASS FIRES AND FIRE PROTECTION STRATEGY IN AUSTRALIA.

AUSTRALIA, COMMONWEALTH BUREAU OF METEOROLOGY, MELBOURNE, BULLETIN 38. 234 P.

BURNING/ENVIRONMENTAL EFFECTS/METEOROLOGY/RAINFALL

35

FOLEY, J.C.

1957

DROUGHTS IN AUSTRALIA: REVIEW OF RECORDS FROM EARLIEST YEARS OF SETTLEMENT TO 1955.

AUSTRALIA, BUREAU OF METEOROLOGY, MELBOURNE, BULLETIN 43. 281 P.

GRAPHS AND TABLES OF DROUGHT DURATION AND SEVERITY ARE DISCUSSED ON A STATE AND NATIONAL BASIS. AN 'INDEX OF SEVERITY' IS DERIVED FROM THE AMOUNTS OF RAINFALL DEFICIENCY IN DROUGHTS OF VARYING DURATION. THIS CLIMATIC INDEX OF DROUGHT SEVERITY IS CORRELATED WITH THE PERCEPTION OF DROUGHT AS EXPRESSED IN PRESS REPORTS AND OFFICIAL SOURCES CONCERNING HUMAN HARDSHIP AND ECONOMIC LOSSES. SEVEN MAJOR DROUGHTS AFFECTING THE GREATER PART OF AUSTRALIA IN THE LAST 100 YEARS ARE DISCERNED, WHILE SEVERAL OTHER SEVERE DROUGHTS AFFECTING MORE LIMITED AREAS, SUCH AS ONE OR TWO CAPITAL STATES, ARE RECOGNIZED. THE EFFECTS OF DROUGHT AS INDICATED BY PRESS AND OFFICIAL REPORTS HAVE TENDED TO BE INCREASINGLY SERIOUS OVER TIME WITH THE EXPANSION OF THE PASTORAL INDUSTRY. THERE IS NO EVIDENCE HOWEVER THAT CLIMATE IS CHANGING.

DROUGHTS/HISTORY/ENVIRONMENTAL EFFECTS/CLIMATIC DATA

36

GENTILLI, J.

1952

PRESENT CLIMATIC FLUCTUATIONS IN WESTERN AUSTRALIA.

WESTERN AUSTRALIAN NATURALIST 3:155-165.

WESTERN AUSTRALIA/CLIMATIC CHANGE

37

GENTILLI, J.

1971

CLIMATIC FLUCTUATIONS. IN J. GENTILLI, ED., CLIMATES OF AUSTRALIA AND NEW ZEALAND, P. 189-211.

ELSEVIER, AMSTERDAM. WORLD SURVEY OF CLIMATOLOGY, V. 13. MGA 22.11-464.

THE CONTENTS OF THIS PAPER ON CLIMATIC FLUCTUATIONS IN AUSTRALIA COMPRISE A HISTORICAL REVIEW OF STUDIES ON WEATHER CYCLES AND THE 19 YEAR LUNAR CYCLE; SOLAR CYCLES; THE SOUTHERN OSCILLATION; CLIMATE TRENDS AND FLUCTUATION; THE CLIMATE OF THE SOUTHEAST QUARTER AND THE GENERAL PATTERN OF CLIMATIC CHANGE IN AUSTRALIA. EXTENSIVE DATA ARE PRESENTED IN TABLES, GRAPHS, AND MAPS.

OALS/CLIMATIC CHANGE/AUSTRALIA/CLIMATIC DATA/HISTORY/MAPS/WEATHER PATTERNS

38

GIBBS, W.J./MAHER, J.V.

1967

RAINFALL DECILES AS DROUGHT INDICATORS.

AUSTRALIA, BUREAU OF METEOROLOGY, BULLETIN 48. 33 P. MGA 19.1-305.

FOR EACH YEAR FROM 1885-1965 THE DECILE RANGES OF ANNUAL RAINFALL WERE MAPPED OVER THE WHOLE OF AUSTRALIA. THE FIRST, OR LOWEST DECILE WAS FOUND TO CORRESPOND WELL WITH THE OCCURRENCE OF MAJOR DROUGHT AS INDICATED BY OFFICIAL RECORDS OF PASTORAL PRODUCTIVITY. RAINFALL IS REGARDED AS THE BEST SINGLE INDICATOR OF DROUGHT, ALTHOUGH THE DEFINITION OF DROUGHT NEEDS TO BE IN TERMS OF THE EMPLOYMENT OF WATER IN LAND USE. IT IS CONCLUDED THAT IT IS MOST UNLIKELY THAT THE WHOLE OF AUSTRALIA WILL BE DROUGHT-AFFECTED AT ANY ONE TIME, BUT EXTENSIVE AREAS SUCH AS THE WHOLE OF SOUTHEASTERN AUSTRALIA MAY BE AFFECTED ONCE IN A CENTURY.

AUSTRALIA/NEW SOUTH WALES/QUEENSLAND/DROUGHTS/CLIMATIC DATA/RAINFALL/ WEATHER PATTERNS/OALS

39

HALL, E.A.A./SPECHT, R.L./EARDLEY, C.M.

1964

REGENERATION OF THE VEGETATION OF KOONAMORE VEGETATION RESERVE (SOUTH AUSTRALIA), 1926-1962.

AUSTRALIAN JOURNAL OF BOTANY 12(2):205-264.

DESCRIBES REGENERATION OF DEGRADED PASTURES IN NORTHEASTERN PASTORAL SOUTH AUSTRALIA IN THE PERIOD 1926 TO 1962. IN 1926 ALL SALTBUSHES (ATRIPLEX SPP.) HAD BEEN DESTROYED ON THE INVESTIGATION SITE. GIVEN AN ADEQUATE SEED SOURCE, REGENERATION BY SALTBUSHES IS POSSIBLE ON NON-ERODED SITES BUT IS MUCH SLOWER ON ERODED SITES. BLUEBUSHES (MAIREANA SPP.) DO NOT RECOVER AS RAPIDLY. RABBITS DESTROYED SEEDLINGS OF MANY REGENERATING GENERA SUCH AS CASSIA AND ACACIA.

SOUTH AUSTRALIA/REVEGETATION/ATRIPLEX/ACACIA/CASSIA/LAGOMORPHA/PASTURES/ SHRUBS/SOIL EROSION

40

HALL, N. ET AL

1972

THE USE OF TREES AND SHRUBS IN THE DRY COUNTRY OF AUSTRALIA.

AUSTRALIA, DEPARTMENT OF NATIONAL DEVELOPMENT, FORESTRY AND TIMBER BUREAU, CANBERRA. 558 P.

AIM IS TO ADVISE ON THE USE OF TREES AND SHRUBS FOR CONSERVATION AND IN LAND USE. DOES NOT DEAL WITH SPECIFIC PROBLEM AREAS BUT CONSTITUTES A VALUABLE REVIEW OF ENVIRONMENTAL STATUS AND A LITERATURE SOURCE. CONSIDERS STABILITY OF THE MAIN NATURAL ENVIRONMENTS OF ARID AUSTRALIA AS DETERMINED BY TOPOGRAPHY, SOIL, VEGETATION AND CLIMATE. REVIEWS MECHANISMS OF EROSION BY WIND AND WATER, AND EXAMPLES OF THEIR INCIDENCE, AND THEIR EFFECTS IN THE DEGRADATION OF SELECTED SHRUBLANDS. RECOMMENDS CONSERVATION PRACTICES. ILLUSTRATES SHRUBLANDS AND WOODLANDS IN VARIOUS DEGREES OF DEGRADATION DUE TO GRAZING. DISCUSSES ECOLOGICAL FACTORS IN THE SELECTION AND ESTABLISHMENT OF SHRUBS AND TREES TO COUNTER DEGRADATION AND RECOMMENDS SPECIES AND APPROPRIATE PLANTING TECHNIQUES FOR SALT-LAND AREAS. REVIEWS CONDITION OF MAIN LANDSCAPE TYPES. DEALS WITH FIRE IN DRY LANDS AND THE PROBLEMS OF FIRE CONTROL.

EROSION/SOIL TYPES/CONSERVATION/TOPOGRAPHY/VEGETATION/CLIMATE/BURNING/ CONTROLLED BURNING/EROSION/DEGENERATION/WOODLAND/SHRUBS/TREES

41.

HEATHCOTE, R.L.

1964

CONSERVATION OR OPPORTUNE USE. THE PASTORALISTS' PROBLEM IN SEMI-ARID AUSTRALIA.

ADVANCEMENT OF SCIENCE 21:47-60.

CONSERVATION/LAND USE/GRAZING/PASTURES

42

HEATHCOTE, R.L.

1965

BACK OF BOURKE: A STUDY OF LAND APPRAISAL AND SETTLEMENT IN SEMI-ARID AUSTRALIA.

MELBOURNE UNIVERSITY PRESS, MELBOURNE. 244 P.

DEALS WITH SOUTHWEST QUEENSLAND AND NORTHWEST NEW SOUTH WALES. EARLY ASSESSMENTS OF THE PASTORAL POTENTIAL RANGED BETWEEN AN OPTIMISTIC AND A PESSIMISTIC VIEW OF THE AREA AS 'DESERT' DEPENDING ON SEASON. BY 1883, WITH PASTORAL OCCUPATION VIRTUALLY COMPLETE, THERE WAS EVIDENCE OF DETERIORATION OF GRASS AND SALTBUSH PASTURES ALONG MAIN RIVER FRONTAGES, REMOVAL OF VEGETATION FROM SANDHILLS, AND SOME DETERIORATION AND EROSION IN THE BACK COUNTRY, SHOWN BY A DECLINE IN CATTLE NUMBERS FROM THE 1880'S. ESTIMATES OF CARRYING CAPACITY WERE STILL OPTIMISTIC, PROBAELY INFLUENCED BY THE DEVELOPMENT OF ARTESIAN WATER SUPPLIES. REDUCED STOCK NUMBERS BY 1890'S WERE ATTRIBUTED TO DROUGHT, OCCASIONAL FLOODING, LOSS OF EDIBLE TREES AND SHRUBS AND THEIR REPLACEMENT BY CLOSE STANDS OF INEDIBLE SHRUBS (SCRUB) THROUGH GRAZING BY RABBITS AND CONTROL OF BUSHFIRES, DIMINUTION OF DROUGHT STAND-BY FEED; OVERSTOCKING. THIS WAS COUNTERED TO SOME EXTENT BY OPENING UP OF BACK COUNTRY, ADDITIONAL FENCING, CONSTRUCTION OF RABBIT-PROOF FENCES AND PEST CONTROL, IMPROVED ARTESIAN WATER SUPPLIES, AND SCRUB CLEARING. DETERIORATION CONTINUED AS SHOWN BY FALLING STOCKING RATES. IN SUBSEQUENT YEARS THERE HAS BEEN A TENDENCY FOR CLOSER LEASEHOLD SETTLEMENT BASED ON FAMILY LIVING AREAS, BUT THE RETURNS IN ANIMAL UNITS PER AREA HAVE CONTINUED TO DECREASE AND THERE HAS BEEN SOME MOVEMENT AWAY OF RURAL POPULATION. AN ATTITUDE TO THE LAND HAS DEVELOPED ON THE UNDERSTANDING THAT SURPLUS FEED IS DESTROYED BY DROUGHT AND BUSHFIRES AND THAT RESTRICTED USE DOES NOT CONSERVE THE RESOURCE. RETURNS ARE TOO LIMITED FOR CONSERVATIONAL USE AND THE PRACTICAL SOLUTION APPEARS TO BE THE EXPIOITATION OF FEED RESOURCE AS IT OCCURS, NAMELY 'OPPORTUNE USE'.

QUEENSLAND/NEW SOUTH WALES/SETTLEMENTS/DEGENERATION/PASTURES/LAND USE/ CARRYING CAPACITY/GRAZING/EROSION/DROUGHTS/CONSERVATION/CONSUMPTIVE USE

43

HEATHCOTE, R.L.

1969

DROUGHT IN AUSTRALIA: A PROBLEM IN PERCEPTION.

GEOGRAPHICAL REVIEW 59(2):175-194. GA 70B-920.

USEFUL SCIENTIFIC INFORMATION ON THE NATURE OF DROUGHT IN AUSTRALIA HAS APPEARED ONLY IN THE LAST DECADE, AND AN ATTEMPT IS MADE TO EXPLAIN THIS SURPRISING FACT. ANY STUDY OF DROUGHT FACES THREE BASIC PROBLEMS: THE IDENTIFICATION OF DROUGHT, THE RECOGNITION OF ITS EFFECTS, AND THE APPRAISAL OF ITS IMPACT. THE MULTIPLICITY OF DEFINITIONS FOR A VARIETY OF DEFICIENCY THRESHOLDS, THE MEASUREMENT OF THOSE DEFICIENCIES, AND THE MOTIVES BEHIND THE REGISTRATION OF THEIR OCCURRENCES POSE PROBLEMS OF IDENTIFICATION. DROUGHT EFFECTS MAY HAVE BOTH POSITIVE AND NEGATIVE FACETS, AND THE APPRAISAL OF DROUGHT IMPACTS SEEMS TO REFLECT PHILOSOPHICAL AND PSYCHOLOGICAL ATTITUDES THAT ARE AS YET IMPERFECTLY UNDERSTOOD. THE NATURE OF DROUGHT IN AUSTRALIA SEEMS TO BE LARGELY A MATTER OF PERCEPTION.

AUSTRALIA/METEOROLOGY/CLIMATOLOGY/DROUGHTS/DROUGHT TOLERANCE/MOISTURE DEFICIT/ENVIRONMENTAL EFFECTS/OALS

44

HYDER, D.N. ED.

1973

ARID SHRUBLANDS - PROCEEDINGS OF THE THIRD WORKSHOP OF THE UNITED STATES/AUSTRALIA RANGELANDS PANEL, TUCSON, ARIZONA.

SOCIETY FOR RANGE MANAGEMENT, DENVER. 148 P.

PARTICULAR REFERENCE IS MADE TO THE FOLLOWING CHAPTERS: AUSTRALIAN ARID SHRUBLANDS BY R.M. MOORE; BIOLOGICAL CHARACTERISTICS OF AUSTRALIAN ACACIA AND CHENOPODIACEOUS SHRUBLANDS RELEVANT TO THEIR PASTORAL USE, BY R.D. GRAETZ; AND STRUCTURE AND FUNCTION OF AUSTRALIAN ARID SHRUBLANDS BY R.O. SLATYER.

SHRUBS/RANGES/ACACIA

45

JAMES, J.W.

1959 - 1960

EROSION SURVEY OF THE PAROO - UPPER DARLING REGION.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 15:148-159, 16:41-53, 16:185-206, 16:253-275.

WESTERN AUSTRALIA/EROSION/SURVEYS

46

JESSUP, R.W.

1951

THE SOILS, GEOLOGY AND VEGETATION OF NORTH-WESTERN SOUTH AUSTRALIA.

ROYAL SOCIETY OF SOUTH AUSTRALIA, TRANSACTIONS 74(2):189-273.

SOILS, GEOLOGY AND VEGETATION ASSOCIATIONS OF THE SETTLED AREAS OF NORTH-WESTERN SOUTH AUSTRALIA ARE DESCRIBED IN DETAIL WITH MAPS. WIDESPREAD DEATH OF TREES IS REPORTED, BOTH IN GRAZED AND UNGRAZED AREAS. RABBIT PLAGUES ARE REPORTED TO HAVE CAUSED GREAT DAMAGE TO TREES BUT NOT TO SHRUBS. DEGENERATIVE FEATURES WHICH ARE ASCRIBED TO SHEEP AND RABBITS ARE SHOWN IN SOME CASES TO BE THE RESULT OF OVERSTOCKING IN DELICATELY POISED ENVIRONMENTS. SOME REDUCTION IN SHRUB COVER TO PROMOTE HERBACEOUS GROWTH IS CONSIDERED DESIRABLE IN THE GRAZING SITUATION.

SOUTH AUSTRALIA/PHYSICAL GEOGRAPHY/MAPS/TREES/LAGOMORPHA/ANIMAL DAMAGE/GRAZING/DEGENERATION/SOIL TYPES/GEOLOGY/VEGETATION/SHEEP(DOMESTIC)/CARRYING CAPACITY

47

JOHNSON, T.N.

N.D.

THE EFFECT OF SHEEP AND RABBIT GRAZING ON REGENERATION OF WHITE CYPRESS PINE.

AUSTRALIAN FOREST RESEARCH 4(2):3-12.

SHEEP(DOMESTIC)/LAGOMORPHA/TREES/GRAZING/REVEGETATION

48

JONES, R.M.

1966 - 1967

SCALD RECLAMATION STUDIES IN THE HAY DISTRICT, NEW SOUTH WALES. 1: NATURAL RECLAMATION OF SCALDS. 2: RECLAMATION BY PLOUGHING. 3: RECLAMATION BY PONDING BANKS.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 22:147-160, 213-230; 23:57-71.

SCALDS ARE A SURFACE EROSION FORM ASSOCIATED WITH SALT-AFFECTED TEXURE -CONTRAST SOILS RELATED TO PRIOR STREAM SYSTEMS IN THIS AREA. EXAMINATION OF AIR PHOTOGRAPHS AND FIELD STUDIES FROM 1950 TO 1965 REVEALED EXTENSIVE REGENERATION OF SCALDS. FIFTY PERCENT OF THE AREA FORMERLY SCALDED HAD RECLAIMED DURING THIS PERIOD. UNRESTRICTED RUNOFF MAINTAINS THE SCALDED CONDITION WHEREAS BLOCKAGE OF RUNOFF LEADS TO NATURAL RECLAMATION. VEGETATION CHANGES ACCOMPANYING NATURAL RECLAMATION ARE OUTLINED. ARTIFICIAL METHODS OF RECLAMATION TAKE THE FORM OF PLOUGHING, INCLUDING CHECKERBOARD PLOUGHING, CONTOUR FURROWING AND SPIRAL PLOUGHING, AND THE CONSTRUCTION OF PONDING BANKS. COMPLETE SCARIFYING IS OF LITTLE VALUE AND COMPLETE PLOUGHING REQUIRES THOROUGH ROUGHENING OF THE SCALD SURFACE, FAVORABLE RAINFALL CONDITIONS AND IN MANY INSTANCES SOWING OF SEED. RETENTION OF WATER DEPENDS ON SOIL TYPE, SCALD SLOPE, METHOD OF PLOUGHING, CLOSENESS OF FURROW SPACING, RAINFALL AND GRAZING PRACTICE. UNINTENTIONAL PONDING OF WATER ON SCALDS HAS LED TO NATURAL RECLAMATION OF THE PONDED AREAS, IMPROVED SOIL MOISTURE STATUS, REDUCED SALT LEVELS AND GREATLY INCREASED PRODUCTION OF VEGETATION. WATERPONDING PADDOCKS HAVE BEEN CONSTRUCTED TO RECLAIM SCALDS ARTIFICIALLY IN THE SAME MANNER. PONDING BANKS ARE EFFECTIVE ON SLOPES OF LESS THAN 0.5 PERCENT. NATIVE SHRUBS HAVE RESPONDED BEST IN THE PONDED AREAS. RECLAIMED SCALDS ARE ALSO SHOWN TO HAVE IMPROVED MOISTURE RELATIONS, REDUCED SURFACE SALT LEVELS AND GREATER DEVELOPMENT OF CRACKING THAN SCALDED SOILS.

NEW SOUTH WALES/LAND RECLAMATION/SOIL EROSION/RUNOFF/VEGETATION CHANGE/EROSION CONTROL/REVEGETATION/SOIL-WATER-PLANT RELATIONSHIPS

49

JONES, R.M. ED.

1970

STUDIES OF THE AUSTRALIAN ARID ZONE: THE BIOLOGY OF ATRIPLEX.

CSIRO, DIVISION OF PLANT INDUSTRY. 128 P.

SEVERAL AUTHORS DISCUSS THE BIOLOGY OF ATRIPLEX SPECIES IN RELATION TO THE UTILIZATION OF ARID AND SEMIARID RANGELANDS, MAINLY IN SOUTHEASTERN AUSTRALIA. DECREASED DENSITY OF SALTBUSH (ARIPLEX VESICARIA) MAY CAUSE DIMINISHED CYCLING OF NUTRIENTS DUE TO DECREASED UPTAKE OF OXYGEN BY SURFACE SOILS CONSEQUENT ON REDUCTION IN MICROBIAL AND SOIL FAUNA POPULATIONS. A. VESICARIA MUST BE GRAZEI LIGHTLY (0.63 SHEEP PER HECTARE) OWING TO ITS INABILITY TO INITIATE REGROWTH EXCEPT ON YOUNG TERMINAL STEMS, WHICH ARE REMOVED BY HEAVY GRAZING. A. NUMMULARIA CAN PRODUCE NEW LEAVES AFTER COMPLETE DEFOLIATION. DENSITIES OF SALTBUSH DIMINISH CONCENTRICALLY TOWARDS WATERING POINTS (BIOSPHERE EFFECT) ANI MAY BE INVADED BY LESS PALATABLE SPECIES SUCH AS A. SPONGIOSA WHICH ARE INDICATORS OF INTENSE STOCKING. HOWEVER, IN MOISTER AREAS HEAVY GRAZING MAY LEAD TO THE REPLACEMENT OF SALTBUSHES BY MORE PRODUCTIVE SPECIES SUCH AS THE PERENNIAL GRASS DANTHONIA CAESPITOSA.

ATRIPLEX/RANGES/NEW SOUTH WALES/GRAZING/ANIMAL DAMAGE/VEGETATION CHANGE/ VEGETATION EFFECTS

50

LAWRENCE, E.F.

1937

A CLIMATIC ANALYSIS OF NEW SOUTH WALES.

AUSTRALIAN GEOGRAPHER 3(3):2-23.

THE ANNUAL VARIABILITY OF CLIMATE IN NEW SOUTH WALES IS DESCRIBED AND ILLUSTRATED BY CLIMATIC YEAR MAPS AND CLIMATIC TYPE FREQUENCY MAPS FOR THE PERIOD 1900-1935. THE DESERT-DRY AND DRY-HUMID BOUNDARIES MOVE EASTWARD AND WESTWARD TOGETHER. THERE IS A SUGGESTION OF AN EXPANSION EASTWARD OF DESERT CLIMATE DURING THE PERIOD ALTHOUGH THE TIME SPAN IS CONSIDERED TOO SHORT TO JUDGE WHETHER THIS IS PART OF SOME CYCLICAL CLIMATE FLUCTUATION OR A DEFINITE EASTWARD MOVEMENT OF DESERT CONDITIONS.

NEW SOUTH WALES/CLIMATE/SEASONAL/MAPS/CLIMATIC ZONES/WEATHER PATTERNS

51

LEIGH, J.H./MULHAM, W.E.

1971

THE EFFECT OF DEFOLIATION ON THE PERSISTENCE OF ATRIPLEX VESICARIA.

AUSTRALIAN JOURNAL OF AGRICULTURAL RESEARCH 22:239-244.

THE PERENNIAL SHRUB ATRIPLEX VESICARIA OCCURS OVER MUCH OF ARID AND SEMIARID AUSTRALIA AND IS IMPORTANT AS A DROUGHT-RESISTANT BROWSE PLANT AND AS A COUNTER TO SOIL EROSION. THE PROBLEM OF ITS USE IS COMPLICATED BY THE APPARENT INABILITY OF THE SHRUB TO RECOVER AFTER SEVERE GRAZING. GRAZING CONTROLS CONFIRM THAT HEAVILY GRAZED BUSHES ARE LESS LIKELY TO REGENERATE WHILE COMPLETELY DEFOLIATED BUSHES DO NOT REGROW, IRRESPECTIVE OF SOIL MOISTURE OR SEASON. THIS IS PROBABLY DUE TO THE REMOVAL BY GRAZING OF POTENTIAL GROWTH SITES WHICH APPARENTLY OCCUR ONLY ALONG THE YOUNG STEMS.

ATRIPLEX VESICARIA/SHRUBS/DROUGHT TOLERANCE/LAND RECLAMATION/EROSION CONTROL/ANIMAL DAMAGE/REVEGETATION/FORAGE PLANTS

52

LEIGH, J.H./NOBLE, J.C. EDS.

1972

PLANTS FOR SHEEP IN AUSTRALIA.

ANGUS AND ROBERTSON, SYDNEY. 402 P.

SHEEP(DOMESTIC)/FORAGE PLANTS

53

LOVETT, J.V. ED.

1973

THE ENVIRONMENTAL, ECONOMIC AND SOCIAL SIGNIFICANCE OF DROUGHT.

ANGUS AND ROBERTSON, SYDNEY. 318 P.

ACCEPTS THAT DROUGHT IS A PERMANENT ENVIRONMENTAL FACTOR IN AUSTRALIA. DISCUSSES CLIMATIC INDICES OF DROUGHT, NAMELY RESIDUAL DEFICIT OF RAINFALL AND FIRST DECILE RANGE, AND CONCLUDES THAT PREDICTION OF DROUGHT MAY IMPROVE WITH LONGER METEOROLOGICAL RECORDS AND IMPROVED FORECASTING TECHNIQUES. DROUGHT MAY BE HYDROLOGIC AND AGRICULTURAL AS WELL AS METEOROLOGICAL, DEPENDING ON ITS ECONOMIC EFFECTS. SUSCEPTIBILITY TO WIND EROSION IN AUSTRALIA IS MAPPED IN TERMS OF SEASONAL OCCURRENCE OF STRONG WINDS DURING DRY SUMMERS, AND LIABILITY TO WATER EROSION IS MAPPED BY INTENSITY AND SEASONALITY OF RAINFALL. SOILS ARE MAPPED ACCORDING TO THEIR LIABILITY TO EROSION, AS A FACTOR OF TEXTURE, WITH SANDS, DESERT LOAMS AND MALLEE SOILS SHOWING THE MAXIMUM ERODIBILITY, IN COMPARISON WITH CLAY-RICH, BETTER AGGREGATED SOILS. PRESENTS A MAP SHOWING THE INCIDENCE AND RELATIVE DEGREE OF VARIOUS FORMS OF ACCELERATED EROSION WITHIN AUSTRALIA. ASSESSES BOTH THE SHORT-TERM AND LONG-TERM EFFECTS OF DROUGHT ON PLANT AND ANIMAL LIFE, AS EXPRESSED IN FLUCTUATING PRODUCTION IN THE WOOL, MEAT AND WHEAT INDUSTRIES.

DROUGHTS/ECONOMIC IMPACT/EROSION/WIND EROSION/SEASONAL/SOIL EROSION/SOIL TYPES/ENVIRONMENTAL EFFECTS

54

HABBUTT, J.A.

1961

DEGRADATION OF LAND SURFACES IN ARID AUSTRALIA.

CSIRO, TECHNICAL MEMORANDUM 61/8.

DEGENERATION/DESERTIFICATION

55

MALCOLM, C.V.

1969

USE OF HALOPHYTES FOR FORAGE PRODUCTION ON SALINE WASTELANDS.

AUSTRALIAN INSTITUTE OF AGRICULTURAL SCIENCE, JOURNAL 35(1):38-49.

KWIC V 32/OALS/HALOPHYTES/SALINE SOILS/FORAGE PRODUCTION/GRAZING/
SOIL-WATER-PLANT RELATIONSHIPS/RANGE MANAGEMENT/ADAPTATION/VEGETATION
ESTABLISHMENT

56

MALCOLM, C.V.

1972

ESTABLISHING SHRUBS IN SALINE ENVIRONMENTS.

WESTERN AUSTRALIA DEPARTMENT OF AGRICULTURE, TECHNICAL BULLETIN 14.
37 P.

FACTORS INFLUENCING SHRUB ESTABLISHMENT ON SALINE SITES ARE REVIEWED UNDER HEADINGS OF SOIL, PLANT, AND CLIMATIC RELATIONSHIPS. SOIL SALINITY, STRUCTURE, AND WATER REQUIREMENTS ARE REVIEWED; UNDER PLANT FACTORS, INHIBITORS AND DORMANCY, SEED QUALITY, COMPETITION, SALT TOLERANCE, WATER TEMPERATURE, AND LIGHT REQUIREMENTS, TOXICITY, PATHOGENS, PH, AND ADAPTATION ARE NOTED; AND UNDER CLIMATE, SUCH FACTORS AS TEMPERATURE, WIND, EVAPORATION, AND TIME OF PLANTING ARE DISCUSSED. TO MODIFY THE ENVIRONMENT TO ACCOMMODATE SHRUB ESTABLISHMENT, REDUCING SOIL SALINITY AND IMPROVING WATER RELATIONS, TOGETHER WITH FERTILIZERS, WEED PEST AND GRAZING CONTROLS ARE SUGGESTED. TREATING AND PLANTING THE PROPAGATION MATERIAL INCLUDE SEED TREATMENTS, SEED RATE AND PLACEMENT, AND VEGETATIVE PROPAGATION. CAREFUL SELECTION OF PLANTS WELL ADAPTED BOTH TO ESTABLISHMENT AND LONG-TERM GROWTH ON CHOSEN SITES, AS WELL AS GOOD QUALITY SEED AND SEED BED PREPARATION CAN CONTRIBUTE TO SUCCESSFUL ESTABLISHMENT. (OALS) 155 REFERENCES.

KWIC V 33/OALS/SOIL-WATER-PLANT RELATIONSHIPS/VEGETATION
ESTABLISHMENT/SALT TOLERANCE/SEEDING/SHRUBS/SALINE SOILS/REVIEWS/
BIBLIOGRAPHIES/CLIMATIC-VEGETAL RELATIONSHIPS

57

MARSHALL, A.

1948

THE SIZE OF THE AUSTRALIAN DESERT.

AUSTRALIAN GEOGRAPHER 5(7):168-175.

AUSTRALIAN DESERTS

58

MEINIG, D.W.

1962

ON THE MARGINS OF THE GOOD EARTH. THE SOUTH AUSTRALIAN WHEAT FRONTIER, 1869-1884.

RAND, MCNALLY, CHICAGO. 321 P. (ASSOCIATION OF AMERICAN GEOGRAPHERS, MONOGRAPH SERIES 2)

HISTORICAL ACCOUNT OF THE EXPANSION OF THE SOUTH AUSTRALIAN WHEAT FRONTIER INTO WHAT PROVED TO BE MARGINAL AGRICULTURAL LANDS. FARMERS ENCOURAGED BY HIGH RAINFALLS OF THE LATE 1870'S SPREAD BEYOND WHAT HAD OFFICIALLY BEEN DESIGNATED IN GOYDER'S LINE AS THE LIMIT OF AGRICULTURAL COUNTRY. DROUGHTS IN 1880-1882 LED TO FALLING YIELDS AND ECONOMIC DISASTER AND EVENTUAL RETREAT FROM THE FARMING AREAS. ORIGINAL CLAIMS THAT RAINFALL MIGHT BE INCREASED BY PLOUGHING AND TREE-PLANTING WERE NOT SUSTAINED. THE RECOGNITION OF DIFFERENCES IN LAND POTENTIAL IN QUALITATIVE TERMS WAS ACHIEVED AT INCALCULABLE SOCIAL AND ECONOMIC COST. THIS RESULTED IN A LASTING DELINEATION OF THE PRACTICAL PHYSICAL BOUNDARY BETWEEN ARABLE AND GRAZING LANDS AND IMPORTANT ADJUSTMENTS IN AGRICULTURAL TECHNIQUES, SUCH AS THE INTRODUCTION OF NEW WHEAT VARIETIES, TILLAGE TECHNIQUES, ETC.

RAINFALL/DROUGHTS/HISTORY/SOUTH AUSTRALIA/LAND USE/DRY FARMING/TRITICUM/ CROP PRODUCTION/CLIMATIC ZONES/PLANTING MANAGEMENT

59

MITCHELL, A.

1972

PLANTS AND TECHNIQUES USED FOR SAND DUNE RECLAMATION IN AUSTRALIA.

INTERNATIONAL CO-OPERATION GROUP ON SAND DUNE RECLAMATION, MEETING, NOORDWIJK, HOLLAND. 10 P.

ANNUAL PRECIPITATION, WIND ACTION, VARIATION IN GRAIN SIZE, FERTILITY STATUS AND PH OF DUNE SANDS DIFFER WITH LOCATION OF SAND DUNES. INSTABILITY CAN BE CAUSED BY THE REMOVAL OF THE PROTECTIVE VEGETATIVE COVER BY CLEARING, CULTIVATION, OVERGRAZING, FIRE, BEACH MINING FOR TITANIUM MINERALS, AND CONCENTRATED RECREATIONAL TRAFFIC BY PEOPLE AND VEHICLES. GRASSES THAT HAVE BEEN USED FOR PRIMARY AND SECONDARY STABILIZERS ARE DISCUSSED. INFORMATION IS CONCENTRATED ON PLANT INTRODUCTION AND SELECTION OF STABILIZERS, THE REFINEMENT OF FERTILIZER PRACTICE, AND THE MECHANIZED PLANTING AND APPLICATION OF TEMPORARY SOIL BINDERS. (OALS)

OALS/SAND DUNES/SOIL STABILIZATION/LAND RECLAMATION/AUSTRALIA/SAND CONTROL/VEGETATION ESTABLISHMENT/GRASSES/PLANT COVER/COASTAL TOPOGRAPHIC FEATURES/FERTILIZERS/WIND ACTION/SOIL TREATMENT/SOIL SEALANTS/KWIC AU 8

60

MOORE, C.W.E.

1969

APPLICATION OF ECOLOGY TO THE MANAGEMENT OF PASTORAL LEASES IN NORTHWESTERN NEW SOUTH WALES.

ECOLOGICAL SOCIETY OF AUSTRALIA, PROCEEDINGS 4:39-54.

CLAIMS THAT DETERIORATION AS EXPRESSED BY FALLING SHEEP NUMBERS HAS RESULTED FROM EXPLOITATION FOR MAXIMUM PRODUCTION WITHOUT REGARD TO THE ECOLOGICAL SITUATION. REVIEWS CONDITIONS IN EACH OF MAIN VEGETATION FORMATIONS. CHANGES INCLUDE LOSS OF EDIBLE TREES AND VALUABLE PERENNIAL GRASSES, SOIL EROSION AND DETERIORATION OF SOIL-WATER RELATIONSHIPS, AND INVASION BY NONEDIBLE SHRUBS AND ANNUAL CHENOPODS OF LITTLE PASTORAL VALUE. LISTS CONTRIBUTORY FACTORS AS OVERSTOCKING, CLEARING, RABBITS AND POOR FIRE MANAGEMENT. CLAIMS THAT LOW PRODUCTIVITY RULES OUT PHYSICAL METHODS OF RECLAMATION AND RECOMMENDS DEVELOPMENT OF MANAGEMENT STRATEGIES ON ECOLOGICAL PRINCIPLES WITH CONSIDERATION OF USE OF NATIVE ANIMALS FOR MEAT PRODUCTION.

SOIL EROSION/SOIL-WATER-PLANT RELATIONSHIPS/UNDESIRABLE PLANTS/LIVESTOCK/ OVERGRAZING/PLANT DISTRIBUTION/ECOLOGY/RANGE MANAGEMENT/PASTURES/VEGETATION/ NEW SOUTH WALES/SHEEP(DOMESTIC)/ANIMAL DAMAGE/ENVIRONMENTAL IMPACT

61

MOORE, R.M. ED.

1970

AUSTRALIAN GRASSLANDS.

AUSTRALIAN NATIONAL UNIVERSITY PRESS, CANBERRA. 455 P.

AUSTRALIA/GRASSLAND BIOME

62

NEW SOUTH WALES INTER-DEPARTMENTAL COMMITTEE ON SCRUB AND TIMBER REGROWTH

1969

REPORT OF THE...COMMITTEE...IN THE COBAR-BYROCK DISTRICT AND OTHER AREAS OF THE WESTERN DIVISION OF NEW SOUTH WALES.

GOVERNMENT PRINTER, SYDNEY. 105 P.

SOME 39,000 SQ. KM OF SEMIARID PASTORAL LAND IN THIS DISTRICT HAVE DETERIORATED IN PRODUCTIVITY BECAUSE OF REGROWTH OF INEDIBLE SHRUBS AND TREES. TWO MAJOR INVASIONS OF REGROWTH HAVE OCCURRED SINCE INITIAL PASTORAL SETTLEMENT IN THE 1870'S. THE FIRST IN THE 1890'S FOLLOWED A PERIOD OF ABOVE-AVERAGE RAINFALL BUT WAS EXTENSIVELY DESTROYED BY FIRE IN 1921. THE SECOND OCCURRED FOLLOWING ABOVE-AVERAGE RAINFALL IN THE 1950'S. LOWERED PRODUCTIVITY IS SHOWN IN THAT COUNTRY PREVIOUSLY ASSESSED AS ONE SHEEP TO 4-6 HA CAN NOW CARRY ONLY ONE SHEEP TO 6-8 HA OR MORE. REGROWTH IS CONSIDERED A NATURAL FEATURE OF THE ENVIRONMENT ACCENTUATED BY PROTECTION FROM NATURAL FIRES UNDER PASTORAL OCCUPATION. CONSEQUENCES OF REGROWTH INCLUDE INCREASED SHEET EROSION OF BARE SLOPING GROUND BETWEEN SHRUBS AND FAILURE OF PASTURES TO REGENERATE ON DENUDED SOILS, LOWERED GRAZING CAPACITY AND PROBLEMS OF MUSTERING. LANDHOLDERS FINANCIALLY EMBARRASSED BY LOWERED WOOL PRICES AND DROUGHT DO NOT HAVE CAPITAL FOR RE-STOCKING. REMEDIAL MEASURES SUGGESTED INCLUDE RING-BARKING OF LARGER TREES AND THE GROWTH OF FODDER CROPS AND IMPROVED PASTURES USED CONTOUR-FURROWING AND WATER-SPREADING.

NEW SOUTH WALES/TIMBER/PASTURES/UNDESIRABLE PLANTS/CARRYING CAPACITY/BURNING/ CLIMATIC-VEGETAL RELATIONSHIPS/SHEET EROSION/LIVESTOCK/COSTS/CONTOUR FURROWS/ WATER SPREADING/RANGE MANAGEMENT

63

NEWMAN, J.C./CONDON, R.W.

1969

LAND USE AND PRESENT CONDITION. IN R.O. SLATYER AND R.A. PERRY, EDS., ARID LANDS OF AUSTRALIA, P. 105-132.

AUSTRALIAN NATIONAL UNIVERSITY PRESS, CANBERRA. 321 P.

LAND USE PATTERNS IN ARID RANGELANDS OF AUSTRALIA HAVE BEEN CHARACTERIZED BY INITIAL BUILDUP OF HIGH STOCK NUMBERS WHICH MAY SUBSEQUENTLY FALL RAPIDLY BECAUSE OF DROUGHT AND/OR RABBIT INVASIONS AS WELL AS ECONOMIC DEPRESSIONS. HEAVY STOCKING IN PERIODS OF ABOVE-NORMAL RAINFALL LEADS TO SERIOUS DAMAGE WHEN DROUGHT FOLLOWS AND STOCK CANNOT BE MOVED RAPIDLY TO AREAS OF BETTER GRAZING CAPACITY. LONG-TIME USE UNDER SUCH CIRCUMSTANCES HAS RESULTED IN SEVERE EROSION DAMAGE IN DENUDED AREAS. INTELLIGENT GRAZING PRACTICES AND INFORMED RANGE MANAGEMENT CAN IN TIME RESTORE THE CARRYING CAPACITY OF SUCH DEPLETED AREAS, AND INSURE THEIR LONG-TERM PRODUCTION CAPABILITY. (OALS) [SEE ALSO SLATYER, R.O./PERRY, R.A., EDS., 1969]

OALS/DESERTIFICATION/LAND USE/LAND MANAGEMENT/LAND RECLAMATION/ GRAZING/AUSTRALIA/RANGE MANAGEMENT/LIVESTOCK/CARRYING CAPACITY/ PRODUCTIVITY/LAGOMORPHA/DROUGHTS/PASTURES

64

NORTHCOTE, K.H./SKENE, J.K.M.

1972

AUSTRALIAN SOILS WITH SALINE AND SODIC PROPERTIES.

CSIRO, SOIL PUBLICATION 27. 62 P.

SALT-AFFECTED SOILS INCLUDE SOILS IN WHICH THE GROWTH OF PLANTS IS SUBNORMAL OR RESTRICTED TO HALOPHYTES, SOILS WITH TEXTURAL CONTRASTS IN THE PROFILE DUE TO SALTS, AND SOILS WITH ABNORMALLY HIGH AMOUNTS OF SOLUBLE SALTS. THEY ARE SUBJECT TO SECONDARY SALINIZATION DUE TO THE ACCUMULATION OF SOLUBLE SALTS NEAR THE SURFACE AS A CONSEQUENCE OF IRRIGATION, AGRICULTURE OR CLEARING OF THE NATIVE VEGETATION. INDICATIONS ARE THAT 85,000 HA OF IRRIGATED SOILS AND NOT LESS THAN 197,000 HA OF DRY-LAND AGRICULTURAL SOILS ARE AFFECTED IN THIS WAY. DRY-LAND SALTING IS EXTENSIVE IN THE SUBHUMID WHEAT LANDS OF WESTERN AUSTRALIA AND NORTHWEST VICTORIA DUE TO CHANGES IN THE HYDROLOGIC CYCLE CAUSED BY CLEARING AND REDUCED TRANSPIRATION. THIS RESULTS IN SALINE SEEPAGES ON LOWER SLOPES AND SALINITY ON VALLEY FLOORS DUE TO CAPILLARY CONTACT WITH SALINE GROUNDWATER. RECLAMATION METHODS INCLUDE GRAZING CONTROL, SUITABLE CULTIVATION AND THE USE OF SALT-TOLERANT PLANTS. SCALDING OF ALKALINE SODIC DUPLEX SOILS IS EXTENSIVE IN THE PASTORAL COUNTRY OF WESTERN NEW SOUTH WALES. SECONDARY SALINITY OCCURS IN POORLY-DRAINED IRRIGATED SOILS IN THE MURRAY VALLEY ASSOCIATED WITH THE DEVELOPMENT OF SOIL WATERTABLES, BOTH UNDER HORTICULTURE AND UNDER IRRIGATED PASTURES. RECLAMATION INCLUDES TILE DRAINAGE, PUMPING AND PONDING.

WESTERN AUSTRALIA/SALINE SOILS/SODIUM-AFFECTED SOILS/SOIL-WATER-PLANT RELATIONSHIPS/SOIL PROFILES/VICTORIA/IRRIGATION/LAND RECLAMATION/RANGE MANAGEMENT/HALOPHYTES

65

OGILVIE, C.

1947

THE HYDROLOGY OF COOPER'S CREEK.

QUEENSLAND DEPARTMENT OF PUBLIC LAND, BRISBANE, BUREAU OF INVESTIGATION, TECHNICAL BULLETIN 1:36-70.

QUEENSLAND/HYDROLOGY

66

OVINGTON, J.D. ET AL

1972

A STUDY OF THE IMPACT OF TOURISM AT AYERS ROCK, MT. OLGA NATIONAL PARK.

AUSTRALIA, DEPARTMENT OF THE INTERIOR, CANBERRA. 143 P.

ASSESSES THE ECOLOGICAL IMPACT OF TOURISM IN AN ARID ZONE NATIONAL PARK. SEVERAL SITES AFFECTED BY EXCESSIVE USE ARE EXAMINED IN DETAIL. CHANGES INCLUDE DEGRADED SAND DUNE ECOSYSTEMS THROUGH TRAMPLING BY PHOTOGRAPHERS AND OTHER LOCAL EXAMPLES OF DESTROYED VEGETATIVE COVER, RECOMMENDS MANAGEMENT IN TERMS OF 'RECREATIONAL CARRYING CAPACITY'.

AYERS ROCK/TOURISM/NATIONAL PARKS/ENVIRONMENTAL IMPACT/ECOLOGY/ SAND DUNES/NORTHERN TERRITORY

67

PHILLIPS, J.R.H.

1962

BERRIGAN SANDHILLS -- STUDIES IN STABILIZATION.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 18:56-61.

NEW SOUTH WALES/SAND DUNES/EROSION CONTROL

68

PICK, J.H.

1942

AUSTRALIA'S DYING HEART: SOIL EROSION IN THE INLAND.

MELBOURNE UNIVERSITY PRESS, MELBOURNE. 90 P.

SOIL EROSION/DEGENERATION

69

QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRY, BRISBANE, DIVISION OF LAND UTILISATION

1974

WESTERN ARID REGION, LAND USE STUDY.

SAME AS AUTHOR. TECHNICAL BULLETIN 2(1). 131 P.

A COMPREHENSIVE MULTIDISCIPLINARY STUDY BY A NUMBER OF AUTHORS OF 150,000 SQ. KM OF PASTORAL LAND IN SOUTHWESTERN QUEENSLAND IN THE 100-400 MM RAINFALL ZONE, MAPPED INTO 53 LAND SYSTEMS. THE ERRATIC RAINFALL IS CONSIDERED TO MAKE THE AREA QUITE UNSUITABLE FOR AGRICULTURE. ATTENTION IS DRAWN TO OVER-STOCKING AND DENUDATION OF SOILS, BOTH OF WHICH MUST BE AVOIDED IF THE REGION IS TO BE MAINTAINED AS A VIABLE ECOSYSTEM.

QUEENSLAND/RAINFALL/OVERGRAZING/ENVIRONMENTAL IMPACT/DENUDATION/RANGE MANAGEMENT

70

QUEENSLAND DEPARTMENT OF THE CO-ORDINATOR-GENERAL OF PUBLIC WORKS, ARTESIAN WATER INVESTIGATION COMMITTEE

1954

ARTESIAN WATER SUPPLIES IN QUEENSLAND: REPORT FOLLOWING FIRST INTERIM REPORT (1945) OF COMMITTEE APPOINTED BY THE QUEENSLAND GOVERNMENT TO INVESTIGATE CERTAIN ASPECTS RELATING TO THE GREAT ARTESIAN BASIN (QUEENSLAND PORTION) WITH PARTICULAR REFERENCE TO THE PROBLEM OF DIMINISHING SUPPLY (WITH APPENDICES).

SAME AS AUTHOR. 79 P.

GEOLOGICAL, PHYSICAL AND CHEMICAL ASPECTS OF THE PROBLEM OF DIMINISHING WATER SUPPLY IN THE GREAT ARTESIAN BASIN. PEAK FLOW OF 351 MILLION GALLONS A DAY IN 1914 RAPIDLY FELL TO 230 MILLION GALLONS. ADDITIONAL FLOWS FROM NEW BORES WERE INSUFFICIENT TO OVERTAKE THE DECLINE IN FLOWS OF EXISTING BORES. FEARS OF SUPPLIES IN THE BASIN GIVING OUT AS SEVERAL HUNDREDS OF BORES CEASED FLOWING. BASIN IS A TRUE ARTESIAN SYSTEM HOWEVER, AND ULTIMATELY A STEADY STATE WILL BE REACHED WHEREBY RECHARGE WILL EQUAL WITHDRAWALS. IT IS ESTIMATED THAT RECHARGE IS OF THE ORDER OF 130 MILLION GALLONS PER DAY AND THAT PERMANENT DISCHARGE FROM FLOWING BORES IN QUEENSLAND WILL BE OF THE ORDER OF 110 MILLION GALLONS PER DAY. IT IS SOUND POLICY TO REGULATE FLOW TO SEASONAL REQUIREMENTS IN THE INTERESTS OF CONSERVATION, BUT WHILE DIMINISHED FLOWS CONSTITUTE A DISABILITY THEY IN NO WAY THREATEN THE PASTORAL INDUSTRY. SALINITY OF MUCH OF THE ARTESIAN WATER IS TOO GREAT FOR PROLONGED IRRIGATION OF MOST SOILS.

QUEENSLAND/GROUNDWATER BASINS/WATER LEVEL FLUCTUATIONS/RECHARGE/WITHDRAWAL/ WATER YIELD/BOREHOLES/WATER SHORTAGE/SALINE WATER/WATER MANAGEMENT/ARTESIAN WELLS

71

RATCLIFFE, F.N.

1936

SOIL DRIFT IN THE ARID PASTORAL AREAS OF SOUTH AUSTRALIA.

CSIR, PAMPHLET 64. 84 P.

SOUTH AUSTRALIA/RANGES/SOIL EROSION

72

RATCLIFFE, F.N.

1937

FURTHER OBSERVATIONS ON SOIL EROSION AND SAND DRIFT WITH SPECIAL REFERENCE TO SOUTHWESTERN QUEENSLAND.

CSIR, PAMPHLET 70. 28 P.

DEFINES SALTBUSH, ACACIA AND SANDHILL COUNTRY AND TRANSITION TYPES IN TERMS OF VEGETATION, TOPOGRAPHY AND SOILS AND DISCUSSES THE DIFFERING SUSCEPTIBILITY OF EACH TYPE OF COUNTRY TO SOIL AND SAND DRIFT. CONSIDERS FACTORS RESPONSIBLE FOR DETERIORATION IN EACH DESERT TYPE UNDER GRAZING, PARTICULARLY THE NATURE OF PASTOPAL SETTLEMENT AND LAND USE. THE GREATEST EXTENT OF EROSION AND DRIFT HAS OCCURRED IN SALTBUSH COUNTRY DUE TO OVERGRAZING BY SHEEP, WHEREAS EROSION IN SANDHILL COUNTRY IS MAINLY DUE TO RABBITS PREVENTING THE REGENERATION OF TREES AND SHRUBS. AGGRAVATING FACTORS HAVE BEEN A RUN OF DRY SEASONS, OVER-SUBDIVISION AND THE EXTENSION OF PASTORAL SETTLEMENT INTO UNSUITABLE AREAS. REHABILITATION INVOLVES REVEGETATION AND STABILIZATION. VARIOUS SCHEMES ARE DISCUSSED. FUTURE PASTORAL DEVELOPMENT MUST MAINTAIN AN EQUILIBRIUM BETWEEN VEGETATION AND STOCKING RATES, AND LAND TENURE AND MANAGEMENT MUST BE ADJUSTED ACCORDINGLY. PROVISION OF UNSTOCKED BUFFER AREAS AND RESTRICTION ON TIMBER CLEARING ARE ALSO PROPOSED.

QUEENSLAND/SOIL EROSION/OVERGRAZING/SHEEP(DOMESTIC)/DROUGHTS/DEGENERATION/ LAND RECLAMATION/RANGE MANAGEMENT/ENVIRONMENTAL IMPACT/PLANT COMMUNITIES/ SOIL-WATER-PLANT RELATIONSHIPS/LAGOMORPHA/REVEGETATION

73

RATCLIFFE, F.N.

1959

THE RABBIT IN AUSTRALIA. IN J.A. KEAST, R.L. CROCKER AND C.S. CHRISTIAN, EDS., BIOLOGY AND ECOLOGY IN AUSTRALIA, P. 454-464.

W. JUNK, THE HAGUE.

LAGOMORPHA/ECOLOGY/ENVIRONMENTAL IMPACT

74

ROWAN, J.N.

1971

SALTING ON DRYLAND FARMS IN NORTHWESTERN VICTORIA.

VICTORIA SOIL CONSERVATION AUTHORITY, MELBOURNE. 53 P.

SALTING OF SOIL SURFACES, WITH THE DEVELOPMENT OF SALT PANS, HAS AFFECTED 3,600 HA, OR LESS THAN 1 PERCENT OF THIS AREA OF RIVERINE PLAINS TRAVERSED BY OLDER N-S RIDGES AND E-W SAND DUNES. SALTING HAS OCCURRED PARTICULARLY AT THE LOWER MARGINS OF DUNES AND IN INTER-RIDGE DEPRESSIONS DUE TO INCREASED SEEPAGE OF SOIL WATER CONSEQUENT ON THE CLEARING OF AN ORIGINAL DEEPER-ROOTED VEGETATION, INCLUDING MALLEE EUCALYPTUS, AND ITS REPLACEMENT BY SHALLOW-ROOTED CROPS AND DRY LAND FALLOWING TO CONSERVE MOISTURE. THIS HAS INCREASED THE AMOUNT OF WATER PERCOLATING TO DEEP IN THE DUNES, AND IN THE AMOUNT OF SOIL-SEEPAGE. ON THE MORE OPEN PLAINS, PARTICULARLY IN THE LOW-LANDS, SALTING IS ASSOCIATED WITH HIGHER GROUNDWATER TABLES. THE SALT IN THE SOILS AND THE GROUNDWATER THIS AREA MAY HAVE COME FROM PRIOR STREAM SYSTEMS. PREVENTION WILL NECESSITATE THE MINIMIZATION OF SEEPAGE BY DRYING OUT THE DUNES THROUGH THE PLANTING OF DEEPER-ROOTED CROPS SUCH AS LUCERNE; FORMER CONSERVATIONAL PRACTICES TO COMBAT WIND EROSION, SUCH AS THE ESTABLISHMENT OF A SHALLOW-ROOTED VEGETATION COVER, WERE INADEQUATE IN THIS RESPECT.

SALINITY/PANS/SEEPAGE/DRY FARMING/FALLOWING/VICTORIA

75

ROYAL COMMISSION, NEW SOUTH WALES

1901

REPORT AND SUMMARY OF EVIDENCE OF THE ROYAL COMMISSION TO INQUIRE INTO THE CONDITIONS OF THE CROWN TENANTS, WESTERN DIVISION OF NEW SOUTH WALES.

GOVERNMENT PRINTER, SYDNEY.

AUSTRALIA/NEW SOUTH WALES

76

ROYAL COMMISSION, QUEENSLAND

1951

REPORT OF THE ROYAL COMMISSION APPOINTED TO INVESTIGATE CERTAIN MATTERS RELATING TO THE PASTORAL INDUSTRY IN QUEENSLAND.

GOVERNMENT PRINTER, BRISBANE.

QUEENSLAND/AUSTRALIA/AGRICULTURE/LIVESTOCK

77

ROYAL COMMISSION, WESTERN AUSTRALIA

1940

REPORT OF THE ROYAL COMMISSION APPOINTED TO ENQUIRE INTO AND REPORT UPON THE FINANCIAL AND ECONOMIC POSITION OF THE PASTORAL INDUSTRY IN THE LEASEHOLD AREAS IN WESTERN AUSTRALIA.

GOVERNMENT PRINTER, PERTH.

WESTERN AUSTRALIA/AUSTRALIA/ECONOMIC IMPACT/LIVESTOCK/AGRICULTURE

78

SAINI, B.S.

1971

BUILDING DESIGN AND PLANNING FOR SELF-SUSTAINING COMMUNITIES IN REMOTE LOCALITIES OF AUSTRALIA'S ARID ZONE. IN W.G. MCGINNIES, B.J. GOLDMAN, AND P. PALLORE, EDS., FOOD, FIBER, AND THE ARID LANDS, P. 103-122.

UNIVERSITY OF ARIZONA PRESS, TUCSON. SWRA W72-03657.

OALS/BUILDING DESIGN/DESIGN CRITERIA/AUSTRALIA/ARID LANDS/HEAT/SHELTERS/ PHYSIOLOGICAL PSYCHOLOGY/STRESS(PSYCHOLOGY)/HUMAN BEHAVIOR/LAND USE/NEW SOUTH WALES/ENVIRONMENTAL ENGINEERING/QUEENSLAND/VICTORIA/NORTHERN TERRITORY/WESTERN AUSTRALIA

79

SLATYER, R.O./PERRY, R.A. EDS.

1969

ARID LANDS OF AUSTRALIA.

AUSTRALIAN NATIONAL UNIVERSITY PRESS, CANBERRA. 321 P.

CHAPTERS ON CLIMATE, VEGETATION AND WATER RESOURCES TREAT THE GENERAL PHYSICAL GEOGRAPHY OF ARID AUSTRALIA. LANDFORMS ARE DISCUSSED UNDER PHYSIOGRAPHIC DESERT TYPES, E.G. SHIELD AND RIVERINE DESERT, FOR WHICH AN INHERENT STABILITY UNDER LANDUSE IS CLAIMED. AN ESTIMATE OF THE RELATIVE DEGRADATION OF THE VARIOUS RANGELAND TYPES UNDER GRAZING IS PRESENTED. THE VULNERABLE SHRUBLANDS (E.G. SALTBUSH COUNTRY) ARE THE MOST DEGRADED, THE PASTORALLY VALUABLE TUSSOCK GRASSLANDS, FLOOD PLAIN COUNTRY AND EXTENSIVE LOW WOODLANDS EXHIBIT MODERATE DETERIORATION, WHILE THE LESS-USED SPINIFEX GRASSLANDS AND DESERT UPLANDS ARE LEAST DEGRADED. RANGELAND CONDITION IS RELATED TO THE HISTORY OF PASTORAL SETTLEMENT, PARTICULARLY IN THE EARLY YEARS, UNDER AN UNCERTAIN CLIMATE. THE CONSEQUENCES OF DEGRADATION INCLUDE SERIOUS EROSION OF SHRUBLANDS, SHRUB INVASION OF WOODLANDS, AND REPLACEMENT OF EDIBLE AND PALATABLE SPECIES BY INEDIBLE OR ANNUAL SPECIES. THE SYSTEM OF LAND TENURE RECOMMENDED AS MOST APPROPRIATE TO THESE CONDITIONS IS THAT OF LONG-TERM LEASEHOLDS.

PHYSICAL GEOGRAPHY/CLIMATE/VEGETATION/SOIL-WATER-PLANT RELATIONSHIPS/ DEGENERATION/LANDFORMS/OVERGRAZING/HISTORY/RANGES/SOIL EROSION/LAND TENURE/ LAND MANAGEMENT

80

SPECHT, R.L.

1972

THE VEGETATION OF SOUTH AUSTRALIA, 2D ED.

GOVERNMENT PRINTER, ADELAIDE. 328 P.

VEGETATION IS DISCUSSED IN RELATION TO ITS ENVIRONMENT UNDER LAND SYSTEMS. THE 'ARID' LAND SYSTEMS OCCUPY 5/6THS OF SOUTH AUSTRALIA AND MORE THAN HALF OF THIS AREA HAS BEEN SUBDIVIDED AND GRAZED BY SHEEP WITH INCREASING PRESSURE ON THE LAND SYSTEMS OVER THE PAST CENTURY. TIMBER HAS BEEN REMOVED FOR CONSTRUCTION AND FENCING. CONSEQUENT THINNING OF TREES AND SHRUBS HAS REDUCED SURFACE SOIL STABILITY AND DIMINISHED THE DROUGHT PASTURE RESERVE, WITH CONSEQUENT SURFACE EROSION BY WIND AND WATER. THIS HAS LED IN TURN TO POOR REGENERATION, EVEN WHERE SHEEP ARE EXCLUDED AND RABBIT NUMBERS REDUCED. SEVERITY OF GRAZING AND TRAMPLING BY SHEEP INCREASES TOWARDS WATERING POINTS. WITHIN 400 M MOST SHRUBS ARE DESTROYED AND THERE IS WIDESPREAD TRAMPLING AND EROSION OF THE SURFACE SOIL; BETWEEN 400 AND 1600 M FEW HEALTHY YOUNG SALT-BUSHES ARE FOUND BECAUSE OF LACK OF REGENERATION UNDER MODERATELY HEAVY GRAZING. PASTURES MORE THAN 3600 M FROM THE WATERING POINT REMAIN RELATIVELY UNGRAZED. IN BADLY ERODED AREAS, LACK OF A SEED RESERVOIR, OF A SUITABLE SEED BED, AND PROTECTION OF SEEDLINGS FROM GRAZING SEVERELY LIMIT REGENERATION. EXAMPLES OF SLOW REGENERATION ARE CITED AND ILLUSTRATED FROM THE KOONAMORE VEGETATION RESERVE, SOUTH AUSTRALIA.

OVERGRAZING/SOIL EROSION/SHEEP(DOMESTIC)/DEGENERATION/VEGETATION/SOUTH AUSTRALIA/TIMBER/SHRUBS/SOIL-WATER-PLANT RELATIONSHIPS/ANIMAL DAMAGE/STOCK WATER

81

SQUIRES, U.R.

1970

GRAZING BEHAVIOUR OF SHEEP IN RELATION TO WATERING POINTS IN SEMI-ARID RANGELANDS. IN INTERNATIONAL GRASSLANDS CONGRESS, 11TH, SURFERS PARADISE, 1970, PROCEEDINGS, P. 880-884.

QUEENSLAND PRESS, ST. LUCIA.

SHEEP(DOMESTIC)/OVERGRAZING/RANGES/STOCK WATER

82

STANNARD, M.E.

1957

EROSION SURVEY OF THE SOUTH WEST COBAR PENEPLAIN.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 13:176-186, 14:30-45, 14:137-156.

NEW SOUTH WALES/SOIL EROSION/SURVEYS

83

STANNARD, M.E.

1963

EROSION SURVEY OF THE CENTRAL EAST-DARLING REGION.

NEW SOUTH WALES SOIL CONSERVATION SERVICE, JOURNAL 19:69-80.

NEW SOUTH WALES/SOIL EROSION/SURVEYS

84

STOCKER, G.C.

1966

EFFECTS OF FIRES ON VEGETATION IN THE NORTHERN TERRITORY.

AUSTRALIAN FORESTRY 30(3):223-230.

NORTHERN TERRITORY/BURNING/ENVIRONMENTAL IMPACT

85

TAYLOR, G.

1926

THE FRONTIERS OF SETTLEMENT IN AUSTRALIA.

GEOGRAPHICAL REVIEW 16(1):11-25.

HISTORY/SETTLEMENTS

86

TEAKLE, L.J.H./BURVILL, G.H.

1945

THE MANAGEMENT OF SALT LANDS IN WESTERN AUSTRALIA.

WESTERN AUSTRALIA DEPARTMENT OF AGRICULTURE, JOURNAL 22(2):87-93.

WESTERN AUSTRALIA/SALINE SOILS/LAND MANAGEMENT

87

VICTORIA, STATE RIVERS AND WATER SUPPLY COMMISSION, ARMADALE

1969

PROCEEDINGS OF A CONFERENCE ON LAND DRAINAGE, RECLAMATION AND GROUNDWATER UTILIZATION IN THE RIVERINE PLAINS OF NORTHERN VICTORIA.

SAME AS AUTHOR. 98 P.

24,000 HA OF THE RIVERINE PLAINS OF NORTHERN VICTORIA ARE AFFECTED BY SALINITY AND A LARGER AREA IS SUBJECT TO POTENTIAL SALT DAMAGE. THIS HAS RESULTED FROM IRRIGATION AND DRYLAND AGRICULTURE IN AN AREA OF SHALLOW GROUNDWATER WHICH TENDS TO INCREASE IN AMOUNT AND APPROACH THE SURFACE TOWARDS THE NORTH OF THE AREA. THE PROBLEM HAS EXISTED FOR 50 YEARS. THE AREA OF SALT-AFFECTED LAND IS DECREASING, ALTHOUGH IN SOME AREAS THE SITUATION IS DETERIORATING. THIS REPORT DISCUSSES REMEDIAL MEASURES SUCH AS LAND-DRAINAGE, PUMPING AND THE DIVERSION OF SALINE WATER TO WASTE, INCLUDING DIVERSION TO EVAPORATING PONDS.

VICTORIA/SALINITY/IRRIGATION/DRY FARMING/PLAINS/LAND RECLAMATION/ GROUNDWATER/DRAINAGE/PUMPING/WASTE WATER TREATMENT

88

WARREN, M.N. ED.

1945

BRADFIELD SCHEME FOR WATERING THE INLAND: METEOROLOGICAL ASPECTS.

AUSTRALIA, COMMONWEALTH METEOROLOGICAL BUREAU, MELBOURNE, BULLETIN 34. 82 P.

CONTAINS REPORTS BY VARIOUS AUTHORITIES ON PRACTICABILITY OF CHANGING THE CLIMATE OF CENTRAL AND WESTERN AUSTRALIA. COMMITTEE DENIES THE LIKELIHOOD OF IMPROVING CLIMATE BY A LARGE-SCALE IRRIGATION AND WATER STORAGE SCHEME, CITING MANY STATISTICS AND REPORTS BY KINEER, HOLZMAN AND OTHERS DENYING EFFECT OF STORAGE OR CULTIVATION ON RAINFALL OR TEMPERATURE OTHER THAN IN THE IMMEDIATE VICINITY.

METEOROLOGY/IRRIGATION/CLIMATIC CHANGE/WEATHER MODIFICATION

89

WHITE, R.C.L.

1965

DROUGHT AND EFFECTIVE RAINFALL FREQUENCY IN PASTORAL NEW SOUTH WALES, WEST OF THE WHEAT BELT.

AUSTRALIA, COMMONWEALTH BUREAU OF METEOROLOGY, MELBOURNE, TECHNICAL PUBLICATION 5.

NEW SOUTH WALES/DROUGHTS/RAINFALL/METEOROLOGY/RANGES

90

WILCOX, D.G./MCKINNON, E.

1972

A REPORT ON THE CONDITION OF THE GASCOYNE CATCHMENT.

WESTERN AUSTRALIA DEPARTMENT OF AGRICULTURE, PERTH, PASTORAL APPRAISEMENT BOARD. 334 P.

A SURVEY OF SOIL AND VEGETATION RESOURCES OF THE GASCOYNE RIVER CATCHMENT, WESTERN AUSTRALIA. RANGE CONDITION, WIND AND WATER EROSION STATEMENTS ARE PRODUCED FOR THE AREA OF 64,000 SQ. KM, OF WHICH 9,300 SQ. KM WERE FOUND TO BE VERY SERIOUSLY DEGRADED DUE TO OVERUSE; 32,300 SQ. KM TO BE IN A SERIOUS CONDITION BUT USABLE, AND 22,400 SQ. KM NOT BADLY DEGRADED.

WESTERN AUSTRALIA/CATCHMENTS/SOIL-WATER-PLANT RELATIONSHIPS/DEGENERATION/SOIL EROSION/OVERGRAZING/RANGES

91

WILLIAMS, M.

1969

THE SPREAD OF SETTLEMENT IN SOUTH AUSTRALIA. IN F. GALE AND G.H. LAWTON, EDS., SETTLEMENT AND ENCOUNTER, P. 1-50.

OXFORD UNIVERSITY PRESS, MELBOURNE.

SOUTH AUSTRALIA/HISTORY/SETTLEMENTS

92

WILSON, A.D. ED.

1974

STUDIES OF THE AUSTRALIAN ARID ZONE. 2: ANIMAL PRODUCTION.

CSIRO, DIVISION OF LAND RESOURCES MANAGEMENT. 160 P.

CONTAINS CONTRIBUTION BY J.H. LEIGH ON DIET SELECTION AND THE EFFECTS OF GRAZING ON THE COMPOSITION AND STRUCTURE OF ARID AND SEMIARID VEGETATION. HE CONSIDERS EFFECTS OF GRAZING OF DESERT VEGETATION, PARTICULARLY IN SOUTHEASTERN ARID AUSTRALIA. SELECTIVE GRAZING HAS LOCALLY REMOVED EDIBLE SPECIES AND LED TO THEIR REPLACEMENT BY INEDIBLE SPECIES. NON-SELECTIVE GRAZING HAS CAUSED SOME PRISTINE NATIVE PERENNIALS TO BE REPLACED BY THOSE OF LOWER SUCCESSIONAL STATUS. WITH FURTHER DEGENERATION, ANNUAL AND EXOTIC SPECIES HAVE INVADED, INCREASED AND ULTIMATELY DOMINATED. THE DIVERSITY OF COMMUNITIES HAS DECREASED, DENSITIES OF TREED COMMUNITIES AND WOODLAND COMMUNITIES HAVE BEEN LOWERED. CERTAIN SHRUB WOODLAND COMMUNITIES HAVE DISAPPEARED. DISCLIMAX GRASSLANDS HAVE EXTENDED. SOIL STABILITY HAS IN PLACES DIMINISHED, AND LED TO THE DEVELOPMENT OF SCALDS. REFERENCE IS ALSO MADE TO THE FOLLOWING CHAPTERS: BEHAVIOURAL ASPECTS OF THE ECOLOGY OF ARID-ZONE MAMMALS, WITH PARTICULAR REFERENCE TO CATTLE, BY W.A. LOW; BEHAVIOUR OF SHEEP AND CATTLE IN THE MORE ARID AREAS OF AUSTRALIA, BY B.J. LYNCH; AND VEGETATION IMPROVEMENT AND GRAZING MANAGEMENT, BY O.B. WILLIAMS.

PLANT COVER/OVERGRAZING/PLANT COMMUNITIES/SOIL EROSION/ECOLOGY/MAMMALS/SHEEP(DOMESTIC)/CATTLE/RANGES/RANGE MANAGEMENT/REVEGETATION/DEGENERATION/VEGETATION CHANGE

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