

he
tuman
mpac

Man's Role in
Environmental Change

ANDREW COUDIE

Basil Blackwell • Oxford

Contents

	ACKNOWLEDGEMENTS	ix
1	INTRODUCTION	1
	The development of ideas	
	The development of human population and stages of cultural development	
	Man the hunter and gatherer	
	Man the cultivator, keeper, and metal worker	
	Modern industrial and urban man	
2	MAN'S IMPACT ON VEGETATION	25
	Introduction	
	The use of fire	
	Fires: natural and man-made	
	The temperatures attained in fires	
	Some consequences of fire suppression	
	Some effects of fire on vegetation	
	The role of grazing	
	Deforestation	
	Secondary rain forest	
	The role of man in the creation and maintenance of savanna	
	The spread of desert vegetation on desert margins	
	The Maquis of the Mediterranean lands	
	The prairie problem	
	Post-glacial vegetational change in Britain	
	Introduction, invasion, and explosion	
	Air pollution and its effects on plants	
	Miscellaneous causes of plant decline	
	The change in genetic diversity	
3	MAN'S IMPACT ON ANIMALS	66
	Introduction	
	Domestication of animals	

Contents

	Dispersal and invasions of animals	
	Miscellaneous causes of animal contractions and decline	
	The expansion of animal populations under man's influence	
	Animal extinctions	
4	THE IMPACT OF MAN ON THE SOIL	105
	Introduction	
	Salinity: natural sources	
	Increased salinity brought about by man	
	The spread of salinity	
	Consequences of salinity	
	Reclamation of salt-affected lands	
	Lateritization	
	Accelerated podzolization and acidification	
	Soil structure alteration	
	Soil drainage and its impact	
	Soil fertilization	
	Fires and soil	
	Soil erosion-. general considerations	
	Soil erosion associated with deforestation and agriculture	
	Soil erosion produced by fire	
	Soil erosion associated with construction and urbanization	
	Attempts at soil conservation	
5	THE HUMAN IMPACT ON THE WATERS	140
	Man's deliberate modification of rivers	
	Urbanization and its effects on river flow	
	Deforestation and its effect on river flow	
	Changes in lake levels brought about by man	
	Changes in ground-water conditions	
	Water pollution	
	Chemical pollution by agriculture	
	Other sources of chemical pollution	
	Deforestation and its effects on water quality	
	Thermal pollution	
	Pollution with suspended sediments	
6	MAN AS A GEOMORPHOLOGICAL AGENT	187
	Introduction	
	Landforms produced by excavation	
	Landforms produced by construction and dumping	
	Accelerated sedimentation	

Ground subsidence	
Arroyo trenching	
Accelerated weathering	
Accelerated mass movements	
Deliberate modification of channels	
Non-deliberate river channel changes	
Reactivation and stabilization of sand dunes	
Accelerated coastal erosion	
Man's influence on seismicity and volcanoes	
7 THE IMPACT OF MAN ON CLIMATE AND THE ATMOSPHERE	239
World climates	
TheCO ₂ problem	
Other gases	
Aerosols	
Thermal pollution	
Vegetation and albedo	
Forests and rain	
The possible effects of water diversion schemes	
Lakes	
Urban climates	
Smoke haze and photochemical smog	
Rainmaking and other methods of deliberate climate modification	
Conclusion: the climatic impact	
Air pollution: some further effects	
8 CONCLUSION	273
The power of non-industrial and pre-industrial man	
The proliferation of impacts	
Changes are reversible	
The susceptibility to change	
Man or nature?	
REFERENCES	285
INDEX	312