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Gemsbok from the Namib sand dunes and gravel plains use water holes at times. During the calving season the females and young spend longer periods sheltering there.  
 (Photo: Dr. M. K. Seely).

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# KUISEB RIVER

## Life sustaining barrier

by Dr. M. K. Seely, Director, Desert Ecological Research Unit, Gobabeb.

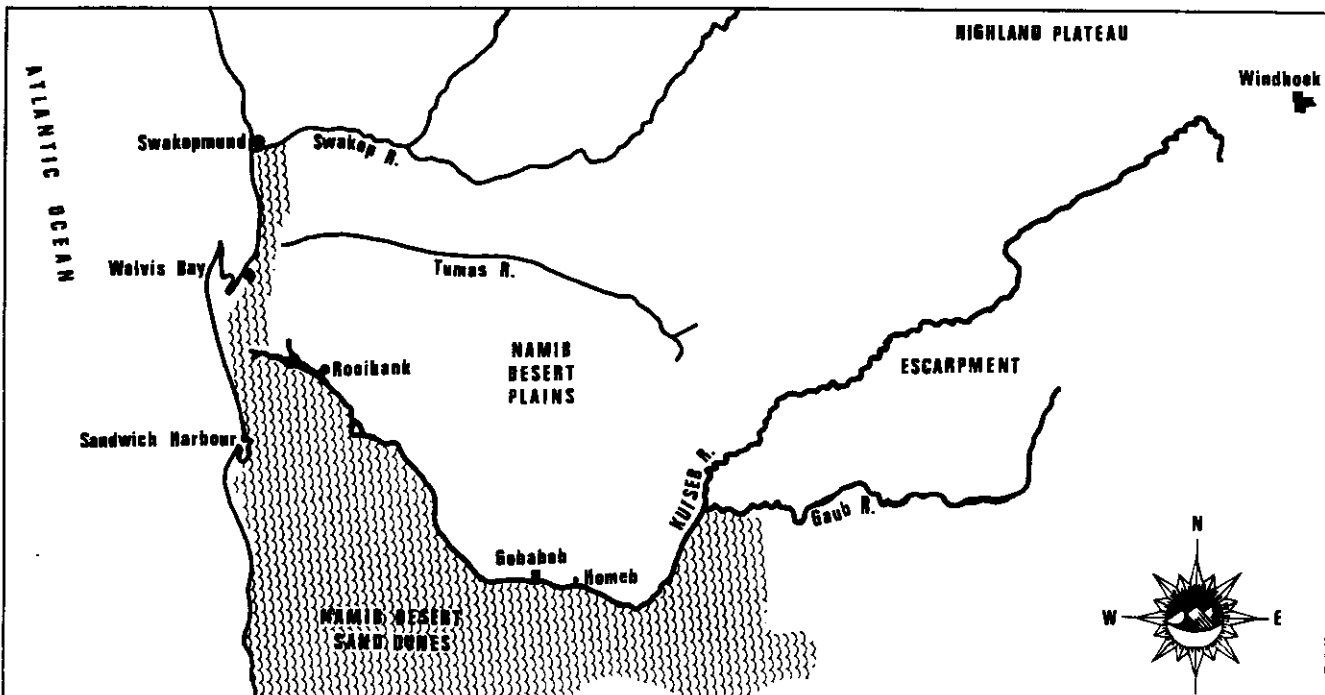
**T**HE Kuiseb River is the most southern and perhaps most important of the larger rivers crossing the central Namib Desert to the Atlantic Ocean. As is so well illustrated by the now famous Gemini V photograph of the central Namib of South West Africa taken by NASA in 1965, the Kuiseb forms the dividing line between the southern dune sea and the central Namib plain.

Throughout its course the Kuiseb takes on many characters. In the highland plateau west of Windhoek, the head waters are to be found. It is here that most of the water which flows in the usually dry riverbed falls as rain. This is an area of fertile grazing for cattle and sheep and, with the exception of Walvis Bay, is the most densely populated area throughout the course of the Kuiseb. The river then flows through the great western escarpment of the southern portion of the African continent where occasional rains fall, adding water to the Kuiseb. Farming is also practised in this area although

the rainfall is less and the terrain rougher than on the highland plateau. From there the second half of the Kuiseb's course passes through the Namib to reach the south Atlantic near Walvis Bay. Before reaching the coastal area most of its course in the desert flows through the Namib Desert Park and is thus frequented by much game.

Also living along the Kuiseb River are the Topnaar Hottentots. Their villages are scattered along the lower 140 kilometres of the river course. Their goats browse and thrive on the riverine forest while they maintain wells in the Kuiseb bed to provide water for themselves and the goats. At the lowest end of the river near the Kuiseb Delta the settlement of Rooibank and the town of Walvis Bay are situated.

From the above it can be observed that all the input





**Gemini V-space photo of Walvis Bay region showing how the Kuseb River (centre) abruptly stops the northward movement of the vast, southern dunes.**

*(With acknowledgement to United States Space Agency).*

into the Kuseb occurs in the highlands while the major usage of the water occurs in its lower reaches. All of the water falling in the Kuseb catchment area, except for that amount retained by the newly constructed Friedenau Dam and numerous smaller farm dams, either percolates into the ground to replenish underground supplies or flows into the Kuseb bed. In the lower portion of the Kuseb the river carries out two very important functions. One is to provide water for the coastal towns of Walvis Bay and Swakopmund as well as to Rooibank on the Kuseb and the Rio-Tinto — Rössing Uranium Mine inland from Swakopmund. This usage of Kuseb water is presently being extensively developed as the Central Namib Desert Water Scheme. The second function, and perhaps

the most important, which the Kuseb has probably been carrying out for thousands of years, is to hold back the southern sand sea.

During a drier age, perhaps 10 000 years ago, the sand dunes were not held back by flowing water scouring out the river bed and crossed the Kuseb River near the coast. These travelling dunes were then stopped, as they are still held back today, by the Swakop River with its better defined lower river bed and perhaps more regular flow.

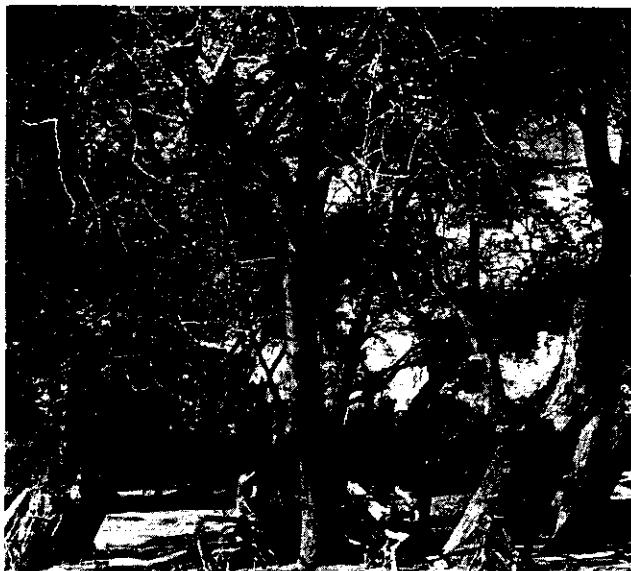
Today however at each flooding the force of flowing water helps to clear the river bed of its accumulated sand. Small sand dunes measured at Gobabeb, the Namib Desert Research Station which is situated 100 kilometres upstream from Walvis Bay, travel at the rate of approximately seven metres per year. Near Walvis Bay the well known dunes which cross the road travel at a much greater rate.

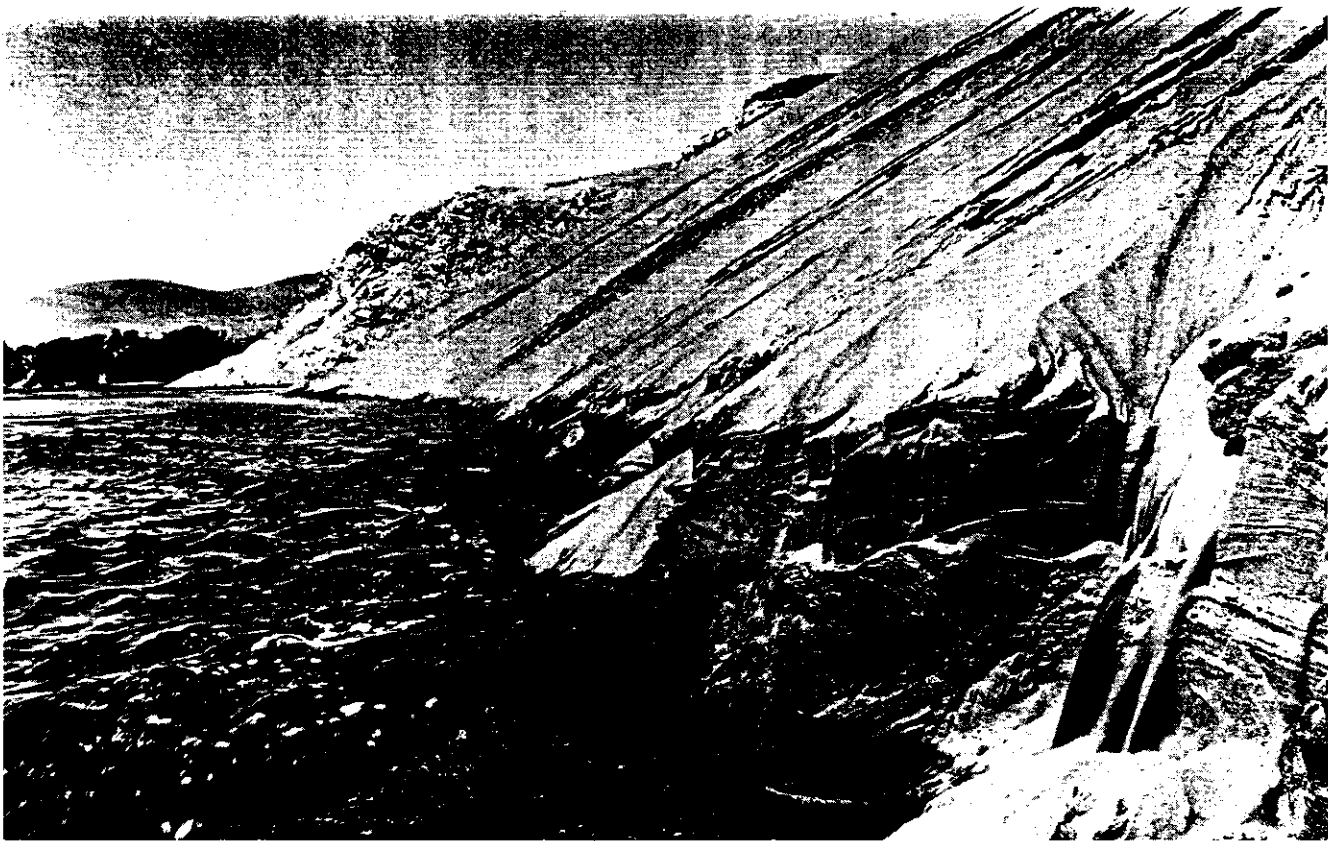
Stengel (*The Rivers of the Namib and their discharge into the Atlantic — Part I: Kuseb and Swakop. Scient. Pap. Namib Desert Res. Sta., 22: 1964*) mentions a quantity of 16 000 000 cubic metres of sand washed out from the Kuseb bed below Rooibank and transported to the coast in 1963. The Kuseb does not flow every year as Henno Martin has noted in his well known book "The Sheltering Desert". In recorded history, from 1837 to 1963, the Kuseb reached the Atlantic approximately 15 times. But in its upper reaches, even in the eastern part of the Namib, the Kuseb flows more often. At Gobabeb the Kuseb has run every year but one since observations were started in 1963.

Besides this very important function of clearing the river bed of sand, the flow of the Kuseb contributes water for the support of life in the Namib Desert Park. The pools of water remaining after a flood are visited by numerous animals, permanent residents of the Kuseb canyon as well as visitors from the desert plains north of the river and sand dunes to the south. Underground Kuseb water maintains an extensive riverine forest in

**Underground water in the Kuseb bed supports an extensive riverine forest on the lower reaches of the Kuseb River. Anaboom and camelthorn trees are the dominant species.**

*(Photo: Dr. L. Schulze-Prozesky).*





the otherwise sparsely vegetated central Namib. The river bed with its trees and occasional water holes can be thought of as an extended oasis between the sand dune and plains desert. Thus the Kuiseb provides both food — through the vegetation it supports — and water for numerous desert inhabitants which otherwise would not be able to survive in the central Namib.

Although only 440 kilometres in length and flowing only a short time in those years that it does flow, the Kuiseb River has an importance greater than its size: firstly maintaining the sand dune sea on its southern bank and secondly as the source of life for numerous and diverse central Namib inhabitants. Careful management rather than indiscriminate draining of this valuable resource would be required all along the Kuiseb's course to maintain sufficient supplies for all the users of Kuiseb water in the future.

Each time that it flows the Kuiseb River transports away the dune sands which have been blown into its bed during the previous year. Through this action the water prevents the sand from crossing the river and covering the Namib plains.

(Photo: A. Bannister).

Perennial water holes in the desert area of the Kuiseb's course provide water for the desert dwelling wildlife.

(Photo: Dr. M. K. Seely).



#### Kuiseb River Floods at Gobabeb

Season	Flood days per month						Total in Season
	July — June	Dec.	Jan.	Feb.	Mar.	April	
1964/65	..	—	2	11	3	10	26
1965/66	..	—	—	10	8	—	18
1966/67	..	—	—	10	12	—	22
1967/68	..	10	—	1	—	—	11
1968/69	..	2	—	1	14	1	18
1969/70	..	—	—	—	1	—	1
1970/71	..	—	—	23	5	6	34
1971/72	..	—	8	—	13	22	43
Total days per month		12	10	56	56	39	