



HĀMUN, DARYĀČA-YE I. GEOGRAPHY

HĀMUN

i. GEOGRAPHY

The Sistān basin is the easternmost endorheic basin in Persia, draining a watershed 350,000 km², of which 26 percent, comprising especially the areas of the western divide, is located in Persia. The depression itself is almost 500 km long from east to west and approximately 300 km from north to south. It consists of a series of desert plateaus surrounded by mountains on all sides. The plateaus are covered by extensive sand dunes in the Rigestān desert (see [DESERT](#)) in the southeast and elsewhere by vast pebble-strewn *dašt* (q.v.) areas, for example Dašt-e Mārgo and Dašt-e Kāš. The plateaus and deserts surrounding the lowest part of the basin are structured by more or less deeply incised and terraced valleys and wadis. Among the rivers that periodically or episodically drain into the Daryāča-ye Hāmun at the bottom of the depression are the rivers Helmand, Hārutrud, Farāhrud, and Kāšrud, all originating in the western Hindu Kush range. They flow through deltas, located at 500 m (+ò 30 m) above sea level, into a flat, very shallow basin, its bottom covered mainly by fine-textured clays and loams. The basin is differentiated into different segments (Hāmun-e Šāberi, Hāmun-e Puzak, and Gowd-e Zereh, see below), which are inundated more or less regularly according to the amount of water



received from the rivers. The lake, commonly known as Hāmūn-e Helmand, covers an area up to 3,000 km² and under favorable runoff conditions reaches a maximum depth of approximately 10-11 m. When the water level drops, the lake is reduced to three separate bodies of water (Hāmūn-e Šāberi, Hāmūn-e Puzak, and Gowd-e Zereh) with a total area of about 1,200 km², varying in size from year to year (Fischer, pp. 76-81). Gowd-e Zereh, the lowest section of the lake, is 467 m above sea level. It is separated from the main basin by a low threshold and receives water only when the runoff of the main tributaries is extremely high.

The entire region is extremely arid, characterized by a dry continental climate, with cold winters and very hot summers. The average annual rainfall recorded at Zābol over a period of more than twenty years was approximately 55 mm, with the extremes of 11.9 mm in 1352 Š./1973 and 108.9 mm in 1342 Š./1963 (Stöber, p. 12). As in other desert environments, occasional rainstorms may cause severe, even disastrous damage. The annual average temperature is approximately 21.6° C, but winter frosts of minus 12° C have also been recorded, and in summer the temperature may exceed 50° C. The average yearly amplitude of variation of monthly mean temperatures is more than 25° C.

Because of extremely high temperatures, the Daryāča-ye Hāmūn basin is notorious for summer low-pressure systems, tempered by regular north-to-northwest winds, known as “the wind of 120 days” (*bād-e šad o bist ruz*). They blow large quantities of very fine sediments (clays and loams) out of the depression, thus contributing to permanent erosion by deflation. The winds, coupled with high temperatures, are the cause of extremely high rates of potential evaporation, which can be crudely estimated at a minimum of 3,000 mm, probably higher.

The water regime of the Daryāča-ye Hāmūn is entirely dependent on its four affluents. The Helmand river, well over 1,000 km long and draining an area approximately 170,000 km², is the most important tributary of the lake (Costantini and Tosi, p. 174; Meder, p. 33), emptying mainly into the Hāmūn-e Puzak in Afghanistan. Both the size of the lake as a whole and its water level depend on the quantity of water discharged by the Helmand river, which peaks between March and May, when meltwater from the Hindu Kush mountain range reaches the basin. The lowest discharge of water is in late summer and early autumn.



The typical sequence of natural ecosystems surrounding the lake is determined by the regularity and length of the inundations. The waters of the separate lakes are basically free of vegetation, though providing important habitats for fish and fowl. Immediately surrounding these areas of open water are thickets of reeds (*neyzār*; *Phragmites communis*) and rushes (*Typha angustifolia*) standing 3-5 m high and able to survive not only seasonal variations in water level but also several years of drought. These plants are used by the local population as fodder, material for construction and for mats, and fuel. A combination of grasses, herbs, and especially rushes known locally as *tazg* (*Scirpus micronatus*) constitute the outermost ring, important for grazing cattle, goats, and sheep. The rushes are used not only in construction but also in making boats. Altogether, the Daryāča-ye Hāmūn is a unique and ecologically unparalleled area within Persia and Afghanistan. Unlike many other endorheic basins in arid central Persia, it is regularly replenished by sweet waters. This special situation has contributed to a unique history and to the development of agriculture and animal husbandry in the present.

BIBLIOGRAPHY

Vasilii Vladimirovich Barthold, *Istoriko-geograficheskiĭ obzor Irana*, tr. Svat Soucek as *An Historical Geography of Iran*, Princeton, N.J., 1984, pp. 66-67.

L. Costantini and Maurizio Tosi, "The Hilmand Culture: The Environment of Southern Sistan in the Third Millenium B.C. and its Exploitation by the Proto-urban Hilmand," in William Charles Brice, ed., *The Environmental History of the Near and Middle East Since the Last Ice Age*, London and New York, 1978, pp. 165-83.

Eckart Ehlers, *Iran: Grundzüge Geographischen Landeskunde*, Darmstadt, 1980, pp. 85-86, 441-42.

William Bayne Fischer, "Physical Geography," in *Camb. Hist. Iran* I, pp. 3-110, esp. pp. 76-78.



Gazeteer of Afghanistan II, pp. 103-5.

Daniel B. Krinsley, *A Geomorphological and Paleoclimatological Study of the Playas of Iran*, U.S. Department of the Interior, Geological Survey, Final Scientific Report—Contract No. PRO CP 70-800, 2 vols., Washington, D.C., 1970, esp. pp. 179-88.

Oskar G. Meder, *Klimaökologie und Siedlungsgeschichte auf dem Hochland von Iran in vor- und frühgeschichtlicher Zeit*, Marburger Geographische Schriften 80, Marburg, 1979.

Georg Stöber, *Die Sayad: Fischer in Sistan*, Sistan-Projekt 3, Marburger Geographische Schriften 85, Marburg, 1981 (with detailed bibliography of historical literature of the 19th and early 20th centuries).