

Chapter 15

AQUATIC BIODIVERSITY IN ARID AND SEMI-ARID ZONES OF ASIA AND WATER MANAGEMENT

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1. INTRODUCTION

Contrary to the general impression, and paradoxical as it may appear, arid and semiarid regions are often quite rich in water resources and have many aquatic habitats. Some of the world's large rivers such as Nile, Indus and Murray–Darling, pass through the arid regions though their source of water lies far outside the arid zone (Williams 2000). Many large and deep lakes, mostly brackish or saline, also occur within the arid regions; for example Caspian Sea, Aral Sea, Dead Sea, Lake Chad, and the Great Salt Lake. There are hundreds of seasonal and ephemeral streams and thousands of shallow, freshwater and saline lakes (now better known as wetlands) of varying size and depth, many of which are permanent.

Yet, assessments of and conservation strategies for biodiversity in arid and semiarid regions tend to overlook the aquatic habitats. Our knowledge of the arid and semiarid zone ecosystems has been synthesized in several relatively recent books (Goodall and Perry 1979; West 1983; Evenari et al. 1985, 1986). These publications rarely refer to aquatic habitats or their biota. Only during the past few years, the richness and peculiarities of biodiversity in aquatic habitats of arid regions of Australia, Africa and North America have started receiving some attention (Robarts and Bothwell 1992, King et al. 1996; Witham et al. 1998; Williams 1998ab, 2000; Brendonck and Williams 2000), but the aquatic ecosystems of arid and semiarid regions of Asia (Figure 1) remain almost totally ignored. A recent contribution on

wetlands of the world's arid zones to the First Conference of Parties of the UN Convention to Combat Desertification made no reference to any wetland in Asia though the list of 39 references included four from Asia (Kingsford 1997). However, a more recent paper by Mirabzadeh (1999) discussed in some detail the nature, distribution, values, threats and future of wetlands in the entire arid region of Asia except South Asia, parts of China and Mongolia. In another recent publication, valuable information on fisheries, plankton and benthos in many lakes of the Central Asian region has been summarized (Petr 1999a).

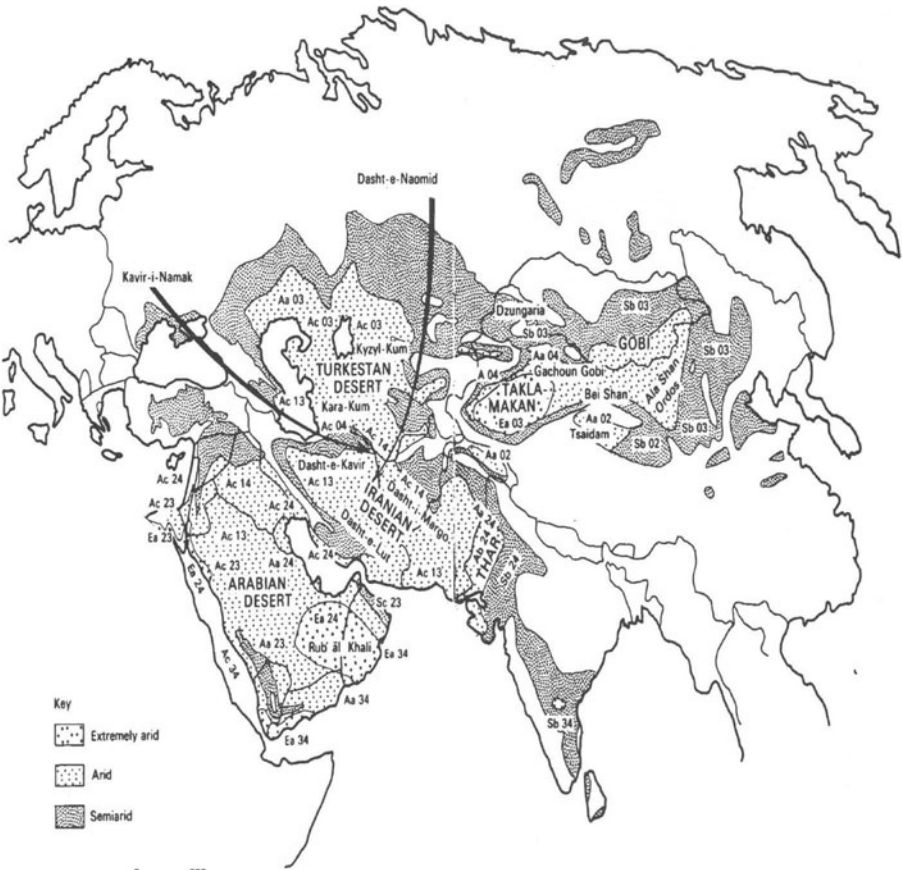


Figure 1. Arid regions of Asia according to Meigs (1953). E = extremely arid, A = arid, S = Semiarid; a = no distinct season of rain, b = summer rain, c = winter rain; first digit represents mean temperature of the coldest month and second digit represents mean temperature of the hottest month: 0 = <0°C, 1 = 0–10°C, 2 = 10–20°C, 3 = 20–30°C, 4 = >30°C. Reproduced from Shimida (1985).