3. DESCRIPTION OF THE SAMPLING SITE
(by U.H. Humpesch)

3.1 Hydrological characteristics at the water gauge Kienstock (48°24'N, 15°51'E; 2021.21 km from the river mouth) (Hydrographisches Zentral-büro, 1984).

Catchment area: 95 970 km^2
Mean annual values (based on data between the period 1976 and 1980)
Discharge (MQ): 1899 m^{3}sec^{-1}
[minimum (NNQ): 723 m^{3}sec^{-1}; maximum (HHQ): 6949 m^{3}sec^{-1}]
Run-off rate (Mq) = 19.8 l sec^{-1}km^{-2}
Run-off height (h$_A$) = 625 mm
Discharge load (A) = 59940.6 h km^3

3.2 Sampling site

The sampling site includes a stretch of the river with a length of about 34 km, beginning with the dam of the impoundment at km 1980.40 (from the river mouth) (Fig. 3.1). Because of the dam, there is a gradient in the water velocity along the longitudinal axis of the impoundment section of the river starting with a mean velocity of about 1.5 – 2 m sec^{-1} at the beginning of the impoundment and ending with that of 0.2 – 0.4 m sec^{-1} near the dam (Fig. 3.1a). The latter gradient leads to an increase in sedimentation towards the dam and consequently in a change of the particle size of the bottom substratum from a modal size range of 18 – 22 mm (overall range 14 – 41 mm) to that of 0.2 mm (Fig. 3.1c).
The river banks are stabilised with large boulders of a size of about 25 cm in diameter. The latter are covered with macrophytes only near the dam (Fig. 3.1a$_{1,2}$). Three different sampling locations have to be conside-

Fig. 3.1. Information on the sampling site between kilometre 1980.40 and 2015 (from the river mouth). (a) Cross sections: showing the width, the depth and the banks of the river; the water velocity near the surface and near the bottom at 90 m and 210 m from the right bank for a discharge of 1800 m^3 sec^{-1} (MQ): (1) At kilometre 2005; (2) At kilometre 1985. (b) Longitudinal section: showing the different water level and the different structure of the bottom between kilometre 2015 and 1980.40; ▨ = gravel, ▨ = sand, ▨ = silt, ▥ = the dam, ▤ = zone of free water. (c) Representative particle size distribution of bed material [diameter of the particle size (in mm) in percent]: 1. at kilometre 2005; 2. at kilometre 1994; 3. at kilometre 1984.

red, the free water zone, the river bottom and the river banks. Sampling the free water zone and the river bottom involves a major change in the water velocity and water depth along the longitudial axis (Fig. 3.1b). In addition, the modal size of the substratum decreases progressively downstream from km 2005 to km 1980.4 at the dam. Therefore three definite zones of bottom types have to be considered: the gravel zone which consists of the typical substratum for the unimpounded part of the Danube in Austria (upstream km 1995), the sand zone (between km 1987 and km 1995) and the mud zone (between the dam and km 1987) (Fig, 3.1b,c)

Reference

Hydrographisches Zentralbüro im Bundesministerium für Land- und Forstwirtschaft (ed.) (1984). Die Abflüsse in Österreich im Zeitraum 1971-1980. – Beiträge zur Hydrographie Österreichs 48/II.