## Kajian Ekosistem dan Sedimentasi Empangan Muda, Pedu dan Ahning

Kajian Ekosistem dan Sedimentasi Empangan Muda, Pedu dan Ahning, Kedah telah dilaksanakan oleh NAHRIM bermula pada Jun 2021 untuk Lembaga Kemajuan Pertanian Muda (MADA). Objektif utama kajian ini adalah untuk menilai dan menentukan profil kualiti air dan status kesihatan ekosistem bagi Empangan Muda, Pedu dan Ahning termasuk kestabilan stratifikasi air terutama di Empangan Ahning, Kedah dan menentukan kadar sedimentasi empangan dari kawasan tadahan Empangan Muda dan Pedu, Kedah. Kajian ini diketuai oleh Pusat Kajian Kualiti Air dan Alam Sekitar NAHRIM dan dilaksana secara bersama dengan Pusat Kajian Sumber Air dan Perubahan iklim. Kajian melibatkan empat skop penilaian iaitu penilaian hidrologi dan takungan empangan, penilaian sedimentasi, penilaian kualiti air dan penilaian kesihatan ekosistem tasik.

Bagi tujuan penilaian takungan empangan, Pasukan NAHRIM telah melaksanakan kerja pengukuran batimetri untuk Empangan Muda dan Empangan Pedu. Kapasiti takungan empangan dan jangka hayat empangan dikira berdasar perbandingan dengan nilai rekabentuk asal empangan. Pengukuran kualiti air dan kesihatan ekosistem dibuat untuk kesemua empangan berdasar Piawai dan Kriteria Kebangsaan Kualiti Air Tasik dan indek trofik dan biodiversiti. Penilaian sedimentasi dari kawasan tadahan dilaksana menggunakan kaedah Revised Universal Soil Loss Equation (RUSLE) di mana perbandingan dibuat berdasar Rainfall/Runoff Erosivity Index (R factor), Cover Management Factor (C) dan Conservation Practice Factor (P) yang berbeza.




**Rajah 1:**
**Lawatan Bersama Lembaga Kemajuan Pertanian Muda dan Jabatan Perhutanan**

***Figure 1:***
***Field visit with Muda Agriculture Development Authority and Forestry Department***

### *Sedimentation and Ecosystem Study for Muda, Pedu and Ahning Dams*

*A Study on the Ecosystem and Sedimentation of Muda, Pedu and Ahning Dams, Kedah has been undertaken by NAHRIM starting in June 2020 for Muda Agricultural Development Authority (MADA). The main objective of this study is to evaluate and determine the water quality profile and ecosystem health status for Muda, Pedu and Ahning Dams including water stratification stability especially in Ahning Dam, Kedah and determine dam sedimentation rate from Muda and Pedu Dam catchment area, Kedah. The study was led by the NAHRIM Water Quality and Environmental Research Center and was conducted jointly with the Water Resources and Climate Change Research Center. The study involves four scopes of assessment namely hydrological and dam storage assessment, sedimentation assessment, water quality assessment and lake ecosystem health assessment.*

*For the purpose of dam storage assessment, the NAHRIM Team has carried out bathymetric measurement work for Muda Dam and Pedu Dam. The dam storage capacity and the lifespan of the dam were calculated based on comparison with the original design value of the dam. Evaluations of water quality and ecosystem health were made for all reservoirs based on National Lake Water Quality Criteria and Standards and trophic and biodiversity indices. Sedimentation assessments from the two catchment areas were carried out using the Revised Universal Soil Loss Equation (RUSLE) method where comparisons were made based on different Rainfall/Runoff Erosivity Index (R factor) Cover Management Factor (C) and Conservation Practice Factor (P).*



**Rajah 2: Mesyuarat Bersama pihak MADA**

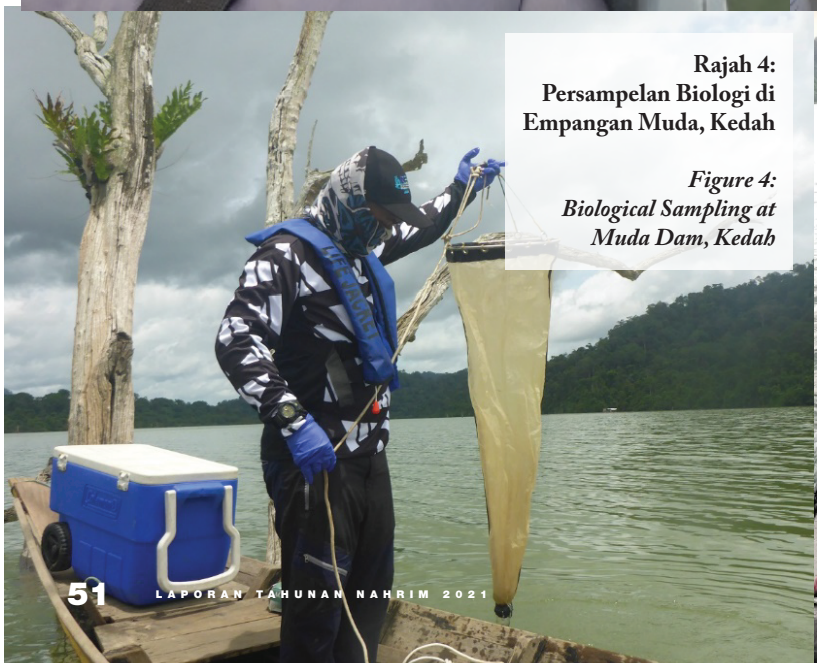
***Figure 2: Meeting with MADA***





**Rajah 3: Persampelan kualiti air di Tasik Ahning, Kedah**

***Figure 3: Water quality sampling at Ahning Lake, Kedah***



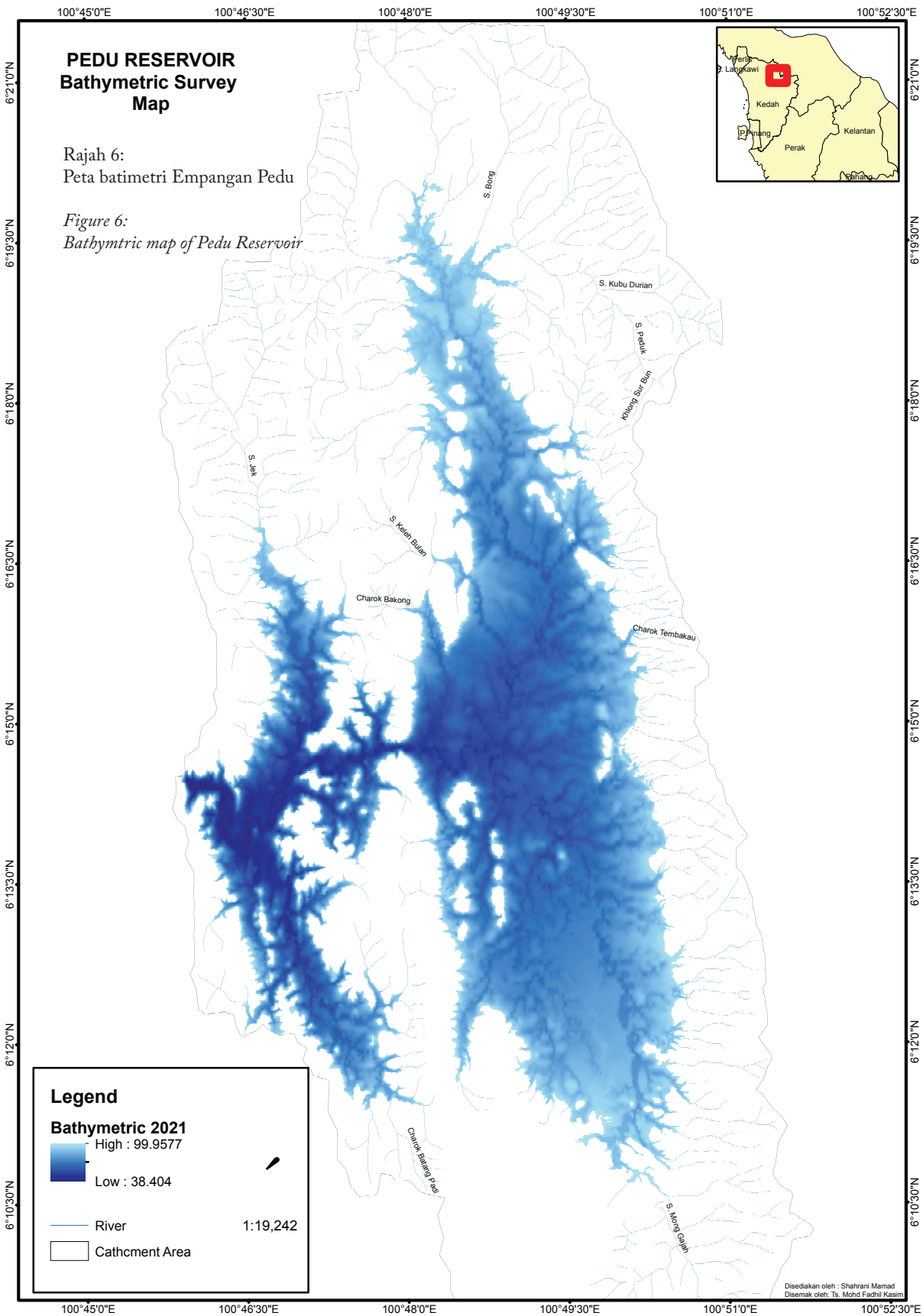
**Rajah 4: Persampelan Biologi di Empangan Muda, Kedah**

***Figure 4: Biological Sampling at Muda Dam, Kedah***



**Rajah 5: Pengukuran batimetri di Tasik Muda**

***Figure 5: Bathymetry survey at Muda Reservoir***




Rajah 6:
Peta batimetri Empangan Pedu

*Figure 6:*
*Bathymtric map of Pedu Reservoir*