



Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme



Second Water Quality Testing Pilot Project for Schools Training Workshop, Lower Songkhram River Basin, Thailand Demonstration Site

Following on from the first training workshop in May 2005, the Second Water Quality Testing Pilot Project for Schools in the Lower Songkhram River Basin (LSRB) Training Workshop was held on 4 November 2005.

Ten schools are involved in the Water Quality Testing Pilot Project, all located next to or nearby the Songkhram River. On this occasion, only nine schools were able to send along five student representatives (ranging in age from 12 or 13 in Primary Year 6, to 16 or 17 years old in Secondary Year 5) and two teachers who have been supervising or monitoring the testing of water quality in the Nam Songkhram River.

The workshop was designed as an opportunity for students and their supervising teachers to summarise and feedback the results of their testing to date; discuss and solve any problems they may have been experiencing during the testing; revise testing techniques; look at simple data storage and analysis techniques; understand the importance of dissolved oxygen for aquatic life and a practical visit to a nearby water treatment plant. As a result of the refresher training, the students should be better equipped and more knowledgeable for implementing the second half of the pilot project water quality testing period.



A teacher from Sam Pong School shows the participants the home made Secchi disk he designed for measuring water turbidity



Students revise the technique for testing dissolved oxygen of water samples with guidance from Walai Rukavej staff

As before, the workshop was a collaborative effort between staff from the Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme (MWBP) Demonstration Site who arranged and helped facilitate the workshop, and staff from Walai Rukavej Botanical Research Institute (WRBRI) and Mahasarakham University acted as the lead trainers, monitors and gave technical input to the pilot project. Five staff from WRBRI travelled up from Mahasarakham to coordinate the workshop and analyse the preliminary results from the participating schools. As at the last workshop, they provided some fun and games (*sanuk*) to keep the students happy, alert and occupied right through the day. This is a vital and popular part of such trainings with mixed age kids, or their attention levels can rapidly wane, especially after lunch!

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The schools involved have been active the past five months collecting water quality samples on a weekly basis and testing them for temperature, pH, turbidity, dissolved oxygen (DO) and biological oxygen demand (BOD), all using simple and cheap test kits that cost less than \$ 5.00 which are supplied by WRBRI. The low price should ensure the sustainability of the project after the pilot phase for those schools which wish to carry on, while the tests for DO and BOD are practical lessons in chemistry in themselves, allowing students to learn about certain chemical reactions and the process of titration. Hence, this project is as much about the process of ensuring replicability and sustainability in adoption of water quality testing in the local curriculum, as it is about the quality of the results themselves, although these are important too.

To date the schools have had mixed fortunes and results in regularly collecting samples according to the recommended weekly timetable. While some schools appear to have taken the process on as part and parcel of their regular curriculum, other schools have struggled somewhat to collect the water samples regularly due to variety of reasons. But the majority of schools who have diligently collected samples and tested them on a weekly basis, now have a solid set of baseline data from which to start noting seasonal trends or any anomalies which might occur.



A raw water sample is taken from the Sri Songkhram hospital water treatment plant inlet, to be tested for dissolved oxygen and biological oxygen demand (BOD)



Another sample is taken at the final pond of a small artificial wetland, after the wastewater has passed a series of anaerobic and aerobic treatment stages

The afternoon session started with a presentation on the relationships between DO and other water quality parameters, such as temperature and examined the importance of oxygen to aquatic life, especially fish. The structure and function of gills was explained to the participants and a formalin-preserved set of gills was handed around for examination. Following the classroom theory, the participants were led to the nearby water treatment plant of Sri Songkhram District hospital, where a staff member explained the steps in treating raw sewage through anaerobic and aerobic means, including trickling through an artificial wetland containing reed beds and water hyacinth plants as the final step in the purification process. The guided tour was also mixed with a practical demonstration in measuring the changes in DO content of the primary waste water to the time it is released into the external environment, with the water quality test kits used by the schools and verifying the results with a Hach DO meter.

The teachers and students returned to their respective schools with a reinforced understanding of water quality parameters and a new sense of the important role that schools can play as local custodians and watchdogs over the environmental health of the Nam Songkhram river. The students will now continue to monitor the river water quality on a regular basis up to February or the end of the school academic year,

before coming together again in March to present the results, swap lessons learned and evaluate the overall exercise in a final workshop.



A teacher from Kham Takla Secondary School gives feedback to participants from the practical experience of testing and monitoring water quality by her schoolclass, while Khun Pattaraporn, a researcher and workshop facilitator from Walai Rukavej BRI, Mahasarakham University listens.

