# BioRA DSS Workshop

## Recap Day 3

BioRA DSS Technical Workshop  
Phnom Penh, Cambodia  
15-19 February 2016

## Thursday Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 AM</td>
<td>Yesterday’s Recap Agenda for the Day</td>
<td>Henry Manguerra</td>
</tr>
<tr>
<td>08:45 AM</td>
<td>Introduction to Hands-on Testing Process</td>
<td>Cate Brown</td>
</tr>
<tr>
<td>09:00 AM</td>
<td>Hands-on practical and testing adjustments</td>
<td>BioRA consultants</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Hands-on practical and testing adjustments</td>
<td>BioRA consultants</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>LUNCH</td>
<td></td>
</tr>
<tr>
<td>01:00 PM</td>
<td>PARALLEL SESSION (UP TO TWO FROM EACH COUNTRY) – INFORMALLY DISCUSS OUTSTANDING COUNCIL STUDY ISSUES (ROOM 105 TENTATIVE)</td>
<td></td>
</tr>
<tr>
<td>03:00 PM</td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>03:30 PM</td>
<td>Hands-on practical and testing adjustments</td>
<td>BioRA consultants</td>
</tr>
<tr>
<td>05:00 PM</td>
<td>Close for the day</td>
<td></td>
</tr>
</tbody>
</table>
Summary

<table>
<thead>
<tr>
<th>Workshop Objective</th>
<th>Coverage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Transfer - Technical Report</td>
<td>Yes</td>
<td>Preliminary Calibration – Volume 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Status and Trends</td>
</tr>
<tr>
<td>Knowledge Transfer – DSS</td>
<td>Yes</td>
<td>Hands-on</td>
</tr>
<tr>
<td>DSS Testing</td>
<td>Yes</td>
<td>Introduction/Context</td>
</tr>
<tr>
<td>Compilation of Comments – Technical</td>
<td>Yes</td>
<td>See next slides</td>
</tr>
<tr>
<td>Report and DSS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Knowledge Transfer

- Presentation and discussion on the following:
  - Calibration results – Geomorphology, Fish, Herpetofauna (Interim Report Volume 1)
  - Status and Trends (Interim Report Volume 2)
  - Users Guide (Interim Report Volume 3)

- Hands-on
  - Interrogating and exploring scenarios
  - Running scenarios
Comments

- Notion: FA1 characterized by bedrock channel, erosion will be limited
  - False notion because of the fact that the bedrock channel is overlain by a thick layer of sediments
  - Observation that the movement of sediment during the season (deposition and erosion/incision) could be as deep/thick as 9-10 meters
  - Field visit to Mekong River could have been educational
- Relative change in clarity between CS4 (25 percent reduction in sediment) and CS10 (75 percent reduction in sediment) is related to TSS threshold = 50 mg/l
  - Below this threshold, clarity increases tremendously
- Choice of sediment reduction (25 and 75 percent reductions) for CS4 and CS10 were completely arbitrary. They were not directly attributed to any water resources developments

Comments

- Changes in geomorphology is the next most important driver after flow, sediment, and water quality as all other ecosystem discipline indicators (e.g., vegetation, fish, herpetofauna, etc) also depend on it
- Selection of indicators is based on the major expected drivers. For example for fish indicators, the main drivers are:
  - Hydrological changes
  - Geomorphological changes
  - Food
  - Connectivity
- Other considerations for selecting indicators include data availability and time/budget constraints
  - Initial: 50 linked indicators/indicator/FA for fish
  - Current: 10-12 linked indicators/indicator/FA for fish
Comments

• For the overall results, in addition to seasonal means, provide also the annual means of changes in the indicator values
• Fish Diversity vs. Fish Abundance
  – Relative change in abundance in guild (and not individual species – or diversity)
• Onset of dry season, and onset of wet season – reiterated as important for migration and spawning and these are accounted for in the DSS
  – Indicators
  – CS3 includes the timing in addition to shortened session

Comments

• The completion/finalization of the response curves follows dependencies between disciplines
  – Geomorphology indicators can be completed without waiting for other ecosystem indicators
  – Fish and Herpetofauna depend on geomorphology and other ecosystem indicators such as vegetation
Comments

- On Thursday morning, review some of the basic concepts that were presented/discussed on Monday
- For testing on Thursday, we need to reinstall a clean copy of the DSS
- On Friday, dedicate a time to hear overall comments from MCs on the report and DSS (3:30 pm Friday)
  - In particular, need comments on S&T
- Presentation on exogenous factors
  - Not due to water resources development factors (e.g., hunting pressures, etc).
  - Combined and is meant to tease out the impact solely of water resources developments
- Comment on geographic units?
- Review how BioRA DSS will be used for assessment of cumulative scenarios

Overall Assessment Framework
Three Sequential Activities of the BioRA Team

- SETUP AND CONSTRUCT RESPONSE CURVES: Setup of the BioRA DSS which includes the construction of the response curves through KNOWLEDGE CAPTURE
  - Using Preliminary Reference Scenario

- CALIBRATE: Calibration of the BioRA DSS
  - Using Calibration Scenarios (and Test Scenarios)

- APPLY (ANALYSIS): Application of the BioRA DSS to assess development scenarios
  - Using Cumulative Scenarios 2007, 2020, and 2040

Overall Process Flow

Step 1: Select scenarios
Step 2: Select focus areas
Step 4: DRIFT Indicators
Step 5: Assign Reference Status and Trends
Step 6: Knowledge capture
  - Set up ECO-LMB
  - Create response curves
Step 7: Calibration
Step 8: Analysis
  - Run ECO-LMB for all scenarios and generate prediction of change

Formulate Dev Scenarios
Simulate Dev Scenarios (DSF, etc.)
Step 3: Model hydrology, hydraulics, sediments, WQ
Reference
ACTIVITY 1: SETUP

1. Select scenarios
2. Select focus areas
3. Model hydrology, hydraulics, sediments, WQ
4. DRIFT Indicators
5. Assign Reference Status and Trends
6. Knowledge capture
   - Set up ECO-LMB
   - Create response curves
7. Calibration
8. Analysis
   - Run ECO-LMB for all scenarios and generate prediction of change

ACTIVITY 2: CALIBRATION

1. Select scenarios
2. Select focus areas
3. Model hydrology, hydraulics, sediments, WQ
4. DRIFT Indicators
5. Assign Reference Status and Trends
6. Knowledge capture
   - Set up ECO-LMB
   - Create response curves
7. Calibration
8. Analysis
   - Run ECO-LMB for all scenarios and generate prediction of change
### ACTIVITY 3: APPLY

- **Step 1**: Select scenarios
  - Formulate Dev Scenarios
- **Step 2**: Select focus areas
  - Reference
  - Simulate Dev Scenarios (DSF, etc.)
- **Step 3**: Model hydrology, hydraulics, sediments, WQ
  - Run ECO-LMB for all scenarios and generate prediction of change
- **Step 4**: DRIFT Indicators
- **Step 5**: Assign Reference Status and Trends
  - Reference Formulate Dev Scenarios
  - Simulate Dev Scenarios (DSF, etc.)
- **Step 6**: Knowledge capture
  - Set up ECO-LMB
  - Create response curves
- **Step 7**: Calibration
  - Import Time Series
- **Step 8**: Analysis
  - Run ECO-LMB for all scenarios and generate prediction of change

### Reminders – Friday Wrap Up

<table>
<thead>
<tr>
<th>Workshop Objective</th>
<th>Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Transfer - Technical Report</td>
<td>MCs “good” understanding</td>
</tr>
<tr>
<td>Knowledge Transfer – DSS</td>
<td></td>
</tr>
<tr>
<td>DSS Testing</td>
<td>Suggestions for adjustments and concerns</td>
</tr>
<tr>
<td>Compilation of Comments – Technical Report and DSS</td>
<td>Written Comments on Reports</td>
</tr>
<tr>
<td></td>
<td>Any other Comments</td>
</tr>
</tbody>
</table>
Thank You