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Title	Proposed Role of the Asian Wetland Inventory (AWI) in the supply of the information needed for improved watershed management in Asia: Case Study Lake Kasumigaura and Tone River Basin
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Abstract	<p>As a result of rapidly escalating population growth at global level, watershed management becomes more and more important for maintaining water quality and natural resources. As the Ramsar Convention indicates, Wetland Inventory is an essential tool for collecting reliable knowledge and information for making decisions about the conservation and wise use of wetlands. It also assists Governments to identify important wetlands and prioritize their conservation and development initiatives in conjunction with management of natural resources, in particular, water, fisheries and/or forestry.</p> <p>The Asian Wetland Inventory (AWI) is an Asian wide project. The key features are its hierarchical and map-based approach with outputs at four levels of detail. The level of detail is related to the scale of the maps that are contained within a standardised Geographic Information System (GIS) format.</p> <p>This presentation demonstrates the proposed approach to the AWI using the Tone River Basin in Japan as an example.</p>
Key topics	watershed management, wetland inventory, GIS, Tone River, Kasumigaura

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Introduction and Background

Wetlands are commonly regarded as one of the most productive environments on Earth. Wetlands include ecosystems such as rivers, lakes and marshes, coastal mangrove forests, lagoons and salt marshes, shallow marine coral reefs, riverine floodplains and peat bogs. They provide many economic and ecological benefits - through wetland products in the form of fisheries and shellfish, groundwater replenishment, maintenance of water tables for agriculture, forestry and pastoral activities, water storage and flood control, shoreline protection and stabilisation, climate change mitigation, sediment and nutrient retention, water purification, habitats for biodiversity and opportunities for recreation and tourism.

With recent rapid population growth, there are serious water management problems. These include, for example, diminishing water supplies, water contamination, erosion, sedimentation, groundwater depletion, flood damage and climate change. According to the Stockholm Environment Institute, 48 countries in the world will suffer from acute water shortages in 2025 (Stockholm Environment Institute, 1997) and, while global warming starting to have a significant influence on large scale flooding of coastal plains in China, Egypt and Bangladesh, improved water management is becoming increasingly essential for preventing or minimizing the downstream consequences.

According to the Convention on Wetlands (Ramsar Convention), wetland inventory is a tool for identifying the function and values of wetlands, including ecological, social and cultural values. It is required for establishing a baseline for measuring future change in wetlands, for identifying their functions and values; for locating where wetlands are, and which are the priority sites for conservation. Wetland inventory is required for planning and managing wetlands at both practical and/or political levels and to enable comparisons between wetlands and management procedures to be made at different levels of government and management (local, national and international). To assess the current global situation and need for wetland inventory the Ramsar Convention commissioned the preparation of a comprehensive "Global Review of Wetland Inventories" (GRoWI) in 1998/99. GRoWI showed that the existing wetland inventory base was inadequate for assessing the distribution and different types of wetlands, the extent of likely impacts and vulnerability, the role of wetlands in climate change and the loss of wetland related economic and ecological values.

Although there is *A Directory of Asian Wetlands* that provided summary information on the status, threats and biodiversity significance of 947 wetland sites in 24 Asian countries (Scott 1989; Scott & Poole 1989), no updated information has been collected for the past 10 years. The Asian Wetland Inventory (AWI) aims to develop a region wide standard methodology for wetland inventory to:

- provide core data / information on Asian wetlands to support International Conventions and Treaties on Wetlands, Climate Change, Biodiversity, Migratory Species and Desertification, and their implementation by Governments;
- analyse long term trends in the status of Asian wetlands and their natural resources;
- enable regular revisions and updates of information on wetlands of national and international importance in Asia; and
- disseminate these analyses for wider consideration and use in sustainable development and conservation of wetland resources.

AWI approach

A principal purpose of the AWI is to delineate and map the wetland resources of Asia, taking into account wetland habitats from the intertidal zone to the uppermost reaches of all major river basins, and to store this information on a GIS. This exercise is to be undertaken at different scales with the amount of detail being dependent on the explicit purpose of the inventory and the size and importance of the wetland. Thus, a hierarchy of four scales of mapping are being used (see Figure-1)

- 1 Geographic regions with a map at a scale of 1:5 000 000
- 2 Wetland regions with maps at a scale of 1:1 000 000 to 1: 250 000
- 3 Wetland complexes with maps at a scale of 1:250 000 to 1:50 000
- 4 Wetland habitat with maps at a scale of 1:50 000 to 1:25 000

Figure 1: Wetland inventory hierarchical methodology – the four-level approach

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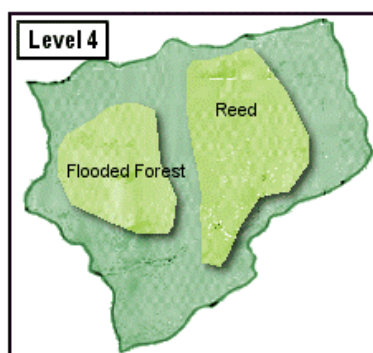
Level 1 - Geographic Regions Asia-wide
[MER - Mekong River Basin]



Level 2 - Wetland Regions
[MER/Lower Mekong/VN,CB]



Level 3 - Wetland Complexes
[MER/Lower Mekong/VN,CB/Plain of Reeds]



Level 4 - Wetland Habitats

The first two levels will provide the contextual basis for the inventory and provide the framework for further detailed wetland inventory and assessment. The third level will provide more information on core data attributes of wetland complexes and larger sites, while the fourth level will provide more information at the site/ habitat level. The hierarchy proposed is presented below.

Level 1: A broad-based geographical regionalisation of Asia will be developed on the basis of river basins. Region wide assessments of geology, land cover and climate will be included. These data will be used as a basis for a step-wise approach to producing an Asian-wide wetland inventory that will encompass regional analyses and develop more detail as site-specific information is collected. The regionalisation will provide a basis for prioritising the inventory effort, noting that Asia encompasses a large area and vastly different socio-economic groupings with the latter often providing the impetus for rapid wetland degradation and loss.

Level 2: A broad, map-based, geographic inventory will then be developed for each subregion of the identified river basin. On the assumption that wetlands within each subregion will share common characteristics, such as underlying geology, climate and rainfall, this will provide the baseline in which similar wetlands or "complexes" can be identified and categorised. A map of each region will be produced and will include assessment/listing of wetland types, a framework for understanding some of the large scale patterns that develop and maintain the wetlands, and a framework within which more detailed work of delineating wetland complexes can be efficiently and rapidly undertaken.

Level 3: A detailed inventory of specific wetland "complexes" identified within each subregion will be undertaken. Each wetland complex will exhibit different hydrological features, such as rainfall, water flow, regulation and seasonality of inundation. Data collection for wetland complexes will be efficient because similar information is needed for all wetlands within a complex. Information in the Level 3 inventory should be the minimum necessary for regional planning, management and generic monitoring. More detailed maps of the wetland sites will be produced at level 4.

Level 4: A site specific wetland inventory will identify all discrete wetland areas within each complex. Wherever possible map-based representations will be compiled. Detailed information on each wetland will include ecological units (habitats and biodiversity usage), threats, conservation status, human uses and criteria fulfilled under Conventions. This will provide precise information essential for wetland site planning, management and specific monitoring. It is anticipated that some, at least, of this effort will be undertaken in parallel with the above levels of analysis given the need to implement management action at individual sites.

A Case Study: Tone River Basin

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Tone River is one of the largest river systems in Japan. The total length of the river is about 322km and the extent of the catchment is about 17,000km². Lake Kasumigaura, the second largest lake in Japan, is located the lower reaches of the basin in the Ibaraki Prefecture, (36.1N, 140.2E).

Utilising the AWI approach to wetland inventory examples of maps and data sheets at levels 1, 2 and 3 will be demonstrated and the applicability thereof in other areas of Asia tested.

Reference

- Scott, D. (1989). *A Directory of Asian Wetlands*. IUCN, Gland Switzerland and Cambridge, U.K.
- Scott, D. and Poole, C (1989). *A Status of Overview of Asian Wetlands*. AWB Publication No. 53, Kuala Lumpur, Malaysia
- Finlayson C. M. and Howes, J. (2001). *A Manual for an Inventory of Asian Wetlands*
- Finlayson, C. et al (2000). *A Proposal for the Asian Wetland Inventory: Comprehensive Information Base for Wetland Conservation and Sustainable Development*.
- Stockholm Environmental Research Institute (1997). *Comprehensive Assessment of the Freshwater Resources of the World*