Ramsar framework for wetland inventory

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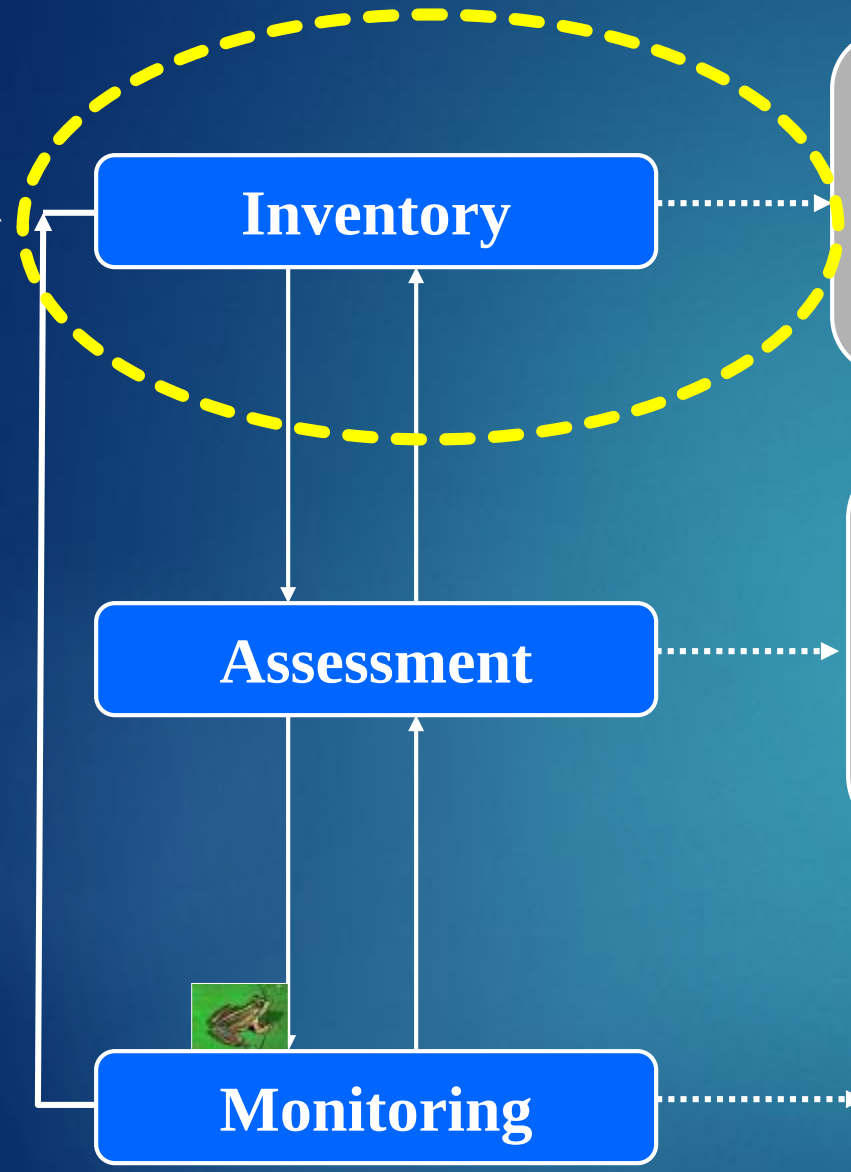


Collection of information to describe wetlands and to provide a basis for assessment and monitoring

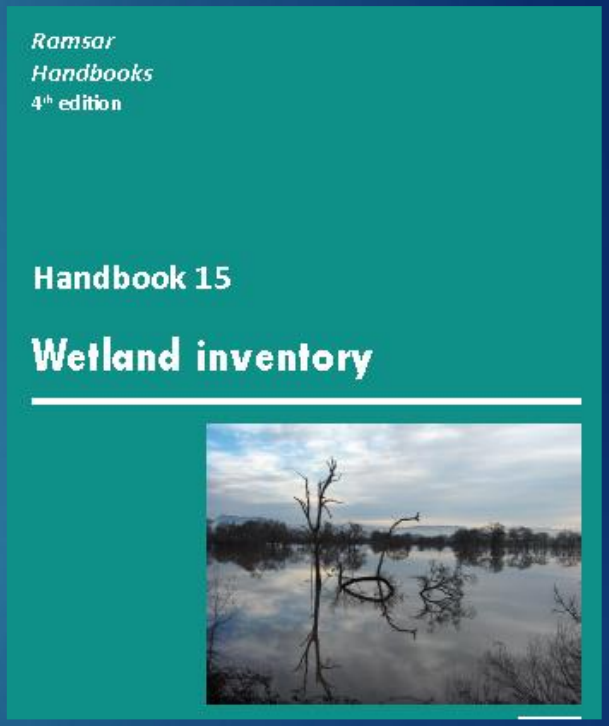
Identification of the status of and threats to wetlands and to provide a basis for monitoring

Collection of information for management purposes based on hypotheses derived from assessment

Ramsar framework for wetland inventory

- Ramsar Wise Use Handbook 15 provides guidance for designing a wetland inventory program that suits individual needs
- Downloadable from Ramsar web site

https://www.ramsar.org/sites/default/files/documents/pdf/lib/hbk4-15.pdf



Ramsar framework for wetland inventory

1. State the purpose and objective
2. Review knowledge and information base
3. Review existing inventory methods
4. Determine the scale and resolution
5. Establish a core or minimum data set
6. Establish a habitat classification
7. Choose an appropriate method
8. Establish a data management system
9. Establish time schedule and extent of resources
10. Assess the feasibility and cost effectiveness
11. Establish a reporting procedure
12. Establish a review and evaluation process


13. Plan a pilot study – test the methods

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1. State the purpose and objective

State the reason(s) for undertaking the inventory and why the information is required, as the basis for choosing a spatial scale and minimum data set.

Wetland inventory has multiple purposes

a) listing particular types, or even all, wetlands in an area
b) listing wetlands of local, national, or international importance
c) describing the occurrence and distribution of wetland taxa
d) describing the occurrence of natural resources (such as peat, fish, reeds, or water)
e) establishing a baseline for measuring change in the ecological character of wetlands
f) assessing the extent and rate of wetland loss or degradation
g) promoting awareness of the value of wetlands (ecosystem services or benefits)
h) providing information for conservation planning/management
i) developing networks of experts and cooperation for wetland conservation and management
j) ….etc….

An inventory should contain a clear statement of its purpose and objective.

This should identify the habitats that will be considered, the types of information that is required, the time schedule, and who will make use of the information.

A clear statement of the purpose(s) will assist in making decisions about the methods and resources needed to undertake the inventory, and how the information is made available to users.

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2. Review the knowledge and information base

Review the published and unpublished literature and determine the extent of knowledge and information available for wetlands in the region being considered.

Past investigations have resulted in the provision of broad-scale inventory information for many wetlands in different parts of the world. Often, more detailed, but localized inventory may have been undertaken, and available in reports on natural resources.

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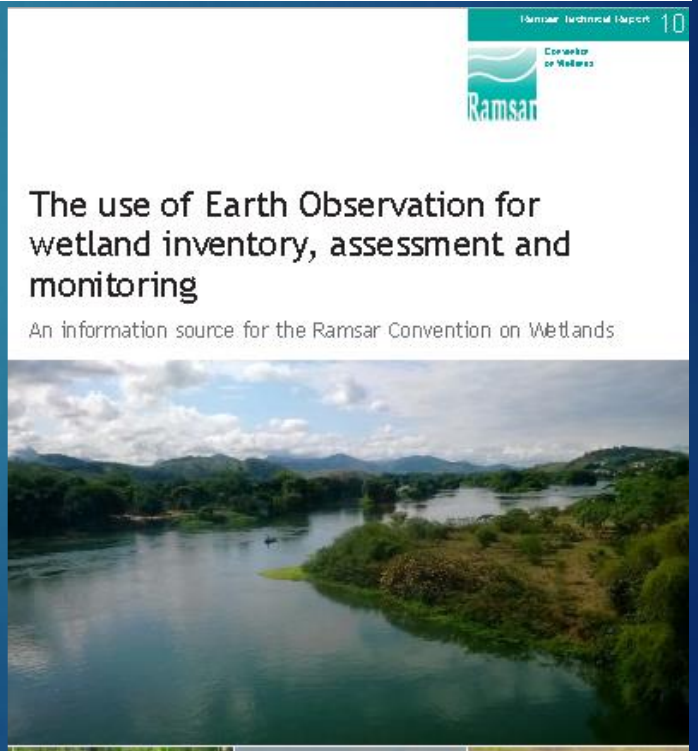
3. Review existing inventory methods

Earth Observation is commonly used for wetland inventory, assessment and monitoring.

Review available methods and seek expert technical advice to ensure that methods are used that can supply the required information and that suitable data management Processes are established.



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4. Determine the scale and resolution

Determine the scale and resolution that will enable the purpose and objective to be achieved

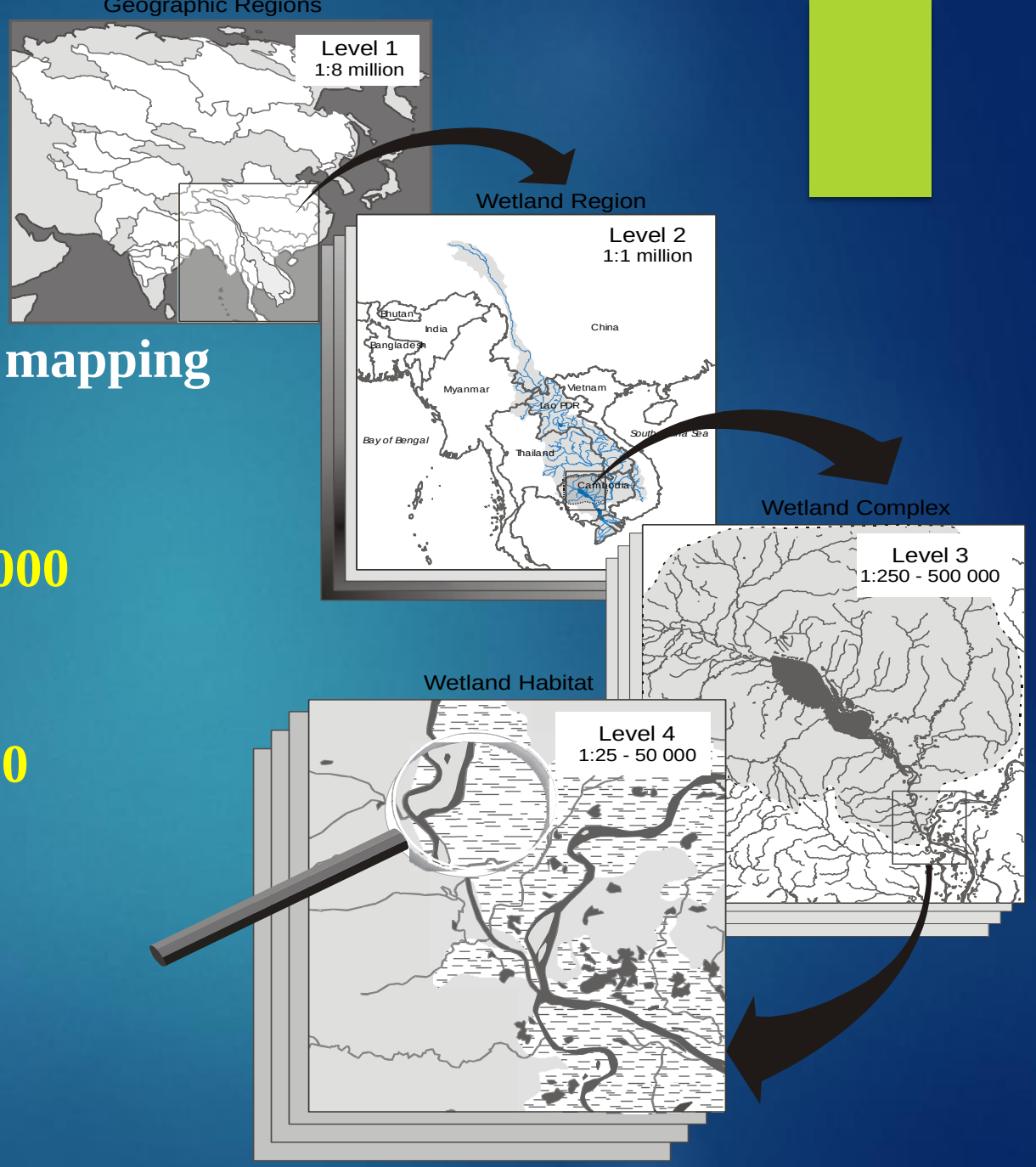
Hierarchical scales for mapping

1. River basins
1:5 000 000 to 1:1 000 000

2. Wetland regions
1:1 000 000 to 1:250 000

3. Wetland complexes
1:250 000 to 1:50 000

4. Wetland habitats
1:50 000 to 1:10 000



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5. Establish a core or minimum data set

Identify the core, or minimum, data set sufficient to describe the location and size of the wetland(s) and any special features.
This can be complemented by additional information on factors affecting the ecological character of the wetland(s) and other management issues, if required.

Data collection - standardised data sheets linked to maps in GIS – more detailed information collected at site levels compared to that collected at a river basin level

1. River basins - geology, climate zone, vegetation - broad overview

2. Wetland regions - location, geology, climate pattern, vegetation, altitude, area, water regime, jurisdiction - more detail of common features of a physical region within the river basin

Data collection - standardised data sheets linked to maps in GIS

3. Wetland complexes (groups of linked wetlands) - location (coordinates and centroid), climate (precipitation, temperature, humidity, evaporation), ecological character (physical - geomorphic setting, size and shape, bathymetry, soil and sediments, water regime, groundwater; physico-chemical - temperature, salinity, transparency, colour, hardness, alkalinity, pH, nutrients; biological - vegetation structure and pattern, major fauna, rare and endangered species) - detailed field collection

4. Wetland habitats - as above with managerial data added (landuse, pressures, goods and services, social and cultural interests, jurisdiction, monitoring and management plans - detailed field collections and management considerations

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The core data can be divided into two components - biophysical and major management features of the wetland. The decision on whether to undertake an inventory based only on core biophysical data or to also include data on management features will be based on individual priorities, needs and resources.

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5a. *Biophysical features*

Site name **(official name of site and catchment)**

Area and boundary **(size and variation, range and average values)**
Location **(projection system, map coordinates, map centroid, elevation)**
Geomorphic setting **(within the landscape, biogeographical region)**
General description **(shape, cross-section and plan view)**
Climate **– zone and major features**
Soil **(structure and colour)**
Water regime **(depth, periodicity, flooding, source of water, groundwater)**
Water chemistry **(salinity, pH, colour, transparency, nutrients)**
Biota **(vegetation zones, animal populations, rare/endangered species)**
Ecosystem services **(provisioning, regulation, supporting, cultural)**

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5b. *Managerial features*

Landuse **in the river basin and/or coastal zone**
Pressures **on the wetland, river basin and/or coastal zone**
Land tenure **and** ***administrative authority*** **for the wetland, river basin and/or coastal zone**
Conservation and management status **of the wetland including legal instruments, social-cultural traditions that affect management**
Ecosystem goods and services **derived from the wetland including products, functions and attributes**
Management plans **and** ***monitoring programs*** **in place and planned**

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6. Establish a habitat classification

Choose a habitat classification that suits the purpose of the inventory.
It is unlikely that a single classification would be globally accepted.

A classification based on the fundamental features that define a wetland – the landform and water regime (with modifiers for other features) - superior to those based on other features

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7. Choose an appropriate method

Choose a method that is appropriate for a specific inventory based on an assessment of the advantages and disadvantages, and costs and benefits of the alternatives.

Document all parts of the method to ensure standardisation between operators and for future reference.

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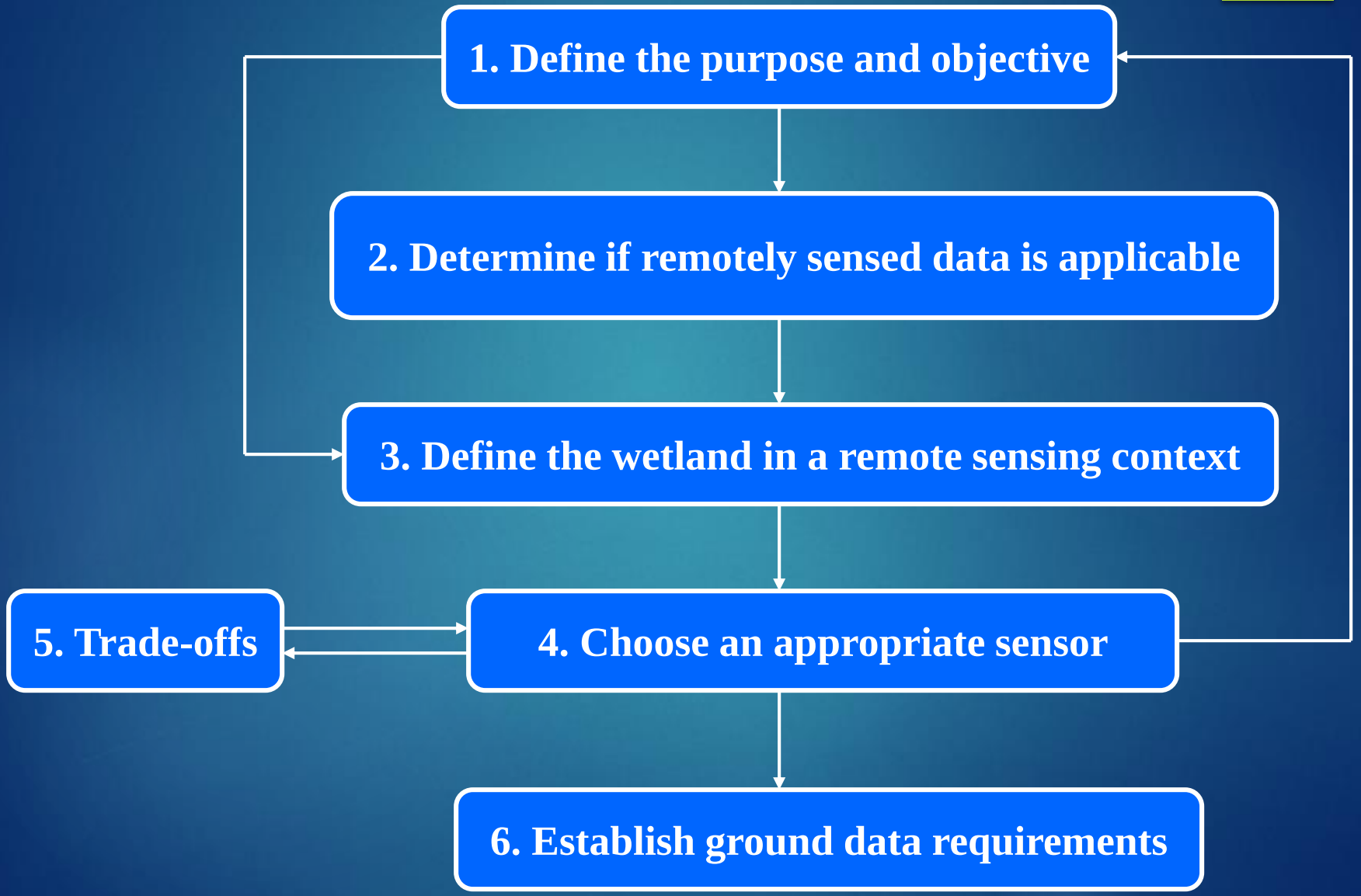
7a. Comparison of methods

Inventory methods in use

Mediterranean (MedWet) inventory
US national wetland inventory
Ugandan national wetland program
Asian wetland inventory
South African Inventory

Examples in Ramsar Technical Report

Process for choosing an appropriate remote sensing sensor



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8. Establish a data management system

Establish clear protocols for collecting, recording and storing data, including archiving, to enable the source of the data and its accuracy to be determined.
Identify suitable rigorous and tested methods for data analysis and document these.
Use a meta-database to record information about the inventory and details of data ownership and access.

8a. Establish a meta-database "data about data"

List and description of Dublin Core metadata elements
(for further information see at http://dublincore.org)

Dublin Core metadata element	Description
Title	A name by which the dataset is formally known
Creator	An entity primarily responsible for making the content of the dataset
Subject	The topic of the content of the dataset
Description	An account – such as an abstract – of the content of the dataset
Publisher	The entity responsible for making the dataset available
Contributor	An entity which has made contributions to the content of the dataset
Date	A date associated with an event in the life cycle of the dataset ie date of creation or completion of dataset
Type	The nature or genre of the dataset
Format	The physical or digital manifestation of the dataset
Identifier	An unambiguous reference to the dataset within a given context i.e. ISBN number
Source	A reference to a resource from which the dataset is derived
Language	The language of the intellectual content of the dataset
Relation	A reference to a related dataset
Coverage	The extent or graphical bou
Rights	Information ab

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9. Establish a time schedule and extent of resources

Establish a time schedule for planning the inventory, for collecting, processing and interpreting the data, for reporting the results, and for reviewing the program.

Establish the extent and reliability of the resources available and if necessary make contingency plans to ensure that data is not lost due to shortfalls.

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10. Assess the feasibility and cost effectiveness

Assess whether or not the program, including reporting of the results can be done within the context of the management processes and financial resources available.

Determine if the costs of data acquisition and analysis are within budget and that the budget is available for the program to be completed.

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11. Establish a reporting procedure

Establish a procedure for interpreting and reporting all results in a timely and cost effective manner.
The report should be succinct/concise and indicate whether or not the objective has been achieved, and contain recommendations for management action, including whether further information or data is required.

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12. Establish a review and evaluation process

Establish a formal and open review process to ensure the effectiveness of all procedures, including reporting and, where necessary, supply information to adjust or even terminate the program.

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13. Plan a pilot study – test your plans

Test and fine-tune the method and specialist equipment being used, assess the training needs for staff involved, and confirm the means of collating, collecting, entering, analysing and interpreting the data. Ensure that any remote sensing data collection can be supported by ground-truthing.

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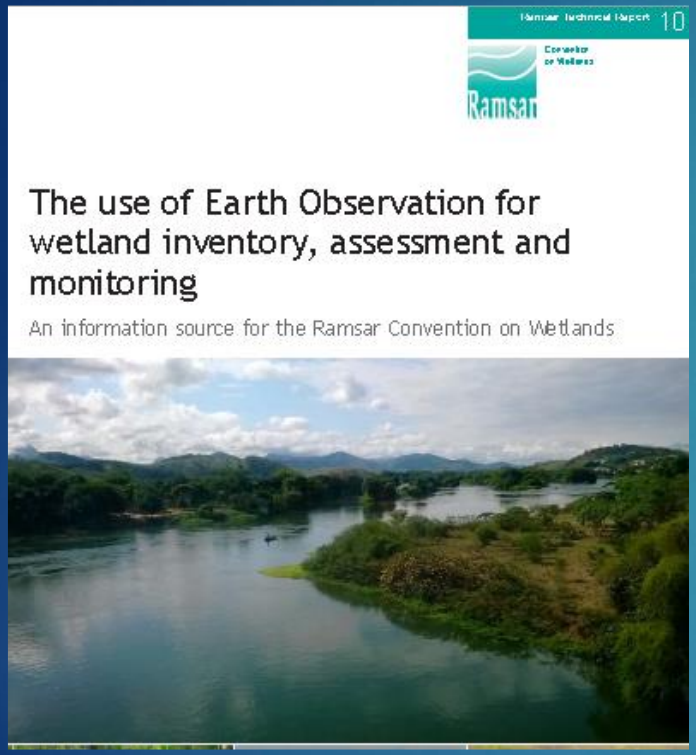

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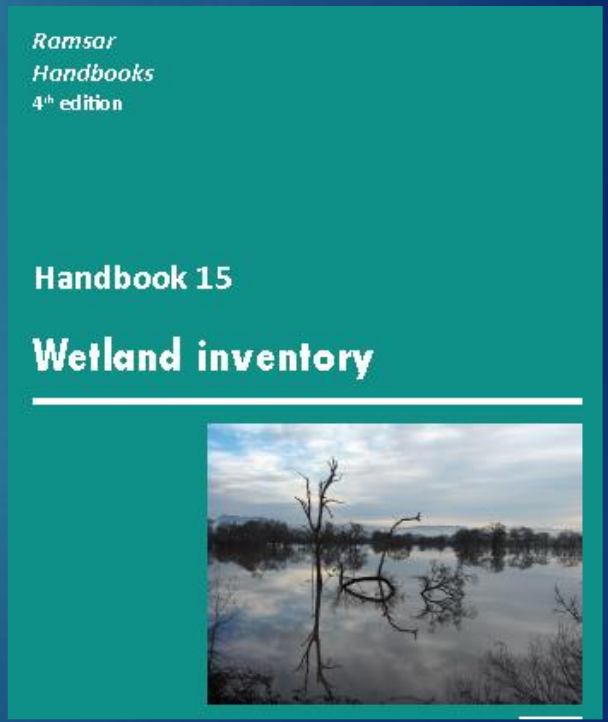

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