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Forest ecosystem inventory and monitoring as a framework for terrestrial natural renewable resource survey programmes

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ABSTRACT - The established practice of forest ecosystem inventory and monitoring is recognised as a main support for terrestrial natural renewable resource survey programmes. Inventory and monitoring programmes focused on an overall assessment of ecosystem attributes evolving into global environmental survey programmes have been devised, but implementation is still quite contradictory. The state-of-the-art is discussed here, with special reference to the European Union and Italy. Topical issues are reviewed, with selective concern to: remote sensing capability, probability sampling, forest type (habitat) classification and landscape ecology, sustainable management indicators. Benefits brought by information technology are highlighted. Its development and the implementation of approaches based on a sound "per habitat" landscape ecological perspective will bring unique benefits, thus leading to an effective integration among sector surveys aimed at global environmental inventory/monitoring.

KEYWORDS - forests, ecosystem management, inventory and monitoring, landscape ecology, information technology

Sound ecosystem management depends on accurate, complete, and concise information regarding the extent, condition and productivity of natural resources. Determining such properties are common objectives of survey programmes, at various scale levels (e.g. Table 1). Investigations can also focus on how such properties change with time.

The well-established practice of forest ecosystem inventory and monitoring is recognised as a main support within such a framework (OLSEN *et al.*, 1999). It can also be taken into account that, as of now, according to the new forest area definitions introduced by UN-ECE/FAO (1997), forest ecosystem surveys must be routinely extended to cover woodland with tree canopy cover larger than 10 percent and the so-called "other wooded land" (tree canopy cover between 5 and 10 percent). That forest inventory/monitoring extends outside woodlands is a topical feature for its integration with natural renewable resource surveys: this is expecially true in Alpine and/or Mediterranean countries, where such lands include many natural and seminatural environments, neighbouring, and often dynamically con-