ACHANAKMAR-AMARKANTAK BIOSPHERE RESERVE

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Lead Institute : Tropical Forest Research Institute (Indian Council of Forestry Research & Education), Jabalpur (M.P.)

Date of Notification : 30th March, 2005

Project : Phase I – 2006-2009

Project : Phase II – 2010-2013

Identified flora: 1295 in 2007, 1498 (203) in 2009 and 1734 (236) in 2013

84 species of plants identified for their ethnobotanical and ethnomedicinal uses.

Identified fauna: 324 in 2007, 327 (3) in 2009 and 389 (62) in 2013

Submitted UNESCO nomination form in 2010.

The International Council of UNESCO's Man and the Biosphere Programme (MAB) meeting in Paris from 9-13 July 2012 declared Achanakmar-Amarkantak Biosphere Reserve in the World Network of Biosphere Reserves (WNBR).

Quality and quantity of ecosystem services

- **Carbon sequestration**
- Carbon management through carbon sequestration and its long term storage is one of the most important issues with regard to climate change.
- Studies carried out on sequestration of soil organic carbon pool under different vegetation cover and land use pattern in Achanakmar-Amarkantak biosphere reserve.
- Maximum SOC pool was found in the soils under mixed forests (118.18 t ha-1) followed by teak forest (76.64 t ha-1), bamboo forest (67.21 t ha-1), sal forest (64.28 t ha-1), and least in soils of open and scrub forest (48.72 t ha-1) (Tiwari and Iqbal, 2015).
- Tiwari, S.C. and Iqbal, S. (2015). Sequestration of soil organic carbon pool under different natural forest vegetation covers in Achanakmar, Chhattisgarh. *International Journal of Multidisciplinary Approach and Studies* **2**(2) : 57-62.
- Regarding land use pattern, highest SOC pool was found in forest land both dense and open (166.8 t ha-1) followed by grassland (95.54 t ha-1), agricultural land (75.70 t ha-1) and least was recorded in wasteland (57.05 t ha-1) (Iqbal and Tiwari, 2015).
- Iqbal, S. and Tiwari, S.C. (2015). Sequestration of soil organic carbon pool under different land uses in Bilaspur district of Achanakmar, Chhattisgarh. *International Journal of Science and Research* **4**(7) : 1920-1924
- **Studies need to be carried out on carbon sequestration in vegetation, soil and litter through carbon stock assessment and annual sequestration.**

- **Invasive alien species**
- IAS are the serious threat to plant diversity and a major cause of species extinction and change in hydrology and ecosystem function.

- Studied vegetation of lantana-invaded forest plots in Achanakmar wildlife sanctuary.
- The results showed no adverse effect of lantana invasion on structural attributes of vegetation at community level, but the effect can potentially build-up with time, particularly at species level (Sahu and Singh, 2008).
- Sahu, P.K. and Singh, J.S. (2008). Structural attributes of lantana-invaded forest plots in Achanakmar-Amarkantak biosphere reserve, central India. *Curr. Sci.* **94**(4) : 494-500.

- Documented a total of 106 inavsive alien plant species belonging to 77 genera spread over 36 families, representing 10.48% of the flora in Achanakmar Amarkantak biosphere reserve (Shukla *et al*., 2009).
- Shukla, A.N., Singh, K.P. and Singh, J.S. (2009). Invasive alien species of Achanakmar-Amarkantak biosphere reserve, central India. *Proc. Nat. Acad. Sci. India*, Section B **79**(4) : 384-392.

- **These studies provides a baseline data which could be used to monitor and develop strategies for control of alien invasive plant species. The places of Achanakmar-Amarkantak biosphere reserve, which are not yet invaded should be selected as priority areas for better management to prevent invasion.**

Improvement of species of economic interest

- Standardized sustainable (non-destructive) harvesting practices of Mahul Patta, *Bauhinia vahlii,* is an important NTFP of economic value in tribal belt of central India, including Achanakmar–Amarkantak biosphere reserve.
- It was concluded that harvesting intensities, 50-60% was found superior for getting quality as well as progressive recruitment of leaves in natural forest areas. It is suggested that harvesting should be restricted to twice (June and October) in a year without damaging the climbers (CGSMFP, 2015)
- Studied population dynamics of threatened medicinal plant species, *Celastrus paniculatus* (Malkangni), *Emblia tsjeriam cottam* (Baibirang), *Peucedanum nagpurens* (Tejraj), *Rubia cordifolia* (Pilia) and *Thalictrum foliolosum* (Mamiri) in buffer zone (Amarkantak and East Karanjia ranges) of Achanakmar–Amarkantak biosphere reserve. Both the ranges showed biotic pressure (rampant grazing and browsing) and human interference throughout (DST, 2012).
- Introduced tasar culture among the tribals of buffer zone in Achanakmar–Amarkantak biosphere reserve (Chatterjee *et. al*., 2007).
- Introduced lac culture, bee keeping and production of vermi compost in buffer zone of Achanakmar–Amarkantak biosphere reserve.
- Developed 600 ha. grasslands.

Ecotourism and socio-economic upliftment of local communities

- **Initiated ecotourism** in Achanakmar-Amarkantak biosphere reserve during the year 2009 with 29.5 km. of tracking routes covering ancient places/natural heritage sites.
- Constructed cultural stage, eco-cottage, tourist huts and information centre at Shivtarai in Kota range of buffer zone of biosphere reserve.
- Developed nature trails at 8 localities viz. Tangli Pathar, Jhojha, Siddha tekari, Kotsagar, Gattumur, Bade Kachhar, Kachandi Jalprapat and Rahiama belonging to Kota and Lamni range of buffer zone of biosphere reserve.
- Ecotourism provided jobs to the inhabitants.

Socio-economic upliftment of local communities

- Distributed 20 solar lanterns, vaccinated domestic cattles in 30 villages, constructed wells and raptas.
- Distributed 50000 fruit bearing seedlings among10 villages.
- **Income generation activities**
  - Established 5 units of value addition for mahul leaves and micro enterprises for collection/processing of mahul leaves.
  - Constructed 6 ponds for pisciculture with the help of local SHG.
  - Collected local bamboo, munga, bel, jamun and sitafal seeds and raised seedlings in nurseries and marketed with the help of local SHG.
  - Promoted 35 groups for lac cultivation and marketed through local SHG and one EDC is given assistance for purchase of silk reeling charkha.
  - Established 2 honey collection and processing units and collected and processed honey with the help of local SHG.

Socio-economic upliftment of local communities

- Collected and prepared amchur and pickle enterprises based on the uses of fruits available by local SHG.
- Constructed 20 vermi composting units through SHG.
- Established 9 units of mushroom cultivation
- Collected and processed medicinal plants through SHG.

- Given training in driving, woodwork, electric work and cooking etc.
- All the beneficiaries are happy to get additional income. Their income has almost doubled. This has resulted in better co-ordination between the forest staff and local people.
- Socio-economic studies indicate that indigenous traditional knowledge plays an important role in sustainable development and enhancement of socio-economic status of tribal peoples of Achanakmar-Amarkantak biosphere reserve.
- Based on the published information, a long list of 184 species of plants consisting of 24 species of pteridophytes and 160 species of angiosperms showing the ethnobotanical and ethnomedicinal uses is prepared.

Publications (TFRI)

- Compendium - 1
- Biosphere Reserve Information Series (BRIS) – 4
- Training modules - 6
- Research papers – 3
- Scientific articles - 5
- Book chapter - 1
- Edited book – 1
- Abstracts in Seminar/Conference/Symposia – 13

Publications (Others)

- Book – 1 (Fauna)
- Research papers – 64 (Flora-21, Fauna-13, Ecology-3, Ethnobotany-18
  - NMFP-5, GIS and Remote Sensing-5


All information pertaining to Achanakmar-Amarkantak biosphere reserve is available at
http://tfri.icfre.org/AABR/aabr-INDEX/index.html
Thank you