

# Achanakmar-Amarkantak Biosphere Reserve

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# ACHANAKMAR-AMARKANTAK BIOSPHERE RESERVE

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

**Date of Notification :** 30<sup>th</sup> 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

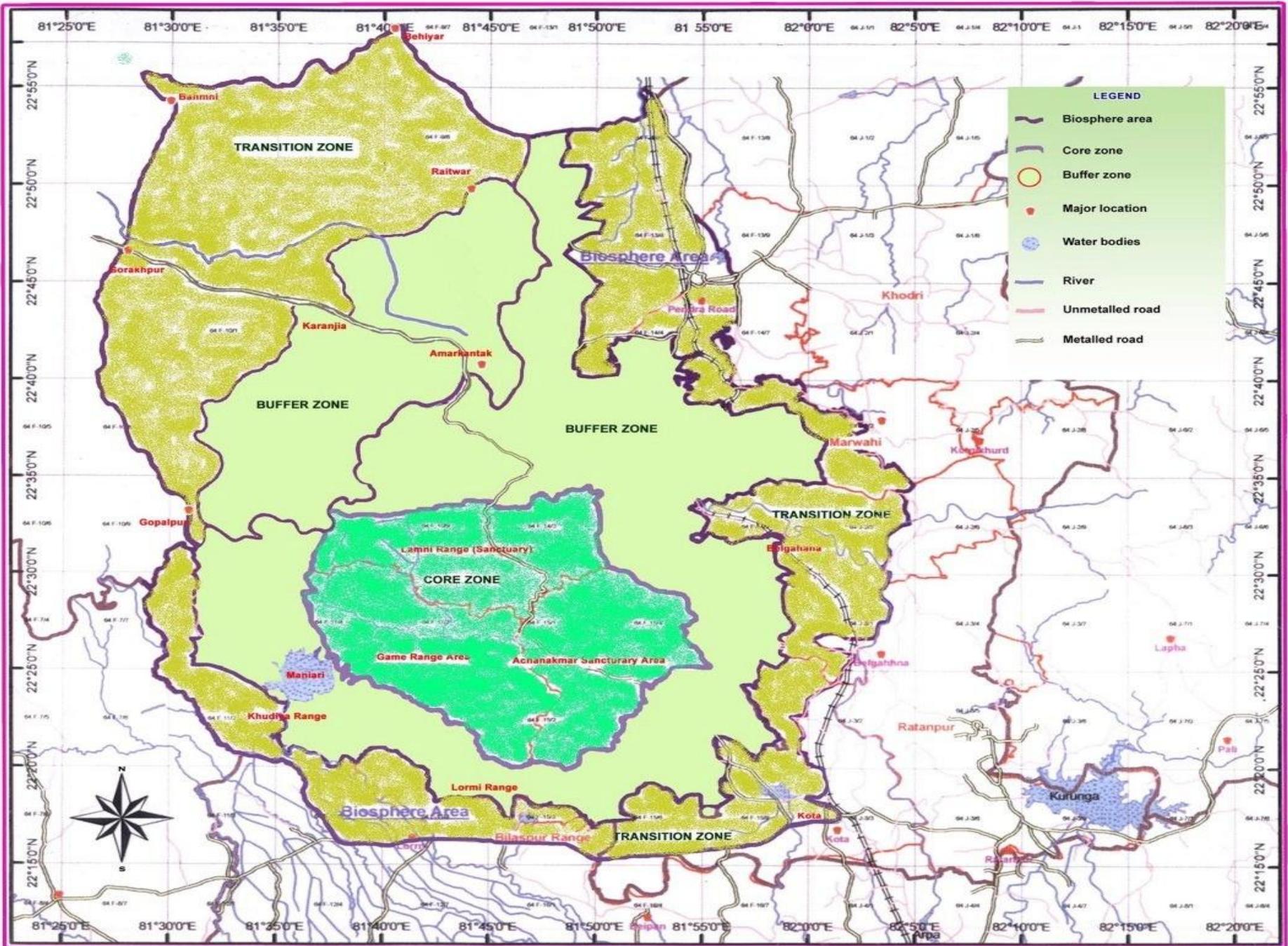
**184 species of plants identified for their ethno-botanical and ethno-medicinal uses.**

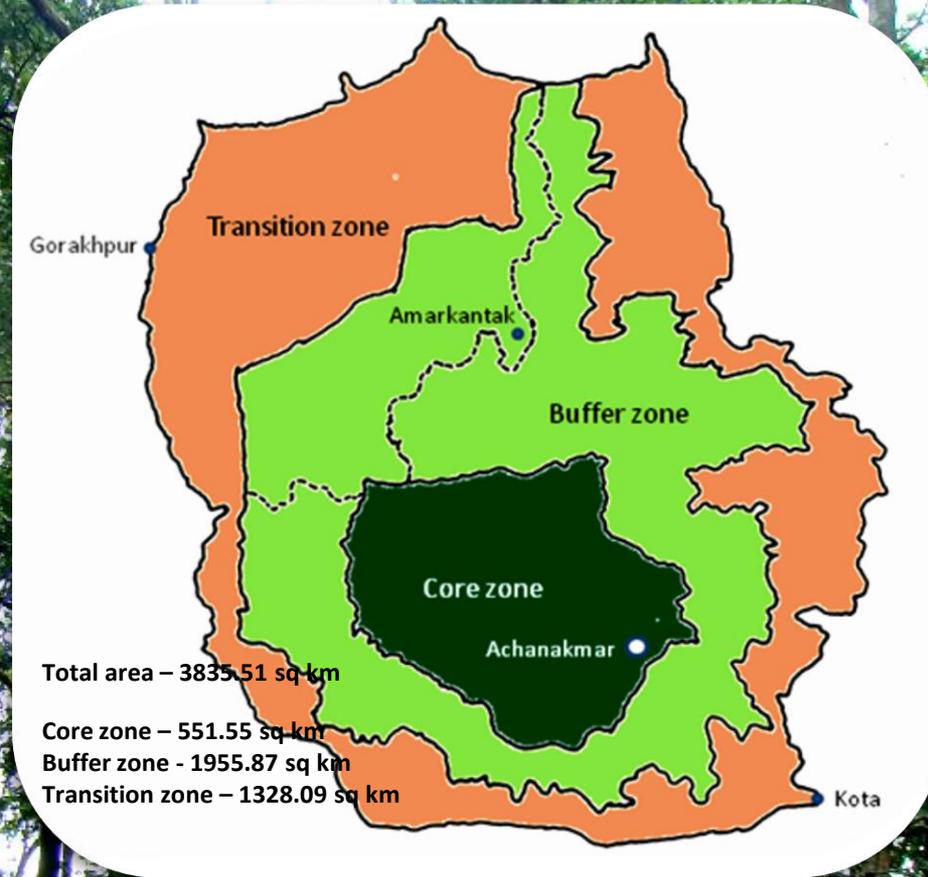
**Identified fauna:** 324 in 2007, 327 (3) in 2009 and 389 (62) in 2013

**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).**

# Map with the boundaries of Achanakmar-Amrarkantak Biosphere Reserve, India





# Sal forests of Achanakmar-Amarkantak biosphere reserve

# Ecosystem services provided by BR

- ✘ Achanakamr-Amarkanatak BR is an interstate BR, located in CG and MP, providing services to the people residing in different zones of BR or in close proximity to BR.
- ✘ Management practices for conservation of biodiversity have directed towards developmental activities, such as habitat improvement, eco-tourism, eco-development, in-situ and ex-situ conservation of plant species, promotion of conventional energy, crop production, socio-economic upliftment of local peoples, social welfare activities, awareness and education, skill development and monitoring and evaluation.
- ✘ Development of grass meadows, construction of ponds/check dams and rehabilitation of degraded forests have increased the biodiversity of the area, both flora and fauna, including wild life.
- ✘ Habitat improvement also reduces forest fire due to increase soil water contents and rise of water table.

# Ecosystem services provided by BR

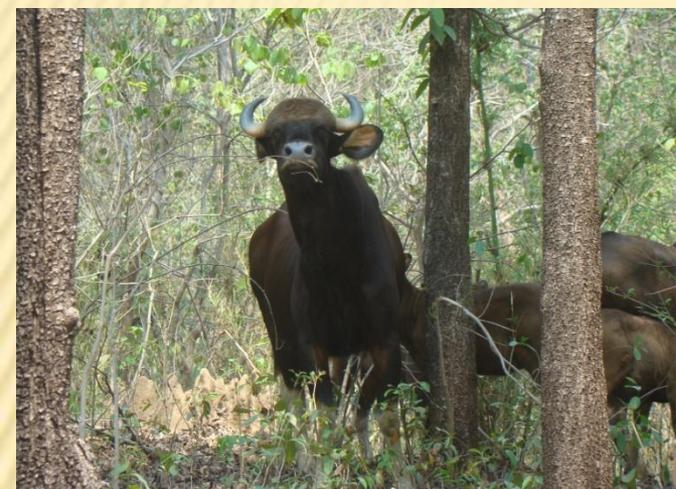
- ✘ Due to habitat improvement, regeneration of flora such as herbs, shrubs and tree species, especially sal (*Shorea robusta*) and other medicinal plants has been increased and it has been recorded that the status of regeneration as “Good”.

Data on density of tree species, species richness and their regeneration status in core and buffer zones of Achanakmar-Amarkantak BR

Zone	2006	Year 2011		2012		Status
	Tree/ha	Seedling/ha	Sapling/ha	Seedling/ha	Sapling/ha	
Core zone	1085 (29)	38660 (5)	1375 (6)	114680 (6)	5662 (11)	Good
Buffer zone	476 (22)	16666 (4)	1089 (6)	99000 (6)	7114 (9)	Good



- ✘ Due to establishment of BR, the population of wild life has been increased. This is mainly due to habitat improvement and eco-development.



**Wild life in Achanakmar-Amarkantak BR**

# 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<sup>-1</sup>) followed by teak forest (76.64 t ha<sup>-1</sup>), bamboo forest (67.21 t ha<sup>-1</sup>), sal forest (64.28 t ha<sup>-1</sup>), and least in soils of open and scrub forest (48.72 t ha<sup>-1</sup>).
- ✘ Regarding land use pattern, highest SOC pool was found in forest land both dense and open (166.8 t ha<sup>-1</sup>) followed by grassland (95.54 t ha<sup>-1</sup>), agricultural land (75.70 t ha<sup>-1</sup>) and least was recorded in wasteland (57.05 t ha<sup>-1</sup>)
- ✘ **Studies need to be carried out on carbon sequestration in vegetation, soil and litter through carbon stock assessment and annual sequestration.**

# 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 BR.**
- ✘ *Bauhinia vahlii* (family Leguminosae) is a gigantic, usually evergreen climber, commonly known as Mahul. It is the largest creeper in India, and can grow up to 10-30m long. It is an important species of economic value in the tribal belt of central region. The leaf is used by the grocery shops, eateries etc. as plates and packing material. The plates made of Mahul leaves are used exclusively during the community feasts and rituals. The stem fibre is used for making ropes, basketry and wickerwork.
- ✘ It has been concluded that harvesting intensities, 50-60% is 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)



Newly recruited leaves in *B. vahlii*



Young leaves of *B. vahlii*



Flowering in *B. vahlii*



Plates prepared of *B. vahlii* leaves

- ✘ 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).



*Celsatrus paniculatus*  
Malkangni



*Embelia tsjeriam-cottam*  
Baibirang



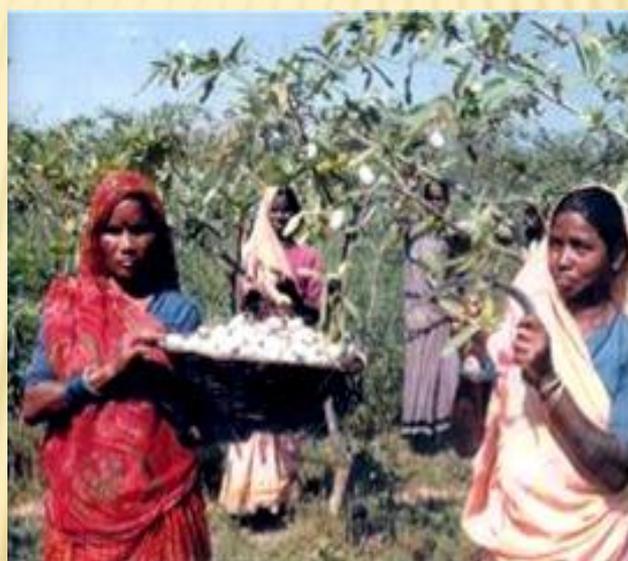
*Rubia cordifolia*  
Manjeeth



*Thalictrum foliolosum*  
Mamira

# Introduced tasar culture among the tribals of buffer zone in Achanakmar–Amarkantak BR.

- ✘ In some ranges of the BR, Forest Protection Committees or Van Surakshya Samiti have been constituted by the villagers.
- ✘ The members of these committees rear the silkworm on naturally occurring small bushes and trees of *Terminalia arjuna* and *T. tomentosa*.
- ✘ The cocoons developed from these worms are sold to Seed Multiplication and Training Centre, Central Silk Board, Bilaspur or even to local traders.
- ✘ The yield is taken in July-August and October-November and the income earned is Rs. 15375 to 46059/year during 2005-06 and 2006-07.
- ✘ The silkworm cocoon production has helped in reducing the migration of villagers to nearby towns in search of jobs.
- ✘ It has also checked felling and lopping of trees in the areas where the silkworm breeds naturally on its hosts.

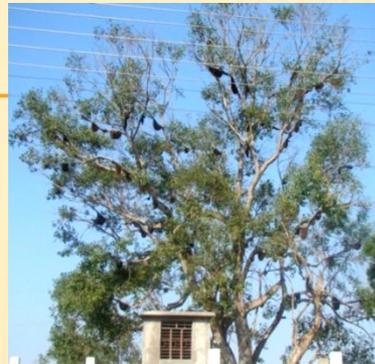


**Tasar silkworm rearing by tribal of Achanakmar-Amarkantak BR**

- ✘ Introduced lac culture, bee keeping, mushroom cultivation and production of vermi compost in buffer zone of Achanakmar–Amarkantak biosphere reserve.



**Lac cultivation by tribal of Achanakmar-Amarkantak BR**



**Bee keeping and honey collection by tribal of Achanakmar-Amarkantak BR**



**Mushroom collection and cultivation by tribal of Achanakmar-Amarkantak BR**



**Vermi composting and vermi wash production by tribal of Achanakmar-Amarkantak BR**

- ✘ **Developed grasslands. This has increased herbivore animal population enormously, especially deer.**



**Developed grasslands and deer in Achanakmar-Amarkantak BR**

# 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.
- ✘ Ecotourism provided jobs to the inhabitants.
- ✘ Distributed dress coat and cap to tourist guides.
- ✘ Number of persons visiting BR is increasing every year.



- ✘ Constructed cultural stage, eco-cottage and tourist 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.



# Socio-economic upliftment of local communities

- ✘ Distributed solar lanterns, vaccinated domestic cattles, constructed wells and raptas.
- ✘ Distributed 50000 fruit bearing seedlings among 10 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.



# Socio-economic upliftment of local communities

- ✘ 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.
- ✘ 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. This has resulted in better co-ordination among local people, forest officials and scientists of lead institute, TFRI, Jabalpur.

**Number of research activities using  
Ahanakmar-Amarkanatak BR  
as  
study site**

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# Tropical Forest Research Institute, Jabalpur

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- × **Floral Studies**
- × **Faunal Studies**
- × **NWFP Studies**

## **Others**

× <u>Floral Studies</u>	-	21
× <u>Faunal Studies</u>	-	13
× <u>Ecological Studies</u>	-	3
× <u>Ethno-botanical Studies</u>	-	18
× <u>NWFP Studies</u>	-	5
× <u>GIS and Remote Sensing Studies</u>	-	5

# Management Action Plan and the activities

- ✘ **Habitat improvement** : Soil and Moisture conservation, construction of check dam/ponds, percolation tank, rehabilitation of degraded forests, conservation of landscapes, sanitation and habitat improvement.
- ✘ **Ecotourism** : Nature trails and trekking routes, conservation of ancient places and natural heritage sites.
- ✘ **Eco-development** : Eco-development in revenue areas, dug well, well deepening, drip irrigation, irrigation/dams, development of grasslands, promotion of fuel wood/fodder tree species and intensive plantations.
- ✘ **In-situ and ex-situ conservation of plant species** : Raising of plants.
- ✘ **Promotion of conventional energy** : Connection of LPG and distribution of solar lantern.
- ✘ **Crop production** : Micro-irrigation of check dams, field channel and vermi composting.
- ✘ **Socio-economic upliftment** : Conservation of indigenous fruit plants, distribution of saplings, fisheries development, construction of pond, promotion and value addition of NTFPs, viz. mushroom, honey, lac, mahul leaves and tasar sericulture.
- ✘ **Social welfare activities** : Health camps.
- ✘ **Awareness and education** : Installation of publicity boards/sign boards and environmental education programmes.
- ✘ **Skill development** : Trainings.
- ✘ **Monitoring and evaluation** : Work performed.

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

*Thank you*