

# INFORMATION RELATED TO RARE, ENDANGERED, THREATENED AND ENDEMIC SPECIES OF EASTERN GHATS

## Biodiversity and strategies for conservation of rare, endangered and threatened medicinal plants

Akshay KR<sup>1\*</sup>, Sudharani N<sup>2</sup>, Anjali K B<sup>1</sup> and Deepak TM<sup>3</sup>.

### Review Article

### Abstract

Biodiversity refers to the numbers, variety and variability of living organisms and ecosystem. India is one of the world's top 12 mega diversity countries with 10 bio geographic regions. India alone includes two among the world's eight biodiversity hotspots. The climatic and altitudinal variations, coupled with varied ecological habitats of this country, have contributed to the development of immensely rich vegetation with a unique diversity in medicinal plants which provides an important source of medicinal raw materials for traditional medicine systems, as well as for pharmaceutical industries in the country and abroad. World Health Organization has listed over 21000 plant species used around the world for medicinal purpose. In India, about 2500 plant species are being used in indigenous system of medicine. The red data book lists 427 Indian Medicinal plant entries on endangered species, of which 28 are considered extinct, 124 endangered, 81 rare and 34 insufficiently known. The dedicated medicinal plants are used by various tribal's and local people to cure different ailments ranging from simple injuries, wounds, cuts, fever, diarrhoea, ulcers, swelling, bone fractures, potency, antidote, skin care, night blindness, toothache, asthma, cough & cold. Medicinal plants occupy a vital sector of health care system in India and represent a major national resource. Hence, there is an immense need for conservation of diversity of medicinal plant wealth for the present and fore coming generations, by adapting the suitable strategy with most appropriate method of conservation.

*(Source: RRJPP | Volume 2 | Issue 3 | July - September, 2014)*

## ETHNO-MEDICINAL SURVEY OF THREATENED PLANTS IN EASTERN GHATS, INDIA

C. Pattanaik<sup>1\*</sup>, C.S. Reddy<sup>2</sup> and K.N. Reddy<sup>3</sup>

### Abstract

An ethnobotanical study was conducted from 2004 to 2006 to investigate the uses of threatened medicinal plants by local tribal people in Eastern Ghats of India. Information on names of plants, part used and medicinal uses was gathered from 160 randomly selected respondents using semi-structured questionnaires. The results obtained revealed that 42 plants were used as a cure of 25 ailments belonging to 30 families. All the plants collected from the study area were either endemic or threatened. The need for the conservation of these threatened plants cannot be over emphasized as most tribal people in the study area depend mostly on herbs from these species. Proper conservation and management plans are suggested to conserve the medicinal plant resources before it lost forever.

Key words: Conservation, Threatened medicinal plants, CAMP, Eastern Ghats, India

## ETHNOBOTANY OF *ANDROGRAPHIS LINEATA* WALLICH EX. NEES – AN ENDEMIC MEDICINAL PLANT OF INDIA

\*Alagesaboopathi C.

### Abstract:

The present exploration is an attempt to an ethnobotanical study was conducted in Eastern Ghats of Tamilnadu, for the investigation of medicinal plant used to treat several diseases by the local health healers. *Andrographis lineata* Wallich ex. Nees is an endemic medicinal plant used for medication. In Shevaroy Hills and Kolli Hills of Eastern Ghats it is employed in about 25 various uses of which 17 are hitherto unreported from other areas of India. The indigenous information of the village dwellers, tribes, village herbalists, herbal practitioners and other traditional healers and the indigenous plant used for medicinal value were collected through personal interviewed and questionnaire during study visits. This result also proved that the plant is uses either whole plant or various parts like leaves, stem, root, flower, seed, etc. The plant parts are used in the form of decoction, juice, paste and powder. Plant is used for speedy recovery sickness like diabetes, jaundice, anti-diabetic, antipyretic, worms, snake bite, antiinflammatory, skin diseases and antivenom. These usage are notable for further studies on current scientific manner.

**Key words:** Ethnobotanical uses, *Andrographis lineata*, Eastern Ghats, Tamilnadu.

# **CYATHEA NILGIRENSIS HOLTUM: A LITTLE KNOWN ENDEMIC SPECIES ON THE VERGE OF EXTINCTION IN THE EASTERN GHATS**

## **Short Communication**

Chiranjibi Pattanaik, C. Sudhakar Reddy

## **Abstract**

Botanical exploration in Ananthagiri hill range revealed the endemic species *Cyathea nilgirensis* Holttum (Cyatheaceae). Intensive surveys are required in order to establish whether there are any other extant populations exist in other part of Ananthagiri hill range, and the presently known populations require habitat monitoring and continuous protection.

## **Graphical Abstract**

A thorough investigation in Ananthagiri hill range revealed the endemic species *Cyathea nilgirensis* Holttum (Cyatheaceae). Intensive surveys are required to find out the remaining survived populations and the presently known populations require habitat monitoring and continuous protection.

**Keywords:** *Cyathea nilgirensis* Holttum Endemic Conservation Eastern Ghats



## Threatened endemic plants from Eastern Ghats, India

Ch. Sudhakar Reddy, K.N. Reddy\*, P.R.C. Prasad & V.S. Raju\*\*

Forestry & Ecology Division, National Remote Sensing Agency, Balanagar, Hyderabad-37

\*Society for Conservation of Natural Resources and Indigenous Knowledge, Dharmavram, Anantapur-515 672

\*\*Department of Botany, Kakatiya University, Warangal-506 009

The Eastern Ghats are one of the richest floristic and phytogeographical regions of India. Eastern Ghats are located between 76° 56" and 86° 30" E longitudes and 11° 30" and 22° N latitudes. They extend in a north east-south west strike in the Indian Peninsula covering an area of about 70, 000 sq km with an average width of 200 km in the north and 100 km in the south. They extend over a length of 1750 km between the rivers Mahanadi and Vaigai along the East coast. On the basis of observation of existing literature and herbarium collections, a small account of threatened endemic plants of Eastern Ghats was presented here.

The present article focuses on about 34 endemic taxa of Eastern Ghats. Of these 12 taxa are known from type collection only and 5 taxa are recollected from type locality only, 12 species are included under different IUCN threat categories (based on Red Data Books on Indian Plants and Conservation Assessment and Management Planning (C.A.M.P.) workshop 2001, Andhra Pradesh). Each taxon is briefly discussed.

### 1. *Aglaia haslettiana* Haines (**Meliaceae**)

Evergreen tree.

Distr.: Restricted to Puri and Angul forests of Orissa.

Note: After Haines (1919) no recent collections are available at CAL.

### 2. *Andrographis beddomei* Clarke (**Acanthaceae**)

Erect herb.

Distr.: Endemic to Cuddapah (Guvvalacheruvu) and Visakhapatnam (Simhachalam) districts of Andhra Pradesh.

Note: Known from two collections only (S.K. Wagh 4406 in 1955 at BLAT; R.V. Reddy 8124 in 1990 at MH and SKU).

### 3. *Andrographis nallamalayana* Ellis (**Acanthaceae**)

A procumbent herb.

Distr.: Endemic to Nallamalais of Kurnool district of Andhra Pradesh.

Note: Known from Ellis collections only.

4. *Argyreia arakuensis* Bal. (**Convolvulaceae**)

A climbing shrub.

Distr.: Endemic to Visakhapatnam district (Araku valley) of Andhra Pradesh.

Note: It is not collected since its discovery (i.e. after 1961).

5. *Boswellia ovalifoliolata* Bal. & Henry (**Burseraceae**); Vern: Guggilam.

Medium sized tree.

Distr.: Endemic to Chittoor (Tirumala hills), Cuddapah and Kurnool districts of Andhra Pradesh. (En)

6. *Brachystelma glabrum* Hook.f. (**Asclepiadaceae**)

Erect glabrous herb.

Distr.: Endemic to Cuddapah hills (Hooker.f. (1883), R.H. Beddome (RHB, s.n. MH) of Andhra Pradesh.

Note: It was not collected after Beddome (1881) collection. Probably extinct.

7. *Brachystelma volubile* Hook.f. (**Asclepiadaceae**)

Twining, perennial herb, with an underground tuber.

Distr.: Endemic to Cuddapah hills [Hooker.f. (1883) R.H. Beddome (RHB, s.n. MH)] of Andhra Pradesh.

Note: It was not collected after Beddome's (1881) collection. Probably extinct.

8. *Ceropegia spiralis* Wight (**Asclepiadaceae**); Vern: Nimmati Gadda.

Slender, erect herb with depresses tuber and grass like leaves.

Distr.: Endemic to Peninsular India.

Note: In Red Data Book of Indian Plants it was placed under the Vulnerable category. All *Ceropegia* sp. are kept under Plants and the Indian Wildlife (Protection) Act, Schedule II-Part-B and Negative list of Export Policy, 1997-2002.

9. *Cleome viscosa* var. *nagarjunakondensis* Sund.-Ragh. (**Cleomaceae**)

Erect herb.

Distr.: Endemic to Nagarjunakonda valley (Nalgonda district), a type locality.

Note: After 1964, there is no recent collections of it are available in any herbaria (known from type collection only).

10. *Chrysopogon velutinus* (Hook.f.) Bor. (**Poaceae**)

A perennial, tufted grass.

Distr.: This grass is extremely rare and reported to be endemic to Cuddapah district in Andhra Pradesh.

Note: It was described by Hooker.f. (1896) based on the collection of Wight. The species may be probably extinct.

11. *Crotalaria madurensis* Wight var. *kurnoolica* Ellis & Swaminathan (**Papilionaceae**)

Erect undershrub.

Ellis & Swaminathan (1969) reported it from Srisailam of Kurnool district. Later R.R. Venkata Raju recollected this variety from Balugram RF of Kurnool district.

Distr.: Endemic to Nallamalais of Kurnool district of Andhra Pradesh.

12. *Crotalaria paniculata* var. *nagarjunakondensis* Thoth. (**Papilionaceae**)

Undershrub.

Distr.: Endemic to Nagarjunakonda valley (Nalgonda district.), a type locality.

Note: After 1958, there is no recent collections of it are available in any herbaria. Recently K.N. Reddy (January, 2002) rediscovered, this rare taxon from type locality.

13. *Cycas beddomei* Dyer (**Cycadaceae**) Vern: Pareetha.

Large shrubby gymnosperm. It is restricted to hills above 650 m only.

Distr.: Restricted to Sheshachalam hills of Chittoor and Cuddapah districts of Andhra Pradesh.

(CR) G.

Stat.: Critical Endangered Globally (C.A.M.P. A.P., 2001).

Note: It is the only gymnospermous species, endemic to Middle Eastern Ghats. It was included in the list of specified plants, as per schedule 6 of Indian Wildlife (Protection) Act 1972.

14. *Decalepis hamiltonii* Wight et Arn. (**Asclepiadaceae**) Vern: Nannari, Maridi,

Large glabrous climbing shrub.

Distr.: Endemic to southern India; Status: Endangered Globally (C.A.M.P. A.P. 2001).

Note: It was facing threat due to overexploitation and habitat destruction.

15. *Dimeria mahendragiriensis* Ravi, Saxena & Brahmam (**Poaceae**)

Perennial herb.

Distr.: Endemic to Mahendragiri, a type locality.

16. *Dimeria mooneyi* Raizada ex Mooney (**Poaceae**)

Annual herb.

Distr.: Restricted to type locality.

Note: No other collections are available. (Mooney 3652, 3657 (DD): near Raisili village, Koraput, 25-10-1950.)

17. *Dimorphocalyx kurnoolensis* R. Raju & Pullaiah (**Euphorbiaceae**)

Small tree.

R.R. Venkata Raju & T. Pullaiah (1994) reported it from Owk forest of Erramalais of Kurnool district.

Distr.: Endemic to Erramalais (Owk forest), type locality.

18. *Heterostemma deccanense* (Talbot) Swarup. & Mangaly (**Asclepiadaceae**)

Vern: Pedda Gana Joola.

A wiry climber.

Distr.: Endemic to West Pune and East Godavari and Khammam districts.

Note: The species was described by Talbot (1911) based on the specimens collected by Krishna from West Pune in 1887. After the type collection the species has not been collected. Hence Nayar & Sastry (1987) recorded this species as endangered and **possibly extinct**. Recently K.N. Reddy & C.S. Reddy (2000) rediscovered this taxon from Maredumilli MPCA of East Godavari district and Sukkumamidi MPCA of Khammam district.

19. *Hildegardia populifolia* (Roxb.) Schott. & Endl. (**Sterculiaceae**) Vern: Gali Budda, Delibuda.

Small tree.

Distr.: Endemic to Middle and southern Eastern Ghats (Andhra Pradesh: Nigidi hills of Anantapur, Ankalamakonda of Chittoor; Tamil Nadu: Villupuram (Kalyrayan hills, Pakkamalai hills) and Salem.

Note: In Red Data Book of Indian Plants it was placed under the Endangered category. [Vulnerable, C.A.M.P. A.P. (2001)]

20. *Lasianthus truncatus* Bedd. (**Rubiaceae**)

A shrub.

Distr.: Hills of Visakhapatnam, at 1300 m (Beddome (1874) described the species A.W. Lushington).

Note: No recent collections are available at CAL or MH.

21. *Leucas indica* (L.) R.Br. ex Vatke var. *nagalapuramiana* (Chandr. & Srin.) Moulali & Pullaiah (**Lamiaceae**)

Erect herb.

Distr.: Endemic to Nagalapuram hills of Chittoor district. (type locality). [M. Chanraborty & Srinivasan (1975)]

Note: There is no recent collections of this taxon since 25 years.

22. *Leucas mollissima* Wall. ex Benth var. *sebastiana* Subbarao & Kumari (**Lamiaceae**)

Erect herb.

Distr.: Endemic to Visakhapatnam district (Cherukonda, Simhachalam hills) of Andhra Pradesh. (R)

23. *Memecylon madgolense* Gamble (**Melastomataceae**)

Shrub.

Gamble (1919) described this species based on the collections of A.W. Lushington from Madgol hills. It is restricted to hilltops about an altitude of 1000-1500 m.

Distr.: Endemic to Madgol hills (type locality) of Visakhapatnam of Andhra Pradesh.

Note: It is known from single collection (Lushington, 1900) only.

24. *Mimosa barberi* Gamble (**Mimosaceae**)

Shrub.

Distr.: Gamble bases his description on sheet (Barber 5282 MH) collected by C.A. Barber from Tummaluru (Godavari agency, East Godavari district) in 1914.

Note: There is no any specimens of this species are available in MH (except Barber), CAL and University herbaria of Andhra Pradesh.

25. *Ophiorrhiza chandrasekharanii* Subbarao & Kumari (**Rubiaceae**)

An erect herb.

Subbarao & Kumari (1984) reported the new species from Vankachinta of Visakhapatnam district (GVS & GRK 30040, CAL & MH). Moulali (1990) collected it from Galikonda (DAM 6515, SKU). It is restricted to the altitude of above 1000 m.

Distr.: Endemic to Visakhapatnam district of Andhra Pradesh.

26. *Pterocarpus santalinus* L.f. (**Papilionaceae**) Vern: Erra Chandanam, Rakta Chandanam, Red

Sanders.

Large deciduous tree.

Distr.: Endemic to Eastern Ghats of Andhra Pradesh (Chittoor, Cuddapah, Nellore and Prakasam districts) and Tamil Nadu (Chengalpattu, Dharmapuri, Salem).

Status: CR (Globally, C.A.M.P. Andhra Pradesh, 2001).

27. *Phyllanthus narayanaswamii* Gamble (**Euphorbiaceae**)

Undershrub.

Gamble (1925) described this taxon based on the collections of V. Narayanaswami (1920) from East Godavari district. After, G.V. Subbarao (1974) recorded it from Cherukonda (GVS 28184, MH) of Visakhapatnam district.

Distr.: Endemic to East Godavari (Rampa hills) and Visakhapatnam (Cherukonda) districts of Andhra Pradesh.

28. *Pimpinella tirupatiensis* Bal. & Subr. (**Apiaceae**); Vern: Konda Kottimeera.

Erect herb.

N.P. Balakrishnan & K. Subramanyam (1960) described this species from Tirumala hills.

Distr.: Endemic to Tirumala hills of Chittoor district of Andhra Pradesh.

Status: Endangered (C.A.M.P. A.P., 2001).

29. *Rostellularia vahlii* (Roth) Nees var. *rupicola* Ellis (**Acanthaceae**)

Herb.

Distr.: Endemic to Nallamalais of Kurnool district (J.L.Ellis (1967) described this variety from Srisailem) of Andhra Pradesh.

Note: Known from collections of Ellis (JLE 32698 MH) and Moulali (DAM 5912, SKU) from Srisailem only.

30. *Shorea tumbergaia* Roxb. (**Dipterocarpaceae**); Vern: Thamba jalari

Large tree.

Distr.: Endemic to Middle Eastern Ghats of Andhra Pradesh (Chittoor, Cuddapah and Nellore districts) and Tamil Nadu (Chengalpattu, N. Arcot districts).

Status: Endangered (Globally, CAMP, 2001).

31. *Syzygium alternifolium* (Wight) Walp. (Myrtaceae); Vern: Mogi.

Large trees.

Distr.: Endemic to Chittoor, Cuddapah and Kurnool districts of Andhra Pradesh (Middle Eastern Ghats).

Stat.: Endangered (Globally, CAMP, A.P., 2001).

32. *Terminalia pallida* Brandis (Combretaceae); Vern: Tella Karaka.

Large evergreen tree.

Distr.: Endemic to Chittoor and Cuddapah districts of Andhra Pradesh.

Stat.: Endangered (Globally, CAMP. A.P., 2001).

33. *Toxocarpus roxburghii* Wight & Arn. (Asclepiadaceae)

Slender climber.

Distr.: Endemic to hills of East Godavari (Maredumilli) and Visakhapatnam (Ananthagiri) districts of Andhra Pradesh. It is restricted to hills above 800 m altitude

Stat.: Endangered.

Note: In Red Data Book of Indian Plants it was placed under the Endangered category. Only collections of G.V. Subbarao (1977) are available at MH.

34. *Wendlandia angustifolia* Wight ex Hook.f. (Rubiaceae)

Small tree.

Distr.: Endemic to Cuddapah hills of Andhra Pradesh.

Stat.: Extinct. (2000).

Note: It was not collected since 150 years, after Bed dome (RHB 1880, MH).

**Table 1.** Threatened plants used ethnomedicinally in Eastern Ghats of India.

Species name	Family	Local name	Habit*	Source of collection**	Part used*	Medicinal uses	TS
<i>Acorus calamus</i> L.	Araceae	Bacha	H	MD	Rh	Indigestion	EN
<i>Albizia thompsonii</i> Brandis	Mimosaceae	Velugu Chinta	T	DD	Sb	Skin diseases	VU
<i>Boswellia ovalifoliolata</i> Balakr. & Henry	Burseraceae	Guggilam	T	DD	Re	Scorpion sting	EN
<i>Celastrus paniculatus</i> Willd.	Celastraceae	Karsona	C	MD	Sd	Rheumatism	NT
<i>Ceropegia spiralis</i> Wight.	Asclepiadaceae	Nimmatigadda	C	DD	Tu	Indigestion	VU
<i>Costus speciosus</i> (Koenig) Sm.	Costaceae	Kevu kane	H	MD	Tu	Rheumatism	NT

<i>Crotalaria paniculata</i> Willd. var <i>nagarjunakondensis</i> Thoth.	Papilionaceae	Gutta Vempali	H	DD	R	Eczema	DD
<i>Curcuma inodora</i> Blatter	Zingiberaceae	Chara Pasupu	H	MD	Tu	Swellings due to wounds	VU
<i>Curcuma psedomontana</i> Grah.	Zingiberaceae	Adavi Pasupu	H	MD	Rh	Antiseptic	VU
<i>Cycas beddomei</i> Dyer	Cycadaceae	Paireetha	S	DD	Mc	Prevents pregnancy	CR
<i>Decalepis hamiltonii</i> Wight. & Arn.	Asclepiadaceae	Nannari	C	DD	R	Health tonic	EN
<i>Decaschistia cuddapahensis</i> Paul & Nayar <sup>a</sup>	Malvaceae	Magasiri Gadda	S	DD	R	Aphrodisiac	---
<i>Dendrobium macrostachyum</i> Lindl.	Orchidaceae	Radam	H	MD	S	Earache	VU
<i>Embelia ribes</i> Burm.f.	Myrsinaceae	Vayu vidangalu	C	SEG	Rb	Asthma	CR
<i>Entada pursaetha</i> DC.	Papilionaceae	Gilla chettu	C	SEG	Sd	Ulcers	EN
<i>Glochidion tomentosum</i> Dalz.	Euphorbiaceae	Pageri	T	SEG	L	Wounds	VU
<i>Gloriosa superba</i> L.	Liliaceae	Agnisikha	C	SEG	Tu	Abortifacient	VU
<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Schult.	Asclepiadaceae	Gudmari	C	MD	L	Diabetes	VU
<i>Habenaria roxburghii</i> (Pers.) R.Br.	Orchidaceae	Malle Leena Gadda	H	MD	Tu	Snakebite	VU
<i>Heterostemma deccanense</i> (Talb.) Swarup & Mangaly	Asclepiadaceae	Pedda Joola pala	C	SEG	Sb	Stomachache	EN
<i>Hildegardia populifolia</i> (Roxb.) Schott. & Endl.	Sterculiaceae	Gali Budda	T	DD	Sb	Malaria	EN
<i>Hypericum gaitii</i> Haines <sup>a</sup>	Hypericaceae	---	S	MD	L	Skin eruption	---
<i>Lasia spinosa</i> L.	Lauraceae	Salava dumpa	H	SEG	Rh	Body pains	EN
<i>Litsea glutinosa</i> (Lour.) Robins	Lauraceae	Nara mamidi	T	SEG	Sb	Check muscular bleeding	CR
<i>Nervilia aragonana</i> Gaud.	Orchidaceae	Ventelu dumpa	H	SEG	L	Skin diseases	EN
<i>Paederia foetida</i> L.	Rubiaceae	Pasaruni	C	MD	L	Skin diseases	NT
<i>Pimpinella tirupatiensis</i> Balakr. & Subram. <sup>a</sup>	Apiaceae	Konda Kottimeera	T	MD	R	Scorpion sting	---

<i>Plumbago indica</i> L.	Plumbaginaceae	Rakta chitaparu	H	DD	Tu	Abortifacient	EN
<i>Premna calycina</i> Haines	Verbenaceae	Nalla Jitramu	T	MD	Sb	Stomachache	VU
<i>Pterocarpus santalinus</i> L.f. <sup>a</sup>	Papilionaceae	Erra chandanam	T	DD	Sb	Diabetes	---
<i>Rauwolfia serpentina</i> (L.) Benth ex Kurz.	Apocynaceae	Patalgaruda	H	MD	R	Snakebite	CR
<i>Rhynchosia beddomei</i> Baker <sup>a</sup>	Papilionaceae	Advi kandi	H	DD	L	Abortifacient	---
<i>Rubia cordifolia</i> L.	Rubiaceae	Khuamadu	H	MD	R	Stomachache	VU
<i>Santalum album</i> L.	Santalaceae	Sirigandhamu	T	DD	R	Skin diseases	NT
<i>Shorea tuggaia</i> Roxb. <sup>a</sup>	Dipterocarpaceae	Thamba Jalari	T	DD	L	Earache	---
<i>Stemona tuberosa</i> Lour.	Stemonaceae	Konda tamara	C	MD	Tu	Gynecological disorder	VU
<i>Syzigium alternifolium</i> (Wight.) Walp.	Myrtaceae	Mogi	T	DD	F	Diabetes	EN
<i>Tacca lentopetaloides</i> (L.) Kuntze	Taccaceae	Dhoi	H	DD	Tu	Body pains	NT
<i>Terminalia pallida</i> Brandis	Combretaceae	Tella Karakkaya	T	DD	F	Dysentery	EN
<i>Torenia indica</i> Saldanha	Scrophulariaceae	Chinna Mogakura	H	DD	L	Earache	VU
<i>Zanthoxylum rhesta</i> (Roxb.) DC.	Rutaceae	Racha	T	MD	F	Dysentery	EN
<i>Zingiber roseum</i> (Roxb.) Rosc.	Zingiberaceae	Rajula gadda	H	MD	Rh	Stimulant	EN

<sup>a</sup>= Endemic; \*T= Tree, S= Shrub, H= Herb, C= Climber; \*\*SEG= Semi evergreen, MD= Moist deciduous, DD= Dry deciduous; \*F= Flower, L= Leaf, R= Root, Rb= Root bark, S= Stem, Sb= Stem bark, Sd= Seed, Tu= Tuber, Rh= Rhizome, Re= Resin, Mc= Male cone; \*VU= Vulnerable, EN= Endangered, NT= Near threatened, CR= Critically endangered, DD= Data deficient; TS= Threat status (CAMP/IUCN)\*