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Amolops kamal — New Cascade Frog Species from Nagaland's Indo-Burma Hotspot

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Amolops kamal — New Cascade Frog Species from Nagaland's Indo-Burma Hotspot

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WHY IN NEWS:

The **Zoological Survey of India (ZSI)** — through its **Shillong centre (North-Eastern Regional Centre)** with molecular-phylogenetics support from **ZSI Pune** — formally described a **new cascade-frog species** named ***Amolops kamal*** in a peer-reviewed taxonomic paper in May 2026. The species was collected from **Singrep village, Kiphire district, Nagaland** in **August 2024** and belongs to the ***Amolops indoburmanensis* species complex**. The discovery underscores India's **under-surveyed amphibian diversity** in the **Indo-Burma biodiversity hotspot** — one of only four hotspots in India.

AMOLOPS — THE CASCADE FROG GENUS

Amolops is a genus of **torrent/cascade frogs** specially adapted to **fast-flowing hill streams**:

FEATURE	DETAIL
Genus	*Amolops* (family **Ranidae**)
Habitat	Fast-flowing rocky streams in hilly tropical/subtropical forests
Adaptation	Powerful hind limbs for jumping between wet rocks; **suction-disc-shaped abdominal skin** on tadpoles enabling them to cling to rocks in fast currents
Geography	Eastern Himalaya, Northeast India, Myanmar, southern China, Southeast Asia
Species count globally	~80+ described species; many cryptic species still being separated via molecular methods
India	~30+ described *Amolops* species, with new additions yearly from the Northeast

THE DISCOVERY — METHODOLOGY

STEP	DETAIL
Field collection	**August 2024** at **Singrep village, Kiphire district, Nagaland** (hill-stream habitat ~1,200-1,500 m elevation)
Initial morphology	ZSI Shillong identified candidate as a distinct member of the *A. indoburmanensis* complex
Molecular phylogenetics	**ZSI Pune** sequenced **16S rRNA** mitochondrial marker; built a phylogenetic tree showing the specimen's distinct lineage
Integrative taxonomy	Combined morphology + acoustic call recordings + molecular data — the **modern gold standard** for describing new amphibians
Publication	Formal description in peer-reviewed journal **May 2026**; announcement May 29-30, 2026
Etymology	"*kamal*" — likely honouring a contributor; common in zoological nomenclature to name species after a person or place

WHY INTEGRATIVE TAXONOMY?

Amphibian taxonomy historically relied on **morphology alone**, which under-counted **cryptic species** — populations that look almost identical but are genetically distinct. The ***Amolops indoburmanensis* species complex** is a classic example: morphologically very similar frogs that turn out to be **multiple distinct species** when DNA-sequenced. Integrative taxonomy combines:

- **Morphometrics** — body length, hindlimb proportions, finger/toe disc width
- **Bioacoustics** — distinct mating calls (often the strongest species barrier in frogs)
- **Molecular phylogenetics** — 16S rRNA, CO1, RAG1 markers
- **Ecological niche** — habitat preference, breeding site

This approach has driven a **doubling of amphibian species descriptions** globally over the past 15 years.

THE INDO-BURMA BIODIVERSITY HOTSPOT

India has **four biodiversity hotspots** (out of 36 globally, defined by Conservation International):

HOTSPOT	INDIA COVERAGE	HIGHLIGHTS
Western Ghats & Sri Lanka	Western Ghats (Gujarat → Tamil Nadu)	Endemic amphibians, lion-tailed macaque, Nilgiri tahr
Eastern Himalaya	Sikkim, North Bengal, Arunachal, parts of Bhutan/Nepal	Red panda, takin, golden langur
Indo-Burma	**Northeast India** (Assam, Meghalaya, Manipur, Mizoram, Nagaland, Tripura), Andaman	Hoolock gibbon, clouded leopard, *Amolops* frogs
Sundaland (Nicobar only)	**Nicobar Islands** (the Sundaland hotspot's northernmost extension)	Nicobar megapode, Nicobar tree shrew

The **Indo-Burma hotspot** spans India's Northeast, Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam, southern China. It is the **most threatened of India's hotspots** — habitat loss from shifting cultivation (*jhum*), road infrastructure, dams, and climate change.

ZOOLOGICAL SURVEY OF INDIA — ARCHITECTURE

PARAMETER	DETAIL
Founded	**July 1, 1916**
Headquarters	**Kolkata** (then Calcutta)
Parent ministry	**Ministry of Environment, Forest and Climate Change (MoEFCC)**
First Director	**Thomas Nelson Annandale** (1916-1924)
Mandate	Survey, identification, classification, and documentation of India's fauna
Regional centres	16 centres across India — North-Eastern Regional Centre at **Shillong**; molecular lab at **ZSI Pune**
Recent milestones	**Animal Discoveries 2024** report (released May 2025): **641 new species/records** described from India that year

WHAT THIS DISCOVERY SIGNALS

1. **NE India is under-surveyed** — over 80% of new amphibian species described from India each year come from the Northeast.
2. **Climate threat** — Hill-stream frogs depend on cool, fast-flowing water; climate warming and stream-flow alteration directly threaten them.

3. **Conservation gap** — *Amolops kamal*'s habitat at Singrep is **not currently protected**; many cryptic NE amphibians are described and then immediately classified as "Data Deficient" because survey work hasn't established population size.
4. **IUCN Red List pipeline** — newly described species usually take 5-10 years to be formally assessed; conservation status of *Amolops kamal* is currently undetermined.
5. **Linkage to Open Natural Ecosystem (ONE) policy** — India's emerging ONE policy framework (mentioned in CSE 2026 SoE) recognises grasslands and hillstream ecosystems as conservation-priority habitats outside formal Protected Area networks.

UPSC RELEVANCE

PAPER	RELEVANCE
GS3	Biodiversity, biodiversity hotspots, species discovery, integrative taxonomy, climate impact on amphibians
Mains	"India's biodiversity hotspots are also its conservation frontlines. Discuss the institutional and policy gaps in conserving the Indo-Burma hotspot."
Prelims	India's 4 biodiversity hotspots (Western Ghats-Sri Lanka, Eastern Himalaya, Indo-Burma, Sundaland-Nicobar), ZSI (1916, Kolkata, MoEFCC), Conservation International's 36 global hotspots, *Amolops* genus, Kiphire district (Nagaland), 16S rRNA marker

FACTS CORNER

AMOLOPS KAMAL — DISCOVERY:

Type locality: Singrep village, Kiphire district, Nagaland

Elevation: ~1,200-1,500 m

Field collection: August 2024

Formal publication: May 2026

Identified by: ZSI Shillong (NE Regional Centre) + ZSI Pune (molecular work)

Species complex: *Amolops indoburmanensis*

AMOLOPS — GENUS:

Family: Ranidae

Habitat: Fast-flowing rocky hillstreams

Globally: ~80+ described species; India ~30+

Adaptation: Suction-disc abdomen on tadpoles

INDIA'S BIODIVERSITY HOTSPOTS (4):

- **Western Ghats & Sri Lanka**
- **Eastern Himalaya**
- **Indo-Burma** (Northeast India; *A. kamal* here)
- **Sundaland** (Nicobar Islands — northernmost extension)

GLOBALLY: 36 BIODIVERSITY HOTSPOTS (CONSERVATION INTERNATIONAL, 1988 FRAMEWORK BY NORMAN MYERS)

ZOOLOGICAL SURVEY OF INDIA:

Founded: July 1, 1916 | HQ Kolkata | Under MoEFCC

First Director: Thomas Nelson Annandale

16 regional centres; key for amphibian work: Shillong + Pune

Animal Discoveries 2024 (released May 2025): 641 new species/records

INTEGRATIVE TAXONOMY METHODS:

Morphometrics + bioacoustics + molecular markers (16S rRNA, CO1, RAG1) + ecological niche

NORTHEAST AMPHIBIAN DIVERSITY CONTEXT:

Over 80% of new Indian amphibians described each year come from NE

> Major threats: jhum cultivation, dams, road infra, climate warming
>
> Conservation gap: many newly described species are immediately classified as “Data Deficient” on IUCN Red List

Source: Amolops kamal — New Cascade Frog Species from Nagaland's Indo-Burma Hotspot — Ujiyari.com | Free UPSC & State PCS Current Affairs

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