



## Amphibians Threatened by Climate Change

**For Prelims:** Amphibians Threatened by Climate Change, [Amphibians, Climate Change, International Union for Conservation of Nature's \(IUCN\)](#).

**For Mains:** Amphibians Threatened by Climate Change, Conservation, Environmental pollution and degradation, Environmental impact assessment.

### [Source: TH](#)

Why in News?

Recently, the study titled '**Ongoing declines for the world's amphibians in the face of emerging threats**' published in the Nature journal reveals significant threats to Amphibians worldwide particularly from [Climate Change](#).

- The study is based on the second global amphibian assessment coordinated by the Amphibian Red List Authority, a branch of the Amphibian Specialist Group of the [International Union for Conservation of Nature's \(IUCN\)](#) Species Survival Commission.
- The assessment evaluated the extinction risk of more than 8,000 amphibian species from all over the world, including 2,286 species evaluated for the first time

### What are the Key Highlights of the Study?

- **Extinction Risk:**
  - Two out of every five amphibian species are threatened with extinction.
  - 40.7% of the species being globally threatened – highest for any species. This is compared to **26.5% of mammals**, 21.4% of reptiles and 12.9% of birds.
  - Between 2004 and 2022, over 300 amphibian species have **moved closer to extinction**, with climate change identified as the primary threat for 39% of these species.
    - Amphibians are particularly sensitive to environmental changes, making them vulnerable to the effects of climate change.
- **Amphibians Gone Extinct:**
  - Four amphibian species were documented as having gone **extinct since 2004** — the Chiriquí harlequin toad (**Atelopus chiriquiensis**) from Costa Rica, the sharp-snouted day frog (**Taudactylus acutirostris**) from Australia, Craugastor myllomyllon and the Jalpa false brook salamander (**Pseudoeurycea exspectata**), both from Guatemala.
- **Greatest Concentration of Threatened Amphibians:**
  - The greatest concentrations of threatened amphibians were found to be in the Caribbean islands, **Mexico and Central America, the tropical Andes region, India's Western Ghats**, Sri Lanka, Cameroon, Nigeria and Madagascar.
- **Human Impact:**
  - Habitat destruction and degradation due to activities such as agriculture, infrastructure development, and other industries remain the most common threats to amphibians, **affecting 93% of all threatened species.**

- **Disease and Overexploitation:**
  - Disease caused by **the chytrid fungus** and overexploitation continue to contribute to amphibian declines.
  - Disease and habitat **loss drove 91 %** of status deteriorations **between 1980 and 2004**.
  - Ongoing and projected climate change effects are **now of increasing concern, driving 39%** of status deterioration since 2004, followed by habitat loss amounting to 37%.
- **Salamander Threat:**
  - Three out of **every five salamander species** are threatened with extinction, primarily due to habitat destruction and climate change.
  - Salamanders are identified as the world's **most threatened group of amphibians**.
    - Amphibians first **appeared more than 300 million years ago**. Three orders of amphibians exist today:
      - Salamanders and newts (60% threatened with extinction); frogs and toads (39%); and the limbless and serpentine caecilians (16%).
- **Conservation Action:**
  - Conservationists plan to **use the study's findings** to develop a global conservation action plan, prioritize conservation efforts, secure additional resources, and influence policies to reverse the negative trend for amphibians.

## What are Amphibians?

- **About:**
  - They fall under the Chordata phylum of the **kingdom Animalia, Eg., Frogs, Toads, Salamanders , newts, caecilians etc.**
  - These are multicellular vertebrates that live both on land and water.
  - They are the first cold-blooded animals to have appeared on land.
    - **Cold-blooded animals** can be defined as the animals which cannot regulate their internal body temperature with the change in the environment.
  - They respire through the lungs and skin.
  - They have three chambered hearts.
- **Significance:**
  - Meanwhile, from an **ecological perspective**, amphibians are regarded as vital **ecological indicators**. Due to a high degree of sensitivity, they are studied and indicate habitat fragmentation, ecosystem stress, the impact of pesticides, and various anthropogenic activities.
    - They are **important biological indicators** and important for the wider health of the ecosystems.
  - They play a significant role **both as a predator and prey**. Amphibians eat pests, which is beneficial for agriculture, and in **controlling diseases like malaria** and more.
  - Amphibians are important **from a medical point of view**. The skin of amphibians contains **different types of peptides** and offers the possibility of medical cures for several human diseases.
    - At present, they are also used in some painkillers.

## UPSC Civil Services Examination Previous Year Question (PYQ)

**Q. With reference to India's biodiversity, Ceylon frogmouth, Coppersmith barbet, Gray-chinned minivet and White-throated redstart are (2020)**

- (a) Birds
- (b) Primates
- (c) Reptiles
- (d) Amphibians

**Ans: (a)**

**Exp:**

- These all are part of the Avian ecology.
- Ceylon Frogmouth
  - It is a grey-brown nocturnal bird species that is found in the Western Ghats and Sri Lanka's forested habitats.
- Coppersmith Barbet
  - Also called crimson-breasted barbet and coppersmith, it is an Asian barbet with crimson forehead and throat, known for its metronomic call that sounds similar to a coppersmith striking metal with a hammer.
  - It is a resident bird in the Indian subcontinent and parts of Southeast Asia.
- White-throated Redstart
  - It is a species of bird in the Muscicapidae family. It is found in Bhutan, China, India, Myanmar, and Nepal.
- Grey-Chinned Minivet
  - It is a species of bird in the Campephagidae family.
  - It is found in Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Taiwan, Thailand and Vietnam.
  - Its natural habitat is subtropical or tropical moist lowland forests.
- **Therefore, option (a) is the correct answer.**

**Q. With reference to the evolution of living organisms, which one of the following sequences is correct? (2009)**

- (a)** Octopus - Dolphin - Shark
- (b)** Pangolin - Tortoise - Hawk
- (c)** Salamander - Python - Kangaroo
- (d)** Frog - Crab - Prawn

**Ans: (c)**

- Sequence of Evolutionary Stages: Single celled → Multi cellular → Fishes → Amphibians → Reptiles → Birds → Mammals.
  - Octopus (Mollusc); Dolphins and Whales (Mammals); Shark (Fish)
  - Pangolin (Mammal); Tortoise (Reptile); Hawk (Bird).
  - **Salamander (Amphibian) - Python (Reptile) - Kangaroo (Mammal). This sequence follows the correct sequence of evolutionary stages.**
  - Frog (Amphibian); Crab (Crustaceans); Prawn (Crustaceans).
- **Therefore, option (c) is the correct answer**