



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**