First Record of Schizopygopsis waddellii in India

Prelims: *Current events of national and international importance | Environment*

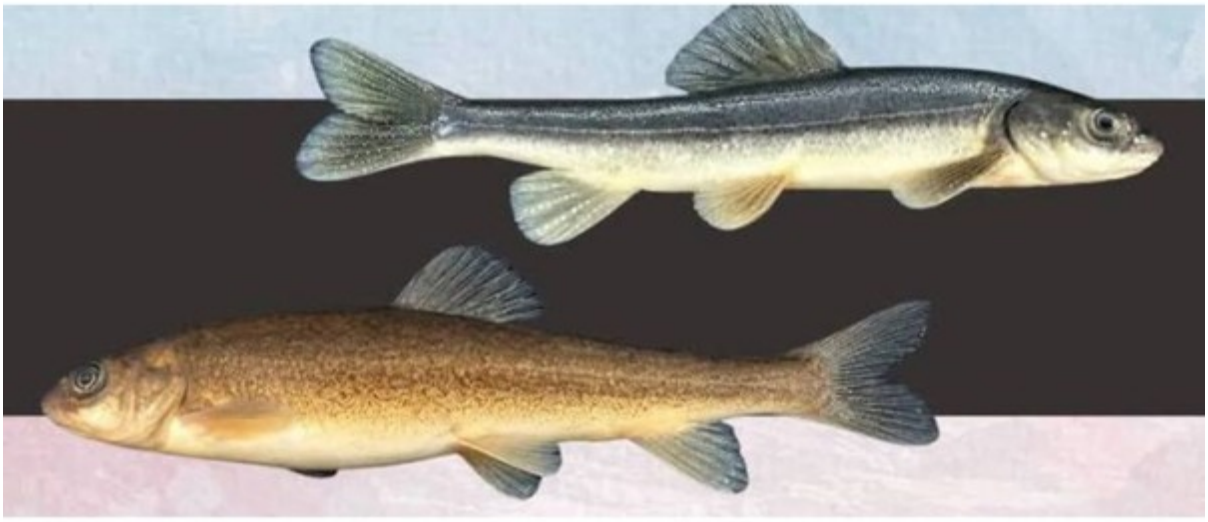
Why in News?

Scientists recorded the Schizopygopsis waddellii in India for the first time, situated at an elevation of approximately 12,800 feet (~3,900 meters) in the border district of Tawang, Arunachal Pradesh.

- **Taxonomic Group -** Belongs to the family **Cyprinidae** (carps and minnows) and the subfamily *Schizopygopsinae* (specialized high-altitude snow trouts).
- **Historical Distribution-** Native to the trans-Himalayan streams and oligotrophic lacustrine ecosystems of the Tibetan and Chinese plateaus.
- **Type Locality-** Originally described by Charles Tate Regan in 1905 as *Gymnocypris waddellii* from **Yamdrok Lake in Tibet**.
- **Integrative Identification-** Species identification was confirmed using an integrative taxonomic framework combining morphological evaluation with mitochondrial DNA (mtDNA) sequencing.
- **Hydrodynamic Morphology -** Possesses an elongated, sub-cylindrical body with an olive-greyish dorsal surface and a silvery-white underside, suited for low-drag movement.
- **Specialized Feeding Mechanism-** Features a blunt snout, a subterminal mouth, and a hard, plate-like **horny scraping structure** around the lower lip used to scrape benthic microalgae and biofilms off submerged rocks.
- **Locomotion & Sensory Adaptation -** Equipped with a deeply forked caudal (tail) fin for rapid propulsion in cold, high-velocity waters, along with a complete lateral line system.
- **Sexual Dimorphism-** Males display visible nuptial tubercles/spines on their body surface and brighter coloration during breeding phases, whereas females lack these spines and exhibit muted coloration.
- **Extreme Cold Tolerance -**Genetically adapted to survive under freezing temperatures, seasonal surface ice cover, low dissolved oxygen, and nutrient-poor (oligotrophic) high-altitude conditions.

Significance for Biodiversity

- **Expands National Freshwater Database-** Formally adds a new high-altitude genus and species record to India's documented freshwater fish fauna.
- **Highlights Data Deficits-** Demonstrates that high-altitude lacustrine ecosystems across the Eastern Himalayas remain significantly under-surveyed.
- **Ecological Baseline-** Provides a scientific baseline for monitoring fragile cold-water aquatic biodiversity, climate change impacts on alpine lakes, and transboundary freshwater conservation along the India-China border region.



Reference

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