

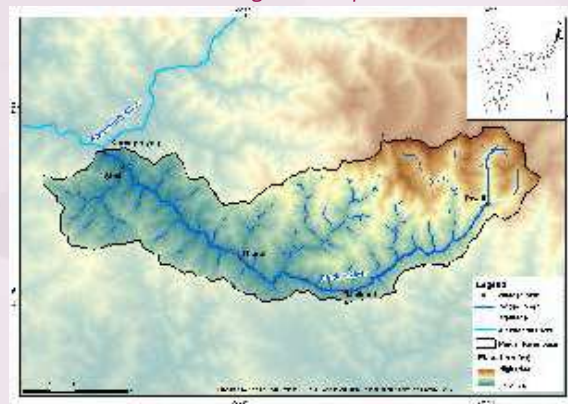
Pindar

GENERAL INFORMATION

- Pindar River, a snow-fed tributary of the Alaknanda River, originates from the Pindari glacier (3820 m asl), in Bageshwar district, Uttarakhand, in the Garhwal Himalaya.
- It traverses a length of 124 km and meets the Alaknanda River at Karnaprayag, Chamoli district.
- Pindar River basin spans an area of 1856.56 km² (Figure 1).
- The basin lies in the Himalaya (West Himalaya-2B) biogeographic zone.
- Climate in the basin varies from sub-tropical in the lower reaches to temperate and alpine in the higher altitude areas.
- Pindar basin is characterised by high mountain terrain shaped by glacial processes, with broad U-shaped valleys in the upper reaches; and narrow valleys, gorges and flat river terraces used for settlements in the lower reaches.
- Major tributaries of the Pindar are the Sundardhunga Gad, Shambhu Gad, Kail Ganga, Pranmati, Meing Gadhera, Kewar Gadhera, Chopta Gad, and Ata Gad.

- The population density along the river is 63.4 persons/km².
- Decadal LULC transitions in the Pindar basin (2008–09 to 2018–19) recorded an increase in area under kharif crop by 2.27%, double/triple crop by 1.13%, grassland by 0.88%, snow cover by 0.35% and waterbodies by 0.03%, while current fallow land decreased by 3.23%, wasteland by 1.16%, evergreen forest by 0.26% and deciduous forest by 0.01%, indicating a shift in land-use patterns (Figures 2a and 2b).

Figure 1: Map of Pindar River basin



BIODIVERSITY VALUE

- Pindar basin is dominated by non-forest areas (41.23%), followed by moderately dense forest (31.55%), open forest (18.34%) and very dense forest (8.88%) (Figure 3).
- The upper basin is dominated by Sub-Alpine Forests, characterised by *Betula utilis* and *Rhododendron campanulatum*. The middle basin is represented by Himalayan Moist Temperate Forests comprising species such as *Quercus semecarpifolia*, *Quercus floribunda*, *Cedrus deodara*, and *Abies pindrow*; while lower basin supports Himalayan Dry Temperate Forests, supporting *Quercus leucotrichophora*, *Rhododendron arboreum*, *Pinus roxburghii* and *Cedrus deodara*. Critically Endangered Indian nard (*Nardostachys jatamansi*), and Endangered *Aconitum heterophyllum* and *Picrorrhiza* (*Picrorrhiza kurroa*) are found in the sub-alpine and alpine zones.
- Nanda Devi National Park and its surrounding areas in the Chamoli district hosts 27 mammalian species (2 orders and 5 families), including the Endangered Himalayan musk deer (*Moschus leucogaster*), and Vulnerable snow leopard (*Panthera uncia*) and Asiatic black bear (*Ursus thibetanus*).
- 121 and 154 bird species have been recorded from the Pindari Reserve Forest and Nanda Devi National Park, respectively. Threatened species in the basin include the Critically Endangered red-headed vulture (*Sarcogyps calvus*), and Vulnerable cheer pheasant (*Catreus wallichii*) and western tragopan (*Tragopan melanocephalus*).
- 50 fish species (4 orders, 9 families) have been documented from the Pindar River, including the Endangered golden mahseer (*Tor putitora*) and *Glyptothorax madraspatanus*.

Figure 2a: LULC map of Pindar River basin (2008-09)



Figure 2b: LULC map of Pindar River basin (2018-19)



Figure 3: Forest cover of Pindar River basin (2019)



CONSERVATION SIGNIFICANCE

ENDANGERED

Fish

Glyptothorax madraspatanus (Day, 1873)

Golden mahseer *Tor putitora*
(Hamilton, 1822)

VULNERABLE

Fish

Dark mahseer *Naziritor chelynoides*
(McClelland, 1839)

Chirruh snowtrout *Schizothorax esocinus*
(Heckel, 1838)

Hill trout *Schizothorax plagiostomus*
(Heckel, 1838)

Snowtrout *Schizothorax richardsonii*
(Gray, 1832)

KEY PROTECTED AREAS

Nanda Devi National Park

Himalayan musk deer (*Moschus leucogaster*) | ©Soham Bhattacharya



DRIVERS OF RIVERSCAPE CHANGE

- Pindari Glacier, source of the Pindar River, has been undergoing sustained retreat due to rising temperatures, accompanied by an upward shift in snowline elevations leading to reduced ice and snow cover, altered seasonal meltwater contributions, declining dry-season baseflows, and changes in peak discharge timing that influence downstream river morphology and water availability.
- A proposed river-linking project aims to divert water from the Pindar system to rain-fed rivers in Almora and Bageshwar districts through tunnels and pipelines, which may lead to landslides, groundwater depletion, habitat disruption, biodiversity loss, and destabilization of traditional landscapes in the ecologically fragile Himalayan basin.
- While no large dams currently operate on the Pindar mainstem, hydropower development and road expansion in adjoining tributaries and valleys influence river corridor stability, alter runoff pathways, and increase surface erosion.
- Anthropogenic disturbances such as urbanization, increased population pressure, deforestation, terracing, and improper land management in the catchment area accelerate erosion and modify the river's sediment load, channel morphology and flow characteristics.

INTERESTING FACTS

- Karnaprayag, the confluence of Alaknanda and Pindar, is the third of the five sacred confluences in Hindu mythology along the Alaknanda River, termed as 'Panch Prayag'.
- According to local lore, Karna, biological son of Kunti (also mother to the Pandavas' in the *Mahabharat*) and the Sun God Surya, performed intense penance at this confluence (known as Karnashila), where he was blessed with the divine *Kavacha* (armour) and *Kundala* (earrings). Lord Krishna is also believed to have performed Karna's cremation rites here.
- Several ancient temples, including Karneshwar Mahadev Temple, Uma Temple, and Karna Temple, are located in Karnaprayag, highlighting the area's long-standing religious importance.
- The renowned Sanskrit poet Kalidasa is traditionally believed to have referenced this region in *Abhijnana Shakuntalam*, associating it with the legendary romance of King Dushyanta and Shakuntala.
- Swami Vivekananda is believed to have meditated at Karnaprayag for several days under the guidance of his spiritual mentors, adding to the site's spiritual legacy.
- Adbadri temple complex (Chamoli district), a group of 16 ancient temples from the Gupta era, is situated near Karnaprayag. The Adi Badri Temple is one of the Panch Badri temples devoted to Lord Vishnu.



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