

Ecological impacts of non-native fish on mahseer species



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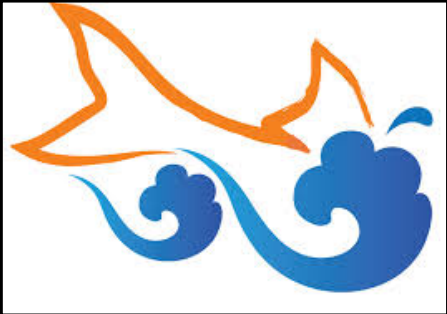
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Mahseer – the ‘tiger of Indian rivers’

- Comparatively **bigger in size** compared to other barb species
- **Highly valued** for food, cultural significance
- **Migratory**; inhabits rocky bottoms; distributed along moderately cold climatic regions
- **Important game fish** - ‘hard fighting qualities’



Gupta, N. et al. (2014). Area 46(4): 389-397

PHOTO: Misty Dhillon

Growing threats

- **Over-exploitation** of species and associated ecosystems
- **Deteriorating environment:** development-driven changes
- Lack of adequate **legal protection**
- **Knowledge gaps**



Growing threats...

By 2050, across the region (compared to a 1960s baseline)

- **temperature** is projected to **increase by about 1-2°C**
- **monsoon** is expected to become **longer/more erratic**
- **precipitation** is projected to **change by 5%** on average
- intensity of **extreme rainfall events** is likely to increase
- **substantial losses in glacial mass**

Alfthan, B., Gupta, N., et al. (2018). United Nations Environment Programme, GRIDArendal and the International Centre for Integrated Mountain Development, Vienna, Arendal and Kathmandu.

Non-native fish species of the region

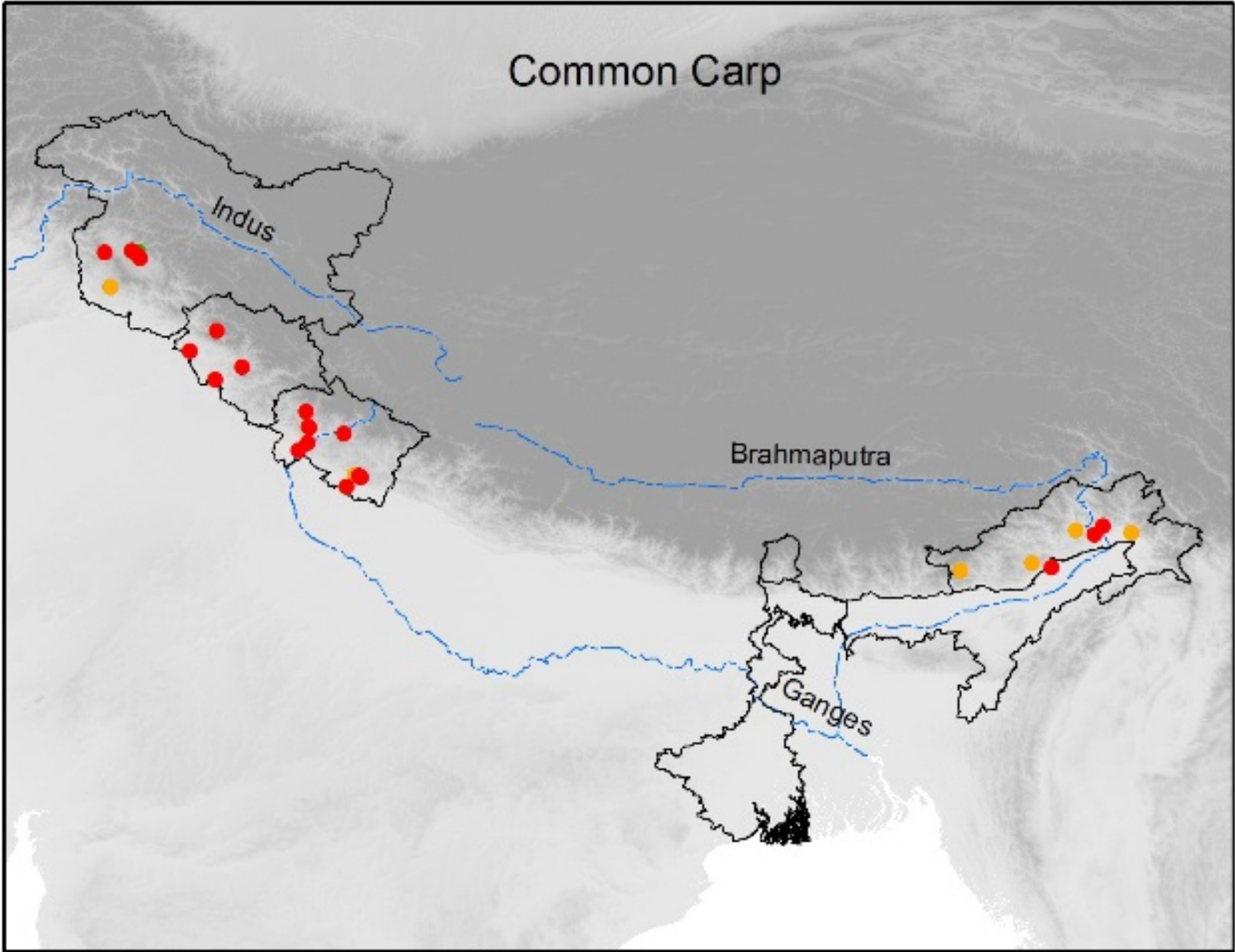
- *'Fish species introduced beyond their native range either deliberately or accidentally, with a potential to negatively impact native fish species, and/or adversely impact the socio-ecological wellbeing of local communities'* (Gupta and Everard 2017)
- Common carp (*Cyprinus carpio carpio*), brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), mirror carp (*Cyprinus carpio specularies*), silver carp (*Hypophthalmichthys molitrix*), grass carp (*Ctenopharyngodon idella*) and crucian carp (*Carassius carassius*)

Jammu and Kashmir; 1956

Jammu and Kashmir
Himachal Pradesh
Uttarakhand
Arunachal Pradesh

Predation, compete for similar food resources and habitat, lesser preferred food fish

Common Carp



- 1970 - 2000
- 2001 - 2010
- 2011 - 2017

--- Major Rivers

Elevation

High : 8806

Low : -277



Way forward

➤ Knowledge gaps

- Indian Himalayan State Action Plans on Climate Change (SAPCC): findings conveyed to State Climate Change Nodal Officers*
- Eurasian **otter** (*Lutra lutra*, Near Threatened), smooth-coated otter (*Lutra perspicillata*, Vulnerable), small-clawed otter (*Aonyx cinereus*, Vulnerable)
- Impacts on **local livelihoods**
- **Biodiversity Monitoring Protocol** for REDD+ developed: survey of mahseer in Bardiya National Park, December 2018

*Gupta, N. et al. (2018) Economic and Political Weekly 53(12): 35-40

Thank you!

