

## *Tor sinensis*, Red Mahseer

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## Taxonomy

| Kingdom  | Phylum   | Class          | Order         | Family     |
|----------|----------|----------------|---------------|------------|
| Animalia | Chordata | Actinopterygii | Cypriniformes | Cyprinidae |

**Taxon Name:** *Tor sinensis* Wu, 1977

### Common Name(s):

- English: Red Mahseer

### Taxonomic Notes:

*Tor sinensis* was described by Wu (1977) from the Luosuo Jiang, Jinghong and Menghan in the upper reaches of the Mekong (Lancang Jiang) in Yunnan Province, China.

## Assessment Information

**Red List Category & Criteria:** Vulnerable B2ab(iii) [ver 3.1](#)

**Year Published:** 2018

**Date Assessed:** April 20, 2018

### Justification:

Despite the wide distribution, the recorded area of occupancy (AOO) of *Tor sinensis* is less than 2000 km<sup>2</sup> and the populations exist in nine fragmented basins part of the non-interconnected tributaries of the Mekong. The Mekong and its tributaries are experiencing high levels of anthropogenic threats, most important of which is the high number of currently operating and proposed mega-hydropower dams, which impact the migrations of *Tor* spp. In view of the restricted distribution, fragmented populations and current and future threats to the habitat, *Tor sinensis* is assessed as Vulnerable.

### Previously Published Red List Assessments

2012 – Data Deficient (DD)

<http://dx.doi.org/10.2305/IUCN.UK.2012-1.RLTS.T187891A1832428.en>

## Geographic Range

### Range Description:

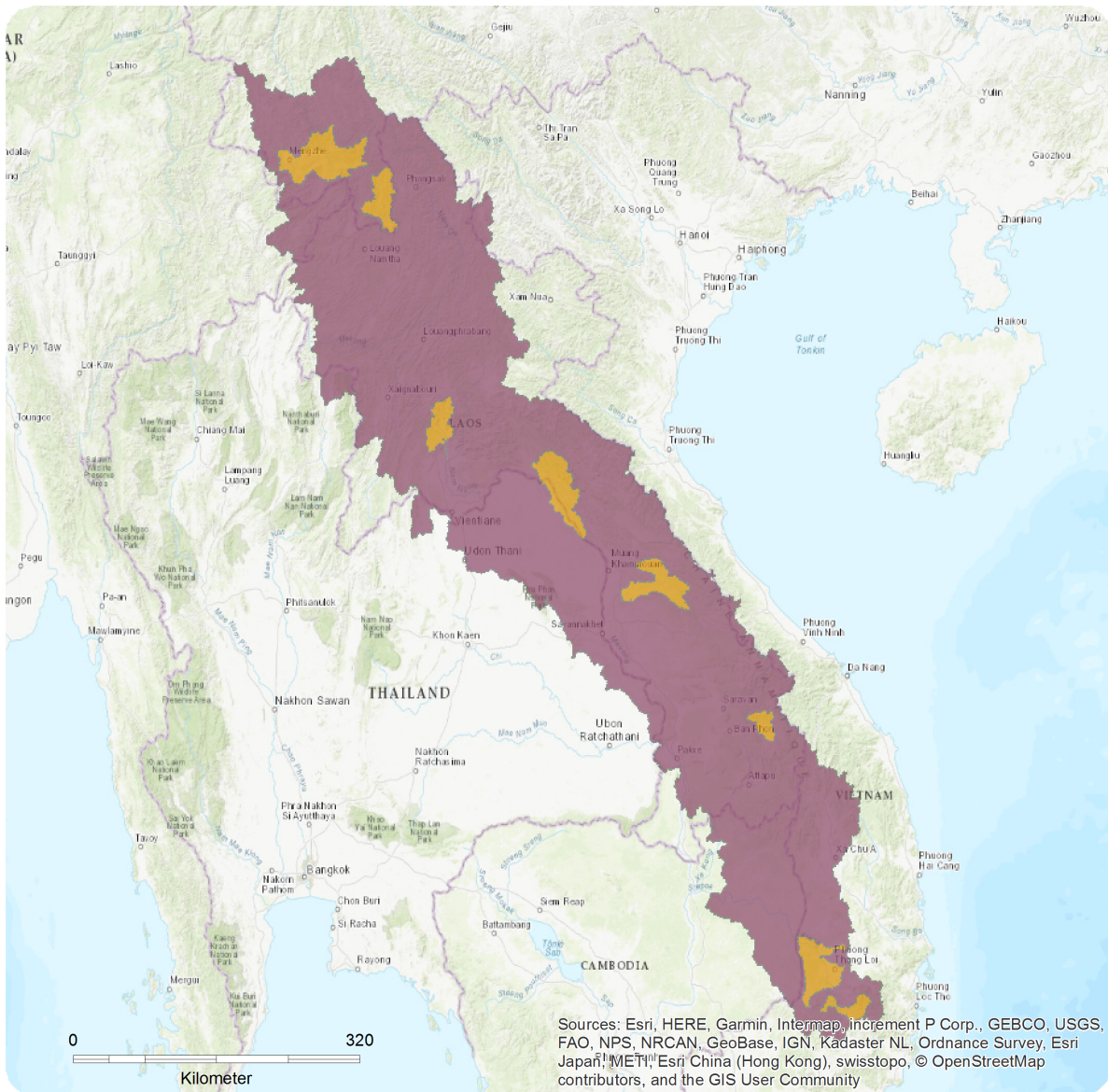
Endemic to the upper Mekong River system, from where it has been recorded from Luosuo Jiang, Jinghong and Menghan in Lancang Jiang (Upper Mekong), Yunnan Province, China (Wu 1977; Zhou and Cui 1996); the Nam Theun, Nam Hinboun, Xe Bang Fai, Se Kong and upper Nam Ngum in Lao PDR (Roberts 1999), upper Ea Krong No and Sre Pok River in Viet Nam (Hoang *et al.* 2015) and Nong Khai in Thailand (on the border with Lao PDR) (C. Vidthayanon pers. comm. 2012).

### Country Occurrence:

**Native:** China (Yunnan); Lao People's Democratic Republic; Thailand; Viet Nam

# Distribution Map

*Tor sinensis*

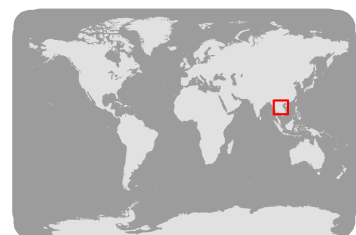


## Range

- Extant (resident)
- Possibly Extant (resident)

## Compiled by:

Bournemouth University



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



## Population

No information on the status or trends in population of *Tor sinensis* is available.

**Current Population Trend:** Unknown

## Habitat and Ecology (see Appendix for additional information)

Inhabits larger streams and rivers in clear gravel and cobble beds. Juvenile *T. sinensis* are known to be planktivorous, switching on to an omnivorous diet as adults (Yi *et al.* 2014) when they consume vegetable matter such as fruits, as well as fish, crustaceans and other invertebrates (Rainboth 1996). Influenced by water velocity and temperature (Yi *et al.* 2014), the spawning season extends from July to September, with a peak in August (KIZCAS 2004). Local knowledge of villagers along the Nam Theun basin in Lao PDR indicates that this species undergoes upstream spawning migrations in such large numbers that "the rivers turn red" (Roberts 1999).

**Systems:** Freshwater

## Use and Trade

The species is known to be fished in Lao PDR at a subsistence level.

## Threats (see Appendix for additional information)

No information on species-specific threats are available, but is probably impacted by indiscriminate fishing methods (poison and blast fishing), by pollution, and by hydropower development, which are general threats to the freshwater biodiversity in the Upper Mekong from where this species has been recorded. Using habitat suitability models, the extinction risk of *T. sinensis* in the Lancang River was suggested to be 'critical', with the cascade of dams identified to be the major threat (Yi *et al.* 2014).

## Conservation Actions (see Appendix for additional information)

No conservation measures are in place for the species. More research is required on micro-level distribution, biology, ecology, threats and livelihood dependence on this species to inform future conservation action.

## Credits

**Assessor(s):** Vidthayanon, C. & Pinder, A.

**Reviewer(s):** Raghavan, R.

**Contributor(s):** Fisher, J. & Dahanukar, N.

## Bibliography

Hoang, H.D., Pham, H.M., Durand, J.D., Tr n, N.T. and Phan, P. Đ. 2015. Mahseers genera *Tor* and *Neolissochilus* (Teleostei: Cyprinidae) from southern Vietnam. *Zootaxa* 4006: 551-568.

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KIZCAS (Kunming Institute of Zoology Chinese Academy of Science). 2004. Report of effects and evaluation of cascade hydropower station construction on aquatic organisms in middle and lower reach of Lancang River. Kunming Institute of Zoology, Kunming.

Rainboth, W.J. 1996. *Fishes of the Cambodian Mekong*. Food and Agriculture Organization of the United Nations (FAO), Rome, Italy.

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Wu, H.-W., Lin, R.-D., Chen, Q.-X., Chen, X.-L. and He, M.-Q. 1977. Barbinae. In: Wu, H-H (ed.), *Zhongguo like yulei zhi. [The cyprinid fishes of China]*, pp. 229-394. People's Press, Shanghai.

Yi, Y., Tang, C., Yang, Z. and Chen, X. 2014. Influence of Manwan Reservoir on fish habitat in the middle reach of the Lancang River. *Ecological Engineering* 69: 106-117.

Zhou, W. and Cui, G.H. 1996. A review of *Tor* species from the Lancangjiang River (Upper Mekong River), China (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters* 7: 131-142.

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## External Resources

For [Images and External Links to Additional Information](#), please see the [Red List website](#).

## Appendix

### Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

| Habitat  | Season | Suitability | Major Importance? |
|--|--------|-------------|-------------------|
| 5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls) | -      | Suitable    | Yes               |
| 5. Wetlands (inland) -> 5.2. Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks | -      | Suitable    | Yes               |

### Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

| Threat   | Timing    | Scope   | Severity                         | Impact Score     |
|--|-----------|---|----------------------------------|------------------|
| 5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest] | Ongoing   | Majority (50-90%)   | Causing/could cause fluctuations | Medium impact: 6 |
| 7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.11. Dams (size unknown)   | Ongoing   | Majority (50-90%)   | Slow, significant declines       | Medium impact: 6 |
|  | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>1. Ecosystem stresses -> 1.2. Ecosystem degradation |                                  |                  |
| 9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.2. Soil erosion, sedimentation   | Ongoing   | Majority (50-90%)   | Slow, significant declines       | Medium impact: 6 |
|  | Stresses: | 1. Ecosystem stresses -> 1.2. Ecosystem degradation   |                                  |                  |

### Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

| Conservation Actions in Place                          |
|--|
| In-Place Research, Monitoring and Planning             |
| Action Recovery plan: No                               |
| Systematic monitoring scheme: No                       |
| In-Place Land/Water Protection and Management          |
| Conservation sites identified: Yes, over part of range |
| Occur in at least one PA: Unknown                      |
| In-Place Species Management                            |
| Harvest management plan: No                            |
| Successfully reintroduced or introduced benignly: No   |

|  |
|--|
| <b>Conservation Actions in Place</b>                       |
| Subject to ex-situ conservation: No                        |
| In-Place Education   |
| Subject to recent education and awareness programmes: No   |
| Included in international legislation: No                  |
| Subject to any international management/trade controls: No |

## Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

|   |
|---|
| <b>Conservation Actions Needed</b>  |
| 1. Land/water protection -> 1.1. Site/area protection                         |
| 2. Land/water management -> 2.1. Site/area management                         |
| 2. Land/water management -> 2.3. Habitat & natural process restoration        |
| 3. Species management -> 3.1. Species management -> 3.1.1. Harvest management |
| 4. Education & awareness -> 4.3. Awareness & communications                   |

## Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

|  |
|--|
| <b>Research Needed</b>                                     |
| 1. Research -> 1.1. Taxonomy                               |
| 1. Research -> 1.2. Population size, distribution & trends |
| 1. Research -> 1.3. Life history & ecology                 |
| 1. Research -> 1.5. Threats                                |
| 3. Monitoring -> 3.1. Population trends                    |
| 3. Monitoring -> 3.4. Habitat trends                       |

## Additional Data Fields

|   |
|---|
| <b>Distribution</b>   |
| Estimated area of occupancy (AOO) (km <sup>2</sup> ): 1395      |
| Continuing decline in area of occupancy (AOO): Unknown          |
| Extreme fluctuations in area of occupancy (AOO): Unknown        |
| Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 161585 |

|   |
|---|
| <b>Distribution</b>   |
| Continuing decline in extent of occurrence (EOO): Unknown         |
| Extreme fluctuations in extent of occurrence (EOO): Unknown       |
| Number of Locations: 9  |
| Continuing decline in number of locations: Unknown                |
| Extreme fluctuations in the number of locations: Unknown          |
| Lower elevation limit (m): 100                                    |
| Upper elevation limit (m): 500                                    |
| <b>Population</b>   |
| Continuing decline of mature individuals: Unknown                 |
| Extreme fluctuations: Unknown                                     |
| Population severely fragmented: Yes                               |
| <b>Habitats and Ecology</b>                                       |
| Continuing decline in area, extent and/or quality of habitat: Yes |
| Movement patterns: Altitudinal Migrant                            |



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