# Introduction
# part I

**Empurau, *Tor tambroides***

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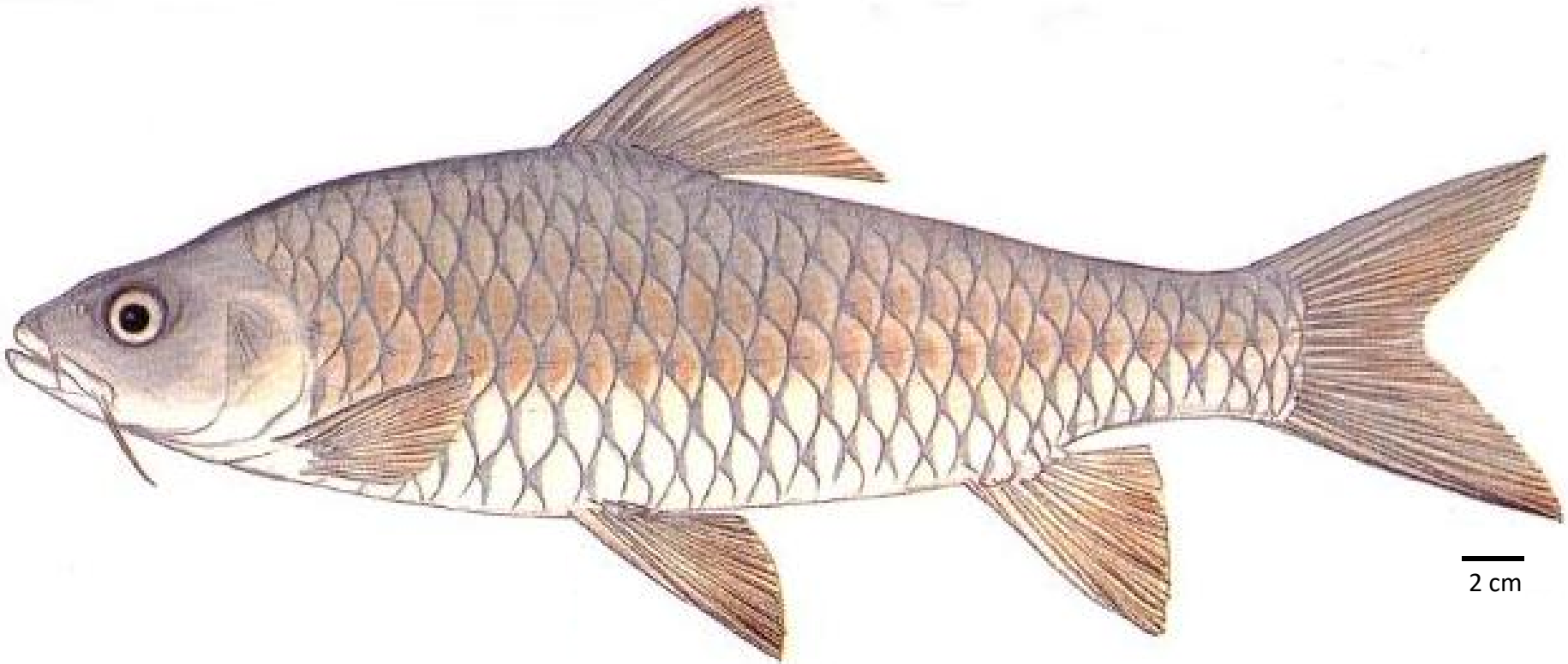
# Empurau, *Tor tambroides* (Bleeker, 1854)

**Malaysia red mahseer**

**Kelah, pelian**

**Carp family**

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# Important species

## Food fish

- Unique flavour - fed on wild fruits e.g. engkabang fruit

## Sport fishing

- sport fishing enthusiast
- Increase tourism industry

## Ornamental fish

- majestic look
- big bright scales

- **Rare in the wild, price increased**
- **Live fish ~ RM1000 per kg**
- **Most expensive freshwater fish in the country**
- **Number of catch increased**

# Decline of the wild population

- Due to:

Fishing and harvesting

Pollution

Agricultural & forestry effluents

Natural system modifications

Dam and water management/ use

# Conservation actions

Site and area protection


Resource & habitat protection

Awareness

# Empurau culture

Therefore, empurau is a potential candidate species for **aquaculture** as:

**Food fish**

- meet consumer demand

**Conservation**

- help to restore wild fish stock
- reduce dependency on wild stock

# Concerns

However, there are impacts of unregulated release of artificially bred stock of empurau, therefore

- It is important to know the identity of the fish
- Brood fish are from local area only
- Progeny are to be released to local river only

# Taxonomy & distribution

# Taxonomy of *Tor* spp.

**Kingdom**
Animalia

**Phylum**
Chordata

**Class**
Actinopterygii

**Order**
Cypriniformes

**Family**
Cyprinidae

**Genus**
*Tor*

# Empurau, *Tor tambroides*

- Tor species in Malaysia
  - *T. tambra* (kelah)
  - *T. tambroides* (kelah, empurau, pelian)
  - *T. douronensis* (semah)

- Confusion still surrounds the taxonomy of these species (Pinder *et al.*, 2019).

- *T. tambroides* is currently assessed as **Data Deficient** (Kottelat *et al.*, 2018).

# Main morphometric characters of *T. tambroides*

- The length of median lobe is long
- Sharp or pointed head
- The scales are large and reddish or white colour
- The lips are thicker and fleshy

- Sarawak - evidence is still lacking to say that the *Tor* species is *T. tambroides* (Walton *et al.,* 2017).

- Pindel *et al.* (2019) & Walton et al. (2017) - *Tor tambroides* found in peninsular Malaysia may actually be *Tor tambra*.

- *T. tambroides*, *T. tambra* and *T. douronensis* were previously described based on specimens from Indonesia (Cuvier and Valenciennes, 1842; Bleeker, 1854).

- Type of locality for *T. tambroides* is Sumatra - Padang, Paja kombo, Solok, Lake Maninjau/Java (Kottelat, 2013).

- Kottelat (2013) considered *T. tambroides* only to be valid in its type locality (Sumatra and Java).

- Walton *et al*. (2017) suggested that topotypic *T. tambra* genetically similar to populations of mahseer in Malaysia which recorded as *T. tambroides*.

- But it cannot currently be concluded that *T. tambra* and *T. tambroides* are synonymous.

- There are genetic distinction between *T. tambroides* from Sumatra and *T. tambra* from the peninsula and Java (Walton *et al*., 2017).

- Thus, more study is needed to disentangle the confusion among the *Tor* species.

# Thank you

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