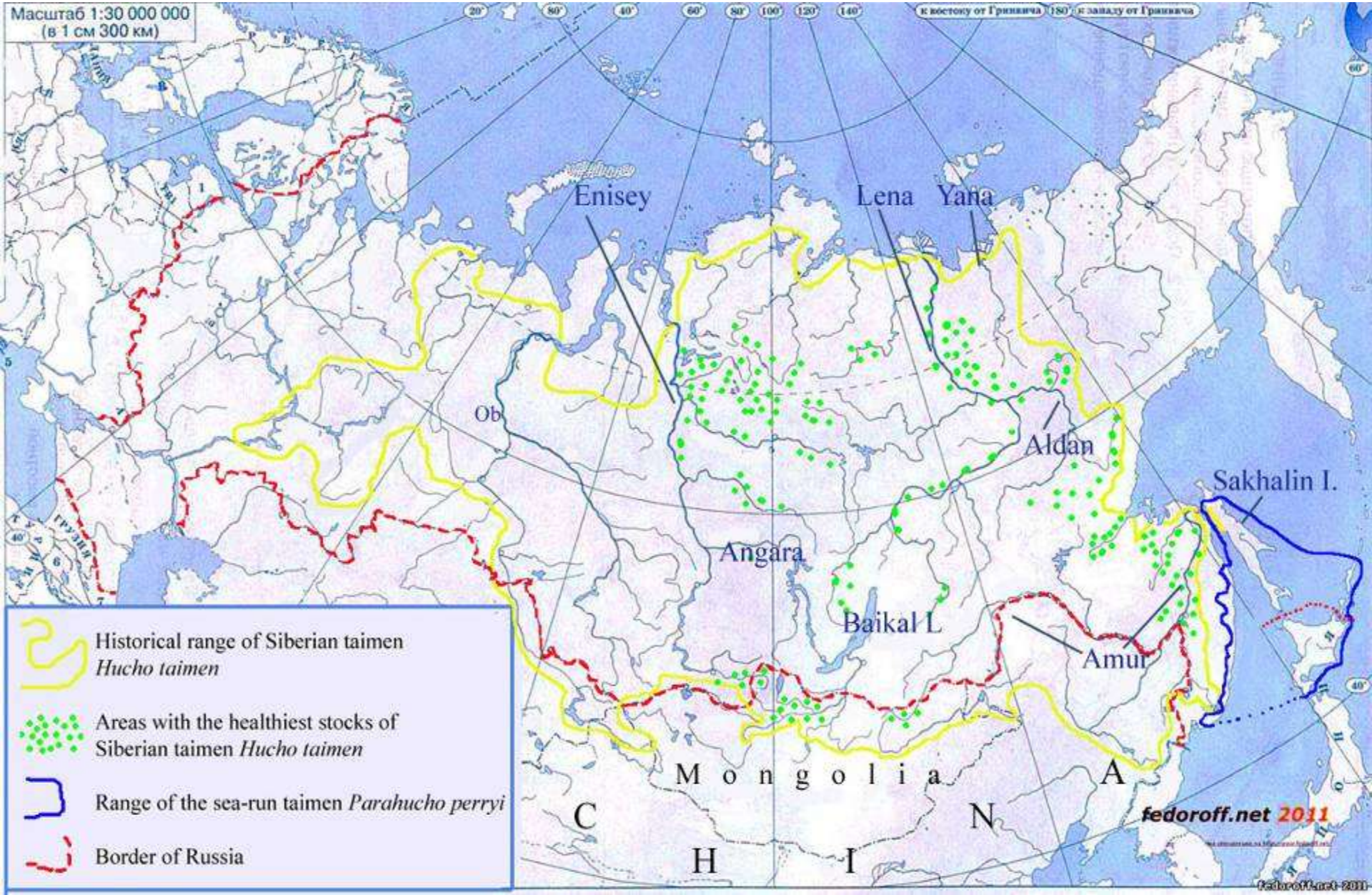
First Steps Toward an IUCN Red List Assessment of the Global Conservation Status of *Hucho taimen*

Zeb Hogan and Olaf Jensen

Taimen Life History Characteristics

- Apex predator, “world’s largest salmonid”
- Long-lived (55+ years; Holcik *et al*. 1988)
- Relatively slow growing (age at sexual maturity = 4-8 years; generation time estimated at 17 years)

Taimen Distribution



Taimen threats

Mongolia: Illegal commercial and recreational fishing, habitat degradation due to over grazing and gold mining, organic pollution from sewage (Ocock *et al*. 2006).

China: “Life history, habitat degradation, increased harvest” (You-Yi *et al*. 2009).

Russia (Baikal region): Unregulated fisheries of spawning migrations, mass poaching, fishing with illegal gear, pollution, timber extraction leading to siltation (Matveyev *et al*. 1998).

Taimen: Current Regional Conservation Status

- Mongolia: Listed as Endangered in Mongolian Red List of Fishes (Ocock *et al.* 2006).

- China: Listed as Endangered since 1998; downgraded in 2006 (You-Yi et al. 2009).

- Russia: Listed as Endangered in parts of western Russia (Illianshenko and Illianshenko 2000), Bashkiria (Matveyev et al. 1998), and Buryatia (Matveyev et al. 1998).

The IUCN Red List Assessment: An estimate of **extinction risk**

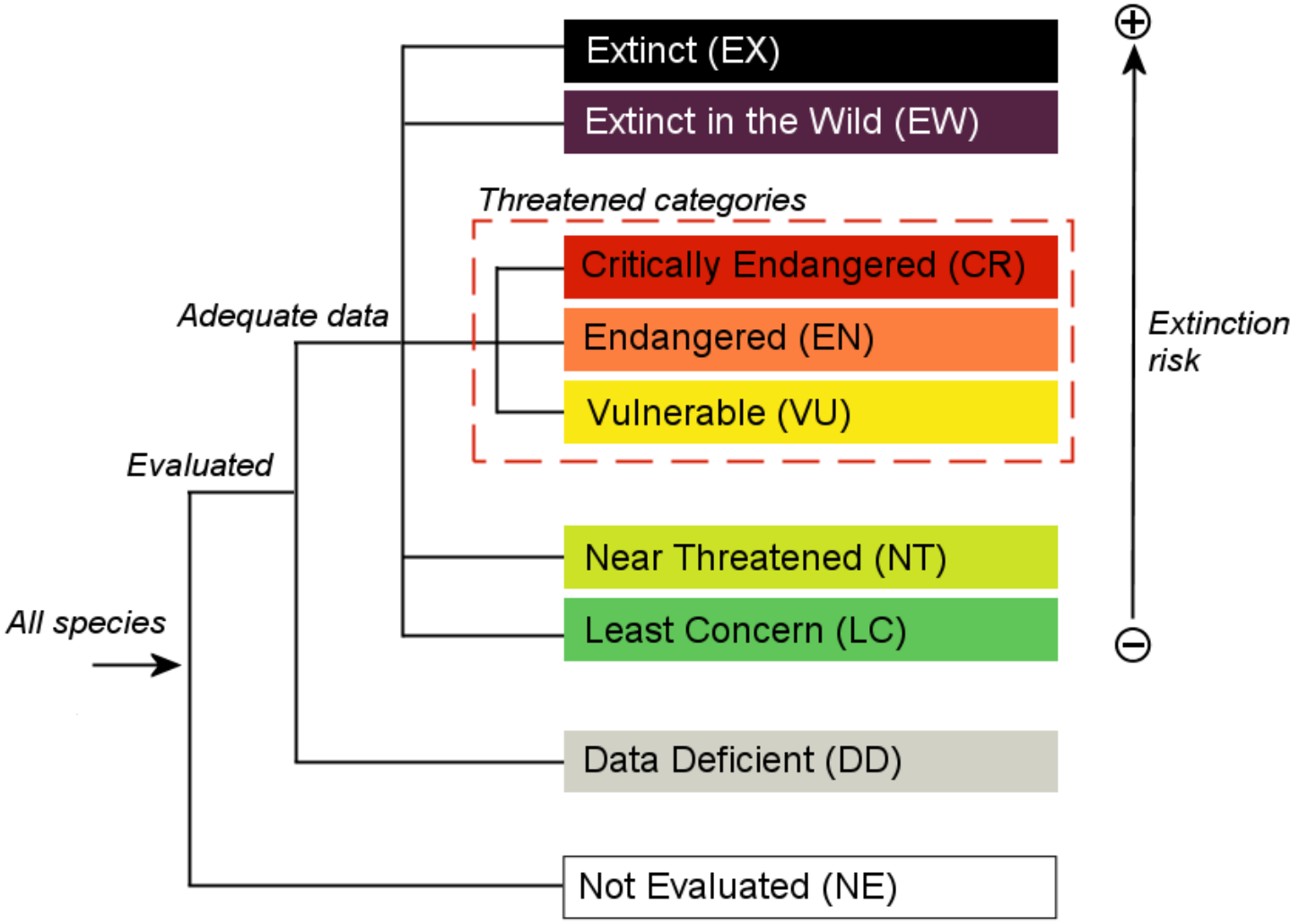
What is the likelihood of a species becoming extinct in the near future, given:

1. Current knowledge about population trends

2. Range

3. Recent, current or projected threats?

Understanding the Red List Categories



Understanding the Red List Categories

Critically Endangered (CR)

CR taxa are considered to be facing an **extremely high risk of extinction** in the wild

Pangasianodon gigas

Photo: © Zeb S. Hogan

Endangered (EN)

EN taxa are considered to be facing a **very high risk of extinction** in the wild

Austroglanis barnardi

Photo: © SAIAB/Roger Bills

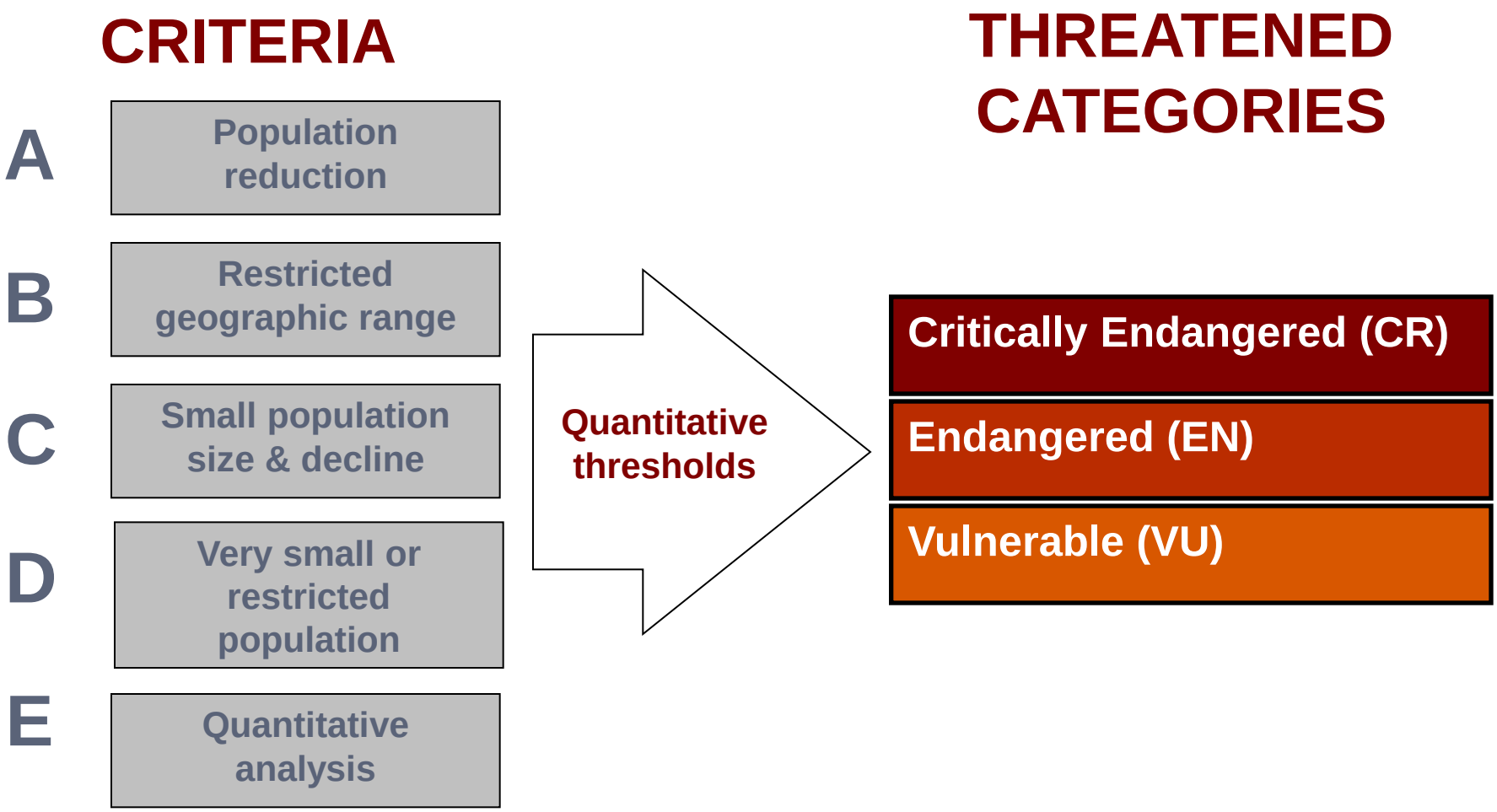
Vulnerable (VU)

VU taxa are considered to be facing a **high risk of extinction** in the wild

Oreochromis andersonii

Photo: © SAIAB/Denis Tweddle

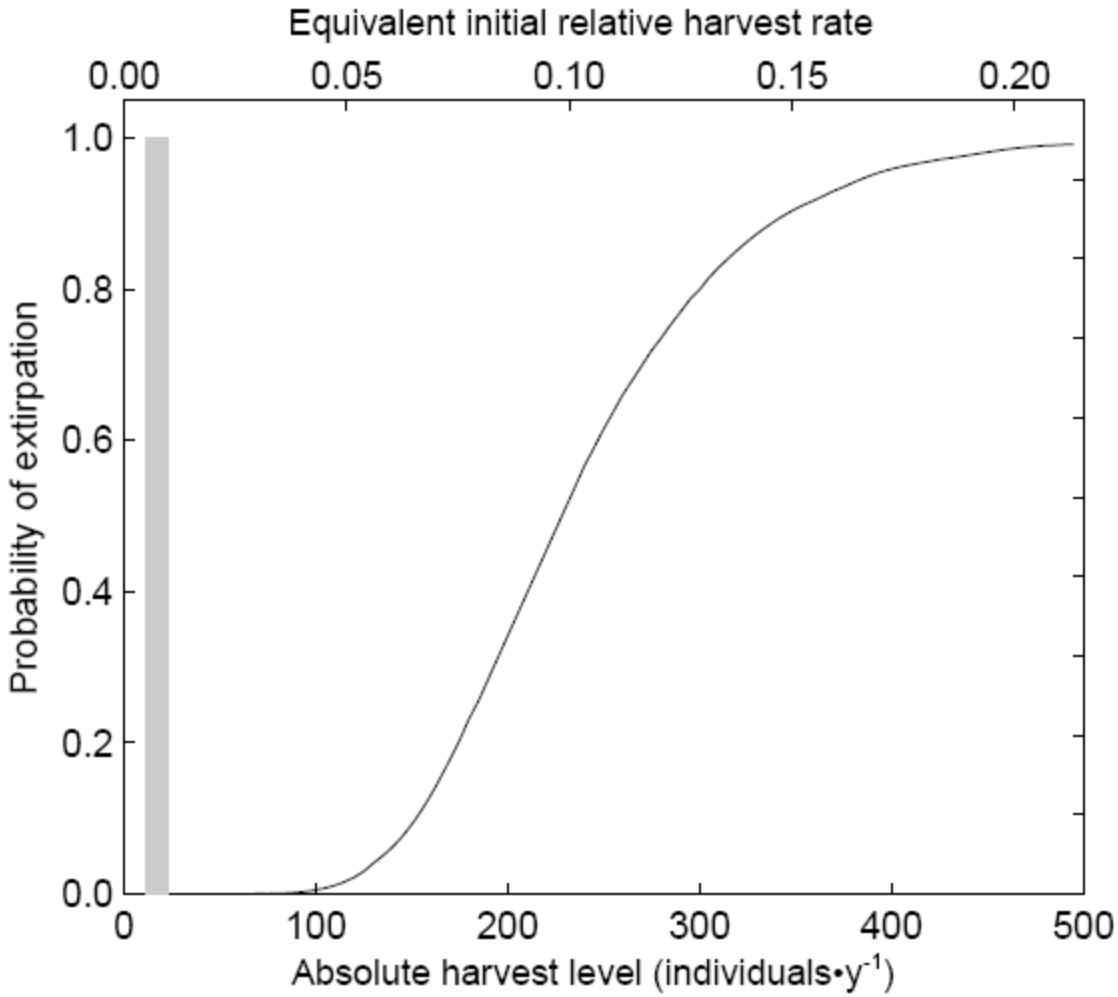
Understanding the Criteria



Summary of the five criteria (A–E) used to evaluate if a taxon belongs in a threatened category (Critically Endangered, Endangered or Vulnerable).

Use any of the criteria A–E	Critically Endangered	Endangered	Vulnerable
A. Population reduction	Declines measured over the longer of 10 years or 3 generations		
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%
A1. Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible **AND** understood **AND** have ceased, based on and specifying any of the following: **(a)** direct observation **(b)** an index of abundance appropriate to the taxon **(c)** a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality **(d)** actual or potential levels of exploitation **(e)** effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.			
A2. Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased **OR** may not be understood **OR** may not be reversible, based on (a) to (e) under A1.			
A3. Population reduction projected or suspected to be met in the future (up to a maximum of 100 years) based on (b) to (e) under A1.			
A4. An observed, estimated, inferred, projected or suspected population reduction (up to a maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased **OR** may not be understood **OR** may not be reversible, based on (a) to (e) under A1.			
B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)			
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following:			
(a) Severely fragmented, **OR** Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** area, extent and/or quality of habitat; **(iv)** number of locations or subpopulations; **(v)** number of mature individuals.			
(c) Extreme fluctuations in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** number of locations or subpopulations; **(iv)** number of mature individuals.			
C. Small population size and decline			
Number of mature individuals	< 250	< 2,500	< 10,000
AND either C1 or C2:			
C1. An estimated continuing decline of at least: (up to a max. of 100 years in future)	25% in 3 years or 1 generation	20% in 5 years or 2 generations	10% in 10 years or 3 generations
C2. A continuing decline **AND** (a) and/or (b):			
(a i) Number of mature individuals in each subpopulation:	< 50	< 250	< 1,000
or			
(a ii) % individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals.			
D. Very small or restricted population			
Either: Number of mature individuals	< 50	< 250	**D1.** < 1,000
			AND/OR
VU D2. Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.			**D2.** typically: AOO < 20 km² or number of locations ≤ 5
E. Quantitative Analysis			
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations (100 years max.)	≥ 20% in 20 years or 5 generations (100 years max.)	≥ 10% in 100 years

Quantitative Analysis – Probability of extirpation



Jenson et al. 20

Pangasianodon hypophthalmus

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	〈ENDANGERED〉	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX

Summary | Classification Schemes | Images & External Links | Bibliography | Full Account

Taxonomy [top]

Kingdom	Phylum	Class	Order	Family
ANIMALIA	CHORDATA	ACTINOPTERYGII	SILURIFORMES	PANGASIIDAE

Scientific Name:	*Pangasianodon hypophthalmus*
Species Authority:	(Sauvage, 1878)
Common Name/s: English – Striped Catfish	
Synonym/s:	*Helicophagus hypophthalmus* Sauvage, 1878 *Pangasius hypophthalmus* (Sauvage, 1878) *Pangasius sutchi* Fowler, 1937

Assessment Information [top]

Red List Category & Criteria:	Endangered A2bd+4bcd ver 3.1
Year Assessed:	2011
Assessor/s:	Vidthayanon, C. & Hogan, Z.
Reviewer/s:	Kottelat, M., Baird, I. & Juffe Bignoli, D.

Justification:
Wild-caught sources of this species were once an important food fish in Thailand, Lao PDR, Cambodia, and

Taxonomy
Assessment Information
Geographic Range
Population
Habitat and Ecology
Threats
Conservation Actions

View Printer Friendly

Hucho taimen Conservation Status

MONGOLIA

- Taimen distribution: decrease of 60% since 1985
- Main threats: overharvest, habitat degradation
- Healthy, stable populations in some rivers?

Source: Ocock et al. 2006

Hucho taimen Conservation Status

CHINA

- Distribution has decreased 95% between 1960 – 2011
- In Heilongjiang River recent years, catch has dropped 10% / year (65% / 10 years)
- Self-sustaining populations restricted to inaccessible mountain valleys and forests

Hucho taimen Conservation Status

RUSSIA

"Dramatic population decline and local extinction" in Lake Baikal Basin (Matveyev et al. 1998).

Hucho taimen by-catch in commercial fisheries of the Amur declined ~95-99% (?) between 1947-1998 (Zolotukhin et al. 2000).

Some stocks functionally extirpated e.g. the Volga River drainage (Mikhail Skopets, personal communication).

Majority of stocks "almost disappeared", "threatened", and "seriously impacted". 10% of stocks "healthy" (Mikhail Skopets, personal communication).


Масштаб 1:30 000 000
(в 1 см 300 км)
к востоку от Гринвича
к западу от Гринвича
Enisey
Lena
Yana
Ob
Aldan
Sakhalin I.
Angara
Baikal L
Amur
M o n g o l i a
C
H
I
N
A
Historical range of Siberian taimen
Hucho taimen
Areas with the healthiest stocks of
Siberian taimen Hucho taimen
Range of the sea-run taimen Parahucho perryi
Border of Russia
fedoroff.net 2011

What is the IUCN Red List global conservation status of Hucho taimen*?

Populations have dropped by 50+% in Mongolia since 1985 (Ocock *et al*. 2006)

Populations have dropped by 95% in China since 1960 (Guang-xiang Tong, personal communication)

How much have populations declined in Russia?

*IUCN thresholds: 80% decline = Critically Endangered ; 50% decline = Endangered; 30% decline = Vulnerable.

Acknowledgements