Family Sisoridae

Torrent catfishes

The family comprises approximately 17 genera and 220 species of rheophilic catfishes, with the greatest diversity observed in South and Southeast Asia. One species, *Bagarius bagarius*, reaches up to 1400 mm SL, while most species are small. Most are highly adapted to live in rapids and very fast-flowing waters, with some (*Oreoglanis*) inhabiting the vertical part of waterfalls. Some species are found in high-altitude streams in the Himalayas, while the greatest diversity of species is observed in rapids of tropical rivers. In West Asia, only *Glyptothorax* is found, which is the most speciose genus of the family. *Glyptothorax* is immediately identified by a thoracic adhesive organ on the breast between the pectorals. The adhesive organ is sometimes referred to as a "sucker," which does not suck to the substrate, but instead adheres with small unculi on elevated skin folds, a structure similar to the feet of gecko lizards. *Glyptothorax* are adapted to live in fast-flowing waters and are commonly found in foothill rivers and mountain streams.

In our region, 13 species are recognised, but six species from Iran are closely related, and their status is under discussion. Two of these (*G. alidaeii* and *G. galaxias*) occur in sympatry and are good biological species. Other species may be conspecific with *G. silviae*, but not all morphological differences have been studied in detail. Three widespread species inhabit large- or medium-sized rivers, while others are restricted to fast-flowing headwater streams with more restricted distribution ranges. A single record of *Glyptothorax* from the Yeşilırmak in the Anatolian Black Sea basin has been identified, although the integrity of this record cannot be confirmed. **Further reading.** Hora & Silas 1952 (diversity); Sayyadzadeh et al. 2022 (diversity in Gulf basin).

Large, fast-flowing rivers such as the Greater Zab in Iraq are the habitat of a rich fish fauna, including *Glyptothorax*, *Mystus,* and *Silurus*.

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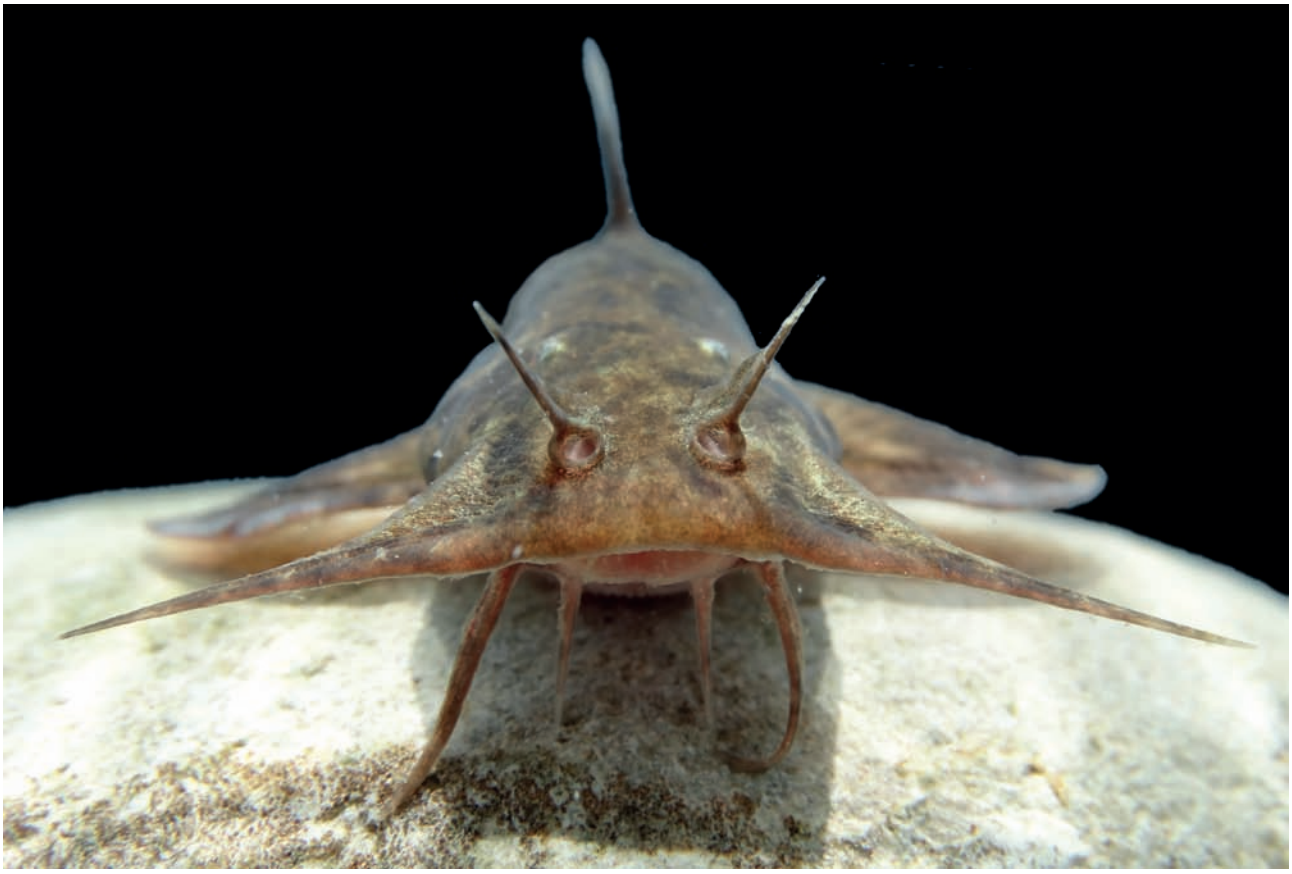


Glyptothorax galaxias; Bazoft, Iran.

Key to species of *Glyptothorax* in West Asia

1a - Adipose length 1.5–3.0 times longer than distance between base of last dorsal ray and adipose origin; 13–17 serrae on pectoral spine, medial pit of thoracic adhesive apparatus with striae.
…….*G. steindachneri*
1b - Adipose length 0.5–1.2 times longer than distance between base of last dorsal ray and adipose origin; 5–14 serrae on pectoral spine; medial pit of thoracic adhesive apparatus without striae.
…….2

2a - Head and flank with tubercles (rarely absent in some individuals).
…….3
2b - Head and flank without tubercles, with roundish or elongate warts.
…….4

3a - Thoracic adhesive apparatus longer than wide, well delineated at its posterior margin, situated completely on a horse-shoe-shaped elevation; head, back, and flank with many minute tubercles and few roundish warts.
…….*G. armeniacus*
3b - Thoracic adhesive apparatus as wide as long, poorly delineated at its posterior margin, only partly situated on shallow, horseshoe-shaped elevation, elevation absent in many adult individuals; head, back, and usually flank with large, bony, striated, and elongated tubercles (absent in some individuals).
…….*G. cous*

4a - Upper head, back, and flank without brown or black spots or blotches.
……5
4b - Upper head, back, and flank with few or many dark-brown spots and, or blotches (potentially faded in poorly preserved individuals).
……6

5a - Outer mandibular barbel not reaching pectoral origin; thoracic adhesive apparatus slightly elevated; medial pit broad, its anterior end roundish; caudal peduncle depth 1.6–2.3 times its length.
……*G. sardashtensis*
5b - Outer mandibular barbel reaching pectoral origin; thoracic adhesive apparatus strongly elevated; medial pit narrow and spear-blade shaped; caudal peduncle depth 1.1–1.3 times its length.
……*G. pallens*

6a - Thoracic adhesive apparatus wider than long, as wide as long in juveniles (0.7–0.9 times longer than wide).
……7
6b - Thoracic adhesive apparatus as wide as long or longer, 1.0–1.6 times longer than wide.
……8

7a - Caudal-peduncle length 16–20 % SL.
……*G. vatandousti*
7b - Caudal-peduncle length 13–16 % SL.
……*G. kurdistanicus*

8a - Anteromedial striae in thoracic adhesive apparatus long and numerous.
……9
8b - Anteromedial striae in thoracic adhesive apparatus short or absent.
……11

9a - Caudal-peduncle depth 1.3–1.6 times in its length; shortest middle caudal ray 42–49 % of longest ray of upper caudal lobe; caudal with pointed lobes; maxillary barbel as long as head (95–108 % HL).
……*G. hosseinpanahii*
9b - Caudal-peduncle depth 1.6–2.5 times in its length; shortest middle caudal ray 55–65 % of longest ray of upper caudal lobe; caudal with rounded lobes; maxillary barbel shorter than head (72–91 % HL).
……10

10a - Fins with a distinct yellow tip; thoracic adhesive apparatus 1.3–1.5 times as long as wide; adipose length 0.5–0.8 of distance between base of last dorsal ray and adipose origin.
……*G. galaxias*
10b - Fins without or with a very indistinct yellow tip; thoracic adhesive apparatus 1.1–1.3 times as long as wide; adipose length 0.7–1.1 of distance between base of last dorsal ray and adipose origin.
……*G. daemon*

11a - Maxillary barbel as long as head (92–110 % HL); inner mandibular barbel 45–48 % HL; outer mandibular barbel 67–74 % HL.
……*G. silviae*
11b - Maxillary barbel shorter than head (76–89 % HL); inner mandibular barbel 18–33 % HL; outer mandibular barbel 42–49 % HL.
……12

12a - Shortest middle caudal ray 57–65 % of longest ray of upper caudal lobe; caudal-peduncle depth 1.3–1.6 times in its length.
……*G. alidaeii*
12b - Shortest middle caudal ray 46–49 % of longest ray of upper caudal lobe; caudal-peduncle depth 1.1–1.3 times in its length.
……*G. shapuri*

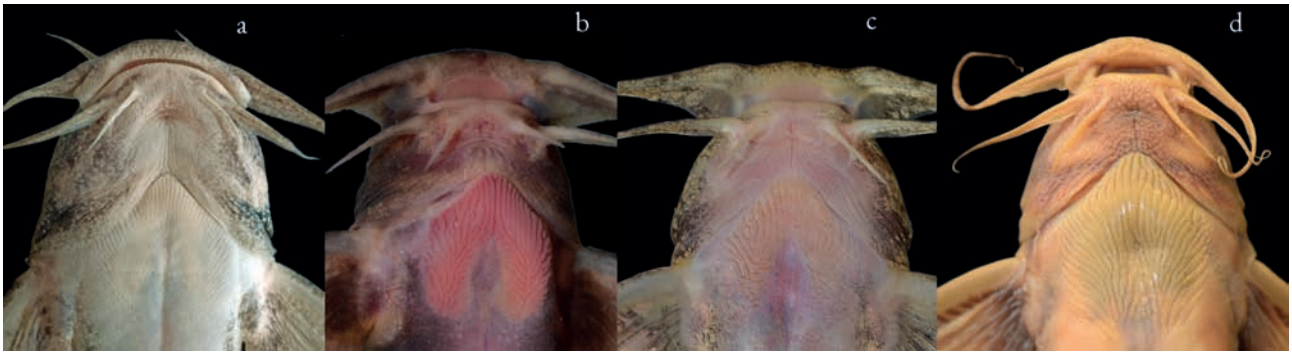


Figure 54: Thoracic adhesive apparatus of *Glyptothorax*: **a,** *G. cous*; **b,** *G. daemon*; **c,** *G. kurdistanicus*; **d,** *G. steindachneri.*

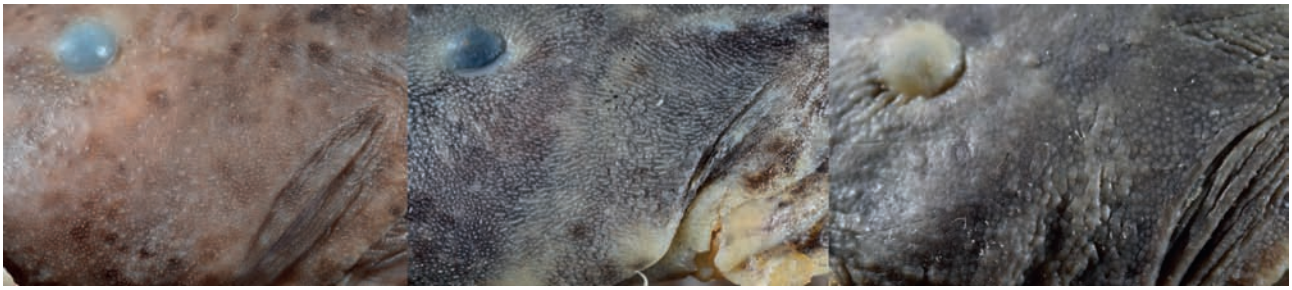


Figure 55: From left: *Glyptothorax armeniacus*, 87 mm SL; with many very small tubercles and few warts; *G. cous*, 151 mm SL; with many large tubercles; *G. daemon*, 102 mm SL, with many warts.

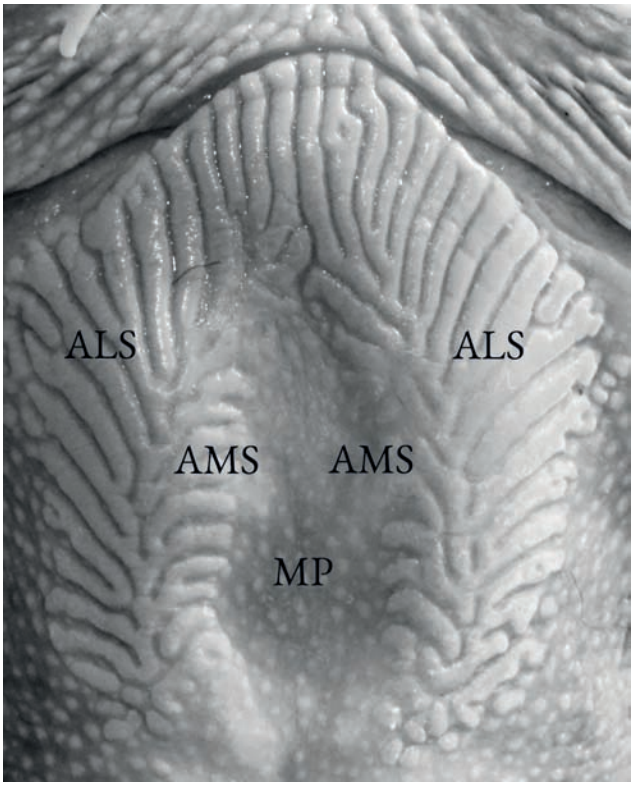


Figure 56: Thoracic adhesive apparatus of *Glyptothorax*, showing structures defined and mentioned in this study: anterolateral striae (ALS); anteromedial striae (AMS); medial pit (MP) (*G. daemon*, Iraq; 109 mm SL).

Glyptothorax alidaeii; Seimareh, Karkheh drainage, Iran; ~110 mm SL.

Glyptothorax alidaeii

Common name. Karkheh torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ thoracic adhesive apparatus with, without or with few, very short anteromedial striae, 1.3–1.6 times longer than wide, extending to base of last pectoral ray or to posterior limit of pectoral base / ○ caudal-peduncle depth 1.3–1.6 times in its length / ○ thoracic adhesive apparatus moderately elevated, completely situated on a horseshoe shaped elevation / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with or without small roundish warts / ○ adipose short, its length 0.5–0.8 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal lobes pointed / ○ inner mandibular barbel 30–33 % HL / ○ outer mandibular barbel 43–49 % HL / ○ maxillary barbel shorter than head, 76–90 % HL / ○ 10–12 serrae on pectoral spine / ○ caudal moderately forked, shortest middle caudal ray 57–65 % of longest ray of upper caudal lobe / ○ fins usually with distinct yellow tips / ○ head, back and flank with many, irregular shaped and set brown blotches smaller than eye / ○ many silvery-beige spots and blotches on head and flank in life. Size up to 350 mm SL.

Distribution. Iran: Middle and upper reaches of Karkheh and Karun drainages.

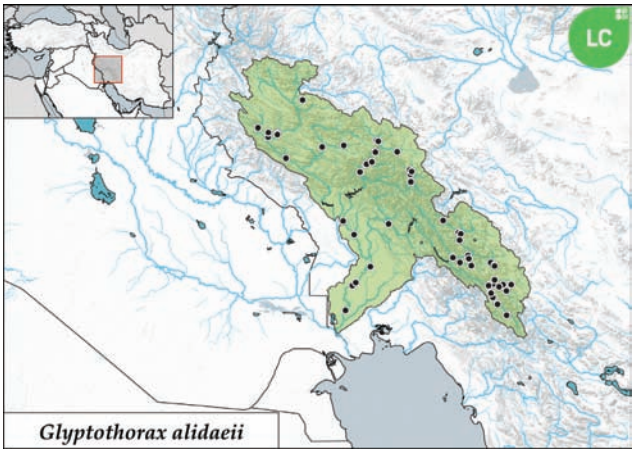
Habitat. Fast-flowing water in rapids and riffles on rock or gravel substrate. Limited to hill stream habitats.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. LC.

Remarks. *Glyptothorax cous*, *G. alidaeii,* and *G. galaxias* are expected to occur in sympatry in Seymareh (Iran), and *G. alidaeii* often occurs together with *G. galaxias*.

Further reading. Mousavi-Sabet et al. 2021 (description); Sayyadzadeh et al. 2022 (synonym of *G. silviae*).



Glyptothorax armeniacus; Euphrates drainage, Türkiye; 66 mm SL.

Glyptothorax armeniacus

Common name. Euphrates torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ● head, back, and flank with many minute tubercles and few roundish warts / ○ thoracic adhesive apparatus strongly elevated, 1.0–1.5 times longer than wide, usually extending from isthmus to base of last pectoral ray or to posterior limit of pectoral base / ○ striae restricted to elevated apparatus / ○ anteromedial striae numerous and well developed / ○ medial pit without striae / ○ 9–12 serrae on pectoral spine / ○ all fins with a distinct, distal yellow tip / ○ adipose short, its length 0.7–1.1 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal moderately forked, shortest middle caudal ray 62–69 % of longest ray of upper caudal lobe / ○ head and body dark-brown without or with small, often indistinct brown or black spots. Size up to 220 mm SL.

Distribution. Türkiye and Syria: Upper Euphrates drainage.

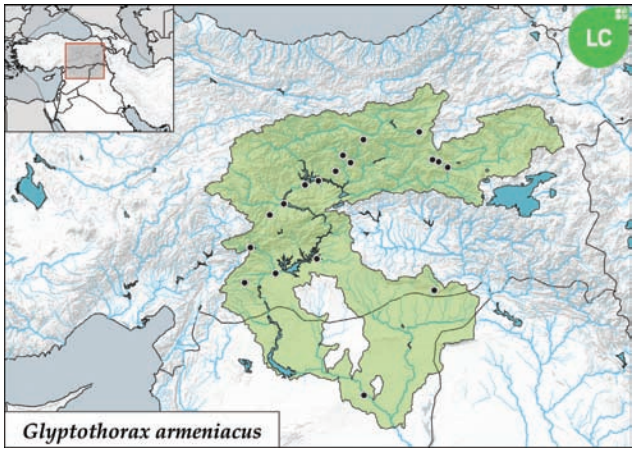
Habitat. Fast-flowing water in rapids and riffles on rock or gravel substrate. Limited to hill stream habitats.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. LC.

Remarks. Despite some fieldwork in the region, the *Glyptothorax* recorded from the Yeşilırmak drainage in Anatolian Black Sea basin has never been confirmed. It cannot be excluded that such catfish occur there, and as the Yeşilırmak is adjacent to the Euphrates, it is likely that this species will be identified as *G. armeniacus*.

Further reading. Berg 1918 (description); Coad & Delmastro 1985 (Yeşilırmak); Freyhof et al. 2021c (description).



Glyptothorax cous; Lesser Zab drainage, Iraq; 160 mm SL. ©Y. Abdullah.

Glyptothorax cous; Lesser Zab drainage, Iraq; 152 mm SL. ©Y. Abdullah.

Glyptothorax cous

Common name. Mesopotamian torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ● thoracic adhesive apparatus 0.8–1.1 times longer than wide, poorly delineated at its posterior margin, only partly situated on shallow, horse-shoe shaped elevation; elevation absent in many adult individuals / ● striae reaching far beyond elevated apparatus, usually onto pectoral base, usually extending from isthmus to base of last pectoral ray or to posterior limit of pectoral base / ○ dorsal head, back and flank usually with large, bony, striated and elongated tubercles (absent in some individuals) / ○ adipose short, its length 0.6–1.2 times larger than distance between base of last dorsal ray and adipose origin / ○ anteromedial striae well developed / ○ medial pit open, without striae / ○ flank with large dark-brown blotches and or small dark-brown spots. Size up to 450 mm SL.

Distribution. Qweiq, Euphrates, Tigris and Karun drainages.

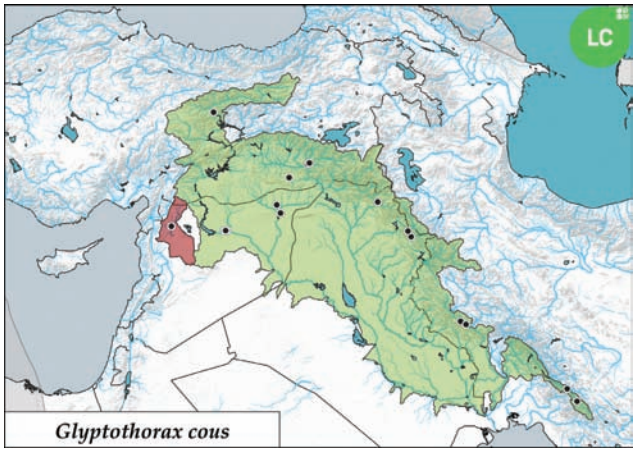
Habitat. Fast to moderately fast-flowing medium to large rivers.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates, as adults, mainly on fish.

Conservation status. LC; extirpated from Qweiq.

Remarks. The mtDNA of *G. cous* from the Tigris is nested within mtDNA of *G. daemon*. There may have been some introgressive hybridisation between the two species. This would also mean that the mtDNA of *G. cous* from the Euphrates could be very different from that of Tigris population, and great caution should be exercised in identifying *G. cous* based on mtDNA alone.

Further reading. Russell 1756 (description); Freyhof et al. 2021c (description).



Glyptothorax daemon; Greater Zab drainage, Iraq; 116 mm SL.

Glyptothorax daemon; Greater Zab drainage, Iraq; 110 mm SL.

Glyptothorax daemon

Common name. Ghost torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ thoracic adhesive apparatus with several, long anteromedial striae, 1.1–1.3 times longer than wide, extending to base of last pectoral ray, or to posterior limit of pectoral base / ○ thoracic adhesive apparatus strongly elevated, completely situated on a horse-shoe shaped elevation / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with small roundish warts / ○ adipose short, its length 0.7–1.1 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal lobes rounded / ○ caudal-peduncle 1.6–2.1 times in its length / ○ maxillary barbel shorter than head, 72–85 % HL / ○ inner mandibular barbel 21–30 % HL / ○ outer mandibular barbel 42–51 % HL / ○ 7–11 serrae on pectoral spine / ○ caudal moderately forked, shortest middle caudal ray 55–59 % of longest ray of upper caudal lobe / ○ fins usually without, rarely with very indistinct yellow tips / ○ flank dark-grey or black with few small black spots, rarely pale-brown. Size up to 125 mm SL, likely to grow larger.

Distribution. Türkiye and Iraq: Upper Tigris and Great Zab drainages.

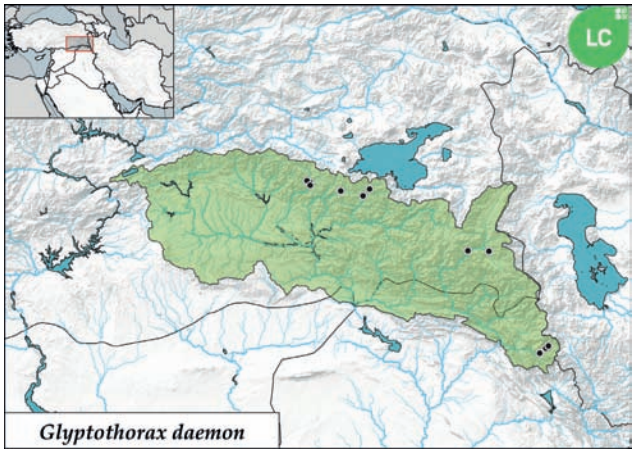
Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

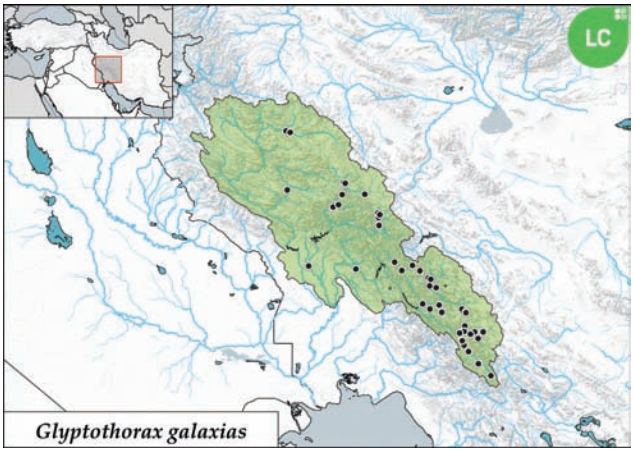
Conservation status. LC.

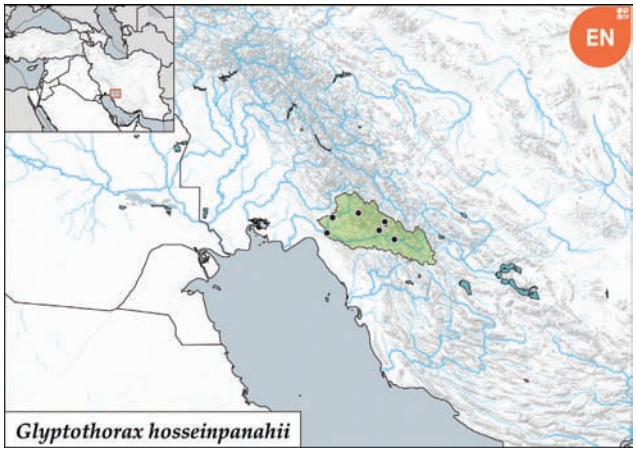
Remarks. *Glyptothorax daemon* populations in upper Tigris may be quite isolated from each other, as they show a shallow but consistent separation in their mtDNA. All these populations belong to one old species, and are not to be described as own species in the future, ignoring the absence of morphological differences.

Further reading. Freyhof et al. 2021c (description).



Glyptothorax galaxias; Karun drainage, Iran; 113 mm SL.





Glyptothorax galaxias

Common name. White-spot torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ thoracic adhesive apparatus with many and long anteromedial striae, 1.3–1.5 times longer than wide, extending to posterior-most pectoral base / ○ thoracic adhesive apparatus strongly elevated, almost or completely situated on a horse-shoe shaped elevation / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with small round warts / ○ adipose length 0.5–0.8 of distance between base of last dorsal ray and adipose origin / ○ caudal lobes rounded / ○ caudal moderately forked, its shortest middle caudal ray 61–65 % of longest ray of upper caudal lobe / ○ head pointed and short, 21–24 % SL / ○ maximum head width 84–101 % HL / ○ postdorsal length 52–54 % SL / ○ preanal length 65–72 % SL / ○ eye diameter 10–14 % HL / ○ caudal-peduncle 1.6–2.1 times in its length / ○ maxillary barbel shorter than head, 77–91 % HL / ○ inner mandibular barbel 26–33 % HL / ○ outer mandibular barbel 56–58 % HL / ○ 9–12 serrae on pectoral spine / ○ all fins with a distinct, distal yellow tip / ○ head, back and flank with many, irregular shaped and set brown blotches as large as eye diameter or slightly larger. Size up to 114 mm SL, likely to grow larger.

Distribution. Iran: Upper Karun and Karkheh drainages.

Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. LC.

Remarks. Occurs often in sympatry with *G. alidaeii*.

Further reading. Mousavi-Sabet et al. 2021 (description); Sayyadzadeh et al. 2022 (synonym of *G. silviae*).

Glyptothorax hosseinpanahii

Common name. Zohreh torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ maxillary barbel as long as head, 95–108 % HL / ○ inner mandibular barbel 25–35 % HL / ○ outer mandibular barbel 46–61 % HL / ○ thoracic adhesive apparatus with many and long anteromedial striae, 1.0–1.2

Glyptothorax hosseinpanahii; Zohreh drainage, Iran; 90 mm SL.

times longer than wide, usually extending posterior-most pectoral base / ○ thoracic adhesive apparatus moderately elevated, almost or completely situated on a horse-shoe shaped elevation / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with small round warts / ○ adipose short, its length 0.5–0.8 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal lobes pointed / ○ caudal deeply forked, shortest middle caudal ray 42–49 % of longest ray of upper caudal lobe / ○ caudal-peduncle 1.3–1.6 times in its length / ○ 9–11 serrae on pectoral spine / ○ all fins with a distinct, distal yellow tip / ○ many black or dark-brown blotches on head, back and flank usually smaller than eye diameter. Size up to 90 mm SL, likely to grow larger.

Distribution. Iran: Zohreh drainage.

Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

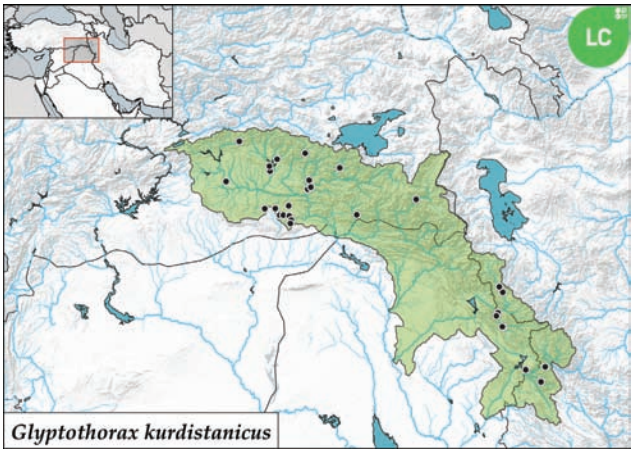
Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

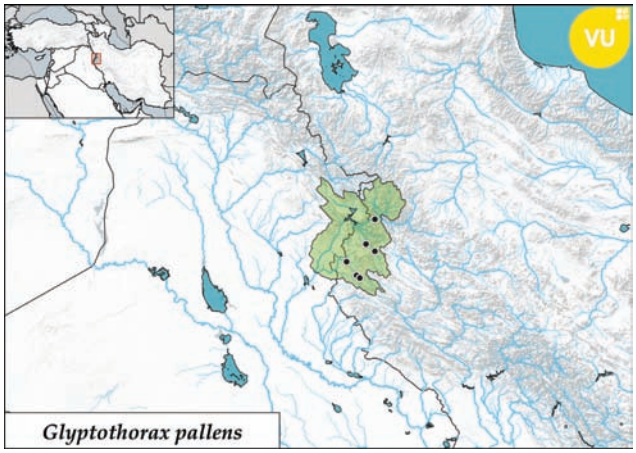
Conservation status. EN; appears to be declining within its very small range.

Further reading. Mousavi-Sabet et al. 2021 (description); Sayyadzadeh et al. 2022 (synonym of *G. silviae*).

Glyptothorax kurdistanicus; Lesser Zab drainage, Iraq; 77 mm SL.

Glyptothorax kurdistanicus; Lesser Zab drainage, Iraq; 120 mm SL. ©Y. Abdullah.





Glyptothorax kurdistanicus

Common name. Tigris torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ● thoracic adhesive apparatus 0.7–0.9 times longer than wide / ○ thoracic adhesive apparatus almost or completely situated on a horse-shoe shaped elevation, usually extending from isthmus to base of first or third branched pectoral ray / ○ anteromedial striae few, very short or absent / ○ striae not reaching onto pectoral base / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with small round warts / ○ adipose short, its length 0.6–1.0 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal-peduncle length 13–16 % SL / ○ caudal-peduncle 1.1–1.3 times in its length / ○ maxillary barbel 74–92 % HL / ○ inner mandibular barbel 31–36 % HL / ○ outer mandibular barbel 53–63 % HL / ○ 9–12 serrae on pectoral spine / ○ all fins with a distinct, distal yellow tip / ○ few black or dark-brown blotches on flank. Size up to 122 mm SL.

Distribution. Upper Tigris (Türkiye) to Sirvan drainage (Iran).

Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. LC.

Further reading. Berg 1931 (description); Freyhof et al. 2021c (description).

Glyptothorax pallens

Common name. Pale torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ head and body pale-brown without brown or black spots / ○ head and flank with roundish or elongate warts, without tubercles / ○ thoracic adhesive apparatus strongly elevated, 1.0–1.2 times longer than wide, usually extending from isthmus to base of last pectoral ray or to posterior limit of pectoral base / ○ medial pit narrow and spear-blade shaped, without striae / ○ striae restricted to elevated apparatus / ○ anteromedial striae absent or very short / ○ caudal-peduncle 1.1–1.3 times in its length / ○ caudal lobes pointed / ○ caudal deeply forked, shortest middle caudal ray 47–53 % of longest ray of upper caudal lobe / ○ head depth 53–57 % HL / ○ maximum head width 73–80 % HL / ○ maxillary barbel 90–95 % HL / ○ inner mandibular barbel 38–42 % HL / ○ outer mandibular barbel 52–59 % HL, reaching pectoral origin / ○ 10–11 serrae on pectoral spine / ○ upper head, back and flank without brown or black spots or blotches / ○ all fins with a distinct, distal yellow tip / ○ adipose short, its length 0.5–0.8 times larger than distance between base of last dorsal ray and adipose origin. Size up to 69 mm SL, likely to grow larger.

Distribution. Iran: Sirvan drainage, including Goleyn, Alvand, Zemkan, and Sirvan.

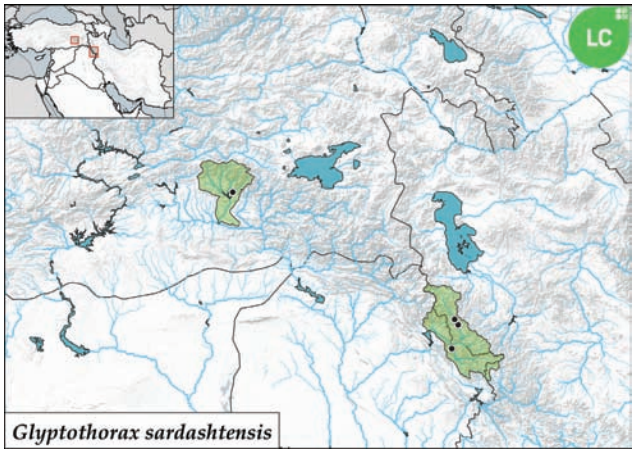
Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

Glyptothorax pallens; Zemkan, Sirvan drainage, Iran; 67 mm SL.

Glyptothorax sardashtensis; Lesser Zab drainage, Iran; ~80 mm SL.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.
Conservation status. VU; appears to be declining within its small range.
Remarks. As the Sirvan flows into Iraq to join Tigris, this species is expected to occur there.
Further reading. Mousavi-Sabet et al. 2021 (description).

Glyptothorax sardashtensis
Common name. Sardasht torrent catfish.
Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ head and body pale-brown without brown or black spots / ○ head and flank without roundish or elongate warts, without tubercles / ○ thoracic adhesive apparatus slightly elevated, 0.8–1.2 times longer than wide, usually extending from isthmus to base of third or fifth branched pectoral ray / ○ striae restricted to elevated apparatus / ○ anteromedial striae few and short / ○ medial pit without striae, broad, its anterior end roundish / ○ caudal-peduncle 1.6–2.3 times in its length / ○ caudal lobes pointed / ○ caudal deeply forked / ○ head depth 37–52 % HL / ○ maximum head width 72–88 % HL / ○ maxillary barbel 53–95 % HL / ○ upper head, back and flank without brown or black spots or blotches / ○ inner mandibular barbel 22–31 % HL / ○ outer mandibular barbel 33–53 % HL, not reaching pectoral origin / ○ 9–11 serrae on pectoral spine / ○ all fins with a distinct, distal yellow tip. Size up to 67 mm SL, likely to grow larger.
Distribution. Lesser Zab (Iran) and Batman drainages (Türkiye). Potentially more widespread.
Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.
Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.
Conservation status. LC.
Further reading. Jokar et al. 2023 (description).



Glyptothorax shapuri; Shapur, Iran; 67 mm SL.

Glyptothorax shapuri

Common name. Shapur torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ thoracic adhesive apparatus with few, very short anteromedial striae, 1.0–1.2 times longer than wide, extending to base of last pectoral ray or to posterior limit of pectoral base / ○ thoracic adhesive apparatus strongly elevated, completely situated on a horse-shoe shaped elevation / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with or without small roundish warts / ○ adipose short, its length 0.5–0.8 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal lobes pointed / ○ caudal deeply forked, its shortest middle caudal ray 46–49 % of longest ray of upper caudal lobe / ○ caudal-peduncle 1.1–1.3 times in its length / ○ inner mandibular barbel 18–22 % HL / ○ outer mandibular barbel 42–44 % HL / ○ maxillary barbel shorter than head, 81–84 % HL / ○ 9–11 serrae on pectoral spine / ○ fins usually with distinct yellow tips / ○ head, back and flank with few, irregular shaped dark-brown blotches as large as eye diameter or larger, and many, very small dark-brown points, much smaller than eye diameter / ○ no silvery-beige spots and blotches on head and flank in life. Size up to 81 mm SL, likely to grow larger.

Distribution. Iran: Helleh drainage.

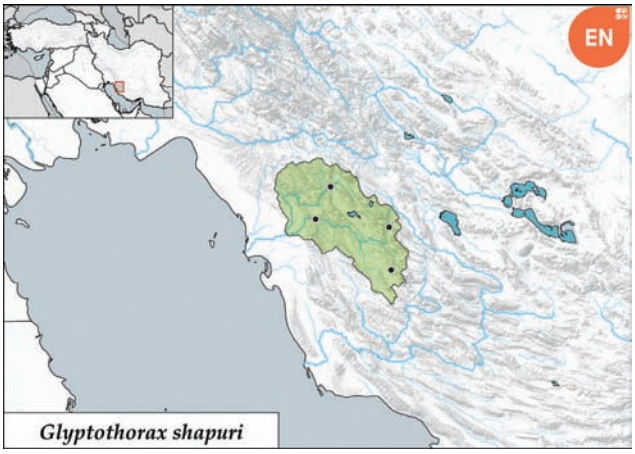
Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. EN; appears to be declining within its very small range.

Remarks. The description of *G. shapuri* may be based on juveniles, and the morphometric and colour pattern characters may be different in adults. However, we cannot exclude that this is a true dwarf species.

Further reading. Mousavi-Sabet et al. 2021 (description); Sayyadzadeh et al. 2022 (synonym of *G. silviae*).



Small and juvenile *Glyptothorax* often inhabit small rivers like the Shapur in Iran.

Glyptothorax silviae; Lodab, Marun drainage, Iran; ~100 mm SL.

Glyptothorax silviae

Common name. Persian torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ○ thoracic adhesive apparatus with no or few, very short anteromedial striae, 1.0–1.2 times longer than wide, extending to base of last pectoral ray or to posterior limit of pectoral base / ○ thoracic adhesive apparatus elevated, completely situated on a horse-shoe shaped elevation / ○ medial pit open, without striae / ○ dorsal and lateral head, back and flank with or without small roundish warts / ○ adipose short, its length 0.8–1.0 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal lobes pointed / ○ caudal moderately forked, its shortest middle caudal ray 61–65 % of longest ray of upper caudal lobe / ○ caudal-peduncle 1.3–1.6 times in its length / ○ inner mandibular barbel 45–48 % HL / ○ outer mandibular barbel 67–74 % HL / ○ maxillary barbel as long as head, 92–110 % HL / ○ 9–11 serrae on pectoral spine / ○ caudal deeply forked, shortest middle caudal ray 40–43 % of longest ray of upper caudal lobe / ○ fins usually with distinct yellow tips / ○ flank grey or brown with few or many spots and small blotches or only small blotches all smaller than eye diameter, without silvery-beige spots and blotches on life. Size up to 100 mm SL, likely to grow larger.

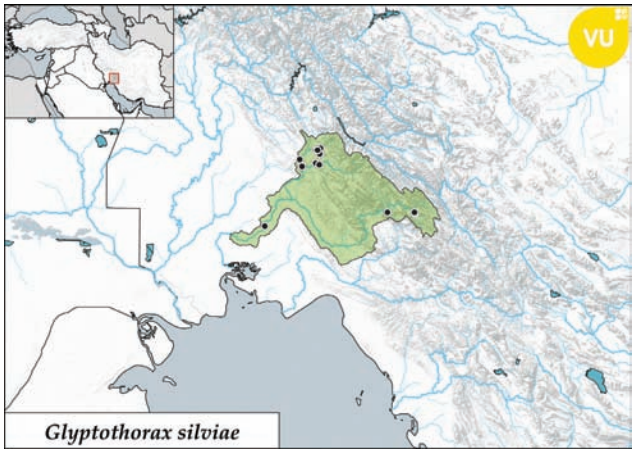
Distribution. Iran: Jarrahi drainage.

Habitat. Fast-flowing water in mountain streams, rapids, and riffles on rocky or gravelly bottoms.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. VU; appears to be declining within its small range.

Further reading. Coad 1981a (description); Freyhof et al. 2021c (description); Mousavi-Sabet et al. 2021 (description); Sayyadzadeh et al. 2022 (morphology).



Glyptothorax steindachneri; Nahr Al-Khabur, Syria; 77 mm SL.

Glyptothorax steindachneri; Deir ez-Zur, Syria; 112 mm SL.

Glyptothorax steindachneri

Common name. Longfin torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ● adipose very long, its length 1.5–3.0 times larger than distance between base of last dorsal ray and adipose origin / ● medial pit closed by striae / ● 13–17 serrae on pectoral spine / ○ head pointed, short, 21–23 % SL / ○ thoracic adhesive apparatus slightly elevated, 1.1–1.5 times longer than wide, on a shallow horse-shoe shaped elevation; extending from isthmus to base of last pectoral ray or to posterior limit of pectoral base / ○ anteromedial striae not or poorly developed / ○ dorsal head and predorsal back with large, striated, elongated tubercles / ○ distance between anus anal origin 5.0–6.7 % SL / ○ flank with small black spots or without spots. Size up to 190 mm SL, likely to grow larger.

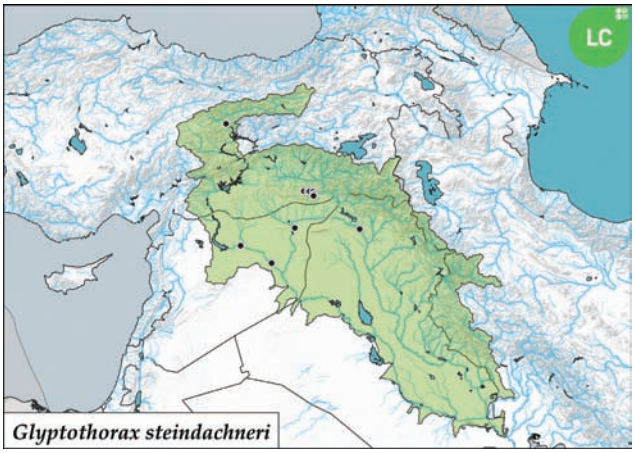
Distribution. Tigris below Diyarbakır; Euphrates in Syria, Nahr Al-Khabur, a tributary of Euphrates in Syria, and Lesser Zab in Iraq.

Habitat. Fast to moderately fast-flowing medium to large rivers.

Biology. Nocturnal. Feeds on benthic invertebrates.

Conservation status. LC.

Further reading. Pietschmann 1913 (description); Freyhof et al. 2021c (description).



Glyptothorax vatandousti; stream Kangavar, Karkheh drainage, Iran; 82 mm SL.

Glyptothorax vatandousti

Common name. Kangavar torrent catfish.

Diagnosis. Distinguished from other species of *Glyptothorax* in West Asia by: ● thoracic adhesive apparatus 0.8–1.1 times longer than wide / ○ thoracic adhesive apparatus almost or completely situated on a horse-shoe shaped elevation, usually extending from isthmus to base of first or third branched pectoral ray / ○ thoracic adhesive apparatus moderately elevated with few, short anteromedial striae / ○ caudal-peduncle length 16–20 % SL / ○ anteromedial striae few, very short / ○ striae not reaching onto pectoral base / ○ medial pit wide, the roundish anterior end, open, without striae / ○ dorsal and lateral head, back and flank with small round warts / ○ adipose short, its length 0.5–0.7 times larger than distance between base of last dorsal ray and adipose origin / ○ caudal-peduncle 1.1–1.3 times in its length / ○ maxillary barbel 72–99 % HL / ○ inner mandibular barbel 31–45 % HL / ○ outer mandibular barbel 50–81 % HL / ○ 5–8 serrae on pectoral spine / ○ all fins with a distinct, distal yellow tip / ○ many black or dark-brown blotches on flank. Size up to 91 mm SL.

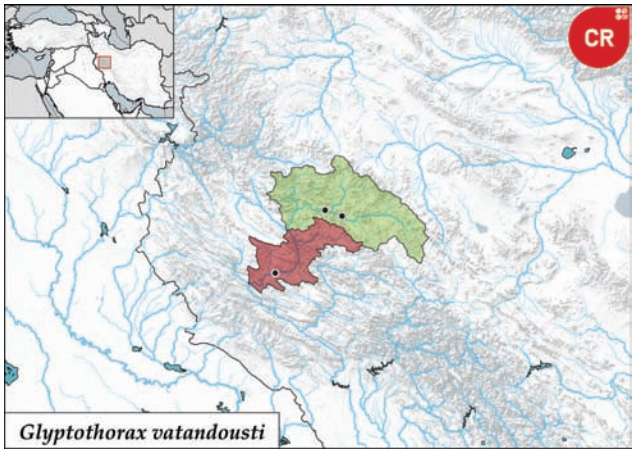
Distribution. Iran: lower reaches of Kangavar in Karkheh drainage.

Habitat. Moderately fast-flowing medium-sized rivers.

Biology. Nocturnal, hiding under rocks during day. Feeds on benthic invertebrates.

Conservation status. CR; known from only one small stream, extirpated from Aran and Chardavol.

Further reading. Jouladeh-Roudbar et al. 2023 (description).



The Botan is a tributary of the Tigris, and habitat of several *Glyptothorax* species.