

# Oriental Weatherfish (*Misgurnus anguillicaudatus*)

Historical Presence	Abundance	Life History	Management
Exotic	Rare	Freshwater	Invasive

## General Information

A member of the loach family, Oriental Weatherfish have a long cylindrical body, with 10-12 barbels around its mouth, a rounded caudal fin, and a stout pectoral spine. An invasive species, they were first documented in NJ by NJDFW in the early 2000s, likely introduced as a result of the aquarium pet trade. Oriental Weatherfish are highly tolerant to extreme conditions and marginal habitat quality including: extreme water temperatures (low and high), low dissolved oxygen, starvation, and desiccation. They are also long lived, early maturing, highly fecund, and can have multiple spawning events in a single year.



Geographic Range	Native to e. Asia, they have invaded 19 states in the U.S. as well as 10 other countries. Within NJ, are found in Saddle R., Neshanic R., Raritan R., and Millstone R.
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## Habitat Description

Shallow rivers, lakes, ponds, swamps and rice fields; prefer muddy bottoms with silt, leaf litter, and woody debris. Have ability to survive in poorly oxygenated water.

## Optimum Habitat Requirements

Dissolved Oxygen	Tolerant of low DO
Temperature	Tolerant (-2 – 30°C)
pH	Tolerant of low pH
Turbidity	
Current	Slow

## Diet

Fry	Zooplankton
Juveniles	Insects, snails, worms, ostracods, fish
Adults	eggs, algae, detritus
<b>Notes:</b> Benthic omnivores, require chemical stimuli to induce feeding behavior.	

## Reproduction

Time of Year	May – October	Age Males Mature	1
Temperature Range		Age Females Mature	1
Water Depth		Nest	None
Substrate		Egg Type	Pelagic (adhesive)
Time of Day	Night	Parental Care	None
Critical pH		Days to Hatching	~ 1.25
Velocity Range		Oxygen Level	

**Notes:** Females may spawn multiple times per year.

## Size and Growth

Maximum length 250 mm. Maximum longevity is 5-7 years of age. Females become considerably larger than males.

## References

(Berg 1949; Sterba 1973; Suzuki 1983; Watanabe and Hidaka 1983; Yamamoto and Tagawa 2000; Hager et al. 2001; Marchetti et al. 2004; Simon et al. 2006; Wang et al. 2008; Koetsier and Urquhart 2012; Urquhart 2013; Schmidt and Schmidt 2014)

- Berg, L. S. 1949. Freshwater fishes of the USSR and adjacent countries. Israel program for scientific translations, Jerusalem 2:496.
- Hager, S., R. A. Tabor, and E. Warner. 2001. An oriental weatherfish (*Misgurnus anguillicaudatus*) population established in Washington State.
- Koetsier, P., and A. N. Urquhart. 2012. Desiccation tolerance in a wild population of the invasive Oriental Weatherfish *Misgurnus anguillicaudatus* in Idaho, USA. *Transactions of the American Fisheries Society* 141(2):365–369.
- Marchetti, M. P., P. B. Moyle, and R. Levine. 2004. Invasive species profiling? Exploring the characteristics of non-native fishes across invasion stages in California. *Freshwater biology* 49(5):646–661.
- Schmidt, R. E., and A. J. Schmidt. 2014. Observations on Oriental Weatherfish (*Misgurnus anguillicaudatus*), an Exotic Species in the Hudson River Valley, New York. *Northeastern naturalist* 21(1):134–146.
- Simon, T. P., G. Bright, F. Veraldi, J. R. Smith, and J. R. Stahl. 2006. New Records for the Alien Oriental Weatherfish, *Misgurnus anguillicaudatus*, in the Lake Michigan Basin, Indiana (Cypriniformes, Cobitidae). Pages 32–36 *Proceedings of the Indiana Academy of Science*.
- Sterba, G. 1973. *Freshwater fishes of the world*. TFH Publications.
- Suzuki, R. 1983. Multiple spawning of the cyprinid loach, *Misgurnus anguillicaudatus*. *Aquaculture* 31(2–4):233–243.
- Urquhart, A. N. 2013. Life history and environmental tolerance of the invasive Oriental Weatherfish (*Misgurnus anguillicaudatus*) in southwestern Idaho, USA.
- Wang, Y., M. Hu, L. Cao, Y. Yang, and W. Wang. 2008. Effects of daphnia (*Moina micrura*) plus chlorella (*Chlorella pyrenoidosa*) or microparticle diets on growth and survival of larval loach (*Misgurnus anguillicaudatus*). *Aquaculture international* 16(4):361–368.
- Watanabe, K., and T. Hidaka. 1983. Feeding behaviour of the Japanese loach, *Misgurnus anguillicaudatus* (Cobitidae). *Journal of Ethology* 1(1–2):86–90.
- Yamamoto, M. N., and A. W. Tagawa. 2000. *Hawaii's Native & Exotic Freshwater Animals*. Honolulu, Hawaii.