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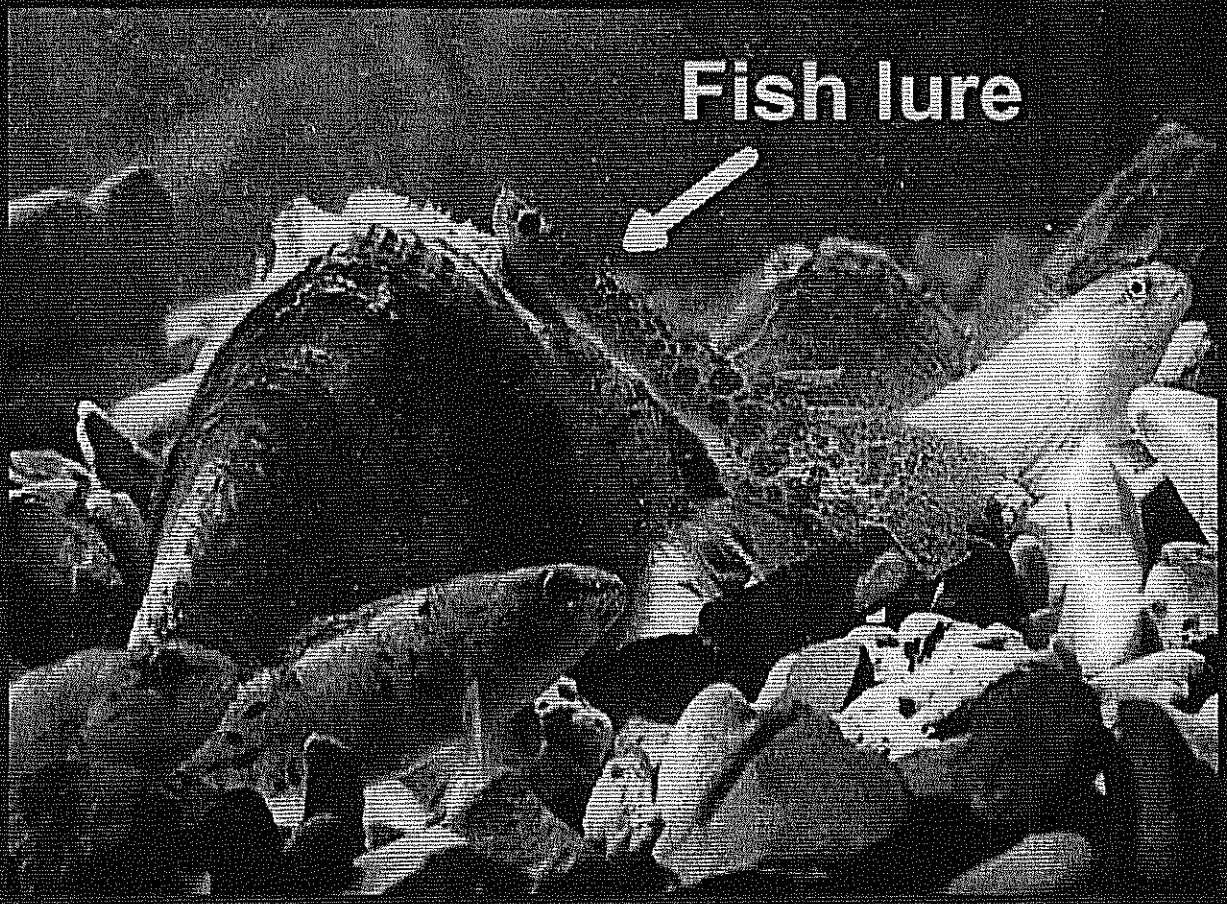
# Fish Lure on Freshwater Mussel

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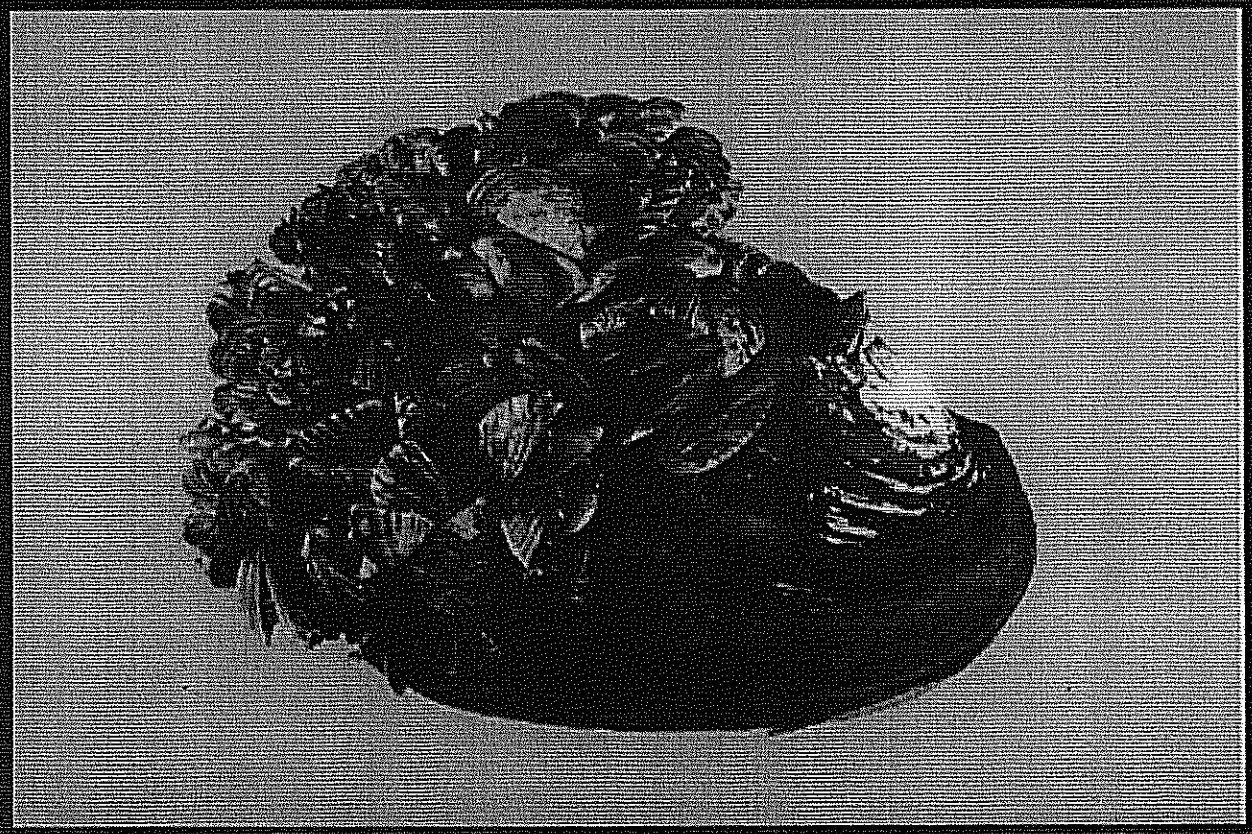
# Freshwater Mussel Infested with Zebra Mussels



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# Mussels of the Illinois River

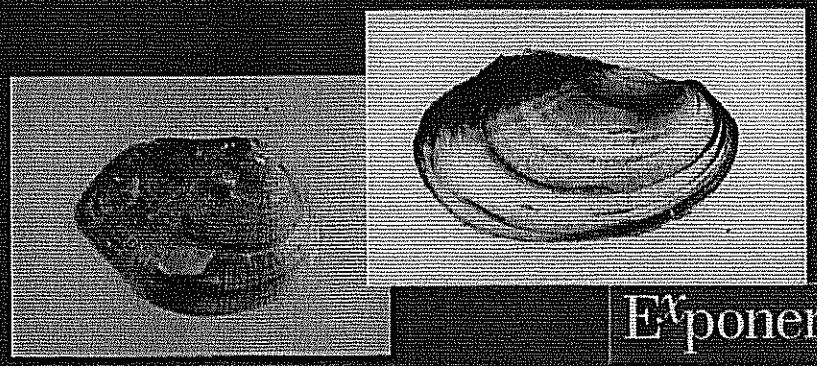
Mussels are monitors of aquatic health. Stable, diverse mussel populations indicate clean water and a healthy aquatic environment (USFWS).

## Illinois River

*Anodonta imbecillus*
*Strophitus undulatus*
*Alasmidonta marginata*
*Lasmigona complanata*
*Cyclonaias tuberculata*
*Fusconaia flava*
*Proptera alata*
*Lampsilis ventricosa*
*Lampsilis rafinesqueana*

## Tenkiller Reservoir

*Obliquaria reflexa*
*Leptodea fragilis*
*Proptera purpurata*



(Branson 1982)

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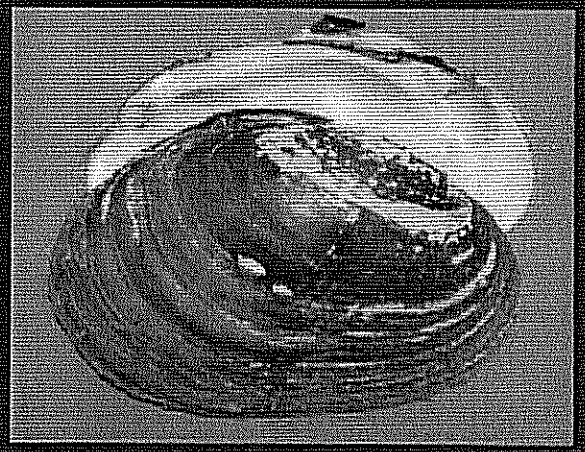
# The Neosho Mucket
## *Lampsilis rafinesqueana*

Candidate for federal listing (2000) and listed as endangered in OK

Declines due to reservoir construction (e.g., Lake Frances) and siltation

Throughout much of its remaining range, occurs sporadically at low densities

In AR and OK, found only in the Illinois River



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# The Neosho Mucket *Lampsilis rafinesqueana* (cont.)

- Common in the Illinois River with catch rates varying from one to 61 found per hour searching (mean = 14)
- In 1994, found at 19 of 22 sites surveyed in AR, and third most abundant species from Osage Cr to state line
- In 2005, found at higher abundances at two sites resurveyed
- One mussel bed lost due to sedimentation from public access nearby

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# Summary – Biological Conditions

- The Illinois River has a diverse fish community, although a relatively high abundance of stoneroller as is characteristic in nutrient-enriched systems
- The river appears to support robust fish and macroinvertebrate communities despite elevated nutrients
- "The ecological impact of nutrient enrichment, regardless of the sources, is generally not manifested in Ozark Plateau streams, primarily due to intact riparian zones resulting in light limitation for algal growth." (USEPA 2004)

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# Summary (cont.)

- Fish from the Illinois River above Lake Tenkiller had the lowest concentrations of organics and metals of all stations sampled in OK
- A diverse mussel community, including the endangered Neosho mucket, is indicative of clean water and a healthy aquatic environment
- Impacts from WWTPs may be significant

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# Ecological Data Gaps

- **Periphyton/algae, benthos, fish, and habitat data for:**
  - Mainstem IL River in AR, further upstream of state line
  - IL River in OK
  - Lake Tenkiller
  - Appropriate reference sites
- **Presence/absence of threatened and endangered species basin-wide**
- **Contaminant concentrations and effects in fish, sediment, and benthos basin-wide**
- **Effects of WWTPs as compared to non-point source contributions**
- **Concentrations and effects of hormones/pathogens**

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