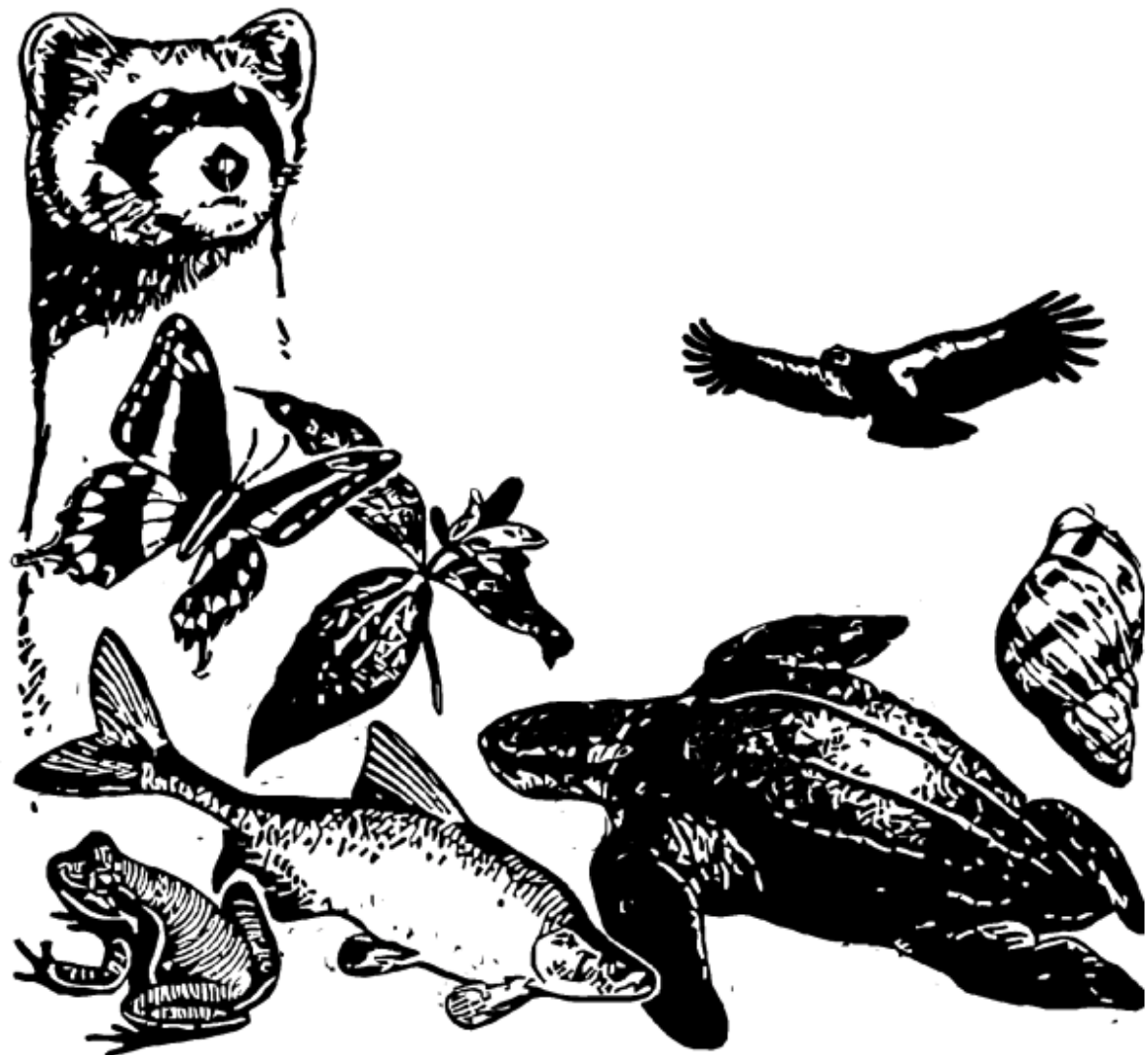


Fishes AMMs

Palezone Shiner and 7 more species

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General Project Design Guidelines - Palezone Shiner and 7 more species

Published by Kentucky Ecological Services Field Office for the following species included in your project

Palezone Shiner *Notropis albizonatus*

Blackside Dace *Phoxinus cumberlandensis*

Pallid Sturgeon *Scaphirhynchus albus*

Duskytail Darter *Etheostoma percnurum*

Relict Darter *Etheostoma chienense*

Cumberland Darter *Etheostoma susanae*

Diamond Darter *Crystallaria cincotta*

Kentucky Arrow Darter *Etheostoma spilotum*

Currently, there are eight federally-listed fish species that may occur in Kentucky and should be considered when evaluating project impacts. The table below lists the general Kentucky distribution of these species and describes typical habitat conditions in which they are found. Species occurrence is not limited to areas that contain typical habitat characteristics. The species can potentially be found in any stream of suitable size within its known range.

| | Distribution in Kentucky | Typical Habitat |
|------------------------------------|---|--|
| Blackside dace | Upper Cumberland River basin (portions of Bell, Harlan, Knox, Laurel, Letcher, McCreary, Pulaski, and Whitley counties). ¹ | Headwater streams (generally 1 st – 2 nd order) with intact riparian zones and stable substrates; generally found near undercut stream banks, woody debris piles, and large rocks; more likely present when stream conductivity levels $\leq 240 \mu\text{S/cm}$. |
| Cumberland darter | Upper Cumberland River basin (McCreary and Whitley counties) | Small to medium-sized streams (2 nd – 4 th order) with pools or shallow runs containing sand, silt, or sand-covered bedrock substrates. |
| Diamond darter | Considered extirpated from Kentucky, but unoccupied critical habitat has been designated in the Green River | Moderate current and clean sand and gravel substrates. |
| Duskytail darter ² | Big South Fork Cumberland River | Rocky areas in gently flowing shallow pools and runs. |
| Kentucky arrow darter ³ | Upper Kentucky River basin (portions of Breathitt, Clay, Harlan, Jackson, Knott, Lee, Leslie, Owsley, Perry, and Wolfe counties) | Headwater streams (generally 1 st – 2 nd order) with moderate- to high-gradients and rocky substrates; most often observed near some type of cover—boulders, rock ledges, large cobble, or woody debris piles; more likely present when stream conductivity levels $\leq 250 \mu\text{S/cm}$. |
| Palezone shiner | Little South Fork Cumberland River | Flowing pools and runs with clear water and substrates composed of bedrock, cobble, pebble, and gravel mixed with clean sand. |

1 The blackside dace is also known to occur in one drainage in the Kentucky River basin (Perry County).

2 Recent taxonomic research has split this species into four distinct species. The Tuxedo darter (*Etheostoma lemniscatum*) is the species that exists in Kentucky. The Service has not formally recognized these nomenclatural changes; therefore, the duskytail darter is the current taxon recognized under the ESA.

3 The Kentucky arrow darter was listed as threatened under the ESA with a 4(d) rule. The 4(d) rule exempts take of the species resulting from certain categories of activities: channel reconfiguration or restoration, bank stabilization, bridge and culvert removal or replacement, and repair and maintenance of USFS concrete plank stream crossings. Additional criteria for qualifying activities are found at 81 FR 68963.

| | Distribution in Kentucky | Typical Habitat |
|-----------------|--|--|
| Pallid sturgeon | Mississippi River, its oxbows, and embayed portions of major tributaries. | |
| Relict darter | Bayou du Chien drainage, including portions of the mainstem, South Fork Bayou du Chien, Jackson Creek, Cane Creek, and Sand Creek. | Quiet to gently flowing pools, runs, and glides, usually over gravel mixed with sand; species often associated with undercut banks and other cover (woody debris, tree roots). |

A fish species appears on the IPaC-generated species list if the project area input for the proposed project is located in a watershed where federally-listed fish species occur or may potentially occur. The Kentucky Field Office (KFO) can further assist in determining if a listed fish species is known to occur in a specific project area or if a habitat assessment or species survey is necessary to provide more information about the species' potential occurrence.

When practicable, we recommend siting projects to avoid impacting streams and rivers that contain listed fish species and utilizing methods, such as horizontal directional drilling and clear span bridges, to avoid direct impacts to listed fish species and their habitats. In-channel activities may affect federally-listed fish species if they are present in the action area of the proposed project. When in-channel activities cannot be avoided, the KFO can provide further assistance when evaluating the effects of these activities and determining the likelihood that adverse effects and/or take of a federally-listed fish species may occur.

Projects that do not involve in-channel activities may still have the potential to indirectly affect listed fish species and their habitats. Stream degradation is the primary threat to most federally-listed fish species in Kentucky. Development activities that disturb areas in watersheds containing listed fish species can degrade the stream by increased siltation/sedimentation, introduction of pollutants, and/or alteration of riparian areas. The following are some general recommendations to minimize indirect impacts to streams and rivers and reduce effects to federally-listed fishes:

- Utilize Best Management Practices to minimize erosion from work areas;
- Limit vegetation removal to minimize impacts to riparian areas;
- Revegetate disturbed areas with native vegetation;
- Use bioengineering techniques to restore disturbance to stream banks;
- Install upland sediment basins, where appropriate, to minimize sediment input into streams and rivers;
- Install detention structures to manage stormwater runoff into streams and river; and
- Minimize the addition of impervious surfaces in the watershed.

When submitting project information to the KFO for review, please include information about streams and rivers in the action area of the proposed project. Describe any proposed activities that would occur in the channel or on the banks and include descriptions of measures proposed to reduce impacts to stream and river habitat.