

**Request to Evaluate the Harlequin Darter (*Etheostoma histrio*) in Florida: Evaluation of a Species of Special Concern.**

**Petitioner Information**

Jeanne-Marie Havrylkoff  
Florida Fish and Wildlife Conservation Commission  
Fish and Aquatic Invertebrate Conservation Coordinator  
8384 Fish Hatchery Road  
Holt, FL 32564  
(850) 508-1759  
[Jeanne.Havrylkoff@MyFWC.com](mailto:Jeanne.Havrylkoff@MyFWC.com)

Signature:



Date:



**Summary**

In 2016, the Florida Fish and Wildlife Conservation Commission directed staff to reevaluate the five species currently designated as Species of Special Concern, including the harlequin darter (*Etheostoma histrio*). The harlequin darter has previously been reviewed by a Biological Review Group (hereafter BRG) in 2010. At that time, following protocols outlined in the "*Guidelines for Using the IUCN Red List Categories and Criteria (Version 8.1)*", the BRG determined it did not meet any listing criteria. Additionally, they concluded that the adequacy of the available data was insufficient to make a full evaluation, thus they recommended that the species be listed as a Species of Special Concern. In accordance with Florida's endangered and threatened list (Rule 68A-27.0012, F.A.C.) this petition is submitted to the Florida Fish and Wildlife Conservation Commission to evaluate the harlequin darter for delisting in Florida.

**Introduction**

As per procedures expressed in Rule 68A-27.0012, Florida Administrative Code (F.A.C.) a petition for delisting a species on Florida's endangered and threatened list may be submitted by the public or Florida Fish and Wildlife Conservation Commission (FWC) staff. On November 16, 2016, the FWC directed staff to reevaluate the five species designated as Species of Special Concern. This direction necessitated the harlequin darter to be petitioned to be evaluated for delisting within Florida (this petition). The designation of Species of Special Concern provides temporary protection for species determined to be data deficient during the previous Biological Status Review (BSR) and affords the species the protection detailed in Rule 68A-27.005, F.A.C., including that "*no person shall take, possess, transport, or sell any species of special concern included in this subsection or parts thereof or their nests or eggs except as authorized by permit from the executive director, permits being issued upon reasonable conclusion that the permitted activity will not be detrimental to the survival potential of the species. For the purposes of this section, the definition of the word take in Rule 68A-1.004, F.A.C., applies.*"

Prior to this direction, the FWC directed staff to evaluate all species listed as Threatened or Species of Special Concern as of November 8, 2010, that had not undergone a status review within the past

decade. A three member Biological Review Group (BRG) met on November 18 and 19, 2010 and determined that the harlequin darter did not meet any listing criteria. The BRG, however, expressed concerns over the adequacy of currently available data, which resulted in the recommendation to list the harlequin darter as a species of special concern. As a result of the BRG, FWC staff published a BSR (FWC 2011) and a Species Action Plan (SAP; FWC 2013).

As a result of this petition, and as directed by Rule 68A-27.0012 F.A.C. the FWC will convene a new BRG, chaired by a member of the FWC Fish and Wildlife Research Institute, and evaluate the listing status of the harlequin darter. Evaluation of the harlequin darter will include criteria included in 68A-27.001, F.A.C., and follow the protocols within the *Guidelines for Application of the IUCN Red List Criteria at Regional and National Levels (Version 4.0; IUCN 2012)* and the *Guidelines for Using the IUCN Red List Categories and Criteria (Version 11; IUCN 2014)*.

### **Biological Information**

Harlequin darter inhabit flowing water and are typically associated with submerged logs and vegetation (Hubbs and Pigg 1972), although they are sometimes found in swiftly flowing rocky, gravel, or sandy riffles (Hubbs and Pigg 1972, Tsai 1968). Harlequin darters are presumed to have limited migratory movements, which is an unusual behavior among darters (Steinberg et al. 2000). This species will move from smaller streams that are used during the summer months to larger streams and rivers during the winter months (Etnier and Starnes 1993, Page 1983).

Little is known about harlequin darter breeding behavior, and most knowledge is based of aquarium observations (Steinberg et al. 2000). Sexual maturity is reached by one year of age, and the maximum lifespan is about 4 years (Kuhajda and Warren 1989). Females are presumed to lay eggs in the late winter (Etnier and Starnes 1993, Kuhajda and Warren 1989, Hubbs and Pigg 1972), and large young-of-the-year have been collected in mid-May (Etnier and Starnes 1993) Visual cues and signals are used by male and female fish during breeding events. Eggs are presumed to be attached to fallen logs, vegetation and large rocks, and will be secured to the location by the female (Bass et al. 2004, Steinberg et al. 2000). Eggs and fry receive no parental care.

When the harlequin darter was last reviewed, data was not available regarding the population status and trend for this species (FWC 2011), although the species is suspected to be in decline along the periphery of its range (Boschung and Mayden 2004, Kuehne and Barbour 1983). Due to harlequin darter habitat preferences sampling is difficult, although they have been reliably collected by electro-fishing (Bass et al. 2004). Species directed sampling efforts have been underway for many years, and have produced valid data relevant to the population status of this fish within Florida. Furthermore, FWC has recently implemented its Imperiled Species Management Plan (ISMP, FWC 2016), which has detailed the framework for management of harlequin darter moving forward pending the outcome of this evaluation request.

### **Distribution**

The harlequin darter has a wide distribution within the lower Mississippi basin, primarily below the fall line, and is occasionally found in waters above the fall line. This species is found in several states including Alabama, Arkansas, Florida, Illinois, Indiana, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, and Texas (NatureServe 2013). Throughout its range this species is considered to be rare to uncommon. There are 36 collection records in Florida, spanning from 1962 through 2009 (FWC 2011). Within Florida, this species is restricted to the Escambia River and its

tributaries including Big Escambia, Little Escambia, Pine Barren, Canoe, and Mitchel creeks (FWC 2011). In the Escambia River, harlequin darters are found from the Alabama/Florida state line, through the White River section (ca. 17.5 km ESE of Milton, Florida; Knight unpublished data in FWC 2011).

### Threats Summary

The 2010 BRG identified that the Florida population of harlequin darter is susceptible to a single catastrophic event occurring within the Escambia River watershed (FWC 2011). Other threats to harlequin darters are stream modification, including the removal of large snags, stream and river impoundments, and high turbidity and sediment concentrations (FWC 2011, Bass et al. 2004, Boschung and Mayden 2004, Steinberg et al. 2000).

### Literature Cited

- Bass, G., T. Hoehn, J. Couch and K. McDonald. 2004. Florida imperiled fish species investigation. Final Report to the U. S. Fish and Wildlife Service. Federal Grant R-3. Florida fish and wildlife Conservation Commission, Holt, FL. 59pp.
- Boschung H. T. and R. L. Mayden. 2004. Fishes of Alabama. Smithsonian Institution Press, Washington D.C. 681pp.
- Florida Fish and Wildlife Conservation Commission. 2011. Harlequin darter biological status review report. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL. 11pp.
- Florida Fish and Wildlife Conservation Commission. 2013. A species action plan for the harlequin darter. Tallahassee, FL. 33pp.
- Florida Fish and Wildlife Conservation Commission (FWC). 2016. Florida's Imperiled Species Management Plan. Tallahassee, Florida. 166 pp.
- Hubbs, C. and J. Pigg. 1972. Habitat preferences of the harlequin darter, *Etheostoma histrio*, in Texas and Oklahoma. *Copeia* 1972: 193-194.
- IUCN. 2012. Guidelines for application of the IUCN red list criteria at regional and national levels: version 4.0. Gland, Switzerland and Cambridge, UK. IUCN 41pp.
- ICUN. 2014. Guidelines for using the IUCN red list categories and criteria: version 11. 87pp.
- Kuehne, R. A. and R. W. Barbour. 1983. The American Darters. University Press of Kentucky, Lexington, KY. 177pp.
- Kuhajda, B. R. and M. L. Warren. 1989. Life history aspects of the harlequin darter, *Etheostoma histrio*, in western Kentucky. *ASB Bulletin* 26:66-67.
- Millsap, B. A., J. A. Gore, D. E. Runde, and S. I. Cerulean. 1990. Setting priorities for the conservation of fish and wildlife species in Florida. *Wildlife Monographs* 11: 3-57.
- NatureServe. 2013. *Etheostoma histrio*. The IUCN red list of threatened species 2013: e.T202489A2745275. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T202489A2745275.en>, accessed 07 April 2017.
- Page, L. M. 1983. Handbook of Darters. T.F.H. Publishers, Neptune City, NJ.

Florida Fish and Wildlife Conservation Commission  
July 10, 2017 Meeting  
Consent Agenda Item 6

Steinberg R., L. M. Page, and J. C. Porterfield. 2000. The spawning behavior of the harlequin darter, *Etheostoma histro* (Osteichthyes: Percidae). *Ichthyological Exploration of Freshwaters* 11:141-148.