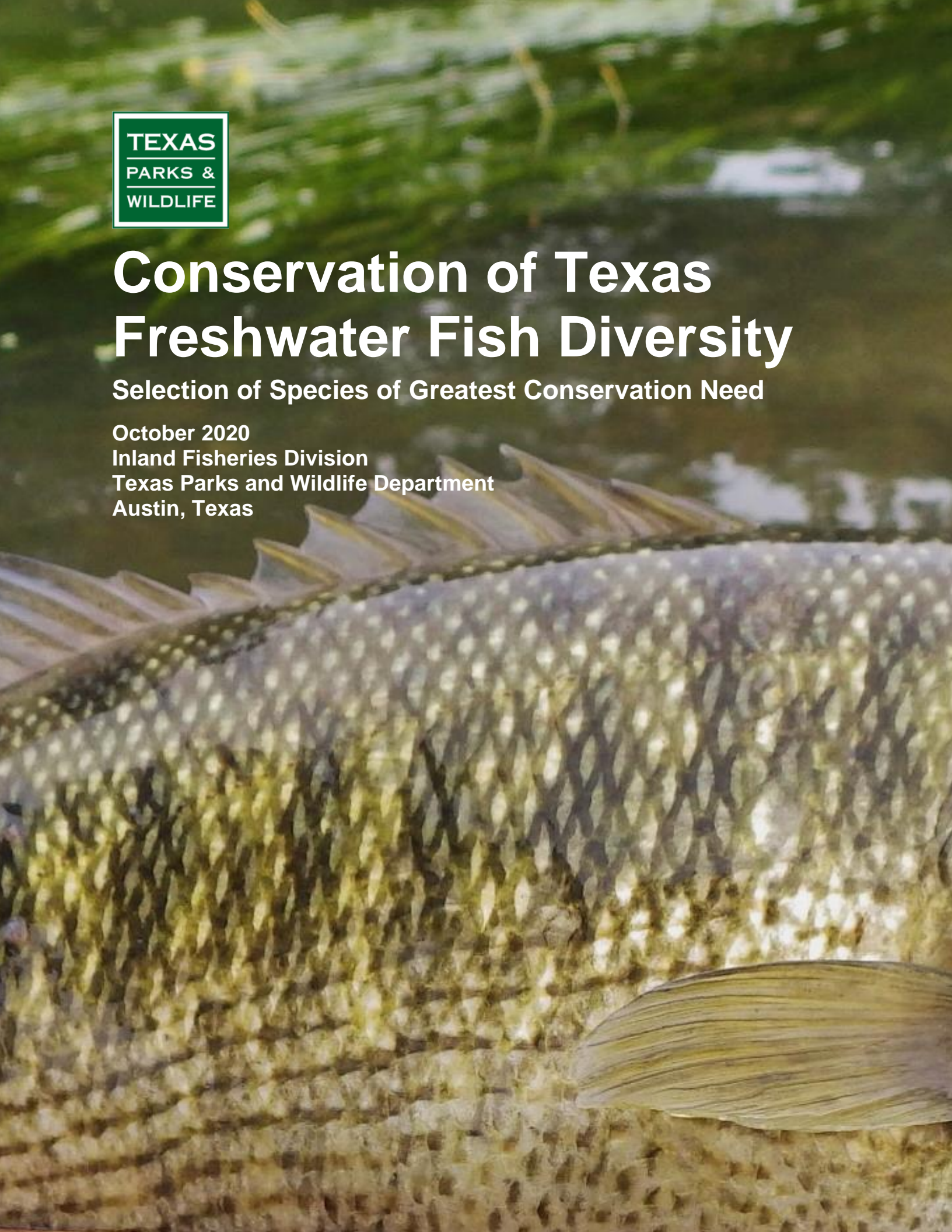




# Conservation of Texas Freshwater Fish Diversity

Selection of Species of Greatest Conservation Need

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**Cover Photo:** Lateral view of a Guadalupe Bass *Micropterus treculii*, the official state fish of Texas and a Species of Greatest Conservation Need (photo credit: Living Waters Fly Fishing)

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## Introduction

Texas Parks and Wildlife Department (TPWD) has broad authorities and mandates to manage and conserve freshwater fish diversity, including mandates to perform ecological research, species propagation, biological surveys and monitoring, habitat restoration, habitat protection, and other actions to ensure the continued ability of native freshwater fishes “to perpetuate themselves” (Texas Parks & Wildlife Code, §§ 67.001–67.0041, Nongame Species). Such actions are prioritized by TPWD for freshwater fishes recognized as Species of Greatest Conservation Need (SGCN; TPWD 2012, Birdsong et al. 2019). Status as a SGCN is afforded to species with low or declining populations in need of conservation action, including species at risk due to threats to their life history needs or habitats; species considered rare due to few, small or declining populations, abundance, or distribution; and species with declining trends in their habitats and populations (AFWA 2012).

Maintaining a frequently updated list of SGCN supports prioritization of conservation investments toward species in need of conservation intervention. It also enables access to project-based funding for research, monitoring, habitat restoration, repatriation, and other actions that have the potential to reverse trends for species at risk or in decline (Birdsong et al. 2019, Birdsong et al., in press). A prime example of such investments is the State Wildlife Grants Program, which was authorized by U.S. Congress to provide a source of funding to state fish and wildlife agencies explicitly for the conservation of SGCN. Since the initial appropriation of funding to the program by U.S. Congress in 2002, TPWD has received annual apportionments totaling \$34.3 million to fill critical science needs and implement conservation actions to restore and preserve the more than 1,300 species recognized as SGCN in Texas (TPWD 2012). Since 2008, approximately 25% of that funding (\$8.6 million) has been invested in the conservation and recovery of freshwater fishes and mussels, corresponding to average annual investments of roughly \$660,000. Birdsong et al. (2017) identified an annual funding need of over \$132 million to adequately address the needs of Texas SGCN (across all taxa within the resource management purview of TPWD), including \$6.2 million annually to conserve native freshwater fishes. In recognition of the substantial conservation needs of SGCN in Texas and nationwide, the Recovering America’s Wildlife Act has been repeatedly introduced into U.S. Congress. Passage of the Act would result in the apportionment of more than \$50 million annually in new funding to TPWD to conserve SGCN.

One of the most noteworthy conservation success stories for a freshwater fish SGCN in Texas is the restoration of Guadalupe Bass *Micropterus treculii*. This species is endemic to the clear, spring-fed rivers of central Texas where populations are threatened with local extirpation from habitat degradation, flow alteration, and hybridization with non-native Smallmouth Bass *Micropterus dolomieu* (Curtis et al.

2015). While these threats are enormously challenging to address, the species was recently repatriated to the Blanco River and the Mission Reach of the San Antonio River (Magnelia et al. 2019a, Birdsong et al. 2020). A previously hybridized population of Guadalupe Bass was also recently restored in the South Llano River (Birdsong et al. 2015, Garrett et al. 2015, Birdsong et al. 2020). Since 2009, over \$1.4 million has been invested through the State Wildlife Grants Program in applied research to guide and inform Guadalupe Bass conservation strategies. Those funds were leveraged many times over with project-based funding contributed by TPWD, Texas Parks and Wildlife Foundation, National Fish and Wildlife Foundation, National Fish Habitat Partnership, Southeast Aquatic Resources Partnership, Natural Resources Conservation Service, and other cooperators invested in habitat restoration, habitat preservation, and invasive species management (Birdsong et al. 2020). Ongoing Guadalupe Bass conservation efforts are guided by a 10-year (2017–2026), range-wide conservation plan for the species (Bean 2017), which identifies a goal of establishing and maintaining 10 self-sustaining populations. While that goal was achieved in 2018, efforts to maintain intact populations of Guadalupe Bass continue throughout the native range (Birdsong et al. 2020).

Given the substantial conservation investments afforded to Guadalupe Bass and other SGCN in Texas, it is of obvious importance that the list of Texas SGCN be frequently revisited with consideration of the best available science on status, trends, and threats to species and their habitats. The initial list of Texas SGCN was published within the 2005 Texas Comprehensive Wildlife Conservation Strategy (TPWD 2005) and subsequently updated within the 2012 Texas Conservation Action Plan (TPWD 2012). The Texas Conservation Action Plan is scheduled to be updated in 2023, at which time TPWD will complete a comprehensive revision of both the plan and list of SGCN. Meanwhile, significant advancements have occurred in the available science on status and trends of Texas biodiversity since the current list of SGCN was published in 2012 (e.g., taxonomic verifications, documentation of species extirpations, range reductions and expansions, and hybridization with nonindigenous species). Furthermore, during 2018–2020, TPWD and cooperators completed a litany of species conservation status assessments, including assessments of 91 freshwater fishes, which were used to inform the 2020 revision of the lists of State Threatened (ST) and State Endangered (SE) species (Birdsong et al., in press). Given this dramatic influx in available science on the status of Texas freshwater fish biodiversity, TPWD determined that a 2020 revision of the list of Texas SGCN was timely and warranted. Revision of the list of Texas SGCN in 2020 is expected to formally occur as a “minor revision” to the 2012 Texas Conservation Action Plan. The updated list is then expected to remain active until the next version of the Texas Conservation Action Plan and associated list of SGCN are published in 2023.

## Conservation Status of Texas Freshwater Fishes

To inform the 2020 revision of the list of freshwater fish SGCN, TPWD relied primarily upon data available through the Biodiversity Center Fish Collection at the University of Texas at Austin and related science products and conservation planning tools assembled by the Fishes of Texas Project Team. The Biodiversity Center Fish Collection contains more than 1.7 million specimens and most (>75%) are from Texas freshwater systems. These specimens were used to compile the open-access database accessible through the Fishes of Texas website (<http://www.fishesoftexas.org/home/>). The database consists of a carefully curated, fully georeferenced, high-quality compilation of all specimen-based records of fish occurrences in Texas dating back to 1850 and is among the highest quality regional fish-occurrence databases in the world (Hendrickson et al. 2020). The Biodiversity Center Fish Collection has been used for pertinent information in field guides (Page and Burr 2011), documentation of species ranges (Craig and Bonner 2019) and range expansions (Martin et al. 2012), historical community composition (Labay et al. 2011), bioassessments (Labay and Hendrickson 2014, Labay et al. 2015, Robertson 2015, Robertson et al. 2016, Robertson et al. 2017, Labay et al. 2019), biodiversity conservation (Cohen et al. 2013, Birdsong et al. 2018, Cohen et al. 2018, Garrett et al. 2019, Magnelia et al. 2019b, Mayes et al. 2019) including identification of Native Fish Conservation Areas (Birdsong et al. 2019), endangered species listing decisions (USFWS 2014, Birdsong et al., in press), and invasive species management (Poulos et al. 2012, Cohen et al. 2014, McGarrity 2019).

During 2014–2020, TPWD contracted with the University of Texas at Austin (supported through State Wildlife Grants T-106 and T-182) to utilize the Biodiversity Center Fish Collection to assemble maps of species native ranges, develop species distribution models and spatial conservation prioritizations, conduct species trend analyses and species status assessments, and to ultimately provide data-driven recommendations on freshwater fishes to be included in the next revision of the list of freshwater fish SGCN. Most of those deliverables were contained in a report by Cohen et al. (2018) titled *Conserving Texas Biodiversity: Status, Trends, and Conservation Planning for Fishes of Greatest Conservation Need*. The report identified recommended revisions to the list of Texas freshwater fish SGCN (see Appendix 3 in Cohen et al. 2018), which were assembled in cooperation with 26 subject matter experts from 10 organizations representing conservation non-profits, state and federal agencies, and academia (see Appendix 2 in Cohen et al. 2018). With consideration of trends in species occurrence and distributional changes over time, subject matter experts recommended that 91 of the 191 species of Texas freshwater fish be recognized as SGCN in the next revision of the list.

In addition to considering the recommendations of Cohen et al. (2018), TPWD also reviewed NatureServe species conservation status ranks (Faber-Langendoen et al. 2012, Master et al. 2012) for Texas freshwater fishes. The species conservation status ranks were recently reassessed and updated by the Fishes of Texas Project Team and TPWD to inform the 2020 revision of the Texas lists of species recognized as ST or SE (Birdsong et al., in press). The NatureServe species conservation status methodology considers 10 individual core factors (i.e., population size; range extent; area of occupancy; number of occurrences; number of occurrences with good viability; environmental specificity; scope, severity, and timing of threats; intrinsic vulnerability; and long-term and short-term trends), which serve as indicators of species rarity, threats, and trends (See Table 1 in Master et al. 2012). Scores are weighted and combined across factors (See Table 9 in Faber-Langendoen et al. 2012) to calculate a final conservation status score for individual species and assign a corresponding conservation status rank of Critically Imperiled (S1), Imperiled (S2), Vulnerable (S3), Apparently Secure (S4), or Secure (S5) (Table 1). Additional unpublished data available from the Inland Fisheries Division were also considered as TPWD examined the status and trends of Texas freshwater fishes and sought to identify those in need of recognition as SGCN.

## **Selection of Freshwater Fish Species of Greatest Conservation Need**

Through this species conservation status assessment process, 89 species of freshwater fish were selected for inclusion in the 2020 revision of the list of Texas SGCN (Table 2). This included retention of all but three species or subspecies, San Felipe Gambusia *Gambusia clarkhubbsi*, Chihuahua Catfish *Ictalurus* sp., and Devils River Pupfish *Cyprinodon eximius* ssp., of the 64 freshwater fishes contained on the most recent list of Texas SGCN (TPWD 2012). San Felipe Gambusia was previously thought to be a unique species endemic to San Felipe Creek. However, a recent genetic assessment by Echelle et al. (2013) concluded that *Gambusia clarkhubbsi* is not a valid species, but rather a population of Spotfin Gambusia *Gambusia krumholzi*, also found in Sycamore Creek in Texas and ríos San Diego and la Compuerta in Mexico. Spotfin Gambusia was assigned a NatureServe conservation status rank of Critically Imperiled (S1) and selected to be added to the list of Texas SGCN. It should also be noted that San Felipe Gambusia is currently identified as ST by TPWD. Upon the next revision of the lists of ST and SE species, TPWD intends to replace San Felipe Gambusia with Spotfin Gambusia.

Chihuahua Catfish was excluded from the revised list of Texas SGCN based on the results of a genetic assessment conducted by TPWD (authors M. Bean and D. Lutz-Carrillo, unpublished data), which resolved available sequences within the Headwater Catfish *Ictalurus lupus* haplotype and genotype groups. Headwater Catfish is listed by

TPWD as ST and was also retained in the 2020 revision of the list of Texas SGCN. Devils River Pupfish was once considered a subspecies of Conchos Pupfish *Cyprinodon eximius* endemic to the Devils River. Although morphologically distinct from other populations, Devils River Pupfish is now considered to be a disjunct population of Conchos Pupfish. Conchos Pupfish is currently listed by TPWD as ST and was retained on the list of Texas SGCN.

Species selected to be added to the list of Texas SGCN consisted of Highland Stoneroller *Campostoma spadiceum*, Guadalupe Roundnose Minnow *Dionda flavipinnis*, Conchos Roundnose Minnow *Dionda* sp. 1, Colorado Roundnose Minnow *Dionda* sp. 3, Nueces Roundnose Minnow *Dionda texensis*, Mississippi Silvery Minnow *Hybognathus nuchalis*, Plains Minnow *Hybognathus placitus*, Pallid Shiner *Hybopsis amnis*, Shoal Chub *Macrhybopsis hyostoma*, Burrhead Chub *Macrhybopsis marconis*, River Shiner *Notropis blennioides*, West Texas Shiner *Notropis megalops*, Suckermouth Minnow *Phenacobius mirabilis*, Flathead Chub *Platygobio gracilis*, Llano River Carpsucker *Carpionodes cf. cyprinus*, Spotted Sucker *Minytrema melanops*, Longlip Jumprock *Moxostoma albidum*, Mexican Blindcat *Prietella phreatophila*, Mountain Mullet *Agonostomus monticola*, Spotfin Gambusia *Gambusia krumholzi*, Gumbo Darter *Etheostoma thompsoni*, and River Darter *Percina shumardi*. Each of these species was assigned a NatureServe conservation status rank of Critically Imperiled (S1) or Imperiled (S2) and identified by Cohen et al. (2018) as experiencing recent declines in occurrence and distribution. The decision was also made to include the following native freshwater fishes considered extirpated from the state or likely extinct: Maravillas Red Shiner *Cyprinella lutrensis blairi*, Conchos Shiner *Cyprinella panarcys*, Phantom Shiner *Notropis orca*, Rio Grande Bluntnose Shiner *Notropis simus simus*, Amistad Gambusia *Gambusia amistadensis*, and San Marcos Gambusia *Gambusia georgei*. Although generally thought to be gone from the state, inclusion on the list will enable focused surveys to provide confirmation and enable support for possible repatriation efforts for extirpated species.

Although recommended for inclusion on the revised list of Texas SGCN by Cohen et al. (2018), Rio Grande Blue Catfish was excluded by TPWD based on the results of a recent genetic assessment (authors M. Bean and D. Lutz-Carrillo, unpublished data). The assessment concluded it is not a unique species but rather a form of Blue Catfish *Ictalurus furcatus*. Cohen et al. (2018) also recommended removal of Texas Shiner *Notropis amabilis* from the list of SGCN. Although the species received a NatureServe conservation status rank of Apparently Secure (S4), TPWD continues to have concerns about the status of the species and intends to reassess the most recent NatureServe conservation status rank in advance of the next revision of the list of Texas SGCN in 2023. In the meantime, the species will remain on the list. If the updated conservation status assessment again assigns a rank of Apparently Secure (S4), it is

anticipated that the species will be removed from the list in 2023. Taxonomic concerns were also identified for Spotted Sucker *Minytrema melanops*. Thus, the decision was made to include Spotted Sucker on the list as a research priority to enable taxonomic verification to be completed in advance of the next update of the list of Texas SGCN in 2023. Lastly, changes are needed to align the list of Texas SGCN with recent taxonomic updates. This includes an update to the common name of *Dionda nigrotaeniata*, which was previously referred to as Guadalupe Roundnose Minnow and now has the common name of Medina Roundnose Minnow (Schönhuth et al. 2012). A similar update is needed for *Dionda serena*, which was previously referred to as Nueces Roundnose Minnow and now has the common name of Frio Roundnose Minnow (Schönhuth et al. 2012; Carson et al. 2014).

## Discussion

Through this process, a data-driven, inclusive, and transparent review was completed to select freshwater fishes for inclusion in the 2020 revision of the list of Texas SGCN. The 89 species selected through this review process were collated alongside other species selected by taxa experts in the TPWD Coastal Fisheries and Wildlife divisions and then submitted to the U.S. Fish and Wildlife Service as a minor revision to the current Texas Conservation Action Plan (TPWD 2012). As noted previously, a comprehensive revision of the Texas Conservation Action Plan is scheduled to be completed in 2023, which will offer another opportunity for TPWD and cooperators to review and reassess the list of SGCN.

Inclusion of individual species on the list of Texas SGCN is typically justified under one or more criteria, such as if the species is considered rare, experiencing population declines, extirpated from the state and considered a priority for repatriation, considered extinct but in need of confirmation, or has an unknown status and is considered a priority for surveys or research. As TPWD assembles the 2023 Texas Conservation Action Plan, associated list of Texas SGCN, and related TPWD web content, it would be beneficial to share more explicit background, reasoning, and justification for inclusion or removal of individual species on the list of Texas SGCN. This could be completed by communicating the specific criteria under which the species were selected for inclusion or by providing a descriptive narrative profiling the status and conservation needs of species recognized as SGCN. During implementation of the 2023 Texas Conservation Action Plan, which is anticipated to be a 10-year plan, it would be beneficial to track investments in research, monitoring, habitat restoration, habitat protection, invasive species management, and other actions implemented to benefit individual SGCN, recognizing the many projects will undoubtedly provide multi-species benefits (e.g., habitat restoration, habitat preservation, invasive species management). Investments by TPWD in conservation of SGCN extend well beyond



investments supported through the State Wildlife Grants Program. For example, the native ranges of SGCN have been prioritized for investments in habitat preservation through the Texas Farm and Ranch Lands Conservation Program (i.e., conservation easements), restoration of springs, creeks, and riparian habitats through the TPWD Landowner Incentive Program, control of riparian invasive plants through the Texas Healthy Creeks Initiative, and conservation planning within the Texas Native Fish Conservation Areas Network. Development of a GIS-based database for tracking and reporting investments in SGCN would undoubtedly enhance efforts by TPWD and partners to plan and deliver conservation measures that achieve the mantra of the Texas Conservation Action Plan of “keeping common species common.”

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Table 1. Definitions of NatureServe state-based conservation status ranks, status rank codes, and their corresponding range of conservation status scores (adapted from Faber-Langendoen et al. 2012).

<b>Conservation Status Rank</b>	<b>Conservation Status Rank Code</b>	<b>Range of Conservation Status Scores</b>	<b>Conservation Status Rank Definition</b>
State Extirpated	SX	N/A	Extirpated from the state
Possibly Extirpated	SH	N/A	Known only from historical records but some hope for rediscovery
Critically Imperiled	S1	$\leq 1.5$	Very high risk of extirpation due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors
Imperiled	S2	1.6–2.5	High risk of extirpation
Vulnerable	S3	2.6–3.5	Moderate risk of extirpation
Apparently Secure	S4	3.6–4.5	Considered stable but with some cause for concern from recent localized declines or threats
Secure	S5	4.6–5.5	Extensive range, abundant populations or occurrences, limited concern with declines or threats

Table 2. Freshwater fishes recommended for inclusion on the list of Texas Species of Greatest Conservation Need (revised 2020) with associated NatureServe state-based conservation status ranks (revised 2019), state listing status (revised 2020), and current federal listing status. NatureServe State Rank: see Table 2. Listing status: State Threatened (ST), State Endangered (SE), Federally Threatened (FT), Federally Endangered (FE), Threatened due to similarity of appearance (SAT)

Family	Scientific Name	Common Name	NatureServe State Rank	State Listing Status	Federal Listing Status
Acipenseridae	<i>Scaphirhynchus platyrhynchus</i>	Shovelnose Sturgeon	S1	ST	SAT
Polyodontidae	<i>Polyodon spathula</i>	Paddlefish	S1	ST	
Lepisosteidae	<i>Atractosteus spatula</i>	Alligator Gar	S2		
Hiodontidae	<i>Hiodon alosoides</i>	Goldeye	S2		
Anguillidae	<i>Anguilla rostrata</i>	American Eel	S2		
Cyprinidae	<i>Campostoma ornatum</i>	Mexican Stoneroller	S1	ST	
	<i>Campostoma spadiceum</i>	Highland Stoneroller	S1		
	<i>Cyprinella lepida</i>	Plateau Shiner	S2	ST	
	<i>Cyprinella lutrensis blairi</i>	Maravillas Red Shiner	SX		
	<i>Cyprinella panarcys</i>	Conchos Shiner	SH		
	<i>Cyprinella proserpina</i>	Proserpine Shiner	S1	ST	
	<i>Cyprinella</i> sp.	Nueces River Shiner	S1		
	<i>Dionda argentosa</i>	Manantial Roundnose Minnow	S2		
	<i>Dionda diaboli</i>	Devils River Minnow	S1	ST	FT
	<i>Dionda episcopa</i>	Roundnose Minnow	S1	ST	
	<i>Dionda flavipinnis</i>	Guadalupe Roundnose Minnow	S2		
	<i>Dionda nigrotaeniata</i>	Medina Roundnose Minnow	S1	ST	
	<i>Dionda serena</i>	Frio Roundnose Minnow	S1		
	<i>Dionda</i> sp. 1	Conchos Roundnose Minnow	S1		
	<i>Dionda</i> sp. 3	Colorado Roundnose Minnow	S1		
	<i>Dionda texensis</i>	Nueces Roundnose Minnow	S2	ST	
	<i>Gila pandora</i>	Rio Grande Chub	S1	ST	

Family	Scientific Name	Common Name	NatureServe State Rank	State Listing Status	Federal Listing Status
Cyprinidae	<i>Hybognathus amarus</i>	Rio Grande Silvery Minnow	SX	SE	FE
	<i>Hybognathus nuchalis</i>	Mississippi Silvery Minnow	S2		
	<i>Hybognathus placitus</i>	Plains Minnow	S2		
	<i>Hybopsis amnis</i>	Pallid Shiner	S2		
	<i>Macrhybopsis aestivalis</i>	Speckled Chub	S1S2	ST	
	<i>Macrhybopsis australis</i>	Prairie Chub	S1	ST	
	<i>Macrhybopsis hyostoma</i>	Shoal Chub	S2		
	<i>Macrhybopsis marconis</i>	Burrhead Chub	S2		
	<i>Macrhybopsis storeriana</i>	Silver Chub	S2		
	<i>Macrhybopsis tetranema</i>	Peppered Chub	S1	ST	
	<i>Notropis amabilis</i>	Texas Shiner	S4		
	<i>Notropis atrocaudalis</i>	Blackspot Shiner	S2		
	<i>Notropis bairdi</i>	Red River Shiner	S1		
	<i>Notropis blennioides</i>	River Shiner	S2		
	<i>Notropis braytoni</i>	Tamaulipas Shiner	S1S2	ST	
	<i>Notropis buccula</i>	Smalleye Shiner	S1S2	SE	FE
	<i>Notropis chalybaeus</i>	Ironcolor Shiner	S2		
	<i>Notropis chihuahua</i>	Chihuahua Shiner	S1	ST	
	<i>Notropis girardi</i>	Arkansas River Shiner	S1	ST	FT
	<i>Notropis jemezianus</i>	Rio Grande Shiner	S1	ST	
	<i>Notropis maculatus</i>	Taillight Shiner	S2		
	<i>Notropis megalops</i>	West Texas Shiner	S1		
	<i>Notropis orca</i>	Phantom Shiner	SX		
	<i>Notropis oxyrinchus</i>	Sharpnose Shiner	S1S2	SE	FE
	<i>Notropis potteri</i>	Chub Shiner	S2	ST	
	<i>Notropis sabiniae</i>	Sabine Shiner	S2		
	<i>Notropis shumardi</i>	Silverband Shiner	S3		
	<i>Notropis simus pecosensis</i>	Pecos Bluntnose Shiner	SX	ST	FT



Family	Scientific Name	Common Name	NatureServe State Rank	State Listing Status	Federal Listing Status
Cyprinidae	<i>Notropis simus simus</i>	Rio Grande Bluntnose Shiner	SX		
	<i>Phenacobius mirabilis</i>	Suckermouth Minnow	S2		
	<i>Platygobio gracilis</i>	Flathead Chub	S1		
	<i>Pteronotropis hubbsi</i>	Bluehead Shiner	S1	ST	
	<i>Rhinichthys cataractae</i>	Longnose Dace	S1		
Catostomidae	<i>Carpiodes cf. cyprinus.</i>	Llano River Carpsucker	S2		
	<i>Cycleptus elongatus</i>	Blue Sucker	S1	ST	
	<i>Cycleptus</i> sp.	Rio Grande Blue Sucker	S1		
	<i>Erimyzon claviformis</i>	Creek Chubsucker	S2	ST	
	<i>Minytrema melanops</i>	Spotted Sucker	SU		
	<i>Moxostoma albidum</i>	Longlip Jumprock	S1		
	<i>Moxostoma austrinum</i>	Mexican Redhorse	S1		
Ictaluridae	<i>Ictalurus lupus</i>	Headwater Catfish	S1S2	ST	
	<i>Prietella phreatophila</i>	Mexican Blindcat	S1	SE	FE
	<i>Satan eurystomus</i>	Widemouth Blindcat	S1	ST	
	<i>Trogloglanis pattersoni</i>	Toothless Blindcat	S1	ST	
Salmonidae	<i>Oncorhynchus clarkii virginalis</i>	Rio Grande Cutthroat Trout	SX		
Mugilidae	<i>Agonostomus monticola</i>	Mountain Mullet	S2		
Poeciliidae	<i>Gambusia amistadensis</i>	Amistad Gambusia	SX		
	<i>Gambusia gaigei</i>	Big Bend Gambusia	S1	SE	FE
	<i>Gambusia georgei</i>	San Marcos Gambusia	SX	SE	FE
	<i>Gambusia heterochir</i>	Clear Creek Gambusia	S1	SE	FE
	<i>Gambusia krumholzi</i>	Spotfin Gambusia	S1	ST	
	<i>Gambusia nobilis</i>	Pecos Gambusia	S1	SE	FE
	<i>Gambusia senilis</i>	Blotched Gambusia	S1	ST	
Cyprinodontidae	<i>Cyprinodon bovinus</i>	Leon Springs Pupfish	S1	SE	FE
	<i>Cyprinodon elegans</i>	Comanche Springs Pupfish	S1	SE	FE
	<i>Cyprinodon eximius</i>	Conchos Pupfish	S1	ST	

Family	Scientific Name	Common Name	NatureServe State Rank	State Listing Status	Federal Listing Status
Cyprinodontidae	<i>Cyprinodon pecosensis</i>	Pecos Pupfish	S1	ST	
	<i>Cyprinodon rubrofluviatilis</i>	Red River Pupfish	S2	ST	
Centrarchidae	<i>Micropterus treculii</i>	Guadalupe Bass	S1		
Percidae	<i>Ammocrypta clara</i>	Western Sand Darter	S2		
	<i>Etheostoma fonticola</i>	Fountain Darter	S1	SE	FE
	<i>Etheostoma grahami</i>	Rio Grande Darter	S1	ST	
	<i>Etheostoma radiosum</i>	Orangebelly Darter	S1		
	<i>Etheostoma thompsoni</i>	Gumbo Darter	S2		
	<i>Percina apristis</i>	Guadalupe Darter	S1	ST	
	<i>Percina maculata</i>	Blackside Darter	S1	ST	
	<i>Percina shumardi</i>	River Darter	S2		



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