

Chapter 1 INTRODUCTION

The purpose of this Biological Assessment (BA) is to identify, analyze and evaluate potential impacts of proposed fish stocking activities of the Arizona Game and Fish Department (AGFD) through the statewide stocking program for a period of ten years on any listed species and/or critical habitats, candidate species, and certain species likely to be listed during this consultation period. This analysis will determine the need for informal or formal consultation, and/or conference with the U.S. Fish and Wildlife Service's Arizona Ecological Services Office (AESO) to achieve compliance with the Endangered Species Act (ESA). This document incorporates the required information as outlined in the Federal Aid Section 7 Biological Evaluation Form, guidance from the Federal Aid Toolkit and Section 7 Consultation Handbook.

PROPOSED ACTION

The Dingell-Johnson Sport Fish Restoration Act as amended (16 U.S.C. 777-777n) (SFRA) directs the FWS to provide Federal aid to States for the management and restoration of fish having "material value in connection with sport or recreation in the marine and/or fresh waters of the United States." In accordance with this Act, for nearly 50 years, the FWS has been distributing SFRA funds in support of the State's efforts to stock sport fish to maintain, expand, and enhance angling opportunities. To fulfill this legislative mandate, the WSFR proposes to fund, in part, for the next ten years, the AGFD sport fish stocking program. Sport fish would be stocked in selected waters of Arizona to provide the public with opportunities for recreational fishing. The proposed action also includes a Conservation and Mitigation Program to address impacts on native species, including federally listed and candidate species.

This consultation is focused on evaluating impacts of the sport fish stocking program funded with SFRA grant dollars, to candidate, threatened, and endangered species and critical habitat listed under the ESA of 1973 as amended. For the purposes of this consultation, the sport fish stocking program involves transport of fish from hatcheries or via contract vendors to proposed stocking locations and any effects resulting from these activities. State hatchery operation and maintenance have been evaluated under a separate Section 7 consultation. Furthermore, this consultation also includes, as part of the proposed action, the implementation of a Conservation and Mitigation Program, described below in this section, to address potential effects of the fish stocking program.

PROPOSED STOCKING LOCATIONS & STOCKED SPECIES

The current proposed action identifies a total of 167 stocking sites (lakes, tanks, stream reaches) and 18 fish species for stocking for the period covered by this consultation (Table 1; Figure 1). Of these waters, 131 are within the Statewide Stocking Subprogram, 21 are within the UFP and 15 are within the FIN Subprogram. Appendix A provides a detailed breakdown of each proposed stocking site, species proposed to be stocked, frequency of stocking actions, numbers of fish to

be stocked annually and size class of fish to be stocked. Ranges of frequency and timing of stocking events are also identified to allow flexibility depending primarily on fish availability as well as water availability and quality.

Table 1. Species proposed for stocking in Arizona waters by the Sport Fish Stocking Program.

Common Name	Code	Scientific Name	Common Name	Code	Scientific Name
Apache Trout	ONAP	<i>Oncorhynchus apache</i>	Largemouth Bass	MISA	<i>Micropterus salmoides</i>
Arctic Grayling	THAR	<i>Thymallus arcticus</i>	Rainbow Trout	ONMY	<i>Oncorhynchus mykiss</i>
Black Crappie	PONI	<i>Pomoxis nigromaculatus</i>	Redear Sunfish	LEMI	<i>Lepomis microlophus</i>
Bluegill Sunfish	LEMA	<i>Lepomis macrochirus</i>	Smallmouth bass	MIDO	<i>Micropterus dolomieu</i>
Brook Trout	SAFO	<i>Salvelinus fontinalis</i>	Threadfin Shad ¹	DOPE	<i>Dorosoma petenense</i>
Brown Trout	SATR	<i>Salmo trutta</i>	Walleye	SAVI	<i>Sander vitreus</i>
Channel Catfish	ICPU	<i>Ictalurus punctatus</i>	White Amur ²	CTID	<i>Ctenopharyngodon idella</i>
Cutthroat Trout	ONCL	<i>Oncorhynchus clarki</i>	White Crappie	POAN	<i>Pomoxis annularis</i>
Gila Trout	ONGI	<i>Oncorhynchus gilae</i>	Yellow Perch	PEFL	<i>Perca flavescens</i>

The maximum number of fish to be stocked includes a buffer above and beyond the number of fish that would normally be stocked (or is planned to be stocked) annually to allow for unanticipated opportunities to stock more fish if needed (e.g. when surplus fish are available from a hatchery, or when stocking conditions are unsuitable at one location, and an alternate stocking location needs to be identified). It is unlikely that the maximum numbers of fish identified in the proposed action will be stocked every year; however, if surplus fish are available the AGFD desires the ability to stock these fish in approved waters to provide additional angling opportunity rather than discard them.

Fish are categorized into length groups generally depending on length ranges; size groups include: fry, fingerling, sub-catchable or catchable (Table 2). Minimum lengths are indicated for the catchable category; any fish greater than the specified length is considered a catchable. Super catchable or incentive fish are considered catchables.

¹ Stocked as a forage fish for sport fish

² Stocked in lakes primarily for vegetation control, not necessarily for sporting opportunity, although some opportunity may be provided.

Table 2. Fish length (in inches) ranges for fry, fingerling, sub-catchable or catchable categories. A size range is only indicated for those sizes proposed for stocking.

Warm Water Species	Fry	Fingerling	Sub-catchable	Catchable
Bluegill Sunfish	<0.5"	-	0.5 - 3"	>3"
Channel Catfish	<1"	-	1 - 11"	>11"
Largemouth Bass	<1"	-	1 - 8"	>8"
Redear Sunfish	<0.5"	-	0.5 - 4"	>4"
Smallmouth Bass	<1"	-	1 - 7"	>7"
White or Black crappie	<0.5"	-	0.5 - 5"	>5"
Cool Water Species*				
Walleye	<1"	1 - 2"	-	-
Yellow Perch	<0.5"	0.5 - 2"	-	-
Cold Water Species				
Trout	-	3 - 5"	6 - 8"	>8"
Arctic Grayling	-	3 - 5"	5 - 7"	-

*Cool water species sizes are for sac fry rather than fry

SOURCES OF STOCKED SPORT FISH

Each year, the AGFD stocks more than 3 million fish for anglers to catch in Arizona's lakes, rivers and streams. In order to accomplish these stockings, the AGFD acquires eggs from outside vendors for hatching and production in state hatchery facilities as well as purchases of fish from contract vendors. Fish are also received on an opportunistic or special basis from Federal or other State hatcheries outside Arizona.

Given the last three complete years of stocking (Fiscal Years 07-09)³:

- On average, 89.5% of the fish stocked by the program are from state hatcheries and 10.5% are from contract vendor
- Of fish stocked in the Statewide subprogram, 99.2% are cold water species comprised of Apache (3.3%), brook (5.4%), brown (1.6%), cutthroat (1.6%) and rainbow trout (88.1%).

³ Calculations exclude walleye and bass stockings in Saguaro, Canyon and Apache lakes as inclusion of these numbers bias the average numbers and are not typical of any given stocking year. Fingerling walleye were opportunistically stocked in FY08 & 09; bass were stocked in response to a golden algae kill. There are no plans to stock bass in these reservoirs in the current proposed action unless there is another catastrophic loss of the fishery.

- Of contract vendor fish purchased, 93.7% are stocked in UFP waters; 6.3% are stocked in statewide waters.
- 90.4% of warm water fish stocked in the state are stocked into UFP waters
- 99.2% of fish stocked in Statewide subprogram waters are cold water fish

State Hatcheries

The AGFD acquires eggs from vendors for fish production in the six hatcheries operated by the State of Arizona. Five of these hatcheries supply fish for the AGFD Sport Fish Stocking Program; the sixth facility, the Bubbling Ponds Hatchery, does not usually supply fish for this program and is not SFRA funded. The other five AGFD hatcheries supply close to 90% percent of the fish stocked under the existing AGFD Sport Fish Stocking Program. In total, five species of fish are produced; these include Apache trout, brook trout, brown trout, cutthroat trout, and rainbow trout. Within the AGFD hatcheries, brook trout, cutthroat trout, and brown trout are reared to fingerling and sub-catchable sizes; only very rarely are they reared to catchable size. Annual production from each hatchery is dependent on temperature, fish strain, feeding regime and fish health. Currently, the hatcheries are at maximum production capabilities.

The hatcheries do not maintain brood stock for egg sources, so all fish produced originate from other sources. These include commercial, state, and Federal producers. Egg and fish suppliers must be able to demonstrate annually and historically that originating facilities have had annual fish health inspections, following protocols established by the American Fisheries Society Fish Health Section, as being free of restricted fish diseases and their causative agents as identified in R12-4-410. Additionally, all AGFD hatcheries are inspected annually following the aforementioned protocols prior to the distribution season. AGFD operates a fish health laboratory staffed with a Fish Health Specialist whose primary responsibility is to provide fish health inspection and diagnostic services for hatchery operations and wild fisheries.

Contract Vendors

Since state operated hatcheries are at maximum production capabilities, and primarily produce trout species, additional fish are supplied through contract vendors. Contracted fish are primarily warm water species; however some trout are also purchased. The UFP is the primary recipient of contract purchased fish; however, if funding is available, several waters in the Statewide Stocking Program may be stocked with sport fishes in addition to those fish provided by the AGFD hatcheries (primarily trout) in order to increase fishing opportunities statewide. Stocked warm water fish create a different and/or seasonal opportunity when rainbow trout cannot be stocked, and at several waters provide opportunity during warmer months when trout are not active.

Fish purchased from contract vendors must meet strict health certification requirements. By Contract, fish must be certified free of pathogens and disease and non-target organisms. AGFD

employees receive all stockings and inspect deliveries prior to stocking. Proof of disease status must be supplied annually.

Best Management Practices & Standard Operating Practices

The AGFD employs several best management and standard operating practices intended to promote consistent statewide fisheries management approaches. Several of these practices are integral components of the Sport Fish Stocking Program.

Standard Fish Sampling Protocol for State of Arizona Waters

The AGFD Sport Fish Program employs the Standard fish Sampling Protocol (Bryan et al 2004). The primary objective of this manual is to provide a standardized format for collecting and reporting fishery data. It also serves as a reference document for biologists, technicians, and administrators on specific survey gear and techniques. The manual focuses on sampling activities that, based on the best available information, provide the requisite information necessary for planning and evaluating fish management programs. Unless otherwise specified in reporting, post 2004 AGFD data reported and discussed in this biological assessment is collected in accordance with Bryan et al 2004.

This manual is reviewed and modified frequently to respond to planning needs and to justify management practices. Continuous evaluation and refinement of survey techniques are also necessary to incorporate new information while ensuring comparability to historical data.

Additional procedures have been developed and implemented statewide intended to detect and minimize transport of other non target organisms, examples include: Decontamination Procedures for Golden Alga, and Decontamination Procedures for Quagga Mussels.

Hazard Analysis Critical Control Point (HACCP) & AGFD Hatcheries

In the course of human activities, equipment and/or organisms are often moved from one location to another. The specific equipment or organism being moved is called the target. Targets can include fish for stocking to meet recreational demands or conservation requirements. Fish stocking may require the use of equipment such as trucks, sampling tools/gear such as nets or traps, and people. Transporting targets provides a potential vector for the spread of non-target organisms that could potentially invade new habitat. Non-target organisms (NTO) are the plants, animals, diseases, pathogens and parasites that are not intended to be moved.

The management of potential pathways to control the movement of non-target organisms has been standard business operations with the food production industry and military for decades and is known as Hazard Analysis and Critical Control Points (HACCP; Figure 2). Within the past 5-10 years, HACCP processes have been designed specifically for numerous natural resource applications, such as hatchery operations. HACCP planning is a management tool that provides a

structured method to identify risks by applying detailed focus on procedures⁴. More specifically, HACCP planning involves a comprehensive review of operational actions that in turn can provide a systematic method to identify threats of contamination by NTO's. The planning process strategically highlights *critical control points* where specific actions should be used to eliminate or significantly reduce the risk of NTO's contamination.

HACCP plans also provide an important reference source allowing procedures and processes to improve and evolve through time. HACCP planning is a concept that identifies where to concentrate research, development, or other efforts to control or prevent the spread of NTO's through an aquaculture pathway.

A critical control point is the best point, step, or procedure at which significant hazards can be prevented or reduced to a minimum risk. All HACCP's utilize a common approach to nuisance, invasive, or non-target organisms in that they cover a broad range of organisms (i.e., vertebrates, invertebrates, plants, and other biota or pathogens) rather than listing species-specific threats. The AGFD provides training to hatchery staff and field resource managers with the specific goal to develop and maintain HACCP plans for essential hatchery activities.

Procedures

Assuming hatchery water supply is reasonably secure from bio-contamination, then for most hatchery operations, there are essentially three operational areas warranting development and practice of HACCP procedures:

- Products such as fish or eggs coming into a hatchery,
- Products (i.e., fish) leaving a hatchery, and
- Transfer of equipment between facilities.

AGFD hatcheries are at a comparatively very low risk for transmitting NTO's from hatcheries to other points in the state. The AGFD operates five hatcheries that produce trout for stocking, and one cool water facility that produces native fishes for conservation:

- Page Springs Hatchery (PSH)
- Sterling Springs Hatchery (SSH)
- Canyon Creek Hatchery (CCH)
- Tonto Creek Hatchery (TCH)

⁴ See the following website for additional information: <http://haccp-nrm.org/>

- Silver Creek Hatchery (SCH)

Hatcheries that have secured water sources (TCH, CCH, and SSH) are extremely unlikely to become infected with NTO biota because there are no reasonable pathways to infect the source springs other than through deliberate human sabotage of the spring boxes or pipes.

Page Springs Hatchery has two water sources, one of which is secured (Pond Springs) and the other is partially secured (Cave Spring). It is unlikely that NTO biota could become established due to the small area of exposed water surface coming from Cave Spring before it enters underground pipes. Moreover, the exposed portion of Cave Spring is protected by a chain link fence, locked gate, and screened entrance. There are also metal screens that filter debris prior to entering the headbox and subsequent hatchery pipes. Introduction of NTO biota via more natural means (transmission via mammals or birds) is unlikely due to fast moving water, which largely precludes use of Cave Spring by mammals and birds.

Silver Creek Hatchery has an open water sources and therefore has a greater potential for NTO contamination. See Table 3 for more information regarding water source and associated risks.

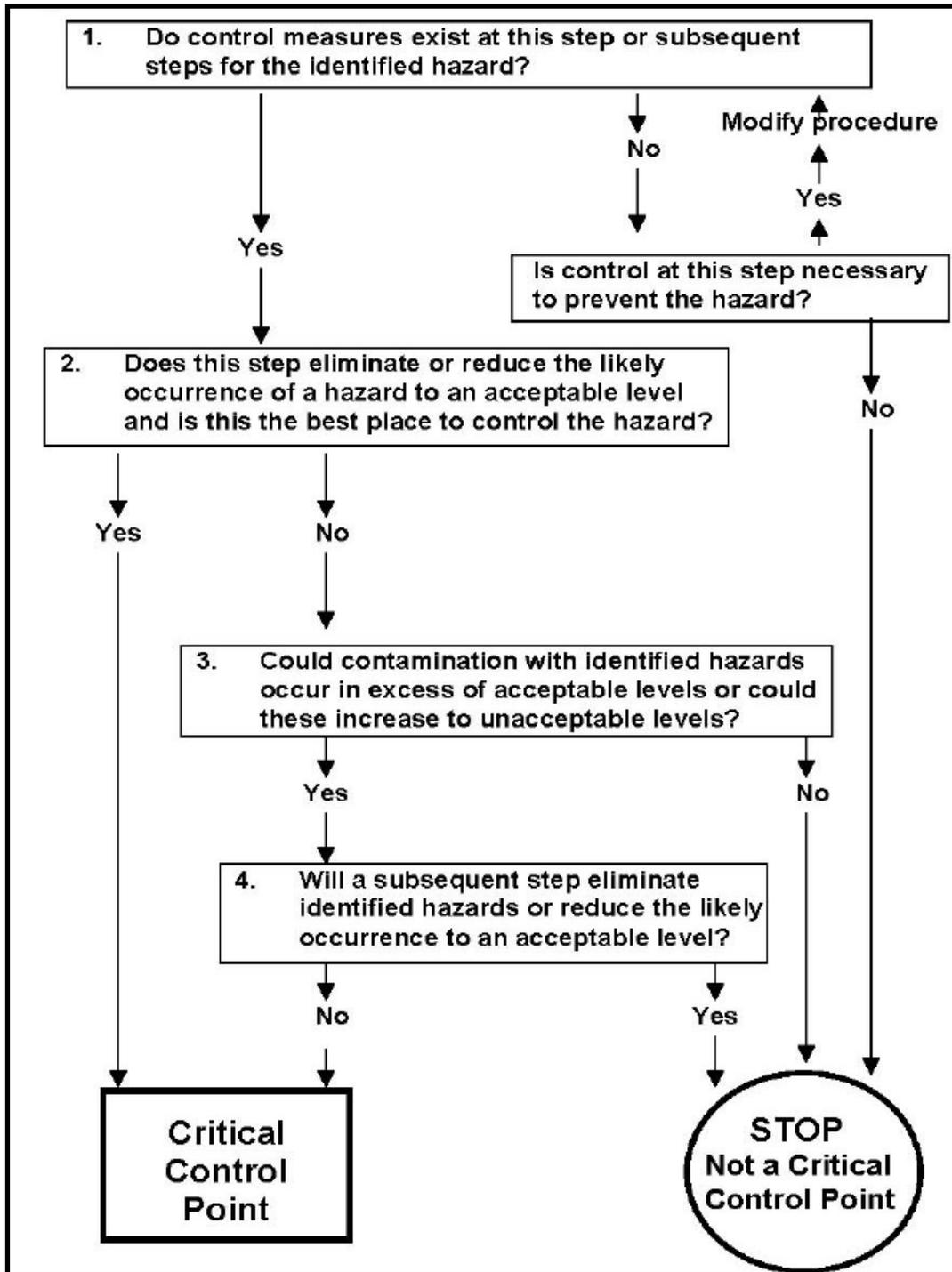


Figure 2. Critical control point decision tree.

Table 3. Water source information and risk of contamination of Non-Target Organisms for AGFD hatcheries.

Hatchery	Water Source	NTO's Present in Water Source	HACCP Plan developed for fish distribution	Risk of transferring NTO's to other waters
Sterling Springs	Secured spring, and underground as well as above-ground pipes	No	No ⁵ , but has HACCP for equipment transfers to/from Sterling Springs Hatchery.	Virtually None
Page Springs	Combination of secured spring (Pond Spring) and semi-exposed spring (Cave Spring) all with underground pipes	No	YES	Very low
Tonto Creek	Secured springs with underground pipes	No	YES	Virtually None
Canyon Creek	Secured springs with underground pipes	No	YES	Virtually None
Silver Creek ⁶	Open spring, open ditch.	YES, crayfish, native fish, nonnative fish, and aquatic vegetation are present	YES	Low ⁷

The hatcheries do not maintain brood stock for egg production. Thus, trout eggs are obtained from external sources. The AGFD requires fish health certification for all imported. HACCP's

⁵ Distribution of fish from Sterling Springs is done by staff from Page Springs Hatchery with Page Springs equipment. The Page Springs HACCP plan for fish stocking is applied to stockings from Sterling Springs.

⁶ The spring source for Silver Creek Hatchery is currently open to ingress of non-target organisms such as bullfrogs and flows through an open ditch system to the hatchery. Silver Creek is scheduled to be renovated starting in Autumn 2011. The renovation includes protection of the spring water source and distribution of the water to the hatchery in a closed pipe system which will minimize risks associated with mollusk and vegetation in the hatchery. Thus, after the renovation, the risk of transferring NTO's to other waters will be low.

⁷ Hatchery-produced fish are transferred to a stocking truck or trailer tank from the raceways either by netting or by using a fish harvester. Both methods remove hatchery water so that fish are placed into a tank that contains clean groundwater from a well. Fish are visually inspected prior to stocking.

have been developed to cover fish distribution as well as equipment transfers. Each hatchery facility has a HACCP Plan because each facility is unique (water source, infrastructure, risks/hazards present, etc.) and has slightly different operational procedures.

The HACCP plans for the above-mentioned actions focus efforts on “Critical Control Points”; however, there are also several operational areas where detection of NTO’s can take place. For example, detection of a NTO can occur at various procedural steps in the production process such as cleaning raceways, feeding fish, or other repetitive tasks. The procedures provide an opportunity to detect NTO’s or fish disease. Should a NTO or significant fish health issue be discovered, it would be investigated to determine the source, analyze the threat to the hatchery, and thereafter options would be reviewed to determine the best approach to address and/or remove the NTO or threat. Table 4 indicates procedural steps employed in AGFD hatcheries that additionally serve as detection points for NTOs.

Table 4. Procedural steps that additionally serve as detection points for non-target organisms for AGFD hatchery operations.

Hatchery Procedure	Hatchery	Frequency
Inspect spring boxes or water source	PSH	As needed
	SSH	Semi-annually
	CCH	As needed
	TCH	Monthly
	SCH	Daily
Clean screens for inflow and/or outflow	PSH	Daily
	SSH	NA
	CCH	NA
	TCH	Monthly
	SCH	Daily
Clean and inspect sediment traps	PSH	NA
	SSH	NA
	CCH	Semi-annually
	TCH	Semi-annually
	SCH	NA
Feed and observe fish	PSH	Ranges from twice daily to once every week
	SSH	Ranges from hourly to once every week
	CCH	Ranges from hourly to once every week
	TCH	Ranges from hourly to once every week
	SCH	Ranges from twice daily to once every week

Hatchery Procedure	Hatchery	Frequency
Conduct fish health assessments	PSH	Minimum of once annually and as needed
	SSH	Minimum of once annually and as needed
	CCH	Minimum of once annually and as needed
	TCH	Minimum of once annually and as needed
	SCH	Minimum of once annually and as needed
Monitor water quality (oxygen) in rearing units	PSH	Minimum once per week and as needed
	SSH	Minimum once per week and as needed
	CCH	Minimum once per week and as needed
	TCH	Minimum once per week and as needed
	SCH	Minimum once per week and as needed
Remove dead fish	PSH	Daily
	SSH	Daily
	CCH	Daily
	TCH	Daily
	SCH	Daily
Clean rearing units	PSH	1-2 times per week
	SSH	1-2 times per week
	CCH	1-2 times per week
	TCH	1-2 times per week
	SCH	Usually 1 time per year at the end of the stocking season (October)
Crowd and sample count fish for transfer or stocking	PSH	Usually done within \pm 3 days of stocking or a transfer
	SSH	Usually done within \pm 3 days of stocking or a transfer
	CCH	Usually done within \pm 3 days of stocking or a transfer
	TCH	Usually done within \pm 3 days of stocking or a transfer
	SCH	Usually done within \pm 3 days of stocking or a transfer
Inventory fish	PSH	Usually 2-3 times per year during transfers to other rearing units
	SSH	Usually 2-3 times per year during transfers to other rearing units
	CCH	Usually 2-3 times per year during transfers to other

Hatchery Procedure	Hatchery	Frequency
		rearing units
	TCH	Usually 2-3 times per year during transfers to other rearing units
	SCH	Fish are inventoried at TCH before transfer to SCH
Transfer fish among rearing units	PSH	Usually 2-3 times per year per rearing unit
	SSH	Usually 2-3 times per year per rearing unit
	CCH	Usually 2-3 times per year per rearing unit
	TCH	Usually 2-3 times per year per rearing unit
	SCH	NA
Dewater and sanitize rearing units by scrubbing and pressure washing	PSH	Usually 2-3 times per year following transfers
	SSH	Usually 2-3 times per year following transfers
	CCH	Usually 2-3 times per year following transfers
	TCH	Usually 2-3 times per year following transfers
	SCH	Usually 1 time per year at the end of the stocking season (October)

SPORT FISH STOCKING CONSERVATION & MITIGATION PROGRAM

Program Overview

For over 40 years, the Department has provided significant management resources for the conservation of nongame wildlife. In 1967, the Department created a full time position for the management of nongame species, the first such state position in the nation. Since 1967 the Department has developed one of the most robust state nongame programs in the nation, with expenditures of several million dollars per year.

The Department recognizes that the ability to continue to provide sport fishing opportunities is closely tied to the continued conservation of native aquatic species. It is upon this foundation, and consistent with its long history of conservation, that the Department intends to offset impacts of the stocking program through implementation of a Conservation and Mitigation Program (Program) that will provide for a total average of \$500,000 per year for the 10 year Program period. This funding will provide a net increase of funding toward conservation for the Program species. The intent of the Program is to not only offset impacts but to further improve the baseline status of species identified by the Endangered Species Act (ESA) and National Environmental Policy Act (NEPA) evaluation processes through directed conservation actions in

order to help secure future management opportunities. The Department’s budget process is administered by the Arizona Game and Fish Commission.

Program Species

As such, the Program includes activities targeted at both consultation species identified in the draft Biological and Conference Opinion (DBCO) and sensitive aquatic species identified in the draft Environmental Assessment (DEA). Collectively, these are termed the “Program Species.” Program Focal Species are those identified by DBCO that are federally listed or candidate species most closely associated with the stocking action (Table 5). Additional Conservation Species (ACS) are the other species evaluated in the DBCO comprised of federally listed or candidate species whose future conservation status can have a direct bearing on future sport fish stocking activities. Mitigation actions are also targeted at sensitive aquatic species identified in the DEA that are most closely associated with the stocking action.

Table 5. Draft Biological and Conference Opinion Focal Species

Species	ESA Status
Chiricahua leopard frog	Threatened
Headwater chub	Candidate
Loach minnow	Threatened
Narrow-headed garter snake	Potential Candidate ⁸
Northern Mexican garter snake	Candidate
New Mexico meadow jumping mouse	Candidate
Northern leopard frog	12 Month Review in prep
Roundtail chub	Candidate

Program Approach

The Program employs several approaches or tools that can be used to provide information that can help determine what actions are necessary for the conservation and recovery of species or to directly conserve and recover wildlife. These tools include:

- Population inventory: systematic sampling of areas to assess species presence;
- Population or community monitoring: systematic sampling of populations to determine status and/or trend over time;

⁸ Project area species likely to be listed in the near future were evaluated in the BCO.

- Directed research: activities that focus on specific issues relating to species interactions to define management options for future implementation;
- Address stressors⁹: Identify and assess current and future key stressors to native aquatic wildlife populations that are, or may be, controlling or predominant contributing force driving the population or species declines. Collaborate with stakeholders to address, remove, or mitigate these key stressors;
- Reintroduction and augmentation: reintroduction or augmentation into historical range is a frequently used tool to recover species. Reintroductions are often coupled with construction of exclusion barriers and removal or suppression of nonnative species. Reintroductions and augmentations are implemented consistent with accepted guidelines such as George et al. (2009).
- Information, education, and outreach activities: includes signs, publications, promotions, and marketing activities; and
- Guidelines: assessing, evaluating, and proposing modifications of guidelines or regulations that can protect or minimize threats to native aquatic species.

The fundamental concept of the Program is to provide aquatic community based conservation strategies that will benefit Program species as well as other native species. Community-based conservation actions provide benefits to Program and other native species at the individual, population and watershed scales, and depending on location, can benefit multiple species at one time. Aquatic habitats available for conservation actions under the Program may be limited, and with a community-based focus, the Program can work to establish functional native aquatic communities in the conservation areas. For example, reintroduction or augmentation actions often include suppression or removal of nonnative species prior to reintroduction of the target species, a benefit to the entire native aquatic community at the introduction site. Reintroduction will include the target species and a contingent of additional appropriate native species in order to establish a functional native aquatic community.

Reduction or removal of stressors on the landscape is a tool that has a range of benefits at both the local and broad scales. Removal of sources of nonnative species from the landscape (e.g. to facilitate introductions or to eliminate a watershed source, etc) minimizes impacts to native species at the site of removal and also minimizes downstream contributions of individuals that help maintain or augment resident nonnative populations.

⁹ Implementation of actions on the landscape may result in stressors that affect species or their habitat. Such actions can include land management actions, road construction, or introduction of new species. Examples of stressors are habitat loss or degradation, predation, competition, or direct disturbance of individuals of a species.

Program Activities

Two tiers of Program activities have been identified; a set of mandatory conservation/mitigation activities targeted at Focal DBCO species and those ACS species with reasonable and prudent measures (RPMs) or terms and conditions (T&C) identified in the draft biological opinion (Table 6) and sensitive aquatic species identified in the DEA (Table 7). Table 8 contains an additional set of activities targeting Program species that will be implemented depending on funding availability.

Each year the Department will identify Table 6 and Table 7 activities for implementation that year through the annual work plan process. If funds remain after the Table 6 and Table 7 activities are funded, activities from Table 8 will be implemented. The average annual program budget will be \$500,000.

Table 6. Mandatory ESA Conservation Actions.

Note that many Program species, regardless of activity focus as identified in the table, will benefit from both ESA and NEPA actions.

Species	Conservation Measure																
Multiple Species ¹⁰	Within 3 years, the AGFD shall convert to triploid rainbow trout for all AGFD hatchery stockings with the exception of closed systems and urban lakes.																
	<p>The AGFD shall secure existing or establish new conservation populations for Focal Species:</p> <table border="1" data-bbox="443 1220 1304 1560"> <thead> <tr> <th data-bbox="443 1220 906 1293">Species</th> <th data-bbox="906 1220 1304 1293">Number of populations secured or established</th> </tr> </thead> <tbody> <tr> <td data-bbox="443 1293 906 1331">Chiricahua leopard frog</td> <td data-bbox="906 1293 1304 1331">3</td> </tr> <tr> <td data-bbox="443 1331 906 1369">Headwater chub</td> <td data-bbox="906 1331 1304 1369">3</td> </tr> <tr> <td data-bbox="443 1369 906 1407">Roundtail chub</td> <td data-bbox="906 1369 1304 1407">3</td> </tr> <tr> <td data-bbox="443 1407 906 1444">Loach minnow</td> <td data-bbox="906 1407 1304 1444">2</td> </tr> <tr> <td data-bbox="443 1444 906 1482">Northern leopard frog</td> <td data-bbox="906 1444 1304 1482">2</td> </tr> <tr> <td data-bbox="443 1482 906 1520">¹¹Northern Mexican gartersnake</td> <td data-bbox="906 1482 1304 1520">2</td> </tr> <tr> <td data-bbox="443 1520 906 1560">⁴Narrow-headed gartersnake</td> <td data-bbox="906 1520 1304 1560">2</td> </tr> </tbody> </table>	Species	Number of populations secured or established	Chiricahua leopard frog	3	Headwater chub	3	Roundtail chub	3	Loach minnow	2	Northern leopard frog	2	¹¹ Northern Mexican gartersnake	2	⁴ Narrow-headed gartersnake	2
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¹⁰ Benefits would result for most aquatic-associated Focal, ACS and other special status species with implementation of these measures. For each measure, some species may benefit directly and some species may benefit indirectly. The magnitude of benefits for each species would also vary.

¹¹ Dependent upon available repatriation source, numbers, and protocols.

Species	Conservation Measure
	<p>The AGFD shall conduct a statewide live bait (bait fish and tiger salamander) use assessment and risk analysis to develop recommendations to amend live bait management. The AGFD shall present these recommendations to the Arizona Game and Fish Commission for implementation consideration.</p> <p>The AGFD shall review and update existing outreach programs addressing use of live bait to ensure they are adequately informing the public about capture, use, and proper discard of live bait species.</p> <p>The AGFD shall review and update existing outreach programs on the risks to native aquatic species from the transport of nonnative aquatic species (sportfish, baitfish, other fish species, amphibians, invertebrates, and plants) to ensure they are adequately informing the public of the harmful nature of such actions, and means they can take to reduce or prevent inadvertent transport of such nonnative species.</p>
Apache Trout	The AGFD shall continue to work with partners to evaluate barrier conditions on the three streams, survey for nonnative fish in recovery streams, and repair barriers as part of the proposed action.
Chiricahua Leopard Frog	<p>For warm-water sport fish stocking actions via contract vendors at sites where effects to Chiricahua leopard frogs are a concern, the “sensitive areas” HACCP plan shall be followed by AGFD personnel receiving the fish from the vendor. This “sensitive areas” plan shall involve the double-sorting and examination of all fish in the load to reduce the risk of introduction of unwanted aquatic organisms with the sport fish. Loads containing unwanted aquatic organisms shall be refused and not stocked.</p> <p>For coldwater sport fish stocking actions at sites where effects to Chiricahua leopard frogs are a concern and trout or grayling are coming from AGFD hatcheries, the HACCP plan for disease and parasite control at the hatchery shall be in place to reduce the risk of contamination of the fish to be stocked.</p> <p>The AGFD shall review the existing angler information concerning the restrictions on transport and use of tiger salamanders at Parker Canyon Lake and modify the information as deemed appropriate to increase angler awareness that such transport and use are harmful.</p>

Species	Conservation Measure
	<p>The AGFD shall visually examine the shoreline and shallow lake margins for the presence of submerged/shoreline vegetation cover for tadpoles at the time rainbow trout are stocked and during any fish surveys conducted post-stocking.</p> <p>The AGFD shall work with the Coronado National Forest in management of habitat conditions at Peña Blanca Lake to ensure that submerged/shoreline vegetation cover for tadpoles is maintained at the lake.</p>
Gila chub	<p>In two years during the 10-year period, the AGFD shall survey the occupied Gila chub habitat on public lands in Spring Creek above the barrier when habitat conditions are conducive to rainbow trout persistence. If any stocked rainbow trout are found, these shall be documented and removed from the stream and an additional survey to locate stocked rainbow trout shall be implemented in the following year.</p>
Headwater Chub	<p>The AGFD shall implement actions to increase angler awareness of headwater chub, including the fact that headwater chub is not a legal sport fish at the East Verde River and Haigler Creek stocking sites.</p> <p>Headwater chub habitats in the East Verde River and Tonto Creek shall be considered priority areas for use of triploid rainbow trout to avoid augmentations to existing wild populations.</p> <p>In order to obtain information needed to implement conservation actions, the AGFD shall undertake an assessment of headwater chub populations in the East Verde River, Tonto Creek, and the Haigler Creek drainage to determine population structure and extent, nonnative species present as stressors, sites for potential reestablishment, and identification of specific research needs. This assessment shall tier off the Arizona Statewide Conservation Agreement and Strategy (AGFD 2006) for headwater chub and five other native fish species, because that document contains considerable information on the conservation needs and a strategy to address those needs. The assessment shall serve as a guidance document for implementing conservation actions for the headwater chub.</p>

Species	Conservation Measure
Roundtail Chub	The AGFD shall, within the first two years of the program, develop an assessment of opportunities across the range of the roundtail chub focusing on those with the greatest potential for conservation benefits for the species. This assessment shall tier off the Arizona Statewide Conservation Agreement and Strategy (AGFD 2006) for roundtail chub and five other native fish species, as that document contains considerable information on the conservation needs and a strategy to address those needs. The assessment shall serve as a guidance document for implementing conservation actions for the roundtail chub.
Spikedace	The AGFD shall continue monitoring of the Upper Verde River to evaluate native and nonnative fish populations. Any individuals of the stocked sport fish species captured during such monitoring shall be removed from the river.
Loach Minnow	In the event of insufficient Apache trout to meet annual recreational stocking demands, the East Fork Black River shall be stocked with Apache trout after those recreational stocking sites associated with a recovery population (i.e., West Fork Black River, West Fork Little Colorado River at Sheeps Crossing, and Lee Valley Lake). Any rainbow trout that are stocked into the East Fork Black River shall be sterile triploids to avoid any augmentation to the reproducing population of rainbow trout in the East Fork Black River.
	If a spill from Big Lake or Crescent Lake is anticipated, the AGFD shall install a fish weir to capture fish and prevent downstream movement. If the weir is not installed prior to a spill, a survey for nonnative trout species in the occupied habitat of the loach minnow shall be completed within that spring/summer season. All nonnative fish species encountered during that survey shall be removed.
	In coordination with partners, the AGFD shall develop and implement a standard survey schedule and procedures to evaluate fish community with emphasis on stocked trout presence in the loach minnow occupied areas of the East Fork Black River drainage.

Species	Conservation Measure
Northern Leopard Frog	<p>For warm-water sport fish stocking actions via contract vendors at sites where effects to northern leopard frogs are a concern, the “sensitive areas” HACCP plan shall be followed by AGFD personnel receiving the fish from the vendor. This “sensitive areas” plan shall involve the double-sorting and examination of all fish in the load to reduce the risk of introduction of unwanted aquatic organisms with the sport fish. Loads containing unwanted aquatic organisms shall be refused and not stocked.</p>
	<p>For coldwater sport fish stocking actions at sites where effects to northern leopard frogs are a concern and trout or grayling are coming from AGFD hatcheries, the HACCP plan for disease and parasite control at the hatchery shall be in place to reduce the risk of contamination of the fish to be stocked.</p>
Sonoran tiger salamander	<p>The AGFD shall work with Federal, state, and private partners to identify and implement projects that reduce the risk of hybridization between Sonoran tiger salamanders and nonnative salamanders.</p>
	<p>The AGFD shall review the existing angler information concerning the restrictions on transport and use of tiger salamanders at Parker Canyon Lake and modify the information as deemed appropriate to increase angler awareness that such transport and use are harmful.</p>
Northern Mexican Gartersnake	<p>The AGFD shall develop outreach material on gartersnakes to attempt to reduce the deliberate killing or injuring of gartersnakes by the public. Materials developed for this program shall be posted at stocking sites that contain populations of gartersnakes.</p>
	<p>In providing for two gartersnake populations either through securing existing but threatened populations or establishment of new conservation populations, a source for individuals to reestablish conservation populations is needed, as well as information on propagation and release options. The Gartersnake Working Group has initiated work in these arenas, and the AGFD shall contribute to these efforts during the 10-year program. Once sufficient information on potential release sites, release progeny, and release methods is obtained, the AGFD shall initiate the reestablishment program.</p>

Species	Conservation Measure
	<p>As part of all native fish reintroduction efforts in Arizona, the AGFD shall ensure that renovated streams occupied by northern Mexican gartersnakes are quickly restocked with appropriate native fish species and native frog species that can provide prey for Northern Mexican gartersnakes in order to not put stress on any gartersnake population through elimination of its forage base.</p>
<p>Narrow-headed Gartersnake</p>	<p>The AGFD shall develop outreach material on gartersnakes to attempt to reduce the deliberate killing or injuring of gartersnakes by the public. Materials developed for this program shall be posted at stocking sites that contain populations of gartersnakes.</p> <p>In providing for two gartersnake populations either through securing existing but threatened populations or establishment of new conservation populations, a source for individuals to reestablish conservation populations is needed, as well as information on propagation and release options. The Gartersnake Working Group has initiated work in these arenas, and the AGFD shall contribute to these efforts during the 10-year program. Once sufficient information on potential release sites, release progeny, and release methods is obtained, the AGFD shall initiate the reestablishment program.</p> <p>As part of all native fish reintroduction efforts in Arizona, the AGFD shall ensure that renovated streams occupied by narrow-headed gartersnakes are quickly restocked with appropriate native fish species that can provide prey for narrow-headed gartersnakes in order to not put stress on any gartersnake population through elimination of its forage base.</p>
<p>Three Forks Springsnail</p>	<p>The AGFD shall continue to implement the HACCP plan for operations at state hatcheries and the transport of trout to the stocking sites in the Black River drainage.</p>
<p>Mt Graham Red Squirrel</p>	<p>The AGFD shall coordinate with the Coronado National Forest on traffic management that can reduce the risk of mortality to Mount Graham red squirrels from vehicles accessing Riggs Flat Lake as part of continuing implementation of the Mount Graham Red Squirrel Recovery Plan.</p>

Species	Conservation Measure
Little Colorado Spinedace	The stocking restrictions and implementing actions from the 1995 (FWS 1995) and 2001 (FWS 2001) incidental take statements for CC Craigin Reservoir, Knoll Lake, and Nelson Reservoir, except for modified creel survey requirements, are part of the Proposed Action for this consultation and shall be implemented over the next 10 years as described in those documents. Creel surveys shall occur no less than once every 10 years.
Arizona Treefrog Huachuca Distinct Population Segment	The AGFD shall review the existing angler information concerning the restrictions on transport and use of tiger salamanders at Parker Canyon Lake and modify the information as deemed appropriate to increase angler awareness that such transport and use are harmful.
Bonytail Razorback Sucker	<p>A barrier net shall be installed at the La Paz County Park Lagoon immediately prior to the stocking event and remain in place for seven days after the stocking event.</p> <p>Prior to any stocking into La Paz County Park Lagoon, signs similar to those used on Lake Havasu shall be posted at the lagoon describing bonytail to anglers and informing them of what to do should they catch a bonytail. These signs shall remain in place as long as the barrier net is in place at the lagoon.</p>
New Mexico Meadow Jumping Mouse	<p>The AGFD shall provide protection from human access impacts, and if needed, enhancement actions for meadow jumping mouse habitats on AGFD-owned lands on the West Fork Black River.</p> <p>The AGFD shall coordinate with the Apache–Sitgreaves National Forests on evaluations of effects to meadow jumping mouse habitat along the East and West Forks of the Little Colorado River.</p>

Table 7. Mandatory NEPA Mitigation Actions.

Note that many Program species will benefit from both ESA and NEPA activities.

Species	Mitigation Action
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Multiple Other Special Status Aquatic and Semi-aquatic Species ¹²	The AGFD shall contribute to the conservation of other special status aquatic and semi-aquatic species through the removal of key stressors. The AGFD shall address two stressors impacting these species and associated aquatic communities within each of the following sub-watersheds/catchments: <ul style="list-style-type: none"> • Verde River sub-basin • Salt River sub-basin • Middle Gila sub-basin • Little Colorado River sub-basin • Bill Williams sub-basin
	The AGFD shall contribute to the conservation of other special status aquatic and semi-aquatic species through planning using a watershed approach. The AGFD shall apply the its Watershed-based Fish Management Process (AGFD 2009) to develop aquatic species management plans for all priority watersheds in the state. The planning process will include consideration for special status species and identify conservation opportunities for incorporation within the planning framework. Special status species will benefit through identification of focal management areas and restoration needs that can be prioritized into multiple land management programs and funding sources in a coordinated approach.
Piscivorous Riparian or Aquatic Nesting Birds	The AGFD shall develop information tools to educate anglers on the impacts of fishing debris on riparian or aquatic nesting birds. The AGFD shall continue to support the monofilament recovery bin program by replacing old and providing new bins.

Table 8. ESA Conservation Commitments that will be implemented contingent upon funding availability; actions are targeted at Additional Conservation Species (ACS) but may also benefit Focal and NEPA sensitive aquatic species.

Species	Conservation Action
Multiple Species	The AGFD shall reintroduce ACS and sensitive aquatic species alongside Focal species as deemed appropriate during planning.

¹² Mitigation measures would also benefit ESA Focal and ACS species. For each measure, some species may benefit directly and some species may benefit indirectly. The magnitude of benefits for each species would also vary.

Species	Conservation Action
Arizona Treefrog Huachuca DPS, Northern Leopard Frog, N. Mexican Gartersnake, Narrow-headed Gartersnake, Headwater Chub, Roundtail Chub, Loach Minnow, Chiricahua LF, Quitobaquito pupfish, Desert pupfish, Sonoran tiger salamander, Gila Topminnow, Razorback sucker, Apache Trout, Southwestern Willow Flycatcher, Little Colorado Spinedace, Page Springs Springsnail, Sonora Chub, Spikedace, Three Forks Spring Snail, Yellow-billed Cuckoo	The AGFD shall continue to work with partners to implement species recovery plans or other recovery/conservation strategies, including monitoring, nonnative species removal efforts, reestablishment of populations within the historical range, monitoring and repair of barriers, or other tools/approaches.
Chiricahua LF, spikedace loach minnow, northern LF, narrow-headed garter snake	The AGFD shall share information with, and periodically solicit available information from, the New Mexico Department of Game and Fish to assess if stocking at Luna Lake potentially may have impacts to native fish, leopard frog, and gartersnake populations in the San Francisco River drainage.
Gila Chub	The AGFD shall work with AESO and partners to develop and implement a recovery plan for the Gila chub. As part of that effort, conservation needs for the species relative to nonnative fish species will be identified and included in the plan.
Southwestern Willow Flycatcher	The AGFD shall work with the ASNF to evaluate impacts to physical and biological features of designated critical habitat on the West Fork Little Colorado River from anglers accessing the stocking sites at Greer and Sheeps Crossing.

Species	Conservation Action
Yellow-billed cuckoo	The AGFD shall work with the Coconino, Prescott, and Tonto National Forests to evaluate impacts to physical habitat features along the occupied habitats on the Verde River from anglers accessing the stocking sites at the middle Verde River, Oak Creek, West Clear Creek, and Wet Beaver Creek.
Little Colorado spinedace	<p>While implementing the Integrated Fisheries Management Plan for the Little Colorado River (Young et al. 2001) and the East Clear Creek Watershed Recovery Strategy for Little Colorado Spinedace and Other Riparian Species (USDA 1999), in cooperation with other partners, the AGFD shall consider other conservation actions to benefit the species. Such actions may include, but are not limited to:</p> <ul style="list-style-type: none"> • Surveys in the Chevelon Creek watershed from the headwaters to Rock Art Ranch to identify nonnative species distribution and determine suitability of habitats for spinedace reintroductions; • Once suitable habitats are identified, plan and implement renovations and reintroductions of spinedace into the Chevelon Creek watershed; • Mechanically remove wild trout from drainages above CC Cragin Reservoir and green sunfish from below the reservoir; • Remove wild brown trout and nonnative warmwater fish species from the mainstem Little Colorado River above Lyman Lake; • Repatriate spinedace found in Nelson Reservoir to occupied habitat upstream; • Continue to work with partners to replicate populations, fund habitat improvements, and maintain or improve habitat for spinedace on Wildlife Management areas that support spinedace;
New Mexico Meadow Jumping Mouse	The AGFD shall explore opportunities to manage for suitable meadow jumping mouse habitats at other AGFD-owned properties in the White Mountains.

Species	Conservation Action
Humpback chub	While implementing the Integrated Fisheries Management Plan for the Little Colorado River (Young et al. 2001), the AGFD shall consider information and recommendations identified in Stone et al. (2007), Hilwig et al. (2009) and Valdez and Thomas (2009) regarding the Little Colorado River drainage above Grand Falls as a possible source of nonnative fish species (particularly channel catfish) into occupied humpback chub habitat in the lower Little Colorado River.

Planning and Program Implementation

A 10-year planning document will be developed to guide annual work plans for Focus species (Table 5) that identify resourcing as necessary to accomplish objectives. Annual conservation work plans will identify and prioritize species, activities, conservation tools, budget and staffing that will implement conservation objectives, including specific conservation actions or targets identified in Table 6 and 3 for Program species. In each year, an annual work plan will be developed by AGFD with input from and coordination with AESO and WSFR. The plan will identify specific actions which will be taken for consultation species in that year. The annual report of the previous year’s activities will be the vehicle to assess progress toward meeting the conservation measures.

Annual work plans will also include additional species and activities based on conservation priority and program budget availabilities (within the \$500,000 average annual Program budget). Annual conservation work plans will identify and prioritize species, activities, conservation tools, budget and staffing that will implement achievable conservation activities, potentially including conservation actions identified in Table 8.

Program Reporting

The AGFD would report on progress and implementation of mitigation measures annually over the 10-year period. Reports would be submitted to the WSFR following existing annual grant reporting schedules and would include any findings as identified in the terms and conditions.

ACTION AREA

INDIVIDUAL SPECIES SITE-SPECIFIC SCALE

The individual species site-specific scale evaluates the effects attributable of the proposed action of stocking sportfish into the stocking sites relative to the presence of consultation species at or near those sites and how that stocking affects those species, and includes effects to species from anglers accessing the stocking sites. The action area for this scale includes the proposed sportfish stocking sites and the hydrologically connected areas surrounding them where stocked

sportfish or their progeny may be found after the stocking event. The hydrologically connected areas for each stocking site were determined based on a number of factors including the presence of perennial water, connectivity between waters during normal hydrological cycles, and the presence of barriers or obstacles that impeded or prevented movement by live sportfish from the stocking site. Some stocking sites were determined to be closed, and the action area for those sites did not extend beyond the stocking site and the adjacent area anglers use to access the stocking site.

Consultation species evaluated under the individual species site-specific scale are those where direct and/or indirect effects from the stocking actions are anticipated. Those effects, and any conservation measures included in the proposed action, are analyzed on those effects, the status of the species, the environmental baseline and the cumulative effects.

AREA-WIDE SCALE

The area-wide scale has a wider perspective and focuses on the indirect, interrelated, and interdependent effects of the proposed action that are more effectively addressed at this wider scale and looks at three general areas; two of which are concerned with the introduction or facilitated movement of nonnative fish, amphibians, and invertebrates; invasive aquatic species; and parasites or diseases (hereinafter referred to as unwanted aquatic organisms) to waters in Arizona.

The first is the inadvertent transport of unwanted aquatic organisms via stocking actions that are part of the proposed action, persons legally engaged in supporting sportfishing in Arizona (for example, bait dealers) or by anglers pursuing stocked sportfish.

The second is the illegal introduction or transport of unwanted aquatic organisms through deliberate actions of anglers or other persons for purposes of creating private bait sources, creating new fishing opportunities outside of legal stocking actions, or other violations of laws and regulations regarding introduction and transport of aquatic species.

Not all illegal or inadvertent movement of unwanted aquatic organisms is attributable to the current proposed action as an interdependent action; the illegal and inadvertent movement of unwanted aquatic organisms has gone on for decades and while originally these activities were directly attributable to nonnative fish stocking of the time and should be considered an effect of those actions, the spread of unwanted aquatic organisms during the period covered by this consultation is more complex. All illegal or inadvertent movements of unwanted aquatic organisms that occurred prior to the date of this BA are part of the Environmental Baseline for this consultation. A subset of the future illegal or inadvertent movement of nonnative aquatic organisms is considered under the effects of the action as an interdependent action, and the remainder considered in Cumulative Effects. Conservation measures identified to address effects from these actions are considered in this analysis.

The third area is the physical effects to aquatic or riparian habitats from anglers pursuing stocked sportfish at stocking sites. These include degradation of physical habitat features, and the disturbance, injury, or death of individuals of affected species (both aquatic and terrestrial). For the terrestrial species, this evaluation is included in greater detail in the individual species site-specific analyses, because it is the only effect of the action on those species. Because there is no measure of these effects, and other recreationists also contribute to these effects, it is not feasible to measure the magnitude of these effects across the landscape.

SPECIES CONSIDERED IN THE CONSULTATION

BACKGROUND

The WSFR Program requested a species list for this consultation on August 19, 2008. The Arizona Ecological Services Office (AESO) responded with a list of species on September 9, 2008. A letter was sent by WSFR on October 7, 2009 to request an update to the September 2008 list. The updated list was received on October 26, 2009.

The October, 2009 list was developed looking at all listed, proposed, and candidate species in Arizona. Species were removed from consideration if the potential for interactions with stocked sport fish or their progeny or anglers pursuing stocked sport fish or their progeny was not likely to require further consideration. AESO noted that the list was subject to modification as specific stocking sites and species stocked were identified during the consultation process.

During discussions from September, 2008 to September, 2009, the original list of species was informally modified based on discussions on connectivity of stocked waters with other waters in Arizona. Some species on the original list, for example the Zuni bluehead sucker, were removed from consideration because their extant populations were sufficiently isolated from stocking sites or connected waters such that exposure to stocked fish or their progeny was not likely to occur.

The original species list did recognize that the act of stocking sport fish could be a vector for transport of nonnative invasive species, parasites, or diseases to native species habitats. These organisms include fish, amphibians, reptiles, mollusks (New Zealand mud snail, Quagga mussels), and crustaceans (crayfish, mitten crabs) that are of themselves injurious to native species or may transmit parasites or diseases. This concept was refined between September 2008, and September, 2009, to look more closely at nonnative species, parasite, or disease transmission related to the sport fish stocking program.

Between October 26, 2009 and March, 2010, AESO examined the two species lists and evaluated the potential for any exposure to direct or indirect effects of the proposed action for all listed, proposed, candidate, and 10j species in Arizona. AESO also include in these tables species in Arizona for which a 90-day finding of may be warranted for listing has been made and a 12-month finding initiated or those species which AESO is considering developing a candidate

form. Since these species may, within the time period covered by the consultation, become candidates for listing, AESO determined if there could be effects from the proposed action that might require future evaluation. AESO’s evaluation indicated that the northern leopard frog and narrow headed garter snake warranted evaluation for this consultation.

SPECIES CATEGORIES FOR SECTION 7 CONSULTATION ON THE PROPOSED ACTION

The tables below divide the list of Arizona species into categories based on the potential for effects from the proposed action. Table 9, Table 10 and Table 11 contain the lists of Arizona species to be specifically considered in this consultation. Table 12 contains the list of aquatic species for which a specific risk from the proposed action has not been identified; however, these species will be globally considered in discussions of accidental introduction of injurious species and illegal transport of stocked sport fish and their progeny. Table 13 contains species that will not be considered further due to lack of exposure. In Table 11, Table 12 and Table 13, the rationale for the decision to consider or not consider them in the consultation is also provided. Table 9, Table 10 and Table 11 also differentiates between species with “may affect, likely to adversely affect” or “likely to adversely modify critical habitat” findings and formal consultation was requested by WSFR and species with “may affect, not likely to adversely affect” or “not likely to adversely modify critical habitat” findings and concurrence was requested by WSFR. For proposed, candidate, and 10j species, the differentiation is between “not likely to jeopardize” and “likely to jeopardize” the continued existence of the species. According to the regulations establishing section 10j experimental non-essential populations, the loss of that population cannot result in jeopardy to the species as a whole, so all 10j populations in Table 9, Table 10 or Table 11 have a finding of non-jeopardy.

Table 9. List of aquatic species found in Arizona considered in biological and conference opinion with initial determination of “may affect” for exposure to stocked sport fish or their progeny and illegal transport of nonnative organisms, parasites or diseases.

Common Name	Scientific Name	ESA Status	Critical Habitat¹³
Page springsnail	Pyrgulopsis morrisoni	C	
Three Forks springsnail	Pyrgulopsis trivialis	PE	
Apache trout	Oncorhynchus apache	T	
Bonytail	Gila elegans	E	
Colorado pikeminnow	Ptychocheilus lucius	10j	
Gila chub	Gila intermedia	E	Yes
Gila topminnow	Poeciliopsis o. occidentalis	E	

¹³ Species may have critical habitat in Arizona, however, unless there could be effects to critical habitat, this space is left blank

Common Name	Scientific Name	ESA Status	Critical Habitat ¹³
Headwater chub	<i>Gila nigra</i>	C	
Humpback chub	<i>Gila cypha</i>	E	Yes
Little Colorado Spinedace	<i>Lepidomeda vittata</i>	T	Yes
Loach minnow	<i>Tiaroga cobitis</i>	T	Yes
Razorback sucker	<i>Xyrauchen texanus</i>	E	Yes
Roundtail chub	<i>Gila robusta</i>	C	
Spikedace	<i>Meda fulgida</i>	T	Yes
Woundfin	<i>Plagopterus argentissimus</i>	10j	
Arizona treefrog-Huachuca DPS	<i>Hyla wrightorum</i>	C	
Chiricahua leopard frog	<i>Lithobates (= Rana) chiricahuensis</i>	T	
Northern leopard frog	<i>Lithobates (= Rana) pipiens</i>	90-day	
Sonora tiger salamander	<i>Ambystoma malvortium stebbinsi</i>	E	
Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>		
Northern Mexican garter snake	<i>Thamnophis eques megalops</i>	C	

Table 10. List of non-aquatic species found in Arizona considered in biological and conference opinion with initial determination of “may affect” due to anglers accessing stocking sites.

Common Name	Scientific Name	ESA Status	Critical Habitat ¹⁴
Bald eagle, Sonoran DPS	<i>Haliaeetus leucocephalus</i>	Delisted	
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	Yes
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	Yes
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	E	
Mexican gray wolf	<i>Canis lupis baileyi</i>	10j	
Mount Graham red squirrel	<i>Tamiasciurus hudsonicus grahamensis</i>	E	
New Mexico meadow	<i>Zapus hudsonius luteus</i>	C	

¹⁴ Species may have critical habitat in Arizona, however, unless there could be effects to critical habitat, this space is left blank

Common Name	Scientific Name	ESA Status	Critical Habitat ¹⁴
jumping mouse			

Table 11. List of aquatic species found in Arizona considered in biological and conference opinion with initial determination of “may affect” for potential effects of the illegal transport by anglers and other persons of stocked species or their progeny that may also transfer parasites or diseases.

Common Name	Scientific Name	Status	Discussion
Desert pupfish	Cyprinodon macularius	E	Reintroduced populations are in watersheds containing stocked sport fish. Illegal transport of stocked sport fish or bait species used to fish for stocked sport fish is possible. Contamination of xx population sites by nonnatives after pupfish were stocked is documented.
Quitobaquito pupfish	Cyprinodon eremus	E	Only natural population in United States is in Quitobaquito Spring pond. Nonnative fish (bullheads, golden shiner) were illegally introduced in the past. Golden shiner is a legal bait fish species for stocking sites on the lower Gila and lower Colorado rivers.
Sonora chub	Gila ditaenia	T with CH	Stocked species (largemouth bass and bluegill) documented in California Gulch. Bait species (green sunfish, goldfish, and mosquitofish) documented in California Gulch. Bait species (green sunfish, mosquitofish) documented in Sycamore Canyon. Nonnative fish identified as concern in recovery plan (USFWS 1992) for predation and spread of parasites.
Sonoyta mud turtle	Kinosteron sonoriense longifemorale	C	No nonnative species large enough to consume turtles or their eggs is known from Quitobaquito Spring Pond. However, concerns exist for the illegal introduction of bullfrogs, crayfish, and large predatory fish (largemouth bass) (USFWS 2009c)

Table 12. Aquatic species in Arizona unlikely to be affected by direct or indirect effects of the proposed action (including illegal transport of stocked fish or their progeny, parasites or diseases) but will be considered globally and rationale for that determination.

Common Name	Scientific Name	Status	Rationale
Huachuca springsnail	Pyrgulopsis thompsoni	C	Aquatic dependent but not found in areas where stocked fish, other species of concern, or disease/parasite vectors are likely to be introduced through actions of anglers or others that pursue stocked sport fish or their progeny. Nonnative species were not identified as a threat in the most recent candidate form (USFWS 2009a).
San Bernardino springsnail	Pyrgulopsis bernardina	PE	Found in one spring at Slaughter Ranch near San Bernardino NWR. Ranch is a park with open access to the pond near the spring, and there is a risk of introduction of nonnative species, but not likely from the proposed action as there is no fishing or reasonable access to retrieve baitfish. Non-stocked species released by general public comprises most of risk.
Stephan's riffle beetle	Heterelmis stephani	C	Aquatic dependent but not found in areas where stocked fish, other species of concern, or disease/parasite vectors are likely to be introduced through actions of anglers that pursue stocked sport fish or their progeny. Nonnative species introductions not identified as a threat in the most recent candidate form (USFWS 2009b).
Beautiful shiner	Cyprinella formosa	T with CH	Access to populations on the San Bernardino NWR is restricted and there is no fishing allowed, limiting the incentive to move fish here or establish bait populations. Past introduction of Asian tapeworm via nonnative fish species indicates that there is connectivity in a global sense with aquatic populations elsewhere.
Virgin River chub	Gila seminuda	E with CH	Found only in the Virgin and Muddy rivers in northern Arizona, eastern Nevada and southern Utah. Risk of exposure to stocked fish, other species of concern, or disease/parasite vectors are likely to be introduced through actions of anglers that pursue stocked sport fish in or their progeny or other illegal movement of disease or parasite vectors in Arizona is not reasonably identified.
Woundfin	Plagopterus argentissimus	E with CH	Found only in the Virgin River in northern Arizona, eastern Nevada and southern Utah. Risk of exposure to stocked fish, other species of concern, or

Common Name	Scientific Name	Status	Rationale
			disease/parasite vectors are likely to be introduced through actions of anglers that pursue stocked sport fish in or their progeny or other illegal movement of disease or parasite vectors in Arizona is not reasonably identified.
Yaqui catfish	<i>Ictalurus pricei</i>	T with CH	Extent and proposed populations on San Bernardino and Leslie Canyon NWRs and at Safe Harbor sites on Leslie Creek and HCP sites on West Turkey Creek have low risks of nonnative introductions due to limited access (private land) and no extant fishing opportunity. West Turkey Creek already contains nonnative fish species and is closed to fishing, reducing incentive for illegal stockings of sport fish or bait fish. Population at House Pond on the Slaughter Ranch is at higher risk due to open access to pond by visitors; but exposure risk from the proposed action is low as there is no fishing or reasonable access to retrieve baitfish. Non-stocked species released by general public comprises most of risk.
Yaqui chub	<i>Gila purpurea</i>	E with CH	Extent and proposed populations on San Bernardino and Leslie Canyon NWRs and at Safe Harbor sites on Leslie Creek and HCP sites on West Turkey Creek have low risks of nonnative introductions due to limited access (private land). West Turkey Creek already contains nonnative fish species and is closed to fishing, reducing incentive for illegal stockings. The population at House Pond on the Slaughter Ranch is at higher risk due to open access to pond by visitors; but exposure risk from the proposed action is low as there is no fishing or reasonable access to retrieve baitfish. Non-stocked species released by general public comprises most of risk.
Yaqui topminnow	<i>Poeciliopsis occidentalis sonoriensis</i>	E	Extent and proposed populations on San Bernardino and Leslie Canyon NWRs and at Safe Harbor sites on Leslie Creek have low risks of nonnative introductions due to limited access (private land). The population at House Pond on the Slaughter Ranch is at higher risk due to open access to pond by visitors; but exposure risk from the proposed action is low as there is no fishing or reasonable access to retrieve baitfish. Non-stocked species released by general public comprises most of risk.
Zuni	<i>Catostomus</i>	C	Nonnative species not found in occupied areas in Kin

Common Name	Scientific Name	Status	Rationale
bluehead sucker	discobolus yarrowi		Li Chee watershed, but fathead minnows were found downstream nearer to Ganado Lake. Use of live bait fish are not allowed by Navajo Nation at Ganado Lake located at the downstream end of the creek. Unlikely that sport fish or bait species connected to the proposed action would be moved to the Navajo Nation by anglers fishing in non-tribal areas. Green sunfish and fathead minnow identified as problems in New Mexico. Fishing on Navajo Nation requires separate tribal fishing permit.
Relict leopard frog	Lithobates (Rana) onca	C	Found only on Lake Mead National Recreation Area in springs and small seeps. Aquatic dependent but not found in areas where stocked fish, other species of concern, or disease/parasite vectors are likely to be introduced through actions of anglers that pursue stocked sport fish or their progeny or other illegal movement of disease or parasite vectors in Arizona is not reasonably identified.

Table 13. All other listed, proposed, or candidate species in Arizona determined not to be affected by direct or indirect effects of the proposed action and rationale for that determination.

Common Name	Scientific Name	Status	Rationale
Black footed ferret	Mustela nigripes	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Hualapai Mexican vole	Microtus mexicanus hualpaiensis	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Jaguar	Panthera onca	E	Exposure risk for disturbance to individuals from anglers at/near stocking sites is unlikely due to developed nature of lakes proposed for stocking and normally high recreationist use of those sites that reduces likelihood of jaguar use of site.
Lesser long-nosed bat	Leptonycteris curasoas yerbabuena	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Ocelot	Leopardus (= Felis)	E	Not aquatic or riparian dependent. No

Common Name	Scientific Name	Status	Rationale
	pardalis		population in vicinity of proposed stocking sites
Sonoran pronghorn	Antilocapra americana sonoriensis	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
California black rail	Laterallus jamaicensis coturniculus	C	Marsh dependent but not found in or near stocking areas where stocked fish or anglers are likely to be present to cause disturbance to individuals.
California condor	Gymnogyps californicus	10j	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Gunnison sage grouse	Centrocercus minimus	C	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Masked bobwhite	Colinus virginianus ridgewayi	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Mountain plover	Charadrius montanus	PT	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Northern Aplomado falcon	Falco femoralis septentrionalis	10j	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Sprague's pipit	Anthus spragueii	90-day	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Desert tortoise (Mohave)	Gopherus (= Xerobates = Scaptochelys) agassizii	T with CH	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Desert tortoise (Sonora)	Gopherus (= Xerobates = Scaptochelys) agassizii	90-day	Not aquatic or riparian dependent. Populations in upland areas in general vicinity of some low elevation stocking sites. Individuals not likely to be found in association with aquatic or riparian habitats
Flat-tailed horned	Phrynosoma mcallii	PT	Not aquatic or riparian dependent. No

Common Name	Scientific Name	Status	Rationale
lizard			population in vicinity of proposed stocking sites
New Mexico ridge-nosed rattlesnake	<i>Crotalus willardi obscurus</i>	T with CH	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>	90-day	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Kanab ambersnail	<i>Oxyloma haydeni kanabensis</i>	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Acuna cactus	<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	C	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Arizona cliffrose	<i>Purshia subintegra</i>	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Arizona hedgehog	<i>Cehinocereus triglochidiatus</i> var. <i>arizonicus</i>	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Brady pincushion cactus	<i>Pediocactus bradyi</i>	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Canelo Hills ladies' -tresses	<i>Spiranthes delitescens</i>	E	Aquatic dependent but introduction of stocked fish, other species of concern, or disease/parasite vectors is not identified as an issue of concern for this species.
Cochise pincushion cactus	<i>Coryphantha robbinsorum</i>	T	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Fickeisen plains cactus	<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	C	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Gierisch mallow	<i>Sphaeralcea gierischii</i>	C	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Huachuca water-umbel	<i>Lilaeopsis schaffneriana</i> ssp.	E with CH	Aquatic dependent but introduction of stocked fish, other species of concern, or

Common Name	Scientific Name	Status	Rationale
	recurva		disease/parasite vectors is not identified as an issue of concern for this species.
Holmgren (Paradox) milkvetch	Astragalus homgreniorum	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Jones' cycladenia	Cycladenis humilis var. jonesii	T	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Kearney blue star	Amsonia kearneyana	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Lemmon fleabane	Erigeron lemmonii	C	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Navajo sedge	Carex specuicola	E with CH	Aquatic dependent but introduction of stocked fish, other species of concern, or disease/parasite vectors is not identified as an issue of concern for this species.
Nichol Turk's head cactus	Echinocactus horizionthalonius var. nicholii	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Peebles Navajo cactus	Pediocactus peeblesianus var. peeblesianus	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Pima pineapple cactus	Coryphantha scheeri var. robustispina	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
San Francisco Peaks groundsel (ragwort)	Packera franciscana	T	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Sentry milk vetch	Astragalus cremnophylax var. cremnophylax	E	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Siler pincushion cactus	Pediocactus sileri	T	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites
Welsh's milkweed	Asclepias welshii	T	Not aquatic or riparian dependent. No population in vicinity of proposed

Common Name	Scientific Name	Status	Rationale
			stocking sites
Wright's marsh thistle	Cirsium wrightii	90-day	Aquatic dependent but introduction of stocked fish, other species of concern, or disease/parasite vectors is not identified as an issue of concern for this species.
Zuni (rhizome) fleabane	Erigeron rhizomatus	T	Not aquatic or riparian dependent. No population in vicinity of proposed stocking sites

ARIZONA SPORT FISH STOCKING PROGRAM OVERVIEW

SPORT FISH PROGRAM

The mission of the AGFD Sport Fish Program is to: Maintain, manage, and enhance the quality, abundance, availability, and diversity of sport fishing opportunities, and disseminate information about Arizona's sport fish and sport fishing opportunities for present and future generations.

The programmatic goals and objectives of the AGFD Sport Fish Program are:

Sport Fish Goals:

- Maintain, manage, and enhance the quality, abundance, availability, and diversity of sport fishing opportunities while contributing to the conservation of Arizona's native fishes.
- Develop integrated, watershed-based fisheries management approaches for watersheds in Arizona and identify reaches or zones for management of sport fishes and native fishes.
- Increase public awareness of Arizona's sport fishing resources and opportunities.
- Develop and implement actions to increase angler recruitment and retention.

Sport Fish Objectives:

- Annually, provide sport fishing opportunities to accommodate 1.6 million coldwater and 4.4 million warm water angler days by the year 2012.
- Achieve a 10 percent increase in satisfaction rating among Arizona's angling public by 2012 (i.e. percent of Arizona's anglers indicating they were satisfied with their angling experience, currently 68%, new target 75%).

The AGFD Sport Fish Stocking Program is a subprogram within the overarching AGFD Sport Fish Program.

Current Demand

In Arizona, 422,000 anglers take advantage of recreational fishing opportunities each year (USFWS 2006). There were 4,156,000 angler use days of fishing in Arizona with a total annual economic impact of \$1.3 billion (Southwick Associates 2007). The AGFD estimates a resident demand of 6 million angler use days through 2012 (AGFD 2009). Demand for angling opportunities in Arizona is anticipated to further increase given current trends in population growth and projected growth models, especially for those areas in close proximity to urban area boundaries.

Sport Fish Stocking Program Funding

The Dingell-Johnson Sport Fish Restoration Act as amended (16 U.S.C. 777-777n) (SFRA) directs the FWS to provide Federal aid to States for the management and restoration of fish having “material value in connection with sport or recreation in the marine and/or fresh waters of the United States.” In accordance with this Act, for nearly 50 years, the FWS has been distributing SFRA funds in support of the State’s efforts to stock sport fish to maintain, expand, and enhance angling opportunities.

Evolution of the Sport Fish Stocking Program

The history of legally stocking fish across the landscape dates back to 1872 when the U.S. Commission of Fish and Fisheries (Fisheries Commission) was tasked by Congress to supplement declining “native stocks of coastal and lake food fish through fish propagation” and the National Fish Hatchery System was formed (www.fws.gov/fisheries/fisheries.html). Federal hatcheries were created that same year and operated in most states (Stein 2010). The Fisheries Commission was renamed the U.S. Bureau of Fisheries in 1903 and as the federal hatchery system grew, fish were transported and stocked across the country using fish cars via the railroad system (1871–1933).

In 1913, the Arizona Legislature created an agency called the Department of State Game Warden. In 1929, its name was changed to the Arizona Game and Fish Commission. The State of Arizona enacted legislation to manage fish in state waters, and in 1922, began construction of the first state-operated fish hatchery.

In 1940, the FWS was created and the Bureau of Fisheries was merged into it. Stocking programs continued and increased to offset the decline of fish resulting from the creation of dams and other federal water projects (www.fws.gov/fisheries/nfhs/).

In 1950, the Dingell-Johnson Federal Aid to Fisheries Act was passed by the U.S. Congress to provide Federal funds to states for fisheries restoration and management programs. Later amendments authorized funding for aquatic education, wetlands restoration and boating safety. As a result, stocking efforts and the development of fishery management programs, including but not limited to hatcheries, expanded and intensified due to the availability of federal funds.

Stocking records in Arizona, from both federal and state-operated hatcheries, were sparse due to the lack of stipulations for types of projects and lack of clarity for reporting requirements under the Act that came later in the late 1980s and 1990s. In Arizona during the 1940s, emphasis on raising and stocking fish shifted to cold water species, primarily trout (Bassett et al 1998). The availability of Federal Aid funds and continued growing public demand for fishing prompted the creation of a lake development program within the AGFD in the 1950s, 1960s, and early 1970s and provided for the creation of many recreational lakes within the state including Luna, Big, Crescent, Ashurst, Kinnikinick, Woods Canyon, Riggs Flat, Fool's Hollow, Rose Canyon, Arivaca, Pena Blanca, Parker Canyon, Lynx, Knoll, Bear Canyon, Chevelon Canyon, Black Canyon, and Willow Springs lakes. The creation of these lakes greatly increased the number of stockings and number of species stocked during this time period. Most of these lakes provided substantial recreational opportunities to the public as well as food on their tables. Threadfin shad were initially harvested from the lower Colorado River to stock in warm water lakes as a forage base for bass and crappie populations. Trout stockings in Arizona and across the western U.S. were most numerous in the 1960s for several reasons: increased funding, the improvement of existing hatcheries, creation of new hatcheries, and improved propagation techniques (Schade and Bonar 2005), as well as growth in human population and recreational interest.

A turning point in the AGFD Sport Fish Stocking Program occurred in the early 1990s, when a number of previously stocked sites and species were eliminated from the stocking program in response to conservation concerns, fish population viability, environmental variability, economics, and cost benefit. At roughly that same time, the AGFD began to expand the stocking of urban lakes and ponds. The dual mandates of the FWS and the AGFD played a notable role in bringing about the changes in the stocking program over the last 15–20 years. The existing stocking program reflects these changes and formed the basis for the development of the action alternatives.

Decisions on whether to stock certain waters or species are based on various factors which may include but are not limited to one or more the following:

- Exposure/impacts to native species and critical habitat
- Lack of consistent availability and quality of water, limiting the suitability of continued stocking at some water bodies or limiting sustainability of populations at a given waterbody
- Angler demand for additional angling opportunities (species or locations)
- Loss of angler access to stocking areas
- Emphasis on existing native aquatic species management in the area
- Limited availability of funds to purchase additional fish above what can be provided by the hatcheries

- Regional fisheries programs determining where the allocation of hatchery fish would be stocked; deciding not to stock one water over another, depending on water availability, quality, and angler use/satisfaction; and availability of hatchery fish
- Tribal sovereignty in cessation of AGFD stocking of tribal waters
- Angler demand for wild fisheries sustained by natural reproduction

Current Sport Fish Stocking Program

As part of the existing program, AGFD stocking sites are managed under two subprograms: the Statewide Sport Fish Stocking Subprogram and the Urban Sport Fish Stocking Subprogram. The AGFD is proposing to add a third category—the Fishing in the Neighborhood (FIN) Subprogram.

The first subprogram is a state-wide fish stocking program whereby identified waters and species are stocked across the state. Stocking locations receive a range of stocking intensities (species and/or numbers) and frequencies based on fish supply, water availability and quality, angler use, access, and impacts to other fish and wildlife resources. The second subprogram, Urban Fishing Program (UFP), is targeted at providing angling opportunity within municipal public parks and urban recreational areas under an intensive use concept.

The FIN subprogram, while similar to the UFP by providing angling opportunities within urban areas, is a less intensive concept. The FIN focuses on angler recruitment and retention by supplementally stocking established urban park lakes to increase recreational angling opportunity by attracting new anglers and retaining existing anglers. The UFP and FIN programs are only partially supported by the use of SFRA funds. The proposed action analyzed within this consultation includes stocking activities for all three of the subprograms.

Statewide Sport Fish Stocking Subprogram – Overview

The current stocking proposal includes 132 Statewide Stocking Subprogram waters which are proposed for stocking at varying frequencies and intensities. Many of these waters provide primary and secondary fisheries that meet both cold and warm water needs on any given year. In some cases, the primary fishery may be a seasonal intensive use, put-and-take, channel catfish fishery, and the secondary fishery may be a year round naturally reproducing warm water fishery consisting of bass or sunfish. Of the 132 proposed stocking locations, 17 are stream reaches and the remaining 115 locations are tanks, lakes or reservoirs.

Few of the waters managed by the AGFD are owned or controlled by the State. In Arizona, large water storage projects sometimes pose challenges for fisheries management, and their primary purposes are for irrigation, hydroelectric power, flood control, and municipal uses. Sport fishing is rarely the principal purpose for the construction and operation of these impounded waters (not withstanding the recreational impoundments previously mentioned). AGFD manages these

warm water fisheries under concepts related to the type of water management occurring at the waterbodies they occupy.

Stocking approaches are developed to support consistent stocking strategies that provide 1) intensive use fisheries, 2) augmentation of fisheries with insufficient natural production to provide consistent angling opportunity, or to bolster existing fisheries in response to fluctuating environmental conditions 3) unique or seasonal opportunity, and 4) a new fishery or recovery of self maintaining populations from partial or complete loss due catastrophic events (e.g. fish kills resulting from algal blooms; fires; Figure 3). AGFD considers several factors when identifying suitable stocking locations and species that include but are not limited to the following: water quality, quantity and persistence; existing aquatic communities; species biology; impacts to native species; angler use and access; partnership commitments and needs; and social demands.

It is very unlikely that all statewide waters would be stocked in any given year, rather only a subset of the locations and species identified as the proposed action would likely be implemented. These regular stockings comprise the core stocking program and are expected to occur on an annual basis or at least every 2-3 years. As environmental conditions (e.g. high water year) and fish availability allow, the number of sites/species stocked in any given year may fluctuate depending on whether it is possible to provide additional opportunities for angling. Stockings to reestablish or augment a fishery in response to a partial or complete loss are expected to be infrequent and may not occur at all during the next 10 years. These locations and species have been included in the consultation because these fisheries support high use. If loss of a high use fishery were to occur, the public would likely expect that the sport fishery be made whole and the AGFD would desire the ability to respond quickly to recover the fishery and minimize the loss of angling opportunity. Establishment of new fisheries (either new locations and/or new species at an existing location) is identified in response to increasing angler demand or to provide angling opportunity in geographic locations that may not currently support fishing opportunities. These stockings (referred to as Statewide Protocol Stockings in the Proposed Action Table) will be conducted according to the Statewide Stocking Protocol (Appendix B).

The AGFD schedules and operates numerous fishing clinics each year. These clinics serve to provide targeted opportunities for Arizonan's to explore a new sporting opportunity, expand their developing skills or simply enjoy a social activity with friends and family. Many clinics are held in June during National Free Fishing Day, when license requirements for fishing in the state are waived. The AGFD also has a group of volunteer fishing instructors available to groups that would like to schedule fishing clinics. These clinics serve to maintain angler participation and recruit new anglers, young or old, to the sport. As part of some AGFD hosted fishing clinics, extra fish may be stocked into approved waters to enhance the success and satisfaction of clinic participants' angling experience, hopefully encouraging them to become life-long participants. The timing of stocking, locations stocked, numbers of fish stocked, and species of fish stocked are not always consistent and may vary from year to year.

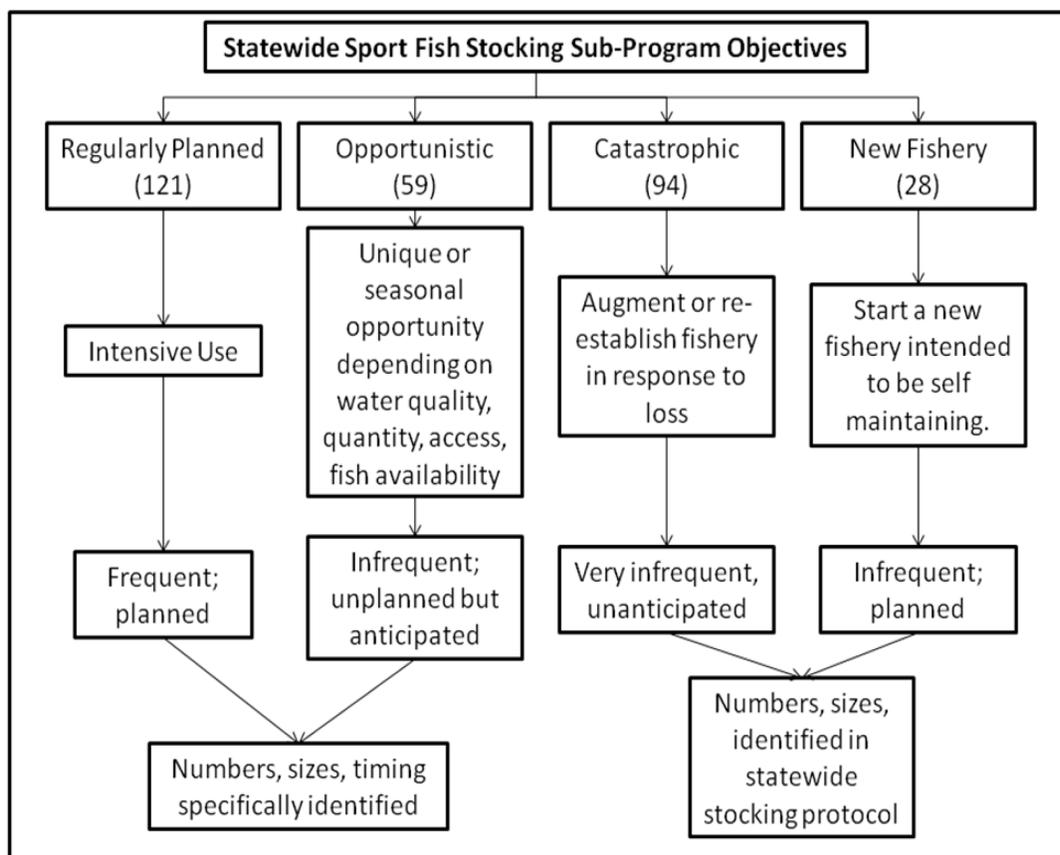


Figure 3. Overview of the objectives employed by the Statewide Sport Fish Stocking Subprogram.

Number of waters where each objective might be employed is indicated in brackets; multiple objectives may be employed at any one water. A new fishery may be a new species at a location that already has an existing population, or a brand new location not previously stocked.

Urban Fishing Subprogram – Overview

The Urban Fishing Program (UFP) is a partnership between the AGFD, local city and county parks and recreation departments to intensively stock and manage park lakes for fishing recreation. The UFP operates on the premise that "if people can't get out of town to fish, we will bring fish into town for the people." The UFP provides convenient, affordable, accessible and fun fishing for anglers of all ages and abilities.

There are currently 21 designated UFP lakes in 11 cities. These lakes are intensively stocked from 20-24 times per year with trout, catfish and sunfish, and may be stocked with other species as well. Many fishing clinics and educational programs are held each year at park lakes. Youth participation is a high priority and they represent 25% of the Program participants.

The UFP was not a federal Sport Fish Restoration program until October 2002. It was not until this time that federal aid funds were used for fish purchases, or for program operation and management. The UFP is funded through SFRA funding as well as via a cooperative effort between the cities of Chandler, Gilbert, Mesa, Payson, Peoria, Phoenix, Sahuarita, Scottsdale, Surprise, Tempe and Tucson. The UFP is supported by the sale of Urban Fishing Licenses and from fees paid into the program by the city parks and recreation departments.

There are presently 16 UFP lakes in the greater Phoenix Metro area that includes eight municipalities, 4 UFP lakes in the Tucson area, and 1 UFP lake located in the Town of Payson. These artificial lakes are all in municipal public parks and urban recreational areas. Three stocking strategies occur at UFP lakes:

- Put-and-take stockings of catchable sized fish for the purpose of fishing recreation and harvest.
- Supplemental stockings that either adds fish to a fishery to help augment low natural reproduction, or increase fishing success for a clinic or other fishing event.
- Restocking of fish communities following catastrophic events or lake draining.

Fishing in the Neighborhood (FIN) Subprogram – Overview

An AGFD priority goal is the recruitment and retention of anglers. A proposed concept to support this goal over the next ten years is the FIN Program concept. Based in established urban areas at established urban park lakes, the FIN program would be based on supplementally stocking these waters to increase recreational angling by attracting new anglers and retaining existing anglers. Fifteen prospective FIN (urban recruitment) waters may be periodically stocked in the future. All proposed FIN waters are located in the urban areas. Reasons for stocking would be for:

- Fishing derbies and similar events.
- Supplemental stockings that add fish to augment low natural reproduction and increase fishing success.
- Stockings of fish species to restart the fish population after a catastrophic event (e.g., golden alga kills) or lake draining.

The FIN concept differs from the UFP concept by: 1) primarily delivering warm water sport fish at significantly fewer stockings each year, and 2) providing moderate, rather than intensive, angling recreation use. Additional fish stockings to augment low natural reproduction or replace fish lost during renovation projects or catastrophic events may be required and would be

conducted according to the Urban Fishing Start-Up and Augmentation Stocking Guidelines (Appendix B).

STATE RULES, REGULATIONS AND AUTHORITIES

INCIDENTAL CATCH AND POSSESSION OF LISTED SPECIES OF FISH

As identified in AGFD Commission Order 40 and as summarized in the AGFD Fishing Regulations, all native fish including Federally listed, candidate, and proposed species (as per the ESA) except those designated as sport fish (i.e., Apache trout, desert sucker, and roundtail chub) are protected statewide, are illegal to possess, and if caught, must immediately be released alive and unharmed.

TRANSMISSION OF DISEASES

Regulations that address potential transmission of fish diseases are identified at R12-4-410 for aquatic wildlife stocking permit holders and at R12-4-411 for live bait dealer's license holders and require originating facilities to be able to demonstrate, through annual fish health inspections, that they are free of restricted fish diseases and their causative agents. Operational protocols and procedures (outside the current rules and regulations) that address potential transmission of diseases are discussed later in this document in the section on analysis methods.

TRANSPORT AND INTRODUCTION OF LIVE SPORT FISH BY THE PUBLIC

R12-4-405 prohibits the importing, purchasing, and transporting of live wildlife without an Arizona license or permit. Under ARS § 17-306, and R12-4-402 the transport and introduction of fish or other organisms to Arizona waters is prohibited except as expressly authorized (e.g., Title 3, Chapter 16 relating to licensed aquaculture). With some restrictions, R12-4-315 allows fish taken alive to be possessed alive on the waters from which they were taken, but prohibits the transport of said fish alive from these waters, except as allowed under R12-4-316. Additional information on potential effects is discussed later in this document in the section on analysis methods.

USE AND TRANSPORT OF LIVE BAIT FISH AND OTHER ORGANISMS

R12-4-316 governs possession, transportation, importation, and use of live baitfish, crayfish, and waterdogs. Baitfish may be purchased at authorized dealers or captured and used onsite where legal to do so. Not all waters of Arizona are open to all bait species; rather the AGFD has designated specific areas for use of certain species of baitfish. Bait fish are not allowed at any site in Apache, Cochise, Coconino, Navajo, or Pima Counties. In the other counties, the use of baitfish is allowed at specific sites. The species currently permitted for use in Arizona are: fathead minnow, mosquitofish, red shiner, threadfin shad, golden shiners, goldfish, sunfish, carp, and tilapia. It is illegal to release live baitfish into any Arizona waters. These restrictions assist in protecting both native and sport species and their habitat from the introduction of new nonnative

species or diseases that may be carried by those species. Additional information on potential effects is discussed later in this document in the section on analysis methods.

