



Marine Fishes TAG Annual Report Date: 3/1/2024

*** Please note that Annual Reports must be digitally submitted to the AZA Conservation, Management, and Welfare Sciences Department (animalprograms@aza.org) and the TAG's APM Committee Liaison no later than **March 1**

*** Please adjust the tables as necessary to accommodate complete answers.

*** This template is available in a digitized Word form at <https://www.aza.org/resource-documents>

- Please provide a list of the most current TAG Steering Committee members, Advisors and APM liaison.

Name	Position	Facility	Email
Paula Carlson	Chair	The Dallas World Aquarium	paula@dwazoo.com
Chris Coco	Vice Chair	Georgia Aquarium	ccoco@georgiaaquarium.org
Kelli Cadenas	Secretary	Sealife Orlando Aquarium	Kelli.cadenas@merlinentertainments.biz
Tim Carpenter	Treasurer	Seattle Aquarium	t.carpenter@seattleaquarium.org
Paul Clarkson	Steering Committee	Monterey Bay Aquarium	PClarkson@mbayaq.org
Kevin Curlee	Steering Committee	Disney's The Seas	Kevin.K.Curlee@disney.com
Jared Durrett	Steering Committee	Ripley's Aquarium of the Smokies	durrett@ripleys.com
Becky Ellsworth	Steering Committee	Columbus Zoo and Aquarium	becky.ellsworth@columbuszoo.org
George Parsons	Steering Committee	Shedd Aquarium	gparsons@sheddaquarium.org
Erin Shusterman	Steering Committee	California Science Center	eshusterman@californiasciencecenter.org
Skylar Snowden	Steering Committee	Virginia Aquarium	sksnowden@VirginiaAquarium.com
Stacia White	Steering Committee	Ripley's Aquarium Myrtle Beach	swhite@ripleys.com
Marcus Zevalkink	Steering Committee	John Ball Zoo	mzevalkink@jbzoo.org
Vacant	Steering Committee		
Vacant	Steering Committee		
Doug Warmolts	General Advisor/Past Chair	Columbus Zoo and Aquarium	doug.warmolts@columbuszoo.org
Beth Firchau	General Advisor/Past Chair	AZA Florida Reef Tract Rescue Project Coordinator	bfirchau@gmail.com
Rob Jones	Veterinary Advisor	The Aquarium Vet	rob@theaquariumvet.com.au
Lisa Hoopes	Nutrition Advisor	Georgia Aquarium	lhoopes@georgiaaquarium.org

Jay Hemdal	RCP Advisor	Toledo Zoo and Aquarium	jay.hemdal@toledozoo.org
Allan Marshall	Animal Transport Advisor	Pittsburgh Zoo and Aquarium	amarshall@pittsburghzoo.org
Joe Choromanski	Government Affairs Advisor	Serviette Group	joe@serviettegrou.com
Dennis Thoney	Field Conservation Advisor		dennisthoney@gmail.com
Linda Penfold	Reproduction Advisor	SEZARC	linda.penfold@sezarc.com
Allen McDowell	Animal Welfare Advisor	North Carolina Aquarium at Roanoke Island	allen.mcdowell@ncaquariums.com
Andy Aiken	Life Support Advisor	National Aquarium in Baltimore	aaiken@aqua.org
Rachel Bashor	Education Advisor	Riverbanks Zoo and Garden	rbashor@riverbanks.org
Chris Dold	APMC Advisor	SeaWorld Parks and Entertainment	chris.dold@seaworld.com
Kate Rodriguez Clark	SPMAG Advisor	Smithsonian National Zoo	Rodriguez-ClarkKM@si.edu
Nuria Baylina	European/EAZA Liaison	Oceanario de Lisboa Aquarium	nbaylina@oceanario.pt
Laura Simmons	Australian/ZAA Liaison	Sealife Aquariums Australia/New Zealand	laura.simmons@merlinentertainments.biz
Laurel Johnson	Big-bellied Seahorse SSP Coordinator/Studbook Keeper	Newport Aquarium	ljohnson@newportaquarium.com
Steven Yong	Lined seahorse SSP Coordinator/Studbook Keeper	Steinhart Aquarium	syong@calacademy.org
Denise Swider	Spotted eagle ray SSP Coordinator	Discovery Cove	Denise.Swider@DiscoveryCove.com
Rebecca Thomas	Spotted eagle ray Studbook Keeper	Ripley's Aquarium Myrtle Beach	R.gangler@yahoo.com
Lise Watson	Zebra Shark SSP Coordinator	Shedd Aquarium	lwatson@sheddaquarium.org
Jack Jewell	Zebra Shark SSP Vice coordinator	Shark Reef at Mandalay Bay	jjewell@mandalaybay.com
Leah Neal	Zebra Shark Studbook Keeper	Georgia Aquarium	lneal@georgiaaquarium.org
Chris Schreiber	Sandtiger Shark Provisional SSP Coordinator	Florida Aquarium	cschreiber@flaquarium.org
Jared Durrett	Sandtiger Shark Provisional SSP Vice Coordinator	Ripley's Aquarium of the Smokies	durrett@ripleys.com
Sandi-Schaefer Padgett	Sandtiger Shark Studbook Keeper	Maritime Aquarium	sschaefer@maritimeaquarium.org
David Cochran	Blacktip Reef Shark Studbook Keeper	Mystic Aquarium	dcochran@mysticaquarium.org
Jennifer Hazeres	Bowmouth Guitarfish Studbook Keeper	Newport Aquarium	jhazeres@newportaquarium.com
Katherine Allen	Cownose Ray Studbook Keeper	Georgia Aquarium	kaallen@georgiaaquarium.org
Aaron Jeskie	Epaulette Shark Studbook Keeper	Columbus Zoo and Aquarium	Aaron.Jeskie@columbuszoo.org

Stacia White	Large-tooth, Smalltooth and Longcomb Sawfish Studbook Keeper	Ripley's Aquarium Myrtle Beach	swhite@ripleys.com
Alyssa Tillman	Southern Stingray Studbook Keeper	Long Beach Aquarium	ATillman@lbaop.org
Vacant	Nurse Shark Studbook Keeper		
Kellie Glover	Atlantic Ray Species Monitor	Jacksonville Zoo	gloverk@jacksonvillezoo.org
Laura Wandel	Goliath Grouper Species Monitor	Dallas Zoo	laura.wandel@dallaszoo.com
Jeremy Brodt	Leafy Seadragon Species Monitor	New England Aquarium	jbrodt@neaq.org
Kevin Becker	Sandbar Shark Species Monitor	Adventure Aquarium	kbecker@adventureaquarium.com
Vacant	Banggai Cardinal Fish Species Monitor		
Vacant	Spotted seahorse Species Monitor		

Please list any new or revised statements or guidelines that the TAG has adopted in the past year (*note that new or revised Policies, Position Statements, White Papers, and Guidelines must be approved by the AZA Board of Directors*). The MFTAG has not created or revised any new statements or guidelines in the past year.

- Please share the date of the upcoming annual check-in meeting with the SSP leadership. Will it be virtual or in person? If in person, will it be in conjunction with a conference or larger meeting? **The MFTAG had a virtual meeting with SSP, Studbook and TAG monitored program leaders on February 9, 2024. We will have an in-person meeting during the Regional Aquatics Workshop in Seattle/Tacoma on May 5, 2024.**
- Please attach an updated, Animal Programs Summary Table (See RCP Template Tables 2 and 5)

Please see the Animal Programs Summary Table on page 4.

Animal Programs Summary Table

Common name (<i>Scientific name</i>)	SSP Designation ¹	Date of Most Recent B&T Plan	Census Population Size - N (M.F.U) in AZA and Source (e.g. ZIMS Studbook ² , BTP, other)	Number of Participating AZA Member Facilities on census date	Commitment Population Trend (CPT _{DATE}) (Grow, Decline, Stable) or Size (CPS _{DATE}) and date by when it should be achieved ³	Target Population Size (TPS _{DATE}) and date by when it should be achieved ⁴	Recent Five-Year Population Growth Rate (λ) and/or Trend (increasing, decreasing, or stable) if growth rate not available, and date span across which it was calculated ⁵
Big Bellied Seahorse (<i>Hippocampus abdominalis</i>)	Signature	03/24/2023	637 (279.215.143) 05/01/2023 Studbook	36	Grow by 2028	850 by 2028	$\lambda = 1.0178$ Increasing (2018-2023)
Lined Seahorse (<i>Hippocampus erectus</i>)	Signature	2/2024	599 (239.291.69) from BTP 2/2024	51	Grow by 2028	800 by 2028	Decreasing (2018-2023)
Spotted Eagle Ray (<i>Aetobatus narinari</i>)	Signature	10/18/2021	48 (23.25.0) on 12/31/2023 from ZIMS studbook	15 on 12/31/2023	TBD 2024	80 by TBD	0.969 (2018-2023)
Zebra shark (<i>Stegostoma tigrinum</i>)	Signature	10/01/2023	150 (51.99.0) on 10/1/2023 from ZIMS Studbook	41 current 43 after B&T recommendations are fulfilled	Stable	150 updated 2023	Increasing (2018-2023)
Sand Tiger Shark (<i>Carcharias taurus</i>)	Provisional	3/25/2020	186 (112.74.0) on 2/21/24 from ZIMS Studbook	37	Grow, 2026	200, 2026	Trend -Increasing (2019 – 2024)

¹SSP designation options: Signature or Provisional

²To obtain this number from ZIMS, run a Census Report, which will default to 31 Dec of the year prior to this report. Set the Institution filter to “AZA” and check the box on the bottom of the screen to “Include animals with undetermined transaction dates” then Generate Raw Data.

³The CPT or CPS and date by which it should be achieved will be found in the most recent RCP for the TAG. This information may not be included in RCPs produced before 2023. Enter TBD with the scheduled date for the next RCP completion.

⁴The TPS and date by which it should be achieved will be found in the most recent BTP for the program. This information may not be included in BTPs produced before 2024 or, if included, may be outdated in BTPs produced in 2023 and earlier. Please pull from a 2024 or later BTP. If none exists enter TBD with the scheduled date for the next RCP completion.

⁵The five-year population growth rate (λ) can be obtained from the ZIMS Studbook, by running the Census Report as described above, referring to column named “Geometric Mean) and using number from cell labeled “last 5 years”.

- Please attach an updated Animal Program Summary Table with Roles, Goals, and Essential Action items. (see the RCP Template Table 7). Please provide the action steps the TAG/SSP is taking, or intends to take, in order to achieve each identified goal, and indicate an approximate timeline for these actions.

Please see the Animal Program Roles, Goals Tables on pages 5-9.

Animal Program Roles, Goals Table

Common Name (Scientific Name)	Big Bellied Seahorse / <i>Hippocampus abdominalis</i>
Program Designation	Provisional SSP
Program Role	Big Bellied Seahorses are a popular exhibit animal with conservation education potential, as near shore species that are heavily affected by anthropogenic environmental changes (deforestation and sedimentation, climate change, bycatch from overfishing).
SMAART Goal #1	Continue to utilize transfer and breeding opportunities to equalize founder lineages by prioritizing breeding and rearing of two under-represented genetic lines to sexual maturity by 2027.
Progress towards Goal #1	Six Breeding and Transfer Plan recommendations fulfilled by three recommended transfers in 2023. Added four AZA institutions with capacity to breed and rear fry in 2023.
SMAART Goal #2	Fulfill the needs of participating facilities and BTP recommended transfers by increasing breeding and survivability of broods, with the goal of two additional Institutions breeding and rearing the species to sexual maturity by 2027.
Progress towards Goal #2	Currently updating the Husbandry/Best practices questionnaire to send to stakeholders, to optimize the overall wellness and welfare of breeding pairs across participation institutions.
SMAART Goal #3	Develop body scoring index specific to Big Bellied Seahorses by 2025. Incorporate parameters in the future development of the Animal Care Manual.
Progress towards Goal #3	No progress to date.

Animal Program Roles, Goals Table

Common Name (Scientific Name)	Lined Seahorse / <i>Hippocampus erectus</i>
Program Designation	Signature SSP
Program Role	Popular exhibit species
SMAART Goal #1	<p>Grow overall population and increase gene diversity by requesting that willing stakeholders breed different genetic lines or acquire wild caught animals for breeding purposes.</p> <p>Continue to prioritize breeding for genetically valuable pairs while maintaining overall population of ~ 1000 animals through at least 2027.</p>
Progress towards Goal #1	<p>During 2020-21, many institutions cut back on resources for rearing and were not able to maintain their own populations or provide animals to other stakeholders. The SSP is currently recruiting for breeding institutions. The presence of red tide has also increased on the Western Atlantic coast in recent years, which has affected several institutions' ability to import wild broodstock.</p> <p>The most recent draft of the Breeding and Transfer plan sent to stakeholders on February 27, 2024, has recommended that 8 facilities breed wild caught animals to produce at least 40 offspring each to send to institutions that have requested animals. 12 facilities were also recommended to breed current animals to maintain their population numbers.</p>
SMAART Goal #2	Will put out a call for nominations for VC by end Q2 2024 with email announcements to SSP IRs and in the Animal Programs Monthly Update with the goal of selecting a suitable candidate by December 2024. Once a vice coordinator is selected, work with that person to develop strategies for stabilizing the population and maximizing genetic diversity with fewer potential founder stock.
Progress towards Goal #2	No progress towards goal to date.
SMAART Goal #3	Work with other Syngnathid program leaders to edit the existing Syngnathid Husbandry Manual document into the AZA ACM format. Also continue to develop the Syngnathid Husbandry Manual as part of the larger Project Seahorse initiative. First draft of the Syngnathid Husbandry Manual document to be released at RAW 2024.
Progress towards Goal #3	Completed and submitted Lined seahorse chapter of the Syngnathid Husbandry Manual to group editors in 2022.

Animal Program Roles, Goals Table

Common Name (Scientific Name)	Spotted Eagle Ray (<i>Aetobatus narinari</i>)
Program Designation	Signature SSP
Program Role	Education/Exhibit needs
SMAART Goal #1 2017-ongoing	Through the acquisition and quarantine of new animals, verify monogenean treatment protocol developed by Ripley's Aquariums, and a new protocol that has been implemented by a second facility. This goal is building on a goal from prior years as this problem still exists within the population. Stakeholders will be informed of this potential treatment via email and at the upcoming MFTAG meeting in May 2024. Continue through at least 2026 if needed.
Progress towards Goal #1	This protocol has not been verified, but another treatment has been tried by SeaWorld San Antonio with some success. Stakeholders will be informed of this potential treatment
SMAART Goal #2 2017-2021	Implement genetic testing program for SER group. This will facilitate confirmation of <i>Aetobatus ocellatus</i> within program.
Progress towards Goal #2	Genetic testing was not completed, but animals were identified based on founder animal collection location. Animals considered to be <i>A. ocellatus</i> were removed from the SSP in the latest BTP and Studbook. There are no current plans to continue this study.
SMAART Goal #3 2018-ongoing	Continue development of SER Animal Care Manual and complete first draft by 2025. As a large majority of captive born rays die before 6 months of age, identifying best rearing practices are a high priority.
Progress towards Goal #3	Some progress has been made on a draft and in the identification of potential authors. Awaiting updated template.

New Goal

SMAART Goal #4 2024-ongoing	Increase participating facilities- add at least one new facility per year as needed through 2029.
Progress towards Goal #1	1 new facility was added in 2023.

Animal Program Roles, Goals Table

Common Name (Scientific Name)	Zebra shark/ <i>Stegostoma tigrinum</i>
Program Designation	Signature SSP
Program Role	Exhibit/ Conservation management for Endangered Species
SMAART Goal #1	Increase breeding of genetically appropriate animals. The goal is to have 3 additional facilities in a position to breed by the end of 2024 after transfer recommendations have been fulfilled. This goal is also aligned to support in situ conservation (Reshark/ StAR) work currently being done in Indonesia.
Progress towards Goal #1	In planning stages with implementation expected before the end of 2024.
SMAART Goal #2	Increase long- term population sustainability. To maintain the current target population, continue to request that facilities work with the SSP to determine breeding pairs/number of eggs to hatch, as well as place an increased focus on consistent breeding through the current Breeding and Transfer Plan cycle which ends in 2026.
Progress towards Goal #2	Stakeholders are being asked not to incubate eggs from animals with “Do not breed” recommendations through the current Breeding and Transfer plan recommendations that were finalized in October 2023. Ongoing- changes to program accountability are being conveyed to stakeholders to prevent animals who have undesirable genetics from being bred.
SMAART Goal #3	Complete ACM by end of 2025.
Progress towards Goal #3	Ongoing- Began work on this with plan to complete by end of next year. We need to compile the information we currently have in the AZA ACM format.

Animal Program Roles, Goals Table

Common Name (Scientific Name)	Sandtiger Shark (<i>Carcharias taurus</i>)
Program Designation	Provisional SSP
Program Role	Popular exhibit species
SMAART Goal #1	<p>Contact all AZA holding facilities to identify, evaluate and investigate observations of sand tiger shark reproduction. This goal will be achieved in the following ways:</p> <p>Program leadership will reach out to all stakeholders, asking for a synopsis of the behaviors observed and data associated with these behaviors by Winter 2024.</p> <p>Collecting and analyzing this data will optimistically give a better insight of reproduction events observed at different facilities. To be completed by Summer/Fall 2025.</p> <p>Work with SAFE Sharks and Rays for data share Summer/Fall 2025.</p> <p>Analyze data; identifying commonalities by Winter 2025</p> <p>Distribute information to stakeholders by Midyear 2026.</p>
Progress towards Goal #1	Program leadership has been in contact with two AZA facilities who have experienced breeding success in the past.
SMAART Goal #2	<p>Identify opportunities for SSP to support in- and ex-situ efforts through ensuring safe animal handling practices. Assist AZA SAFE Sharks & Rays Best Practices for Elasmobranch Handling Project effort to generate Safe Handling practice document by offering feedback as requested by authors. Generate and distribute questionnaire to assess current Sand tiger handling strategies by Feb 2025. Incorporate feedback on best practices into first draft of Animal Care Manual by September 2026.</p>
Progress towards Goal #2	Program coordinator has been selected to help edit chapters in the AZA SAFE Sharks and Rays Best Practices for Elasmobranch Handling Manual.
SMAART Goal #3	Work with involved stakeholders to understand techniques being used in artificial insemination and its potential in terms of maintaining a viable population. Contact IRs to understand status of efforts and future opportunities for maximizing diversity through this research by June 2024
Progress towards Goal #3	Program leadership has been in contact with one AZA facility who has achieved successful reproduction and produced one viable offspring to gain as much knowledge as possible to share with other stakeholders.

- Please complete an updated Animal Care Manual table. List each SSP under the TAG's purview and provide information for each.

See Animal Care Manual Table on page 10.

Animal Care Manual Table

Common name (<i>Scientific name</i>)	SSP Designation ¹	ACM Status*	ACM Format**	ACM Coordinator	Facility	Email	Phone
Big Bellied Seahorse (<i>Hippocampus abdominalis</i>)	Signature	Process has not started	Combined	Laurel Johnson	Newport Aquarium	ljohnson@newportaquarium.com	859-815-1448
Lined Seahorse (<i>Hippocampus erectus</i>)	Signature	Writing	Combined	Steven Yong	Steinhart Aquarium	syong@calacademy.org	415-379-5870
Spotted Eagle Ray (<i>Aetobatus narinari</i>)	Signature	Active Planning	Standalone	Denise Swider	Discovery Cove	Denise.swider@discoverycove.com	407- 616-8869
Zebra Shark (<i>Stegastoma tigrinum</i>)	Signature	Active Planning	Standalone	Lise Watson	Shedd Aquarium	lwatson@sheddaquarium.org	312- 692-3181
Sandtiger Shark	Provisional	Process has not started	Standalone	Chris Schreiber	Florida Aquarium	cshreiber@flaquarium.org	813-724-3088

* ACM Status can be reported as: (1) Published (indicate YEAR) and **Revision** in progress; (2) ACM **Published** (indicate YEAR); (3) **Submitted** to AZA for review/editing; (4) **Writing** in Progress (not submitted yet); (5) Active **Planning** has begun with contributors; (6) Process has **not started**.

** Format options are **Standalone** (ACM is for just this species) or **Combined** (ACM is for multiple species or combined in an umbrella ACM). For combined format indicate the umbrella category or other species included.

- ☒ I have conducted an annual review of all SSP Sustainability Reports under my purview.
- ☒ I have attached the Animal Program Deadlines and Planning Details Report from PMCTrack.
- **Optional: Please list any field conservation, research projects, and/or special accomplishments that have been supported and/or conducted by the TAG in the past year.**
- The MFTAG annually supports the promotion of the Alan D. Henningsen Memorial Research & Conservation Grant. This grant was established to honor a long-time member of the MFTAG program leadership. Funds are generated from fundraising activities by AZA facilities and in partnership with the Sawfish Conservation Society. Sawfish program stakeholders vote on worthy research projects, and each year that funds are collected, those funds are distributed to the recipient via the MFTAG treasury hosted by the Seattle Aquarium. International Sawfish Day is celebrated every year on October 17 and is organized by the AZA and EAZA Studbooks and the Sawfish Conservation Society (SCS) to bring attention to the elasmobranch's critically endangered conservation status and the threats that it faces.
- Many Zebra shark SSP facility members as well as SSP leadership, are partners and/or collaborators in the Star/ReShark program. 2023 saw the release of 4 juvenile Zebra sharks in Raja Ampat through this project. All four sharks hatched from eggs that were provided by Sealife Aquarium Sydney. 3 were released in Wayag Lagoon and 1 was released in Misool. All animals were outfitted with internal acoustic tags before their release. In the fall of 2023 eggs were sent to Kri island from Shark Reef Mandalay Bay and have resulted in 2 hatchlings. One of the animals is in a sea pen and the other will be moving soon to the sea pen. Both are slated for release in April/May 2024. In December of 2023, the StAR project opportunistically acquired 21 eggs from Cairns Marine. The eggs are in various stages of development with 6 pups born so far.
- The MFTAG and its members continue to support the initiatives of the AZA SAFE Sharks and Rays programs. Several of the Steering Committee members and program leaders are actively involved in the development of the Best Practices in Elasmobranch Handling Guide, as authors and/or editors.
- The MFTAG actively promotes the activities of the Aquarium Collections Sustainability Committee with several Steering Committee members serving on the committee. Announcements and calls for participation on behalf of the Larval Programs and other initiatives are posted on the MFTAG's AZA Network and in MFTAG meetings.
- The MFTAG held three meetings for its members in 2023. The first was at the AZA Midyear Meeting in Oklahoma City, the second was held at the Regional Aquatics Workshop in Dubuque Iowa, and the final meeting was held at the AZA Annual Meeting in Columbus, Ohio.
- This year the MFTAG participated in its first TAG Mart at the AZA Annual Meeting in Columbus, Ohio. A total of \$1110.00 was raised and the funds were donated to the Minorities in Zoo and Aquarium Sciences (MAIZS) who will manage the funds to provide a scholarship for a BIPOC member interested in pursuing aquarium and zoo careers. This scholarship is intended to provide opportunities for people to get into the marine aquarium field or to advance their careers in aquarium science. The assistance provided will help the recipient to be able to attend classes or conferences, to network, learn critical industry skills, and open-up future job opportunities within the public aquarium field.

- In 2023 the MFTAG Steering Committee developed a new mentorship program, with the objective of developing emerging leaders, promoting diversity within the MFTAG, and succession planning for the future. MFTAG Steering Committee members, Program leaders and/or Advisors will serve as mentors. An application process includes a letter of commitment from both the applicant and the applicant's facility director. The first call for participants went out via email and on the MFTAG AZA Network in January 2024.
- In July 2023, the MFTAG Steering Committee voted to approve the Coral Reef Aquarium Fisheries Campaign as a Highlighted Program within the MFTAG.
- In August 2023, a new Studbook Keeper was selected by the MFTAG Steering Committee for the Sandtiger Shark SSP, Sandi Schaefer-Padgett from the Maritime Aquarium was selected to fill that position.
- In December 2023 a Steering Committee vote was held to select a new Blacktip reef shark Studbook Keeper. David Cochran from the Mystic Aquarium was selected.