

Aquarium Renovation The Toledo Zoo –

May 2013

Jay Hemdal



The Toledo Zoo Aquarium - Past

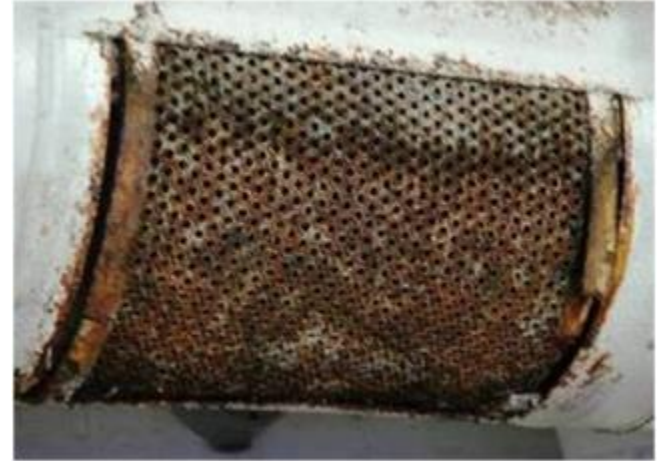


The Toledo Zoo Aquarium - Present



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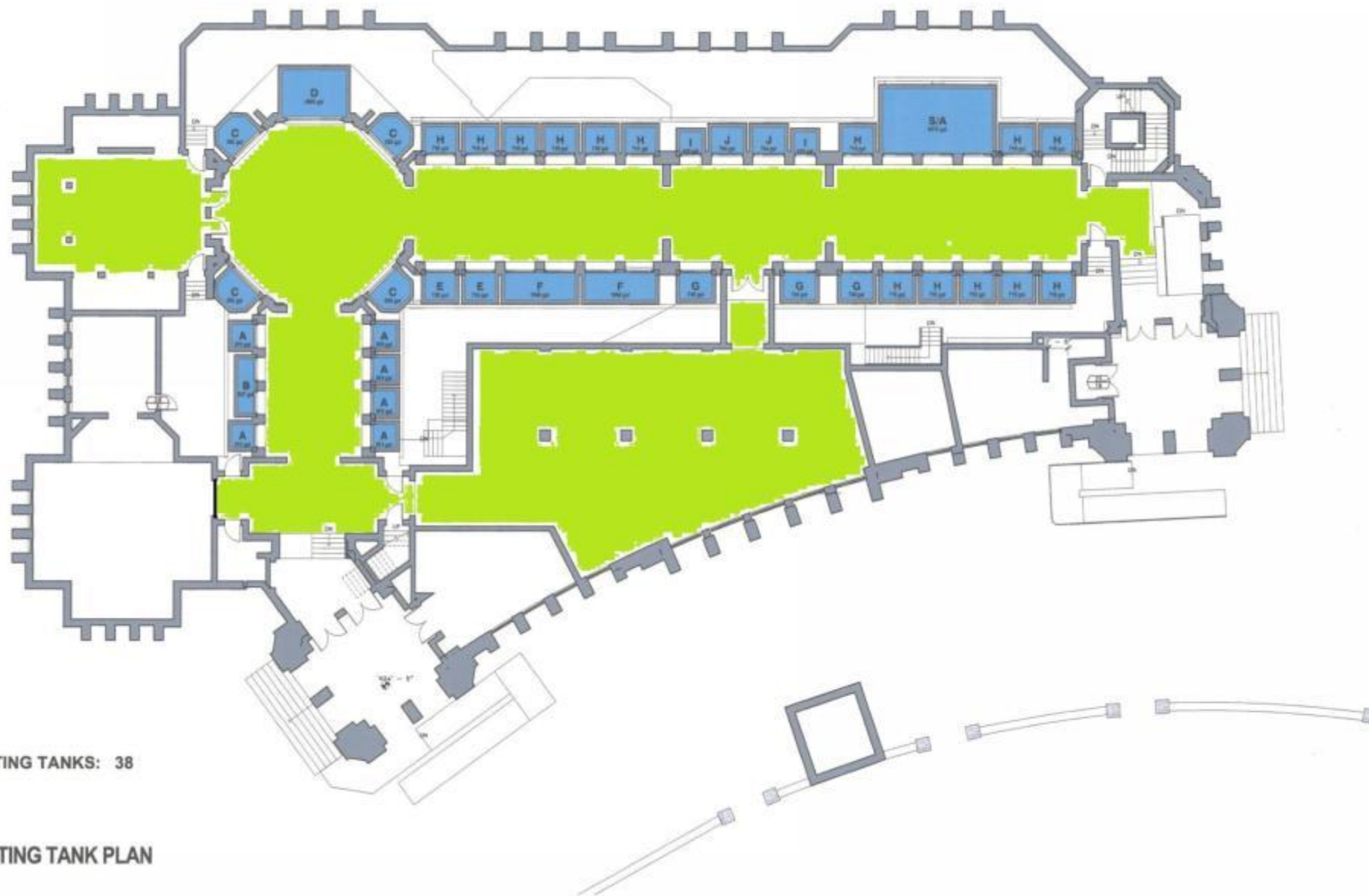
Saltwater is very corrosive....

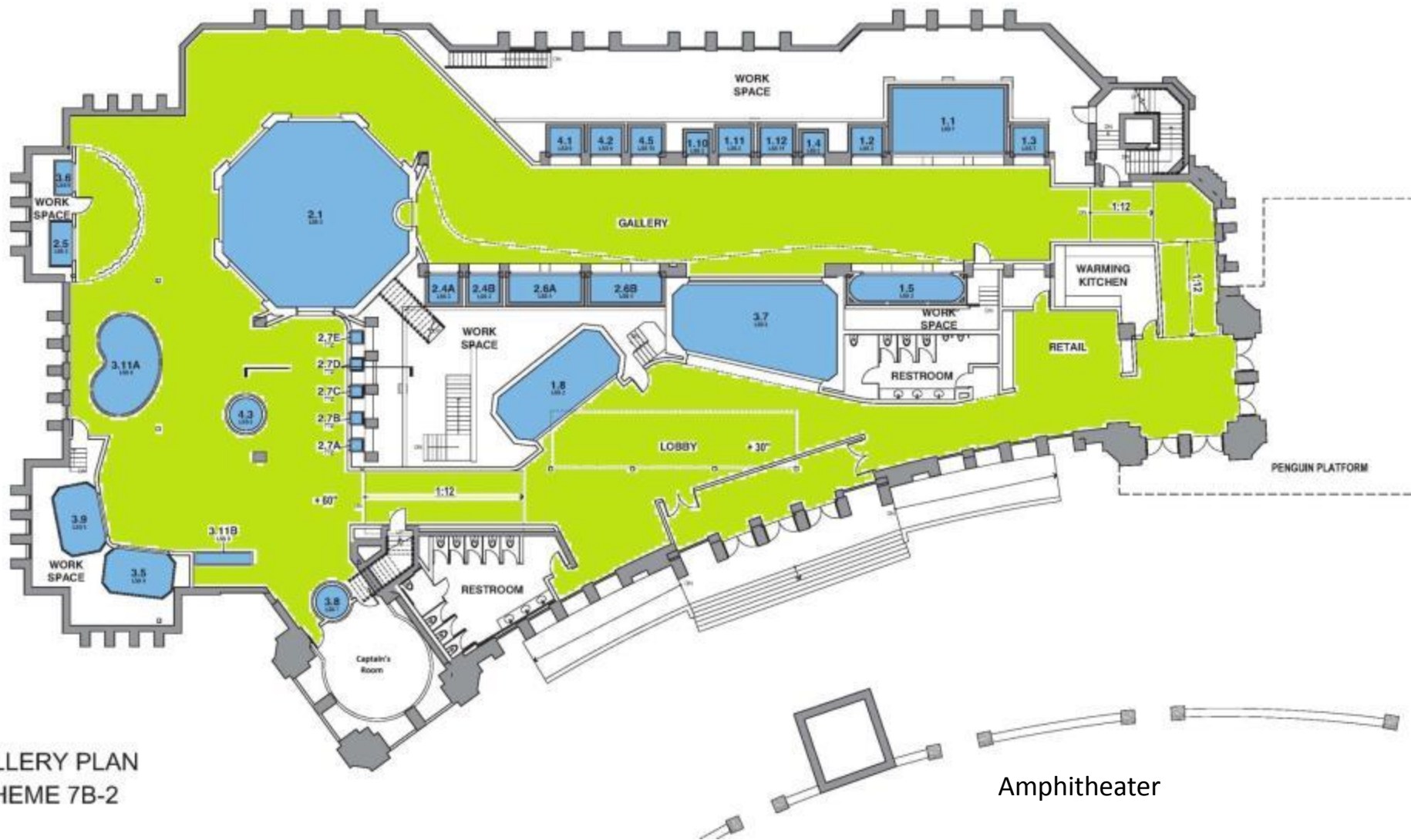


The Toledo Zoo Aquarium - Future

Go beneath the surface and experience a fascinating underwater realm – how we depend on and impact it.







GALLERY PLAN
SCHEME 7B-2

Proposed Aquarium Floor Plan

Contrasting the old (2010) Aquarium to the new Aquarium (2015)

<u>Criteria</u>	<u>Old Value</u>	<u>New Value</u>
Number of exhibits	50	32
Water volume of exhibits	46,000 gallons	178,000 gallons
Percentage of marine ex.	37%	87%
Volume of holding tanks	7500 gallons (16% of Ex. Vol.)	24,000 (13% of Ex. Vol.)
Largest exhibit	7600 gallons	90,000 gallons
Number of species (no insects)	227	200
Number of freshwater species/specimens	117/1743	50/1200
Number of marine species/specimens	110/432	150/2500
Curatorial FTE	1	1
Keeper FTE	4.14	5.6 (Use 5.14)

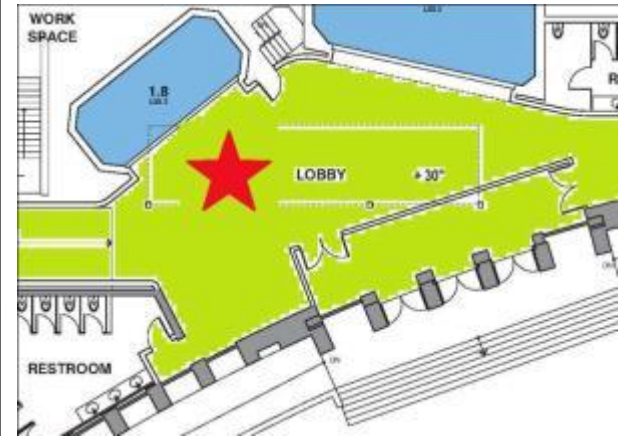


Exhibit name: **Entrance Lobby**

Description: This open area will encompass much of the space taken up by the existing rainforest exhibit. Skylights will remain, so this will be a brightly lit, open area.

Introduction to the primary theme of the building

Subthemes: Conservation, Diversity, Water, Animal Husbandry

Introduction to water: Properties of water, fresh to marine is actually a continuum. Less dense when it freezes, etc.



Exhibit: **Gulf of Mexico – Sharks, Rays and Turtles**

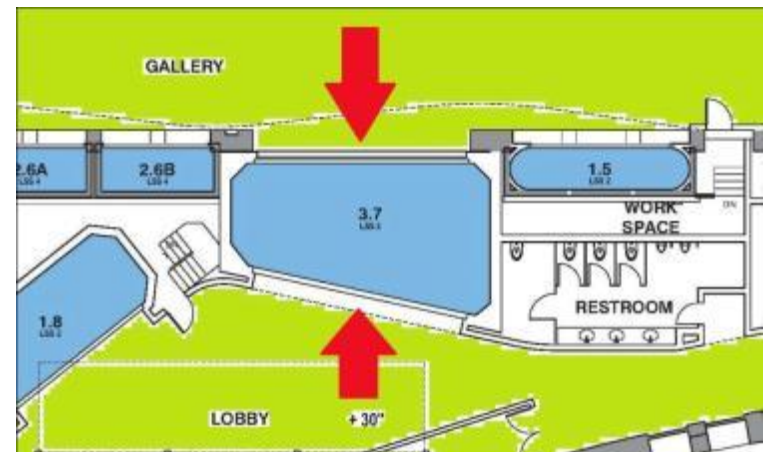
Exhibit number: 3.7

Water type: Temperate marine

Tank volume: 27,805 gallons

Description: This exhibit would be the second largest of the project. Sharks would include black nose and bonnetheads. Other fish would include schooling jacks and possibly a sea turtle. This exhibit would be viewable from two locations.

Top predators, sea turtle conservation, pelagic swimmers.



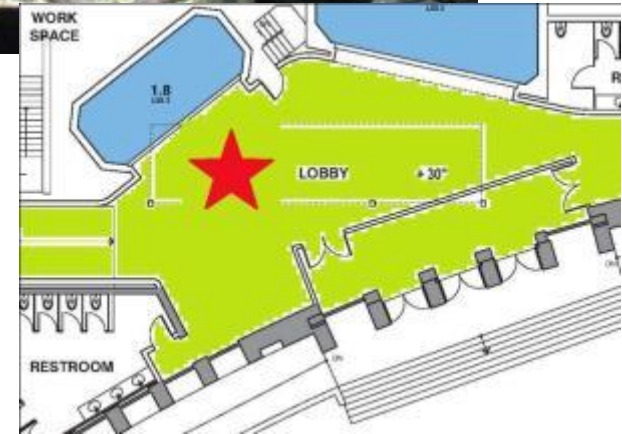


Exhibit name: **The Flooded Amazon Forest**

Exhibit number: 1.8

Water type: Tropical freshwater

Tank volume: 15,330 gallons

Description: This 24 foot long, 10foot deep tank will exhibit Arapaima, pacu, leopoldi stingrays and large catfish. It is over twice the size of our current Amazon ex.

Flooded forests, giants of the Amazon, water turbidity

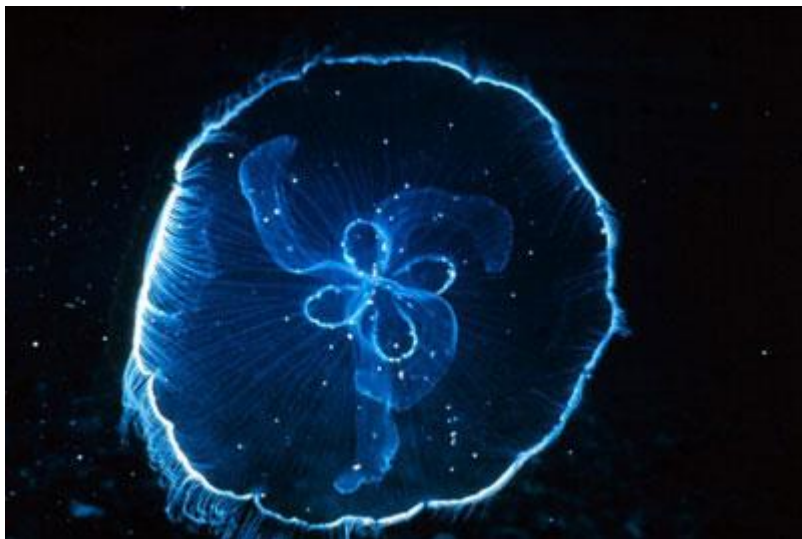
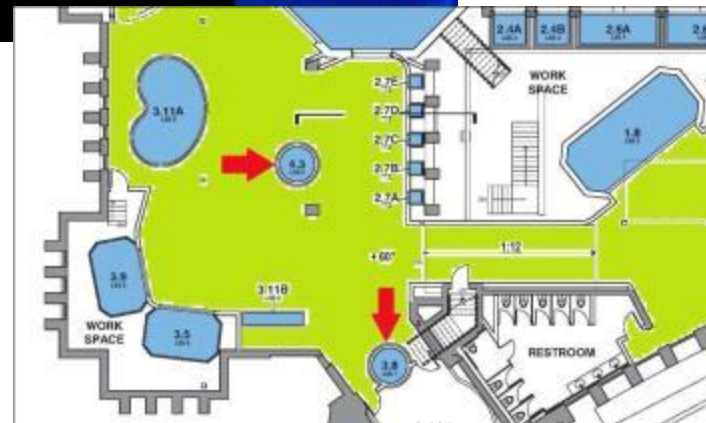


Exhibit: **Atlantic Moon jellies**

Exhibit number: 3.8

Water type: Temperate marine

Tank volume: 991 gallons - cylinder



Description: Moon jelly cylinder exhibit, set into wall next to the Captain's room space. Visitor controlled lighting would enhance the contrast of the jellies.

Hiding in plain sight, edible - inedible confusion, what's in a name?

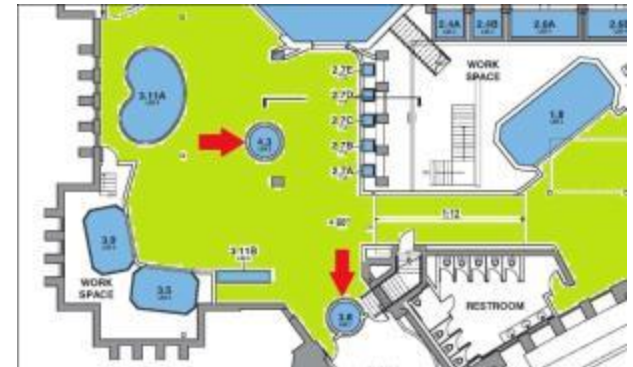


Exhibit: **North Atlantic schooling fish**

Exhibit number: 4.3

Water type: Temperate marine

Tank volume: 991 gallons - cylinder



Description: Single species exhibit to demonstrate schooling/shoaling. A free-standing cylinder – visually appealing. Good site for a pop-up dome in the bottom.

Why do fish school?



Exhibit: **Giant Japanese Spider Crabs**

Exhibit number: 3.5

Water type: Temperate marine

Tank volume: 4399 gallons



Description: The Japanese spider crabs have proved to be a very popular exhibit animal both here at Toledo and at other Aquariums. This exhibit would be over three times the size of our existing one. We would exhibit other species in this tank as well.

Challenges of living at depth, Beauty is in the eye of the beholder



Exhibit: **Coastal California Kelp Forest**

Exhibit number: 3.9

Water type: Temperate marine

Tank volume: 4985 gallons



Description: This exhibit would allow us to display leopard sharks and other coastal California species – including bat rays .

Shark and ray diversity



Exhibit: **Shark and Stingray Lagoon** **Invertebrate Laboratory**

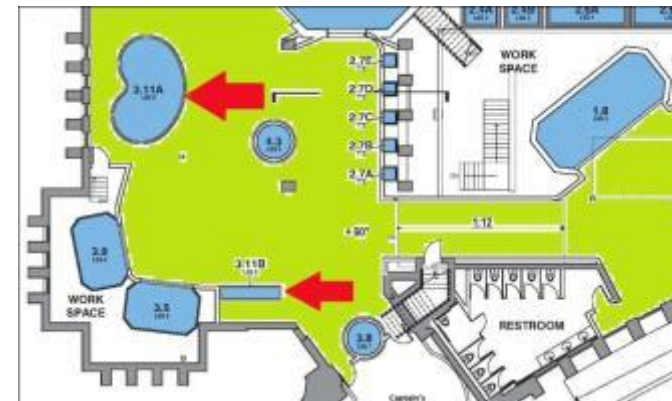
Exhibit number: 3.11a 3.11b

Water type: Temperate marine

Tank volume: 2293 gallons in pool, 138 gallons in invertebrate section

Description: The current design is two touch tanks totaling 2500 gallons. One would house small bamboo sharks and rays – the other would house invertebrates that aren't compatible with those species . The second system would be used for special programs.

Empathy for aquatic animals, touching elasmobranch's skin



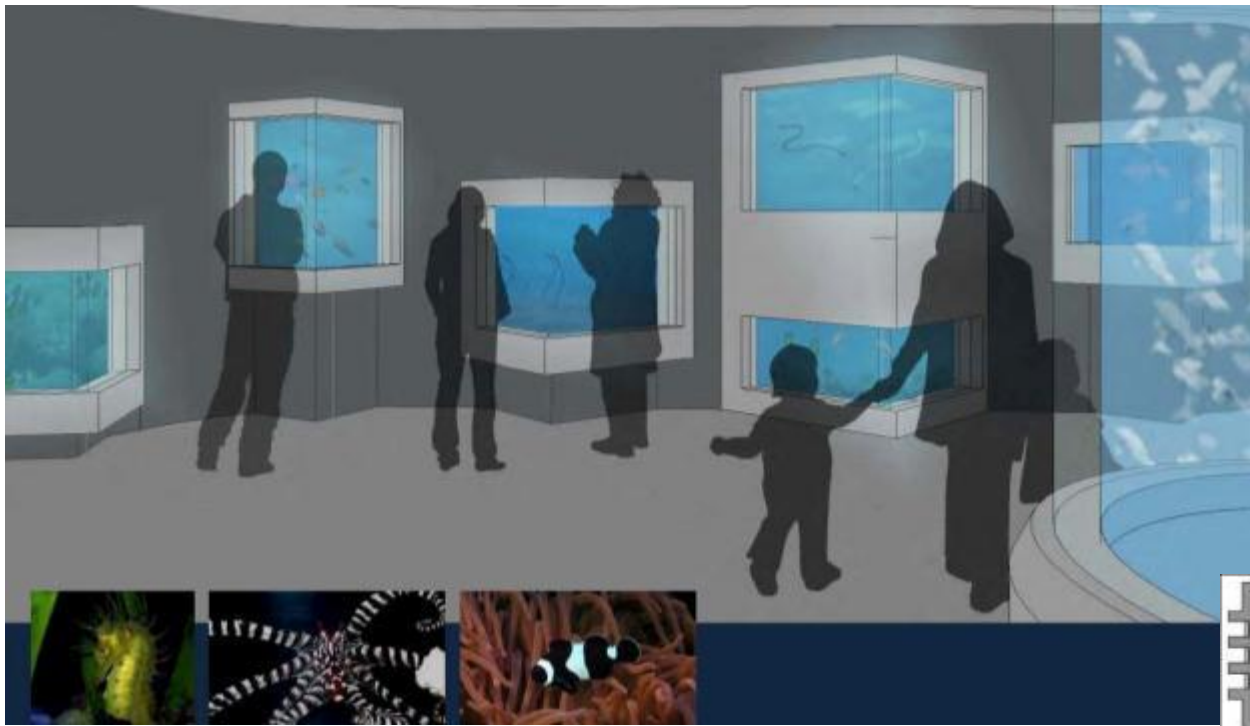


Exhibit name: **Pacific Jewel Tanks (five)**

Exhibit number: 2.7

Water type: Tropical marine

Tank volume: 400 gallons (total of five tanks)

Description: This area would be used to showcase tropical Pacific diversity – seahorses, clownfish, etc. The key is to be able to quickly change the focus of any individual exhibit to take advantage of changes in the collection.

Diversity and fascinating adaptations: Home aquariums, “Friends and Anemones”, adaptation for male seahorses to give birth, etc.

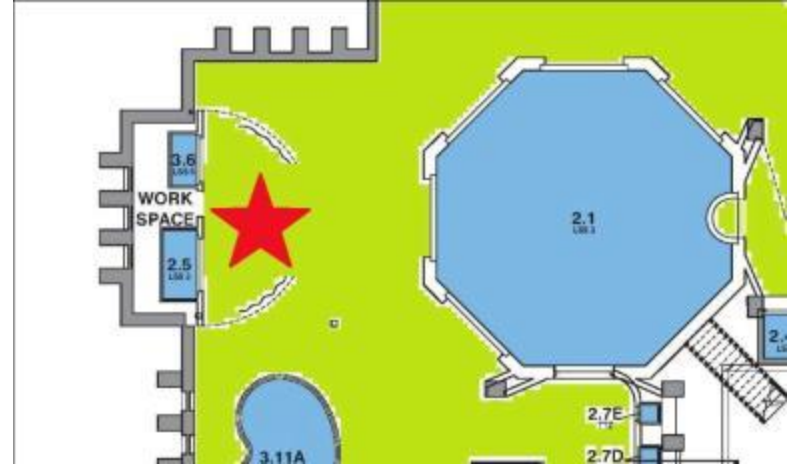


Exhibit name: **Flashlight fish –**

Bioluminescence in action

Exhibit number: 2.5

Water type: Tropical marine

Tank volume: 938 gallons

Description: This species has been a signature animal in the aquarium for the past twenty years. Our impression is that this is a popular exhibit for visitors, especially children.

A fish that glows?



Exhibit: **The Deep Sea**

Exhibit number: 3.6

Water type: Temperate marine

Tank volume: 404 gallons

Description: This exhibit would be dedicated to showcasing the additional diversity seen in Suruga Bay – notably deep sea creatures, really the only true deep sea animals that are commercially available.

Challenges of living at great depths, beauty is in the eye of the beholder





Exhibit name: **Tropical Pacific –
Rainbow Reef**

Exhibit number: 2.1

Water type: Tropical marine

Tank volume: 93,130 gallons

Description: This 30 foot long, 16 feet deep exhibit will showcase colorful tropical Pacific reef fishes + a zebra shark. This would be the site for diver feeding demonstrations – with microphone in mask. A web cam (possibly interactive) could be installed here. Corals will be artificial, due to the predatory nature of some fish species.

Colorful, diverse shapes, myriad of adaptations, human interaction in the aquatic environment, busybodies, our fish are safe: husbandry requirements





Exhibit name: **Reef focus tank**

Exhibit number: 2.4 A / B

Water type: Tropical marine

Tank volume: 814 gallons each

Description: These two exhibits will display smaller deep reef fishes in one tank and a simulated mangrove swamp in the other:

Caribbean Deep Reef Community, light absorption at depth

The Mangrove Swamp – nature's nursery, impact from shrimp farms



Exhibit name: **Pacific Living Coral Reef and Lagoon**

Exhibit number: 2.6

Water type: Tropical marine

Tank volume: 2073 gallons for each tank – 4146 gallons total

Description: These two live coral exhibits will be shallower, wider and three times the volume of our current living reef exhibit. One exhibit will focus on the reef crest, the other on the back-reef lagoon area.

Ocean acidification, giant clam, grow our own corals, chemical warfare



Exhibit: **Northeast Pacific -
Bizarre and Beautiful**

Exhibit number: 4.1

Water type: Coldwater marine

Tank volume: 801 gallons



Description: Species displayed would include wolf eel, rockfish, anemones and stars.
Wave tank, invertebrate diversity, hot or cold - interactive



Exhibit: **Giant Pacific octopus**

Exhibit number: 4.2

Water type: Coldwater marine

Tank volume: 801 gallons



Description: Single species exhibit for a GPO. A favorite of visitors (when it is moving) – is also a chance for us to be more involved in behavioral enrichment. Possibly have a divider and have one large and one new octopus - doubles the chance of seeing one move, plus also means that we always have a large one in the exhibit.

Brains in your arms? animal enrichment, threading a needle



Exhibit: **Beautiful Stingers –
Sea Nettles**

Exhibit number: 4.5

Water type: Coldwater marine

Tank volume: 1108 gallons



Description: This exhibit is important in that it displays an animal that is both striking, and one that has never been exhibited here. The blue background is a great effect.

How do jellies reproduce? How do jellies sting?



Exhibit name: **Australian lungfish-
a link to the past**

Exhibit number: 1.13

Water type: Tropical freshwater

Tank volume: 801 gallons

Description: This 5 foot long tank will exhibit our Asian and Australian freshwater fishes: lungfish, giant gourami and endangered Asian arowana. The lungfish are important from an evolutionary standpoint, the gourami is a hit with visitors and the arowana is a CITES I species (pet trade issues).

Lungfish evolution, What's in a name? (they do have lungs)



Exhibit name: **Electric eel**

Exhibit number: 1.10

Water type: Tropical freshwater

Tank volume: 469 gallons

Description: This 4 foot long will exhibit a single electric eel. This is another species that may be demanded by the visitors if we don't have them to see. I would like to see some sort of interactive component to this exhibit that demonstrates the fish's electrical charge...possibly a "shaking" artificial eel?

Doing work with biogenic electricity

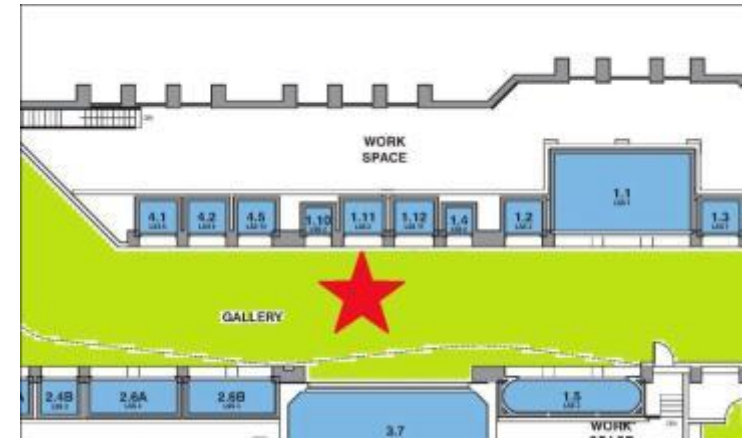


Exhibit name: **Alligator snapping turtle**

Exhibit number: 1.7

Water type: Tropical freshwater

Tank volume: 854 gallons

Description: This 5 foot long exhibit will showcase one of our more popular animals – our alligator snapping turtle.

Unusual tongue adaptation, over-harvesting for food



Exhibit name: **Victoria – a lake in peril**

Exhibit number: 1.12

Water type: Tropical freshwater

Tank volume: 469 gallons

Description: This 5 foot long tank will exhibit fishes of Lake Victoria – specifically non-reproductive members of the Species Survival Plan. As the oldest fish SSP, and one that the Toledo Zoo has been active in for 20 years, we should develop a small exhibit for these fish. Additionally, visitors should be given a view of the propagation tanks through a clear wall.

Invasive species, AZA conservation, explosive speciation, Mouthbrooding



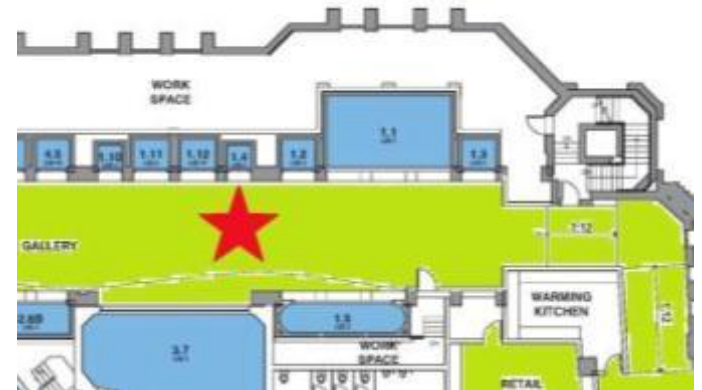


Exhibit name: **Ohio invasive species**

Exhibit number: 1.4

Water type: Temperate freshwater

Tank volume: 542 gallons



Description: This 4 foot long tank will exhibit local Ohio invasive species; round gobies, goldfish, zebra mussels. In the background of the tank would be invasive plant species such as purple loosestrife and Phragmites.

All drains lead to the ocean, “living pollution” – invasive species

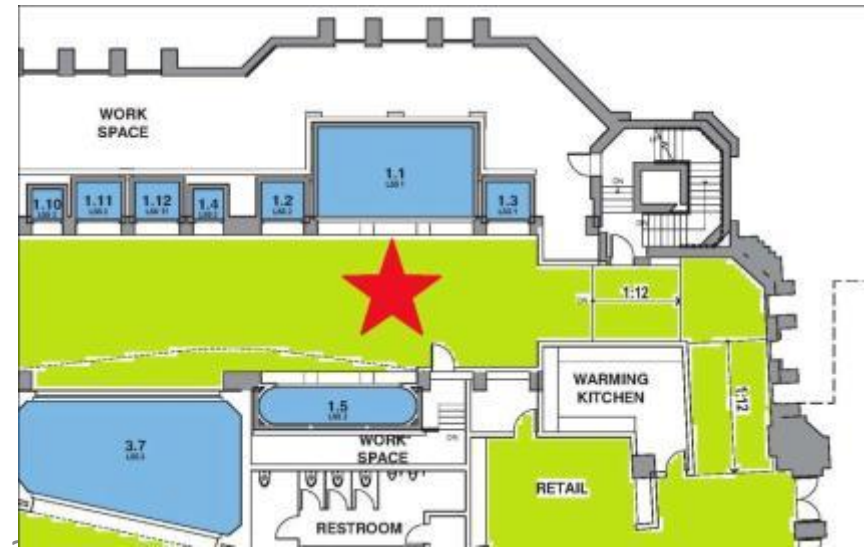


Exhibit name: **Lake Erie Islands**

Exhibit number: 1.1

Water type: Temperate freshwater

Tank volume: 7243 gallons



Description: This 20 foot long tank will exhibit Lake Erie fishes, primarily those with a conservation concern – Lake sturgeon and possibly ciscoes. We would also display walleye in this exhibit. Possible additional species would include a muskie (currently in collection). The superintendent of the London Ohio fish hatchery may help us acquire larger animals.

Responsible fishing, Mycrocystis algae, Big Bruisers, unique habitat in our backyard



Exhibit name: **Ohio stream**

Exhibit number: 1.3

Water type: Temperate freshwater

Tank volume: 801 gallons

Description: This 6 foot long tank will exhibit local Ohio stream species; turtles, darters, small minnows, aquatic plants.

Freshwater mussels, siltation, rheotaxis

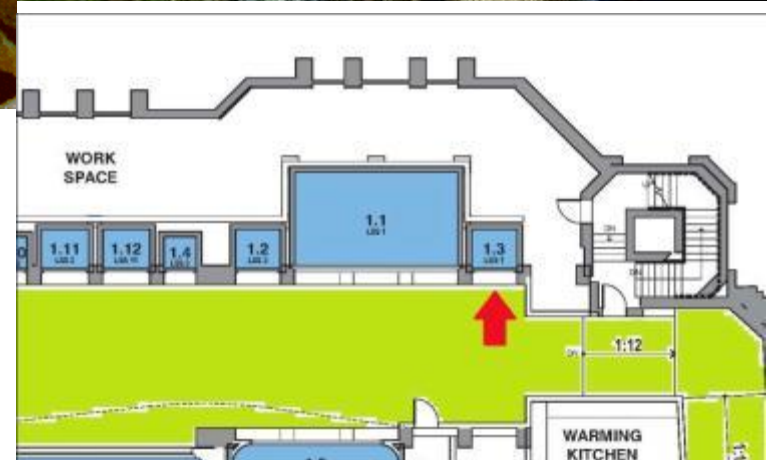




Exhibit name: **The Ohio River**

Exhibit number: 1.5

Water type: Tropical freshwater

Tank volume: 2970 gallons

Description: This 15 foot long, 6 foot deep tank will exhibit freshwater fishes from the Southern portion of Ohio; alligator gar, flathead catfish, and largemouth bass.

Past diversity of fish in Ohio, how rivers have been changed by people.

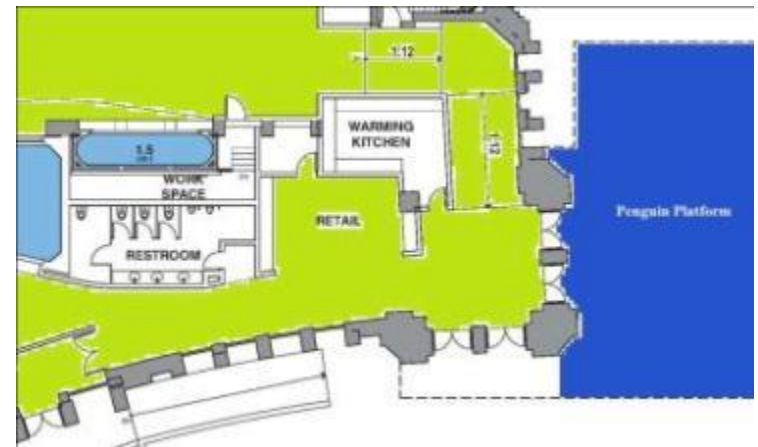


Exhibit: **South African Penguin**

Exhibit number: 4.6

Water type: Coldwater marine

Tank volume: 40,000 gallons



Description: A key exhibit, but not in the original budget.