ECOTARIUM

TERMINUM NON VITA CYCLUS CONSILIUM

UNLIMITED LIFE CYCLE DESIGN

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-

A true spectacle of ecology. Ecologies made visible in design technology and practice by tracing the paths of nature. The anticipation of a future species, part plant and creature, complete with a unique life-cycle, habitats, needs, and social patterns. The Ecotarium cultivates investigations through synthetic biology and multi-scalar infrastructural insertion, pushing the forms of nature to retrieve the wisdom in mosaics, connectivity, biodiversity, patches, matrices and etc. It is a signal of humanist intent. Qualified by techno-scientific methods and routines, this publication is an event of the craft of green architecture and urbanism.

TERREFORM ONE

MITCHELL JOACHIM | MELANIE FESSEL | NURHAN GOKTURK

Edited by Melanie Fessel and Philip Plowright

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Nothing is constant but change! All existence is a perpetual flux of "being and becoming!" That is the broad lesson of the evolution of the world.

— Ernst Haeckel

The Wonders of Life: a Popular Study of Biological Philosophy (1904)

ACKNOWLEDGEMENTS

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A special thank you to Philip Plowright for his brilliance in curating the CRITPraX experience in all of its aspects. Also we would like to express our gratitude to Dean Amy Deines and Associate Dean Scott Shall for embracing this undertaking.

The inspiration that we have received from the studio leaders and students of the CRITPraX studio in this research endeavor, which directly inspired our thinking, is tremendous and we are deeply grateful for all of their groundbreaking ideas and efforts.

A select group of critics spent long hours in discussing the many challenges with the different teams. Their input is deeply appreciated.

Melanie, Mitch and Nurhan, Terreform ONE

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PREFACE

Each summer, the College of Architecture and Design at Lawrence Technological University invites a significant practice to become involved with the school in order to lead a master class studio for incoming graduate students of architecture, interior architecture, interior design, urban design and environmental graphics (interaction design). This studio is called the Critical Practice Studio, or CRITPraX. CRITPraX is a summer design experience based on a two tiered charrette model with a lead master practitioner setting the vision and professional team leaders leading student groups in a competitive environment. In the summer of 2015, Terreform ONE was invited to lead the studio.

I had been following the work of Terreform ONE for almost a decade, from the 2006 top eVolo entry of Mitchell Joachim through to the work of the group in habitat design (Plug-In Ecology, Fab Tree Hab, MATscape, Willow Balls, In Vitro Meat Habitat), sustainable cities and "urbaneering" (Bio City Map of 11 Billion, Resilient Water Infrastructure, Governors Hook, Super Docking Navy Yard, Rapid Re(f)use, Green Brain, Peristaltic City), and future mobility (Mini Stracking Electric Cars, Smart Dots + Soft Mobs, Jetpack Packing, Stackable Car, etc). What was fascinating about the work of Terreform ONE was their ability to reduce what seem to be insurmountable issues down to core factors, and then propose an project that was really a critical exploration of our cultural ossification. The speculative, discipline-spanning nature of those projects challenged existing understandings of our built environment to the point of activating a paradigm shift in thinking. Those challenges also ranged in focus from urban design to synthetic biology and everything inbetween. It is no surprise that we wanted them to lead a studio to share their processes and approaches. We were lucky to get the participation of three directors from the group – Mitchell Joachim, PhD (research), Melanie Fessel (design) and Nurhan Gokturk (innovation).

In addition to Terreform ONE, there was the participation of eight other leaders, professionals in their own right with practices, academic pursuits and research interests. These were Aaron Blendowski, Irsida Bejo, Jhana Frederiksen, Aaron Jones, Ross Hoekstra, Anirban Adhya, Alina Chelaidite, and Wes Taylor. Without their energy, enthusiasm, intelligence and perseverance, this work could not have been completed.

Terreform ONE joined a long and illustrious list of participants in CRITPraX. These include (in no particular order) Dan Woods & Amale Andraos of WORKac; Paul Lewis, Marc Tsurumaki and David Lewis David of LTL Architects; Srdjan Jovanovic Weiss of NAO; Monica Ponce de Leon & Nader Tehrani of Office Da; Tobias Armborst, Daniel D'Oca and Georgeen Theodore of Interboro Partners; Mason White of Lateral Office; Alexander D'Hooghe of MIT and Organization and Research Group for Permanent Modernity (ORG); Dale Clifford of BINARY; David Dowell and Josh Shelton of el dorado; Shane and Betsy Williamson of WilliamsonChong and Raveevarn Choksombatchai of Veev Studio.

Philip Plowright, Lawrence Tech

WHEN YOU INVENT THE SHIP, YOU ALSO INVENT THE SHIPWRECK; WHEN YOU INVENT THE PLANE YOU ALSO INVENT THE PLANE CRASH.

PAUL VIRILIO

INTRODUCTION

A torrent of cliche is prescribing the end is already here. Our ecological society has formed around the possibility of the collapse, through pollution, various floods, the greenhouse effect, overpopulation, etc. Hence, alarming criteria makes up the roots of an environmentalist debate. Now, the gravity of industrial errors and mishaps renders the appearance of a new society. This is the eschatological society, a society of the collapsed. Paul Virilio suggests this raises primary philosophical questions. His raison d'être is "to invent the ship is to invent the shipwreck; to invent the airplane is to invent the crash".

Any valuation of scientific progress implies reciprocal accident progress. Designers converse about inventing airplanes with a thousand seats, which then imply a possible thousand deaths. Aristotle said, "The accident reveals the substance", which is to say that one cannot separate the innovation of an object, technique, or place from its devalued negative side. Therefore, if tomorrow's humankind is to flourish, what then constitutes the magnitude of our failure?

The creation of the Ecotarium makes a true spectacle of ecology. Making ecologies visible in design technology and practice is vastly significant. We do this by tracing the paths of nature. The Ecotarium cultivates investigations within the forms of nature to retrieve the wisdom in mosaics, connectivity, biodiversity, patches, matrices and etc. The first signal of humanist intent is our complex ensemble of design. Any well designed edifice demands a supposition of possibilities and interpretations.

"THERE IS NO MORE THROWING AWAY, AWAY HAS GONE AWAY."
GERTRUDE STEIN

Green design seeks a genius loci revealed in both the struggle and the fellowship of numerous augmented assemblies. This Ecotarium must qualify and disseminate such practices. Qualified by techno-scientific methods and routines, it is vital to admit that the practice of green architecture is still at length a craft.

SCALE PHASES

ECOTARIUM
The Ecotarium is a large scale intervention in a regional planning setting that introduces the new species in multiple scales (eco-habitat, eco-assembly, eco-transect). The design is assembled into a large scale metabolism, addressing regional relationships including nodes, centers, arteries, and supply.

ECO-GRAM
A primer eco-statement, an instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment. A graphic diagram representing an ecological phenomenon of life cycle analysis: Birth - Eat - Waste - Growth - Metabolism - Mate - Die - Decompose - Birth.

ECO-CREATURE
The anticipation of a future species, part plant and creature, complete with a unique life-cycle, habits, needs, and social patterns. Characteristics of this new species include all biological systems (food, digestive and reproductive systems) and environmental context (sunlight, air, water, soil conditions).

ECO-HABITAT
A habitat for the housing of the eco-creature, including full support for its life-cycle and environmental needs. The eco-habitat is hermetically sealed for at least one year (no external input or output).

ECO-ASSEMBLY
A "mixing facility" designed for the task of housing several habitats, allowing them to connect and interact in a post-isolation period.

ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction. The transect contains five densities: hyper-urban, urban, sub-urban, rural and natural.

Creatures to Scale:

Latin Name: **Mycorrhizal Theridiid**
Common Name: **Viaranea**

Latin name: **Petrofiltrum**
Common Name: **Oil Filtrate**

Latin name: **Escherichia Vesicularia Chamedryfolia**
Common Name: **EVC | Mobile Moss**

Latin name: **Selaginella Paradisaea**
Common Name: **Sela-Tern**

Latin name: **Trochilus Februa**
Common Name: **Threshingbird**

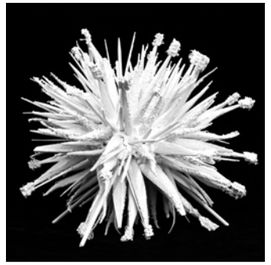
Scientific Name: **Nymphaeaceae hippodetritus [originally in sub-Saharan habitat]**
Nymphaeaceae hippodetritus forma Defretus [formal variation in Detroit]
Common Name: **HPAD | Amphibious biogenetic creature**

Latin name: **Thunnus Glycine Max**
Common Name: **Arkpod [ärk päd]**

H | 0'1"

H | 7'2"

H | 0'5.5"



H | 3'0"

H | 12'0"

H | 8'0"

H | 15'0"

ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.

Habitats to Scale:

Species: **Viaranea**
Quantity Contained: **1000**

Species: **Petrofiltrum**
Quantity Contained: **3**

Species: **EVC | Mobile Moss**
Quantity Contained: **50**

Species: **Sela-Tern**
Quantity Contained: **216**

Species: **Threshingbird**
Quantity Contained: **3 (2 Adults and offspring)**

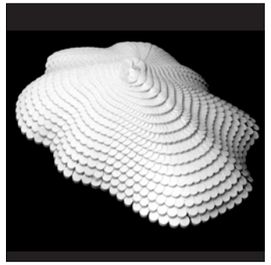
Species: **HPAD**
Quantity Contained: **2 (Adult and offspring)**

Species: **Arkpod**
Quantity Contained: **5**

H | 0'3.5"

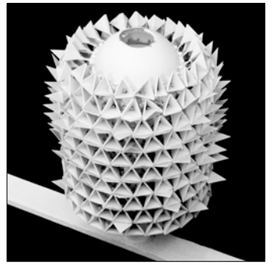
H | 20'0"

H | 70'0"



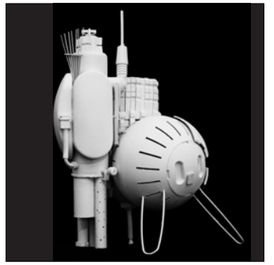
ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

H | 50'0"



H | 80'0"

H | 120'0"



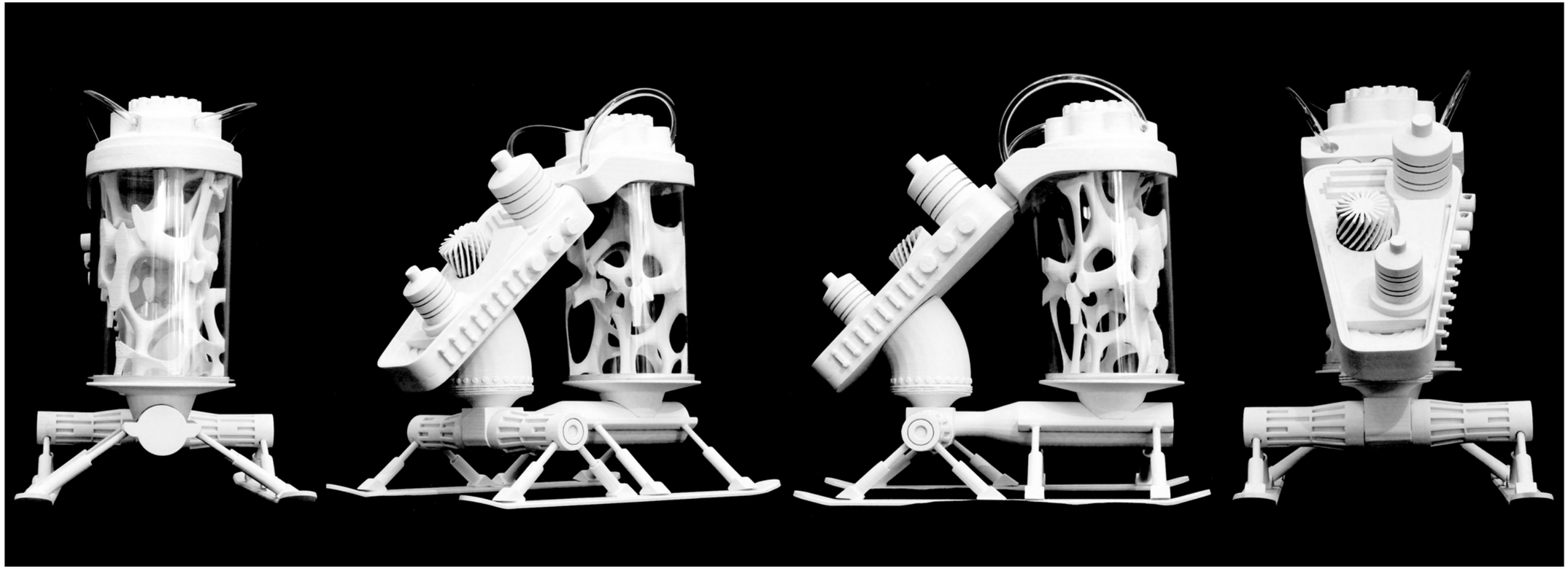
H | 490'0"

SEVEN CREATURES AND THEIR HABITATS

ECOTARIUM

INFRASTRUCTURE IS A PARADOX. MOST OF WHAT WE BUILD IS NOT BUILT TO LAST, BUT RATHER BUILT TO FAIL.

MYCORRHIZAL THERIDIID (VIARANEA)



ECOTARIUM | A SPECTACLE OF ECOLOGY

MYCORRHIZAL THERIDIID (VIARANEA)

MYCORRHIZAL THERIDIID

Latin Name: Mycorrhizal Theridiid

Common Name: Viaranea

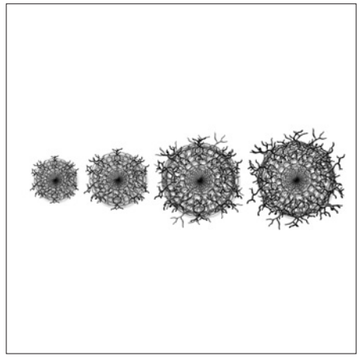
LIFECYCLE OF CREATURE

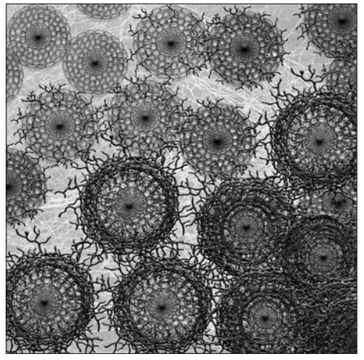
The lifecycle of the Viaranea starts as an embryo in the egg pouch laid by an adult where the Viaranea grows for six weeks. After six weeks the Viaranea hatch and balloon, landing in an existing web created by a mature Viaranea. The Viaranea continue to grow in the web for six months and then journey out of this environment to seek bitumen based habitat for maturation from adolescence to adult.

SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

The Viaranea features an asexual reproduction process called Parthenogenesis. During this process, the Viaranea is triggered into reproduction by the fungi within the road spider. The spider reproduces between the ages of one to just over two years of age. If they live to two years of age, and only 20% do, they become a scout with the responsibility to search for infrastructure that needs repair. This involves leaving the bitumen based context (road) to find a new habitat, laying the egg sac in this location, providing nutrients for the hatchlings until they can survive on

ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.





their own. After six months the hatchlings begin their life as a worker. The bitumen based material is the main habitat for the creature. They do, however, leave this context only to hunt.

HABITAT OF THE CREATURE

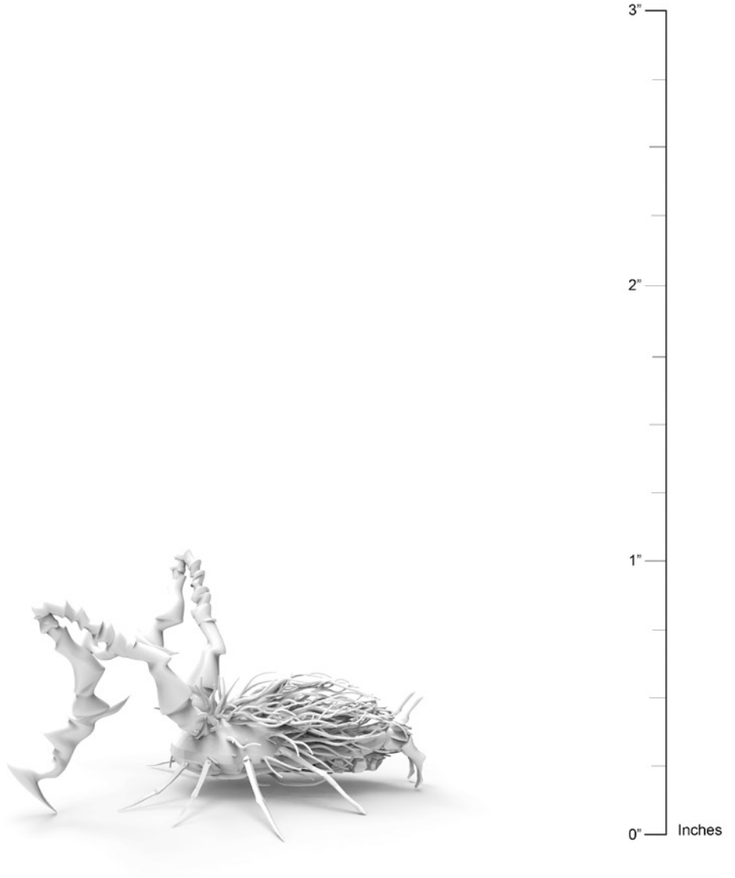
Any bitumen based material can be colonized by the Viaranea spider. The primary habitat is human road infrastructure.

FOOD CYCLE

The Viaranea survives off other insects, sucking the nutrients that are found in blood. The Viaranea species live together in numbers of about twenty-five, composing a colony, but spend most time individually.

INTERACTION WITH ENVIRONMENT

The Viaranea spins a web, which is a genetically morphed mix between the Mycorrihizal Fungi and Viaranea silk, within fissures in road infrastructure. This new silk gains nutrients from the bitumen and light, promoting growth and filling the cracks. This growth will eventually grow outside the confines of the cracks in the road creating a new, durable, and maintenance free infrastructure. Due to the organic nature of the fungal web, the fungus will eventually degrade into soil, thus prompting new growth where concrete and asphalt once existed.



REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION

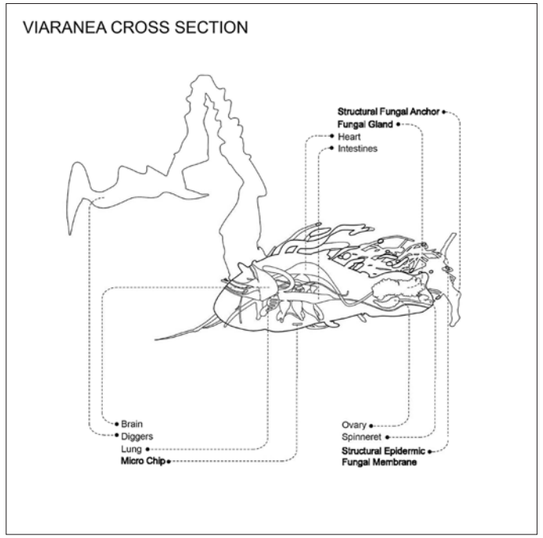
The Viaranea uses the arachnid processes of web creation combined with the attraction of the Mycorrhizal Fungi to root systems as well as the fungus' strong compressive strength, and the ability to expand as it finds nutrients to. The creature's two large front arms are intended for digging and breaking down of the existing infrastructure. Near the rear of the Viaranea, two large anchors promote stability while the demolition task is being performed.

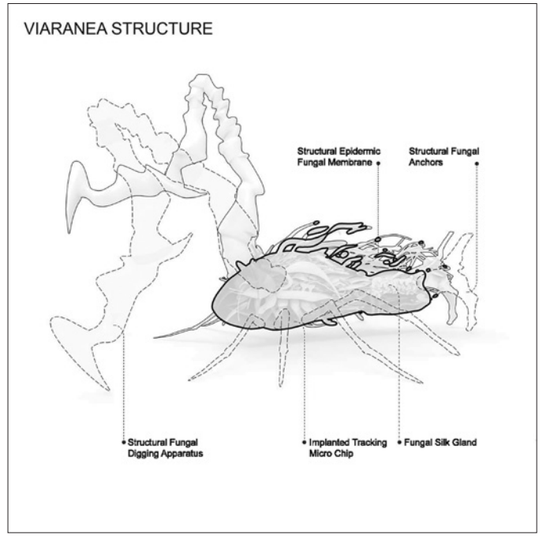
CHARACTERISTICS OF THE MERGER

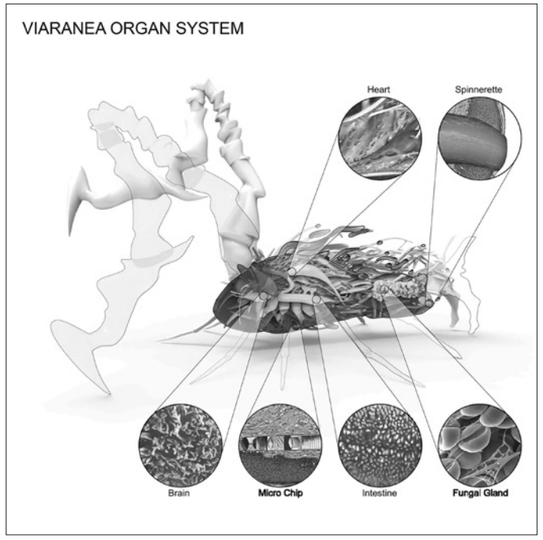
The species was based off the American House Spider, due to its size, webbing ability with a material strong in tensile strength, and the ability to move quickly. The merger resulted in multiple changes to the species anatomy and behavior. The exoskeleton includes fungi follicles which allow immediate fungal growth on the exoskeleton to increase the strength of the creature's body. The Viaranea's front legs have grown exponentially in size to help excavate the infrastructure, which exposes nutrients and room for the web. Finally, there are also anchors in the rear to compensate for the immense movement happening at the front of the spider. The silk glands in the spider that create the silk for the web evolve into fungal glands merging the fungal spores with silk, creating the fungal silk when it secretes from the spinnerets.

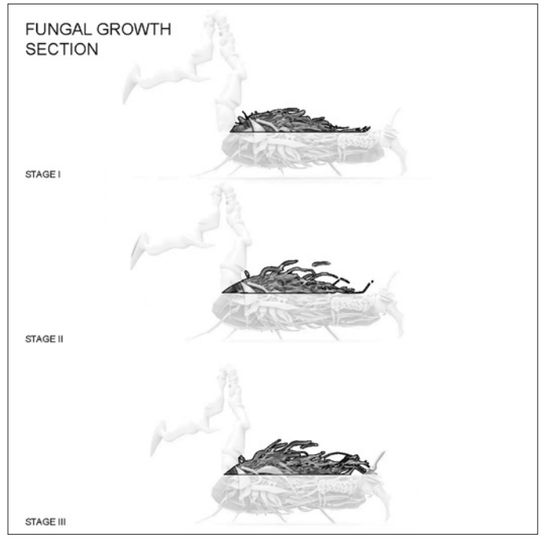
ECO-CREATURE | MYCORRHIZAL THERIDIID

ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.

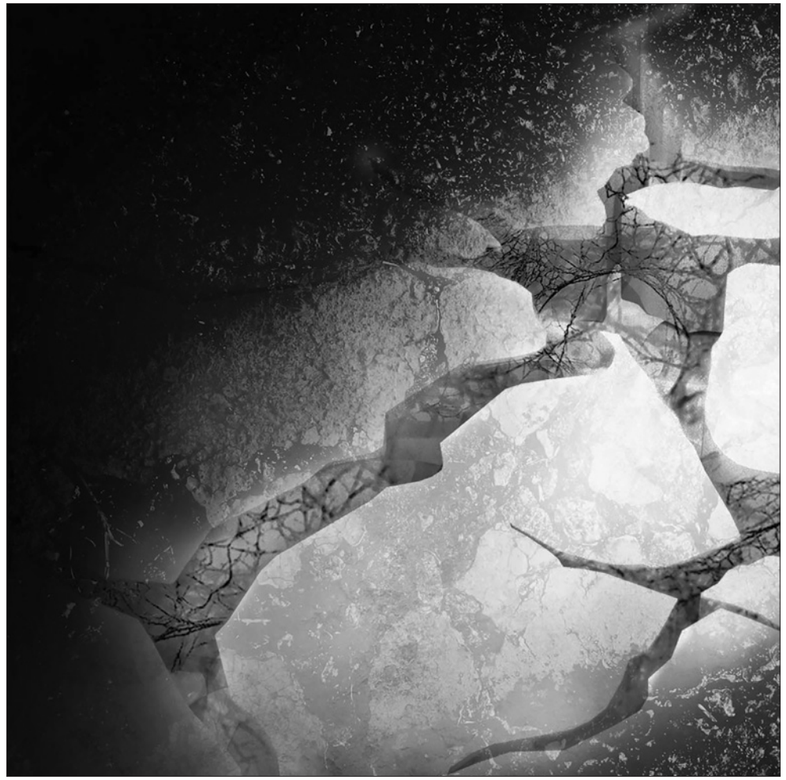


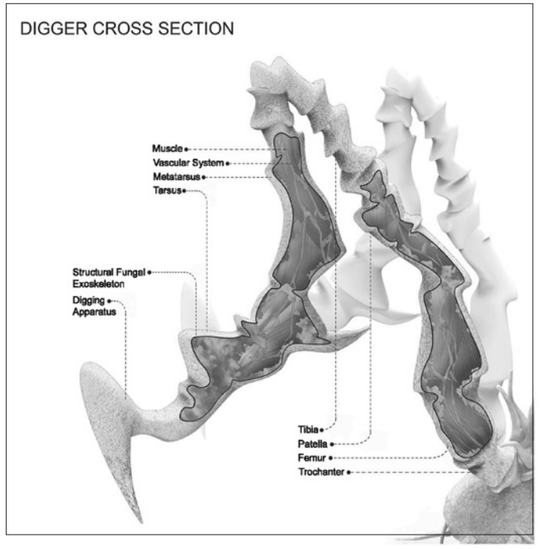


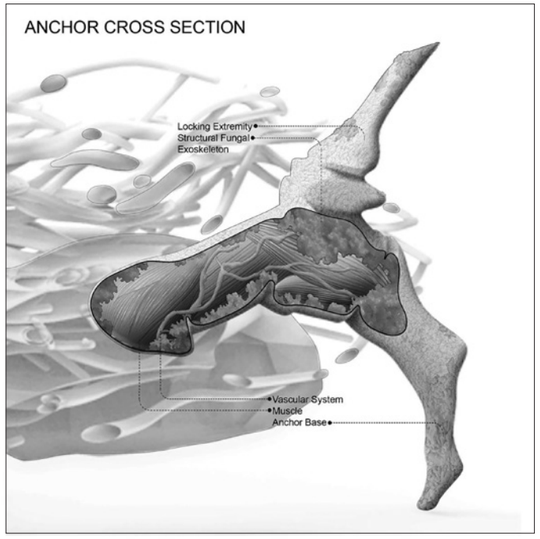


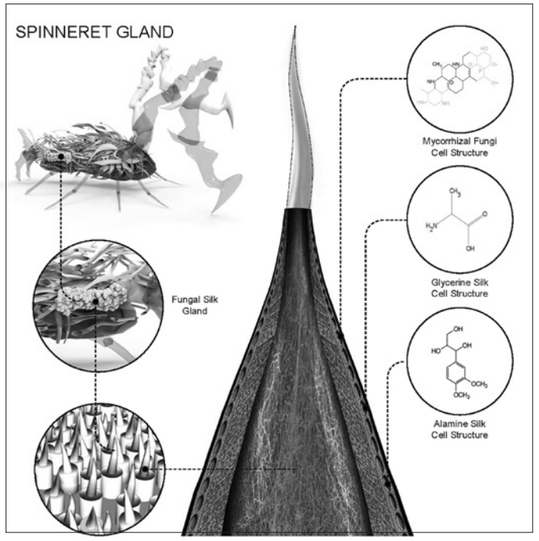


ECO-CREATURE | MYCORRHIZAL THERIDIID









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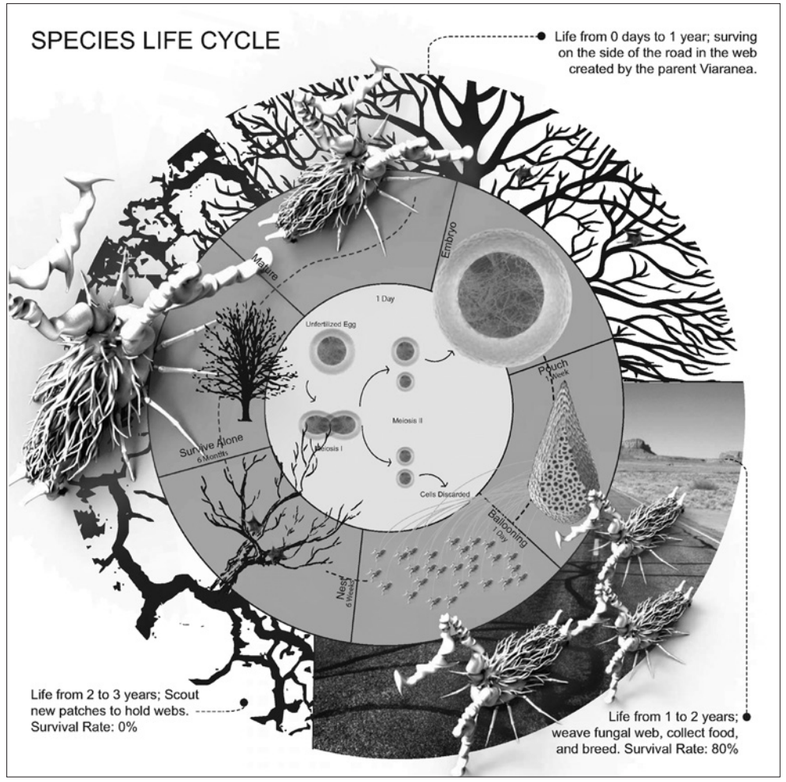
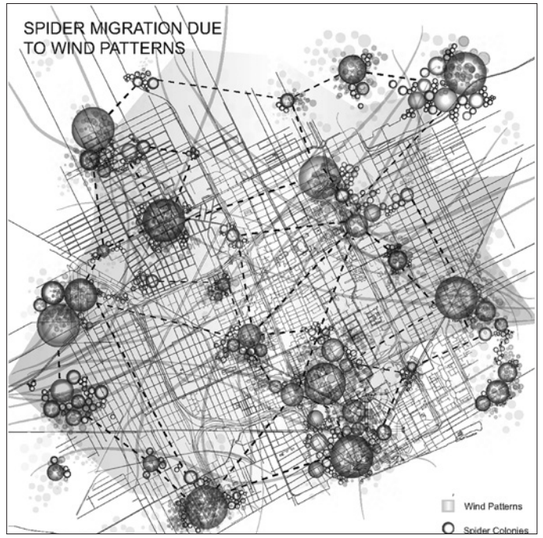
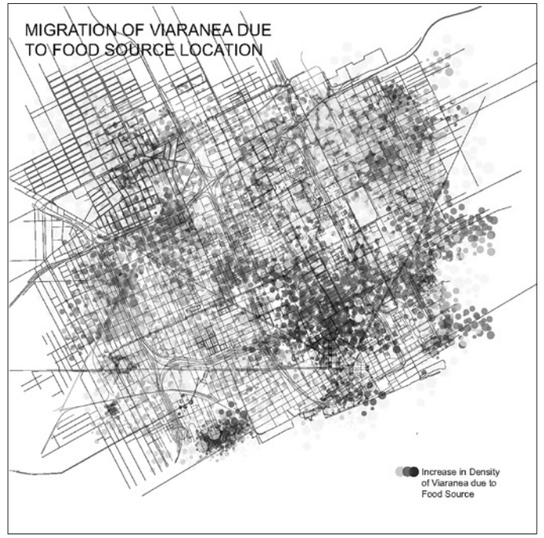
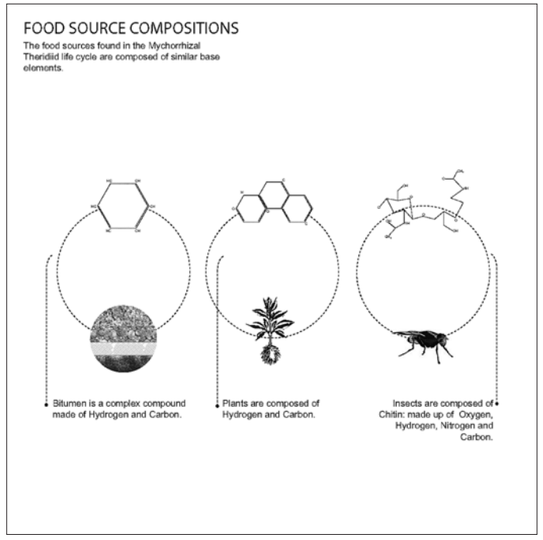
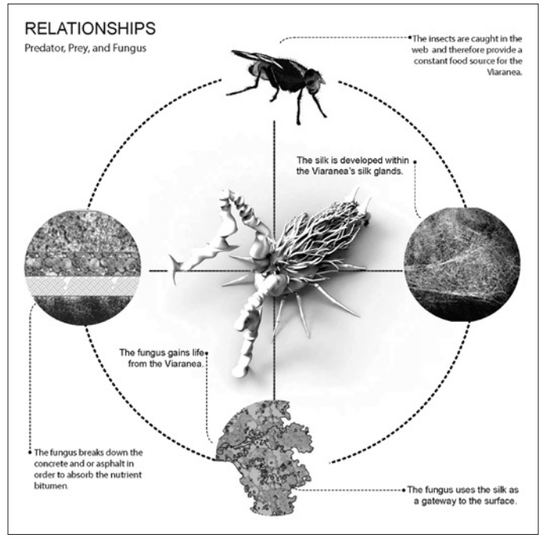


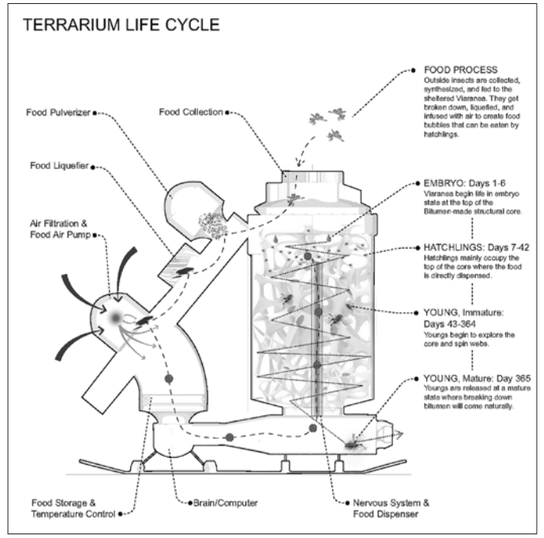


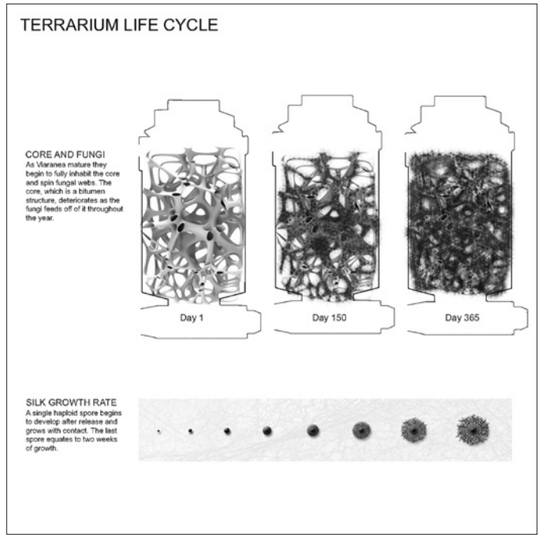


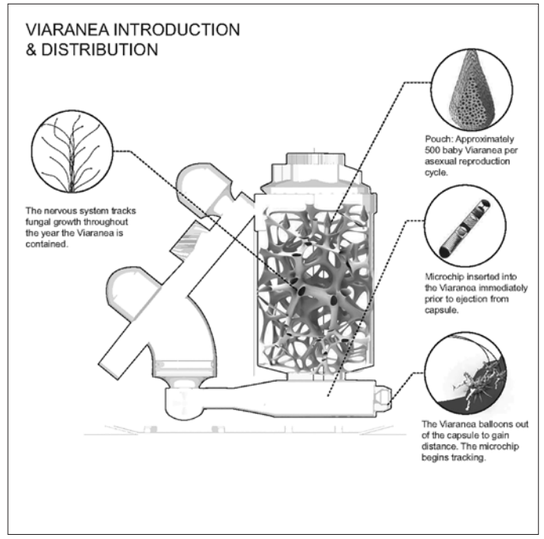




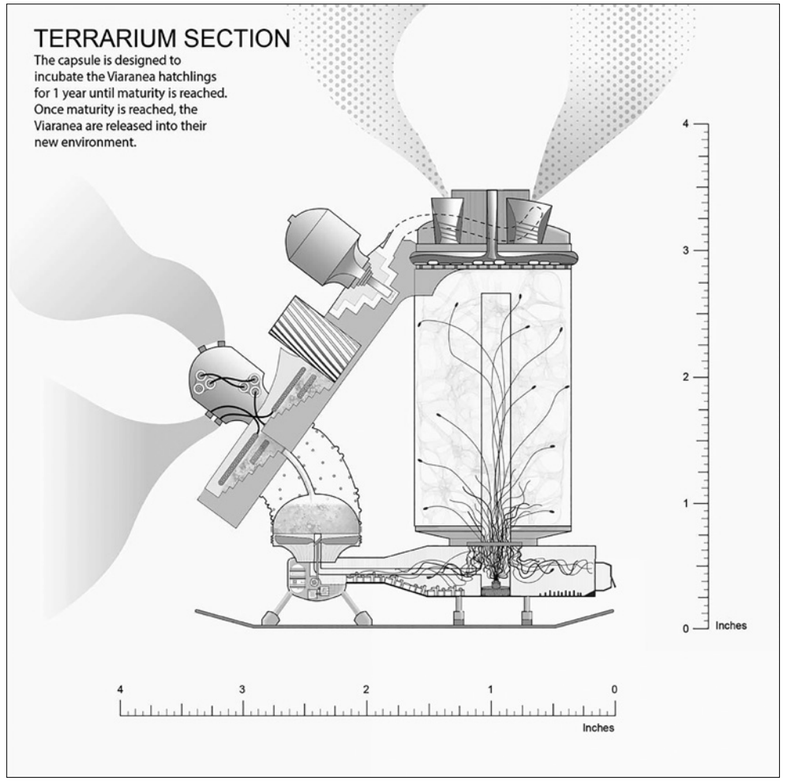
ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

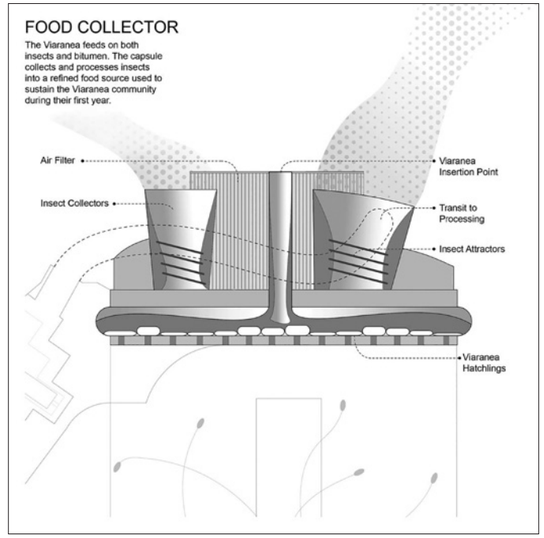


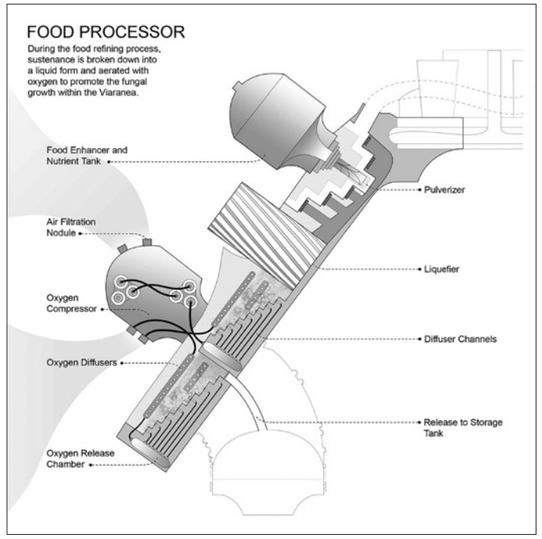


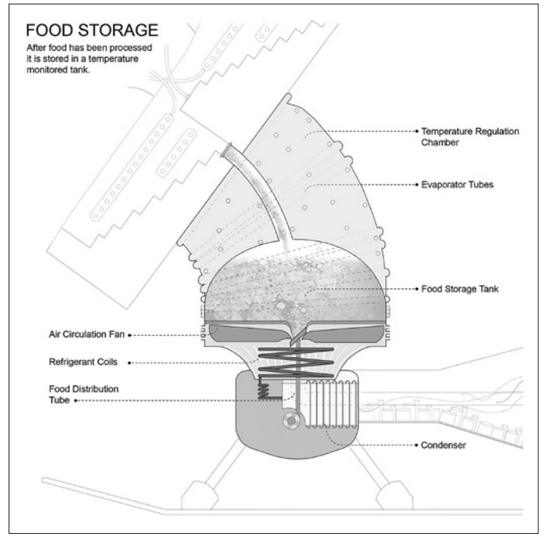


ECO-HABITAT | MYCORRHIZAL THERIDIID

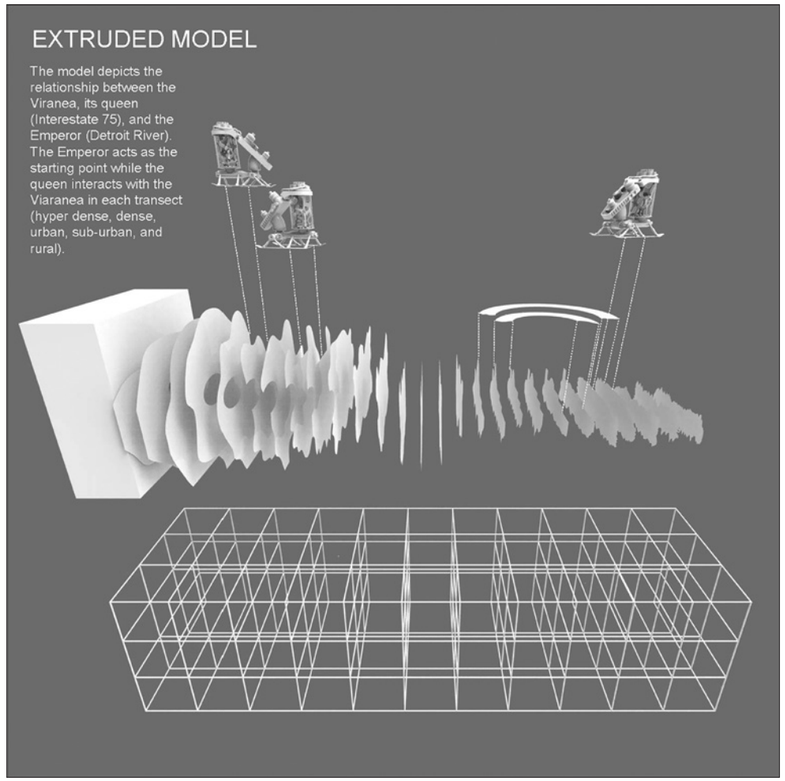




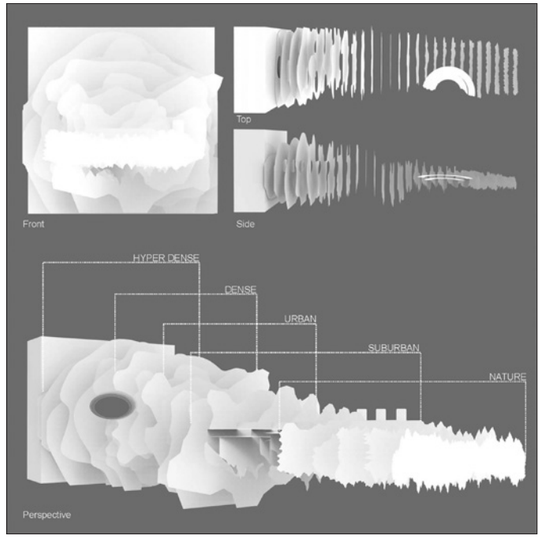


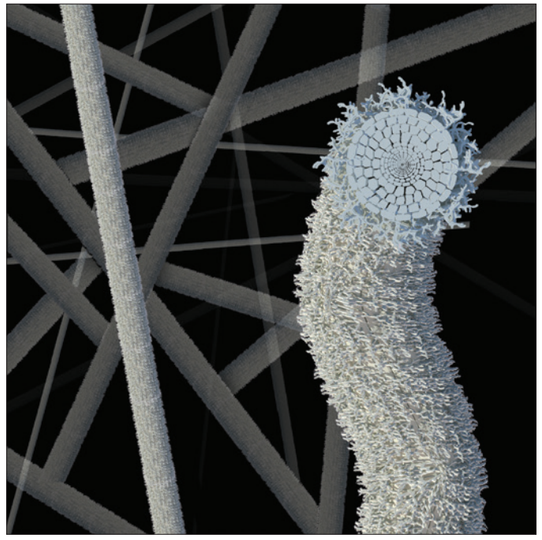


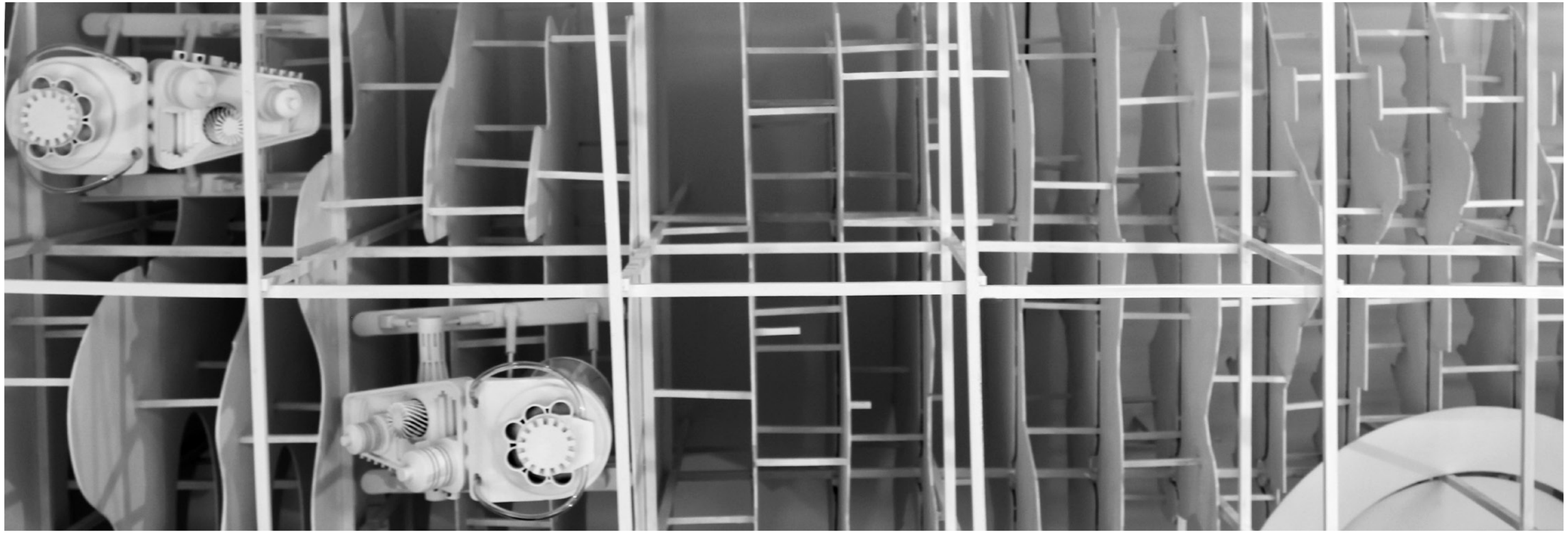
ECO-ASSEMBLY | MYCORRHIZAL THERIDIID



ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.

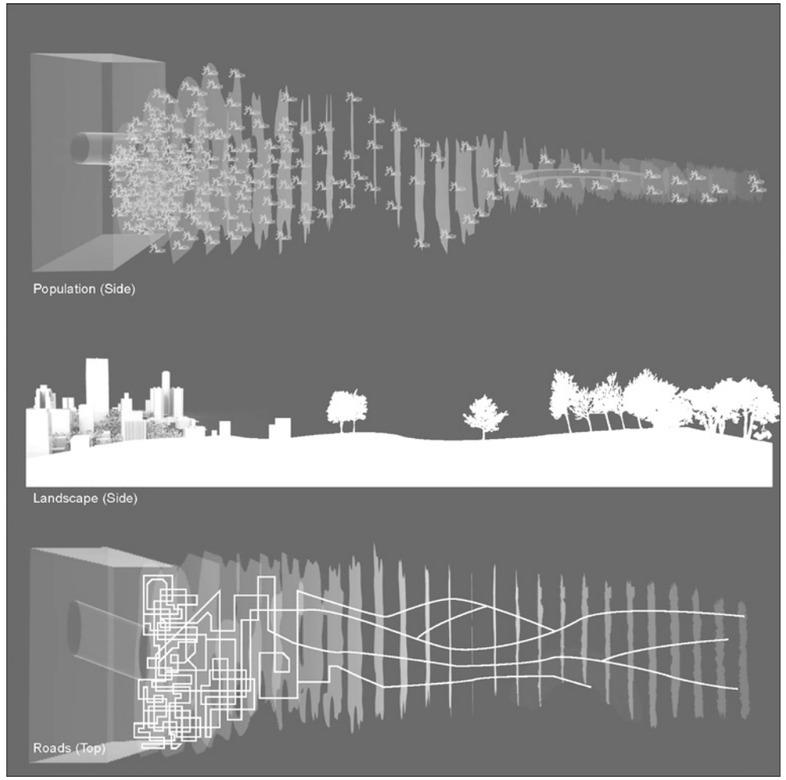




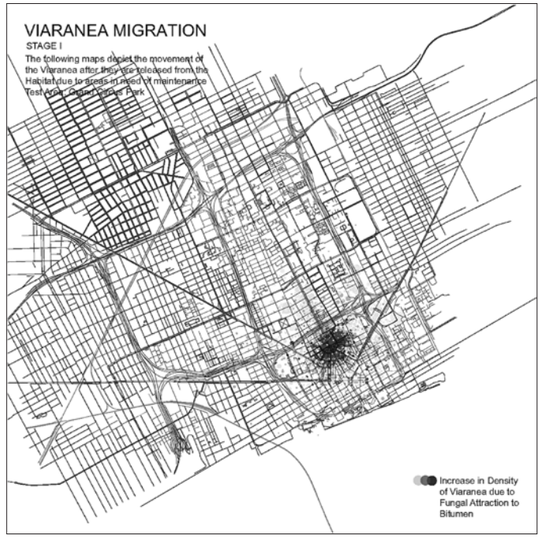


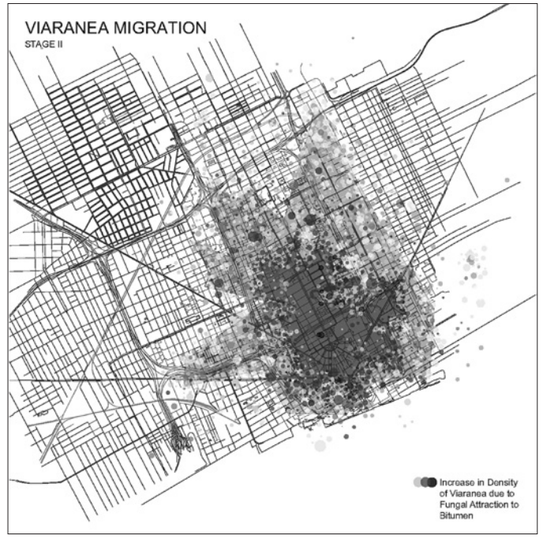
ECOTARIUM | PLAN VIEW

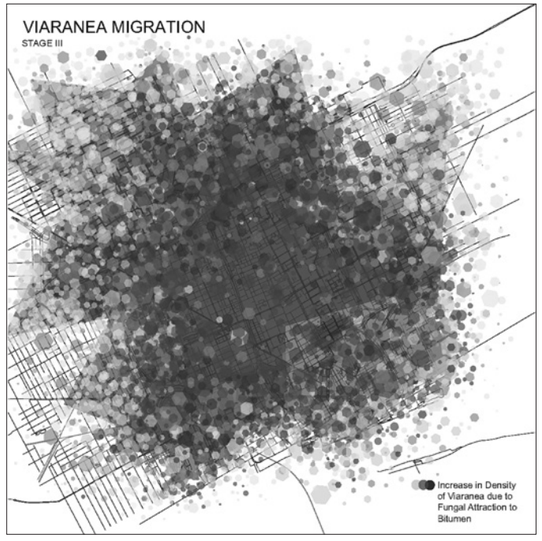
ECO-TRANSECT | MYCORRHIZAL THERIDIID

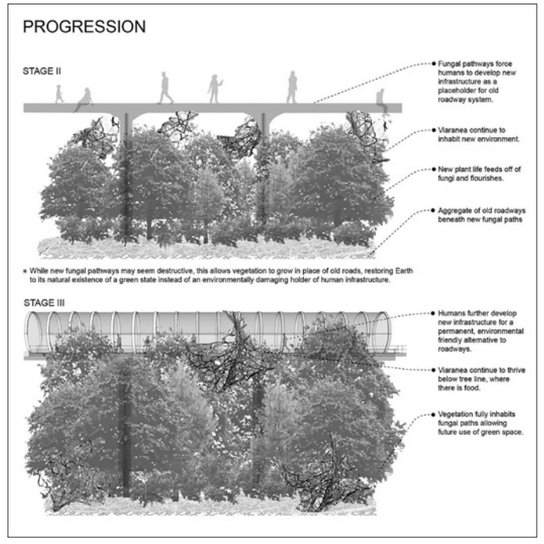


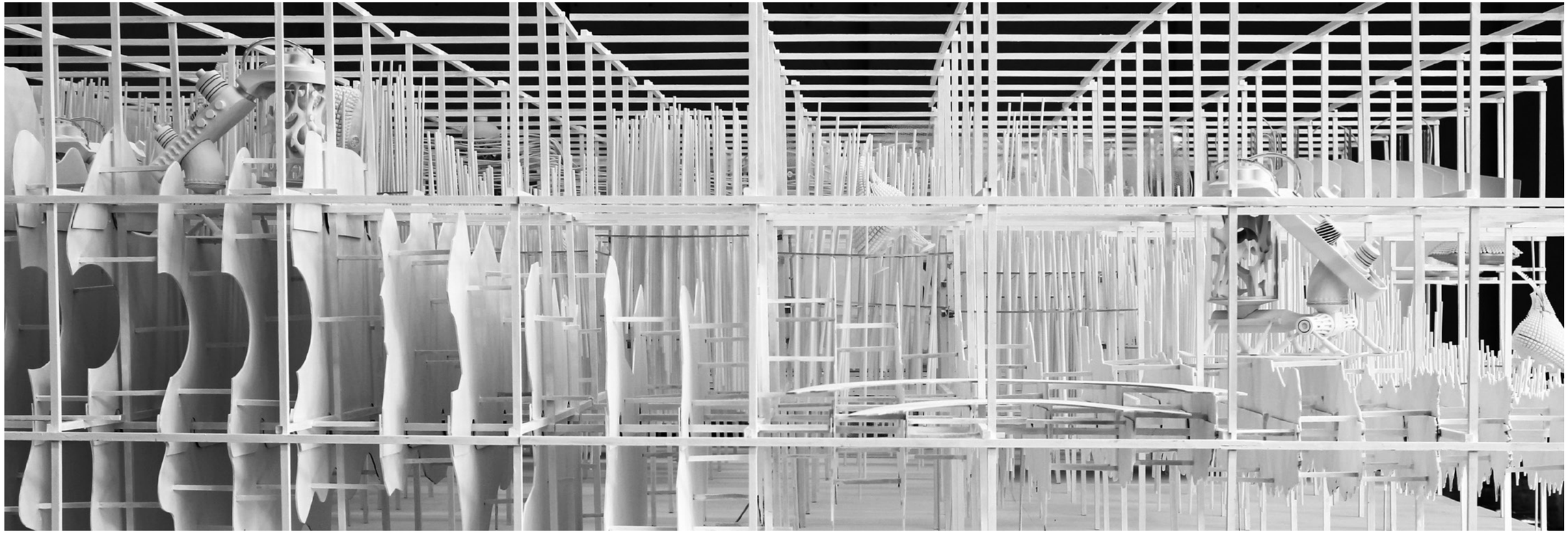
ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.







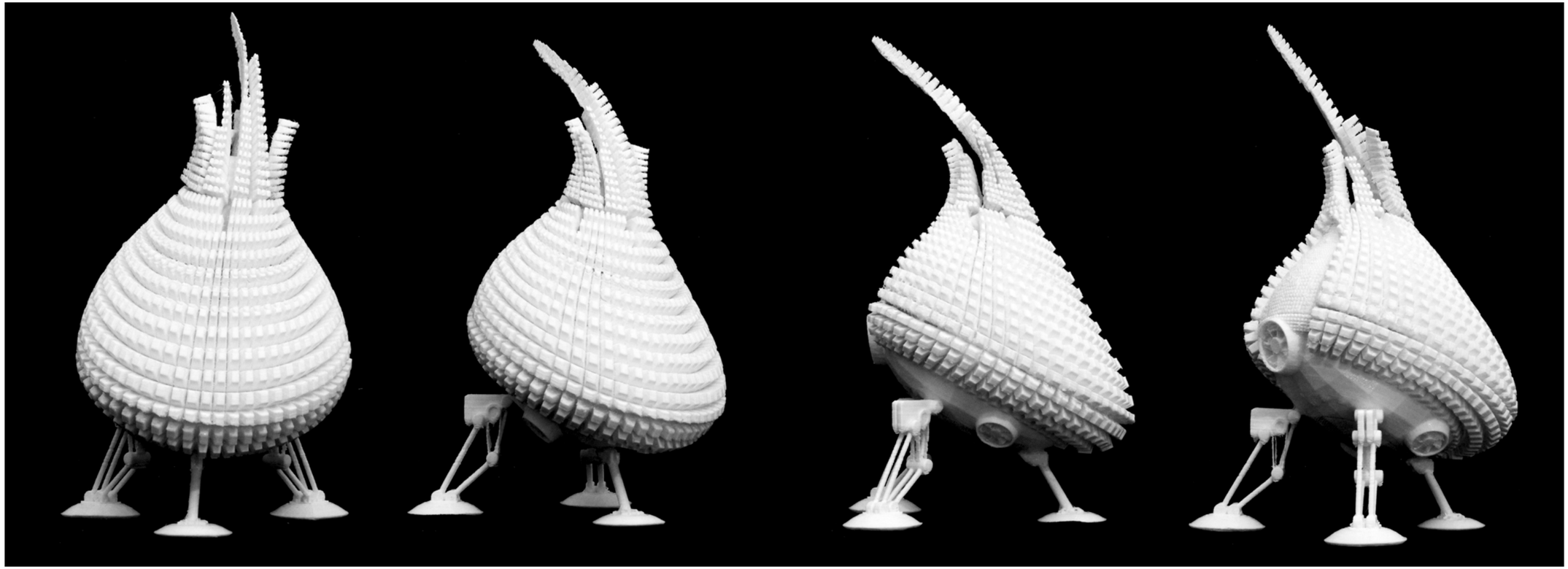




ECOTARIUM | ELEVATION VIEW

THROUGH SYSTEMATIC CONTAMINATION AND CATHARSIS, WE HAVE COME TO REALIZE THAT BOTH NATURAL AND SYNTHETIC RESOURCES ARE ESSENTIAL TO LIFE ON EARTH AS WE KNOW IT.

PETROFILTRUM



ECOTARIUM | A SPECTACLE OF ECOLOGY

PETROFILTRUM

PETROFILTRUM

Latin name: Petrofiltrum

Common name: Oil filtrate

LIFECYCLE OF CREATURE

Petrofiltrum's lifecycle is 100 years, while its external grass leaves have a lifecycle of 50 days.

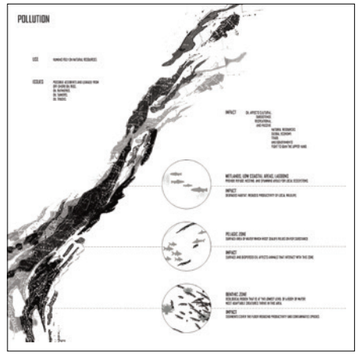
SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

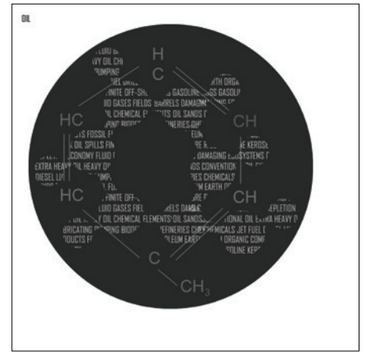
Petrofiltrum is an asexual creature which reproduces in high oil conditions. The cycle of reproduction is dependent on the amount of oil it takes in each day. Petrofiltrum can release up to four sacks of eggs a day – none, if it doesn't eat enough oil. Each sack contains 200 eggs, which feed on the oil contained within the sack in order to grow and develop into a Megalopa within 12-14 days.

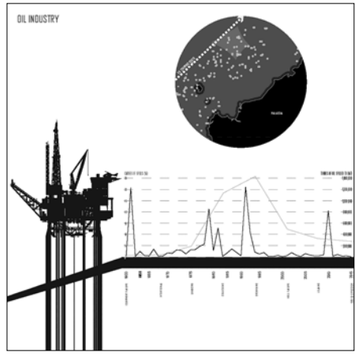
HABITAT OF THE CREATURE

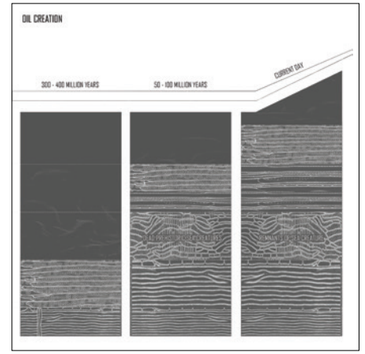
Petrofiltrum roams in a wide variety of habitats within the ocean environment. The species can thrive and survive in the ocean floor, water column, and surfaces where oil is found. It is an independent creature that can migrate far and with ease towards food. Its hard shell provides a natural protection

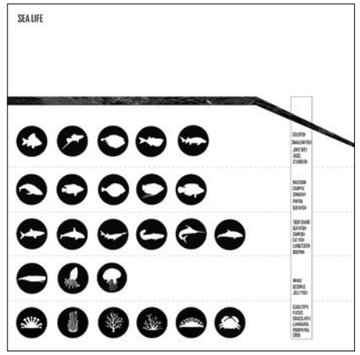
ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.











(thus, no need to find shelter) and is equipped with a series of sensors that act as beacons in Petrofiltrum's search for food miles away.

FOOD CYCLE

Petrofiltrum requires nourishment from crude oil and the oil derivatives such as diesel and gasoline. The creature can sense and intake food through chemoreceptors placed along the hard shell. It completes chemosynthesis internally to provide the nutrients necessary to live and reproduce. Digestion happens in the stomach, where the oil-degrading bacteria lives and nutrients are separated into food and eggs. One feeds the grass root bulbs in the kidney and the other fills the oil sacks.

INTERACTION WITH ENVIRONMENT

Petrofiltrum's mobility is due to its long and spindly grass-growing limbs. The leaves that come out of each joint not only provide camouflage and release oxygen, but they enable an effortless flexibility and flow. The two front legs are telescopic in nature, which allow the creature to walk on ocean floor, to swim in the water column (fully extending to 12', thus producing more leaves) and to attach itself to (moving or static) surfaces, such as oil rigs and large naval vessels. In this last instance, Petrofiltrum is considered dormant. Its front legs fully retract to the size of the others (2'), and the claws open up to allow for a sticky 'pad' or glove hidden inside that helps the creature

PETROFILTRUM SCALE

Species
Actual Height: 7'-3"

stick to such oiled textures for as long as it needs to feed itself (but not enough to reproduce), without the risk of falling from speed, weather or change in surface material.

REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION

The Japanese Spider Crab is the largest in the world and can grow up to 45 pounds with a leg span of 12 feet. This animal was selected because of its reach; gentle disposition as a scavenger, not a predator; excellent camouflage skills; an appetite for mainly carcasses and dead things, as well as a hard shell that provides shelter at all times – all of which give the crab an advantage in handling low levels of light, oxygen, food and pressure in the deep sea.

The Manatee Seagrass is a sub species of seagrass, a submerged vascular plant that produces dense vegetative beds. It has a horizontal root system (rhizome and roots) and a vertical leaf structure made of cylindrical blades, which allow the Seagrass to filter and transfer nutrients, quickly reproduce thus expand its interlocking leaf cluster, increase its oxygen production and facilitate mobility in water.

Alcanivorax Borkumensis is an aerobic, non-motile, oil-degrading marine bacteria found in oil-contaminated waters. It does live in clean environments too, but in very low numbers. Oil

concentrations cause an increase in nutrients for the bacteria, speeding up its metabolism and growth rate. This organism harbors enzymes that can degrade a broad variety of alkanes, which are then used as carbon and energy source. In addition, this process produces bioplastic: a biofilm formed around the oil droplet, and bio surfactants: extracellular, membrane-bound glucose lipids that reduce water surface tension and elute oil out of water.

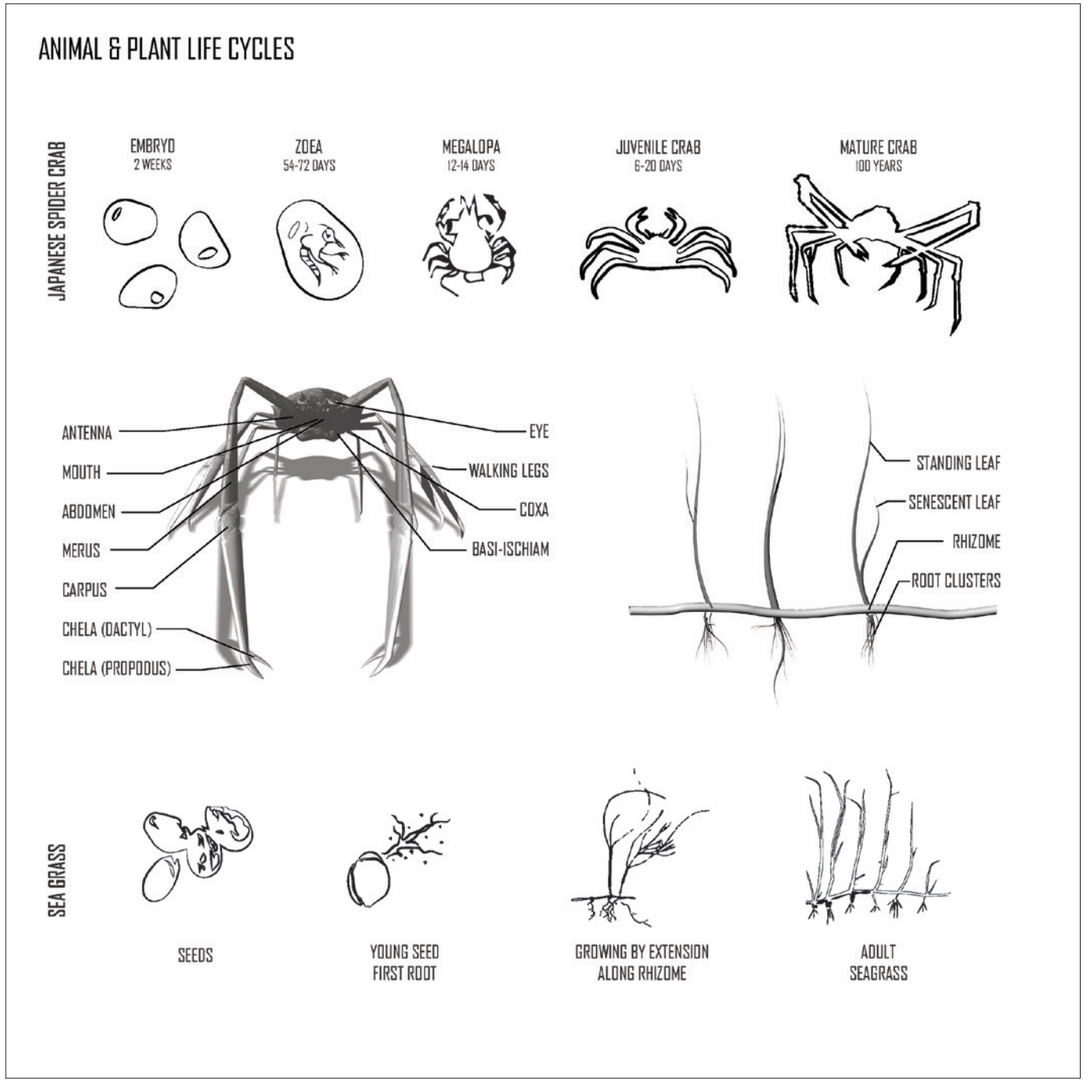
CHARACTERISTICS OF THE MERGER

Petrofiltrum is comprised of the Japanese Spider Crab, Manatee Seagrass and the Alcanivorax bacteria. The Japanese Spider Crab provides the necessary body disposition and digestive capacity needed to filter oil within the ocean as it spans up to 12 feet wide, standing at an overall height of 6 feet. This species also provides a natural ability to reach and thrive within a variety of ocean depths and surfaces.

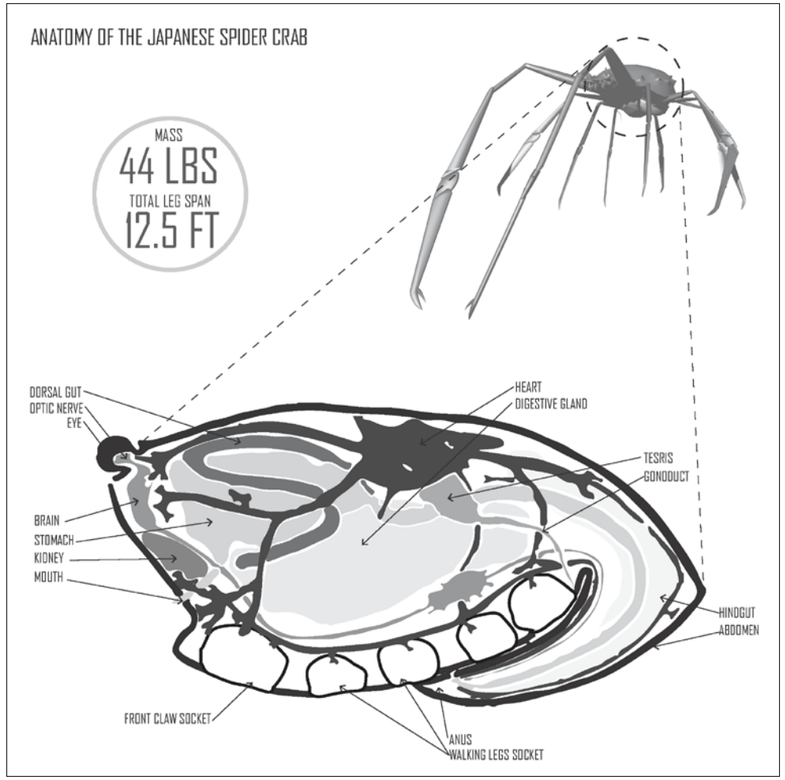
The Manatee Seagrass was implemented to provide an extra level of filtration and mobility. Traditional Manatee Seagrass uses photosynthesis to provide sugar and other nutrients to its system for growth and reproduction, however, chemosynthesis was introduced to take advantage of the oil within the ocean. Through chemosynthesis, the seagrass is provided with the necessary nutrients it needs to produce sugar within the creature. The seagrass has been applied into Petrofiltrum as

the kidney and circulatory system which carries the nutrients from the digestive track into the ligaments of the species in order to provide mobility.

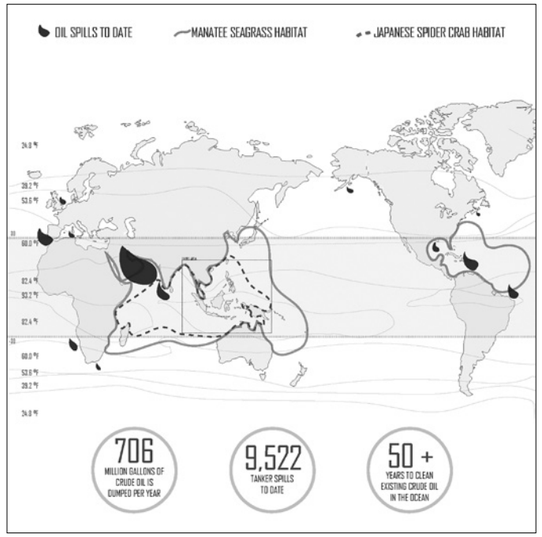
Lastly, Alcanivorax bacteria was introduced within the stomach of the species. The bacteria intakes oil, decomposes some of it as well as outputting a bioplastic sack that houses the oil and egg within. This sack contains the oil and provides the necessary nutrients for the species reproductive cycle.

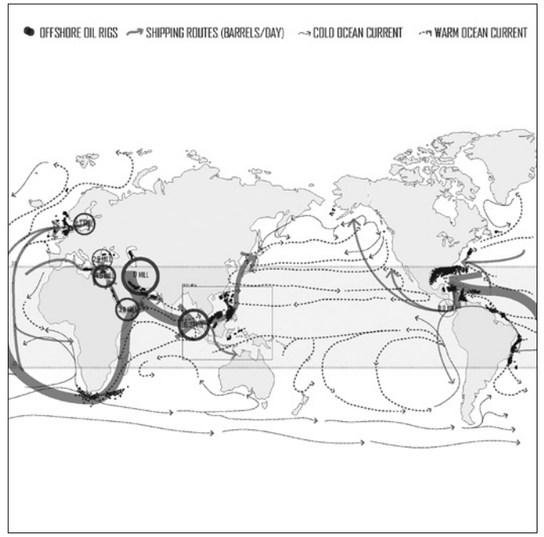


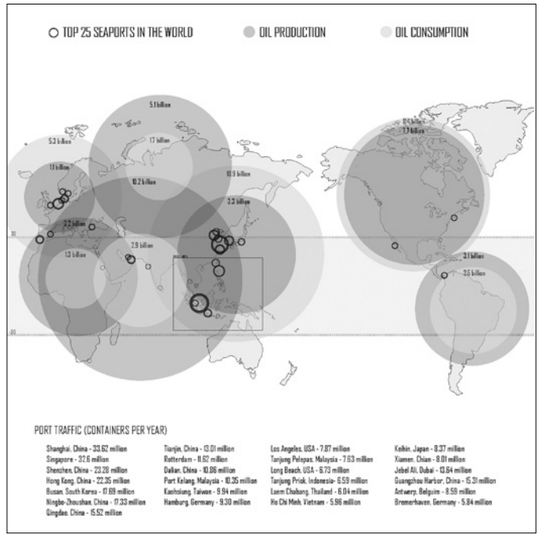
ECO-CREATURE | PETROFILTRUM

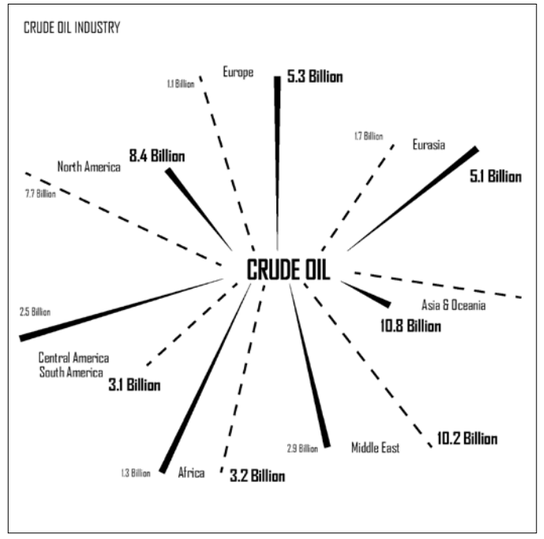


ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.

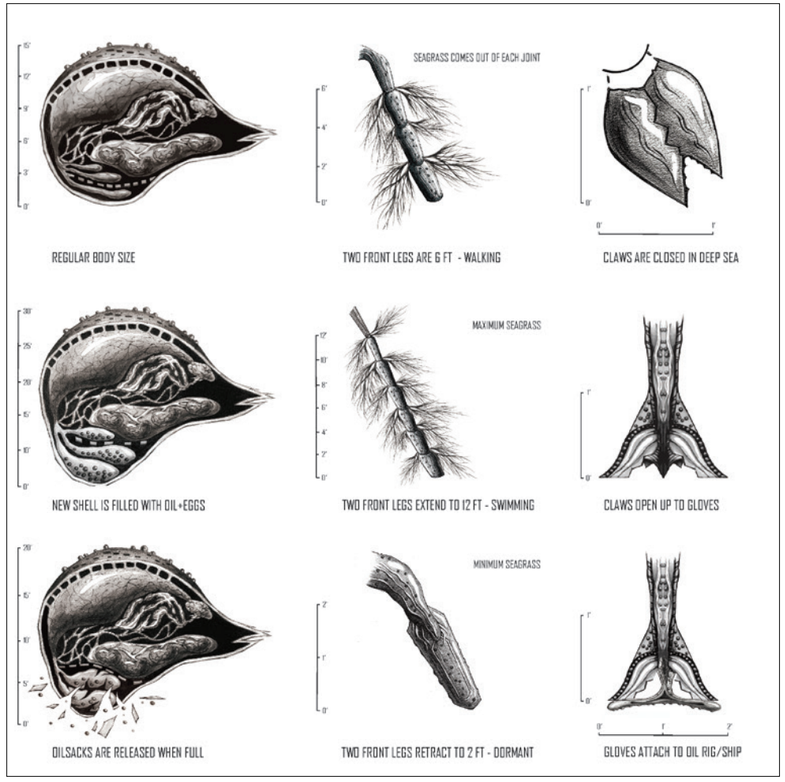


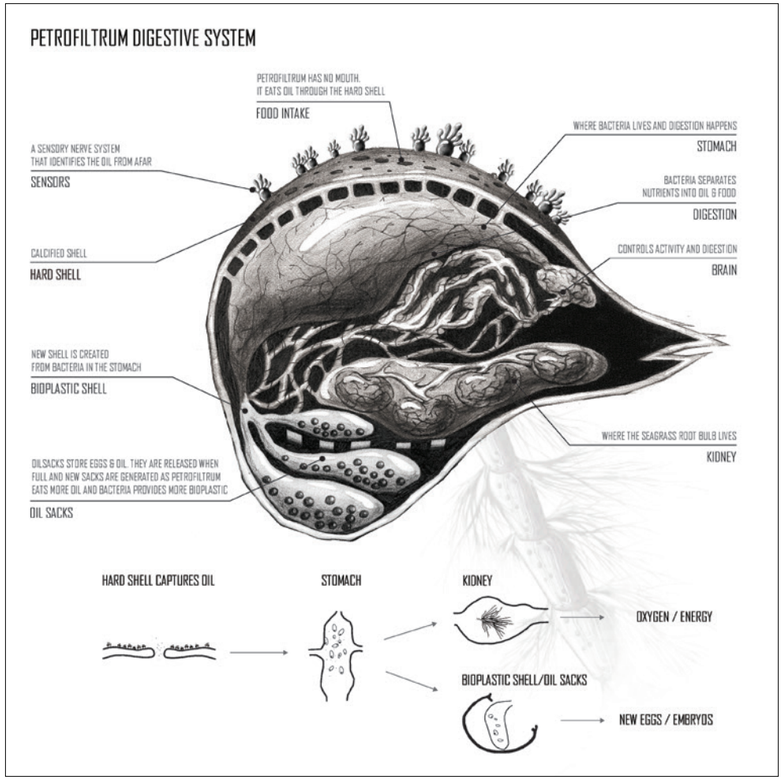


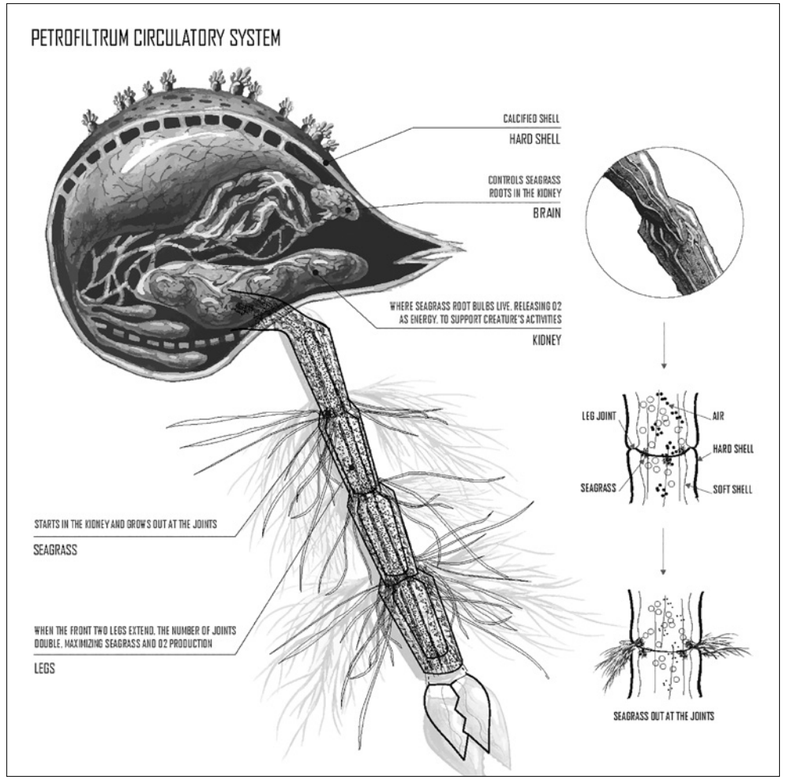


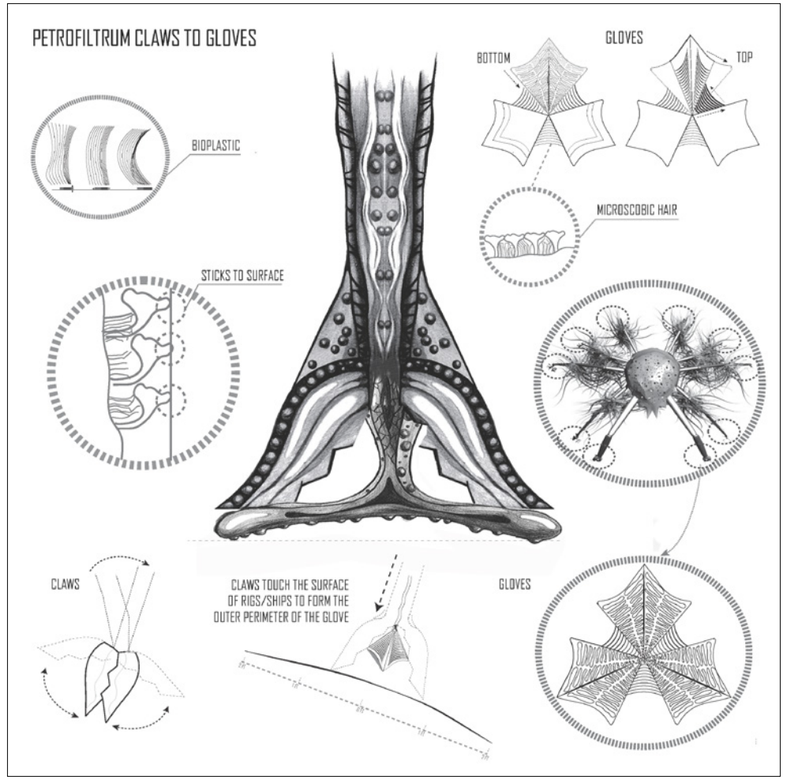


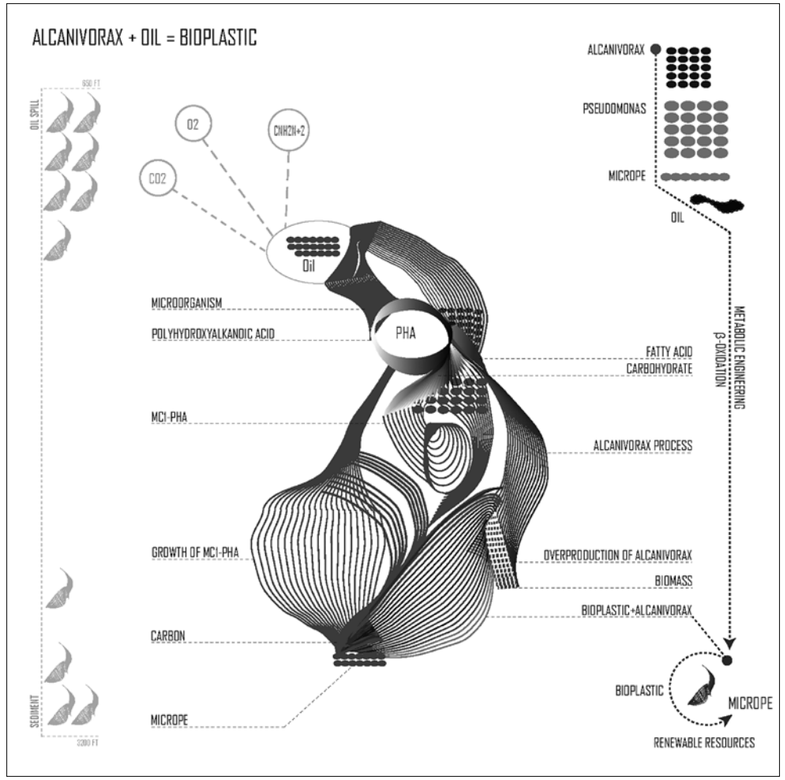
ECO-CREATURE | PETROFILTRUM



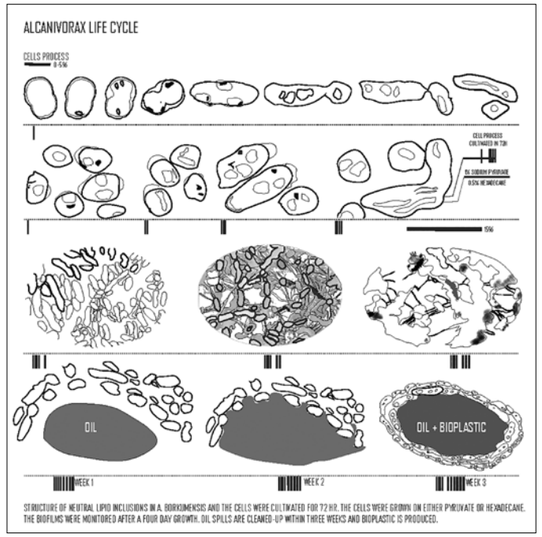


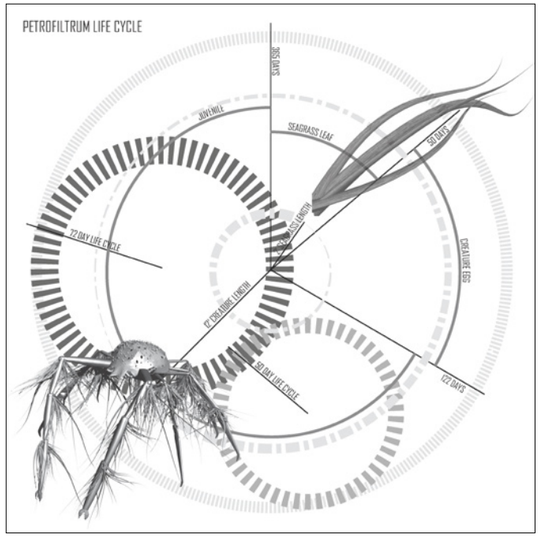

PETROFILTRUM CIRCULATORY SYSTEM
CALCIFIED SHELL
HARD SHELL
CONTROLS SEAGRASS ROOTS IN THE KIDNEY
BRAIN
WHERE SEAGRASS ROOT BULBS LIVE. RELEASING O2 AS ENERGY. TO SUPPORT CREATURE'S ACTIVITIES
KIDNEY
STARTS IN THE KIDNEY AND GROWS OUT AT THE JOINTS
SEAGRASS
WHEN THE FRONT TWO LEGS EXTEND. THE NUMBER OF JOINTS DOUBLE. MAXIMIZING SEAGRASS AND O2 PRODUCTION
LEGS
LEG JOINT
AIR
HARD SHELL
SEAGRASS
SOFT SHELL
SEAGRASS OUT AT THE JOINTS

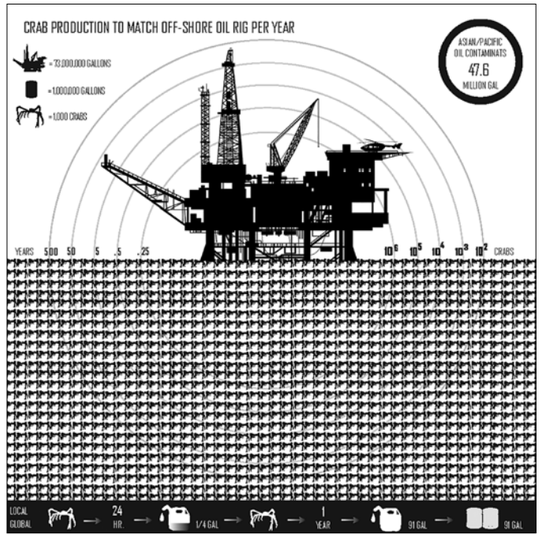

PETROFILTRUM CLAWS TO GLOVES
BIOPLASTIC
BOTTOM
GLOVES
TOP
MICROSCOBIC HAIR
STICKS TO SURFACE
CLAWS
CLAWS TOUCH THE SURFACE OF RIGS/SHIPS TO FORM THE OUTER PERIMETER OF THE GLOVE
GLOVES

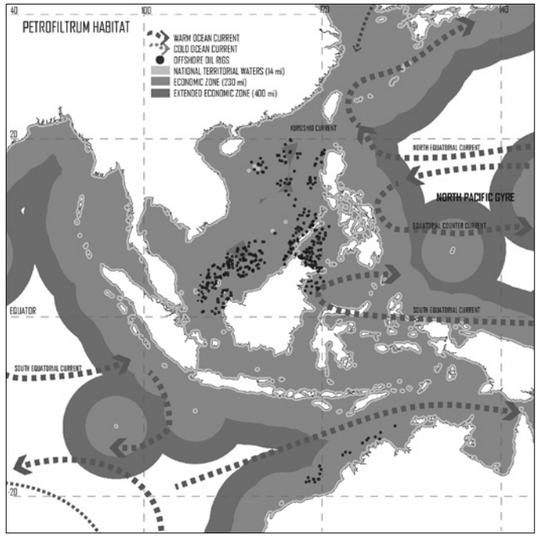


ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

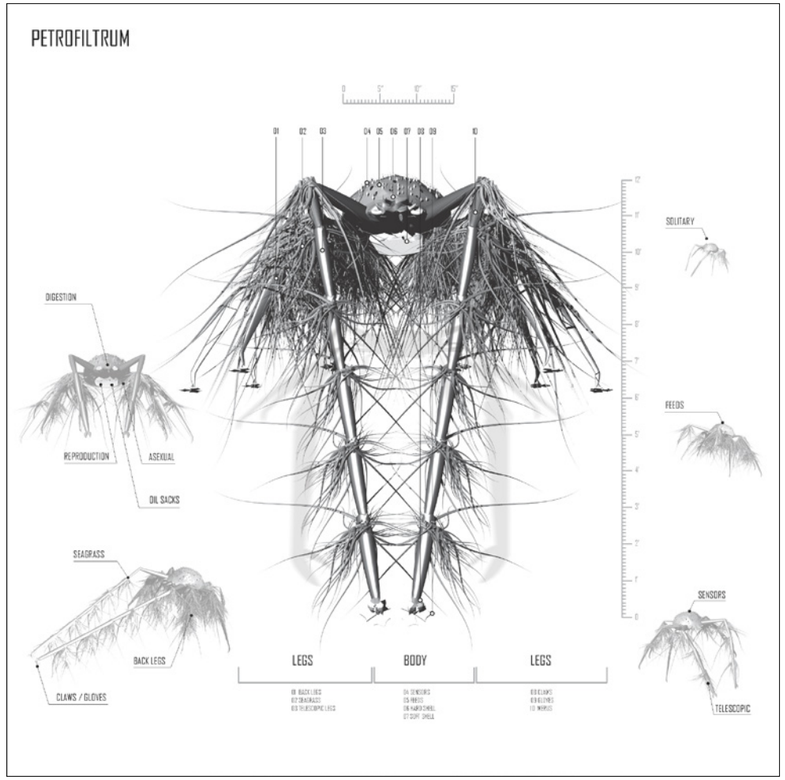


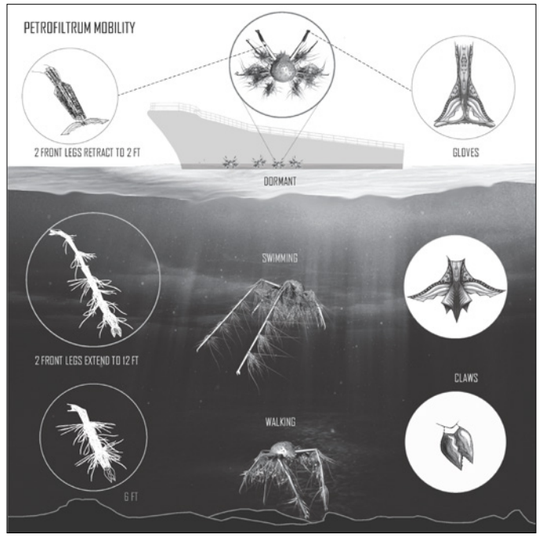


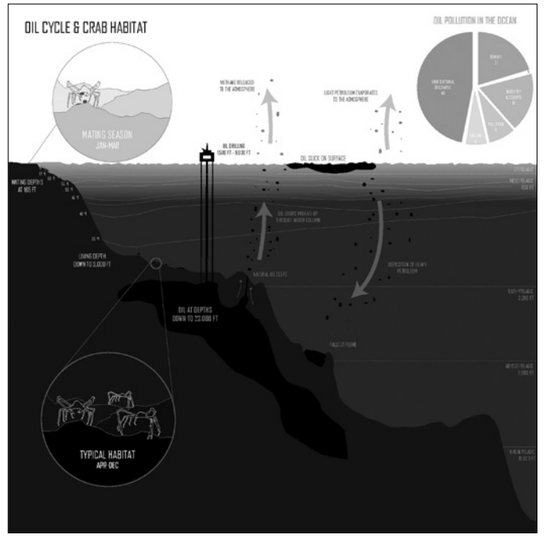


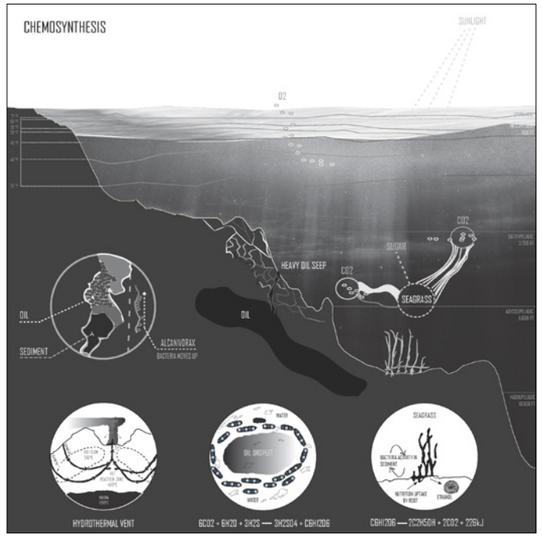


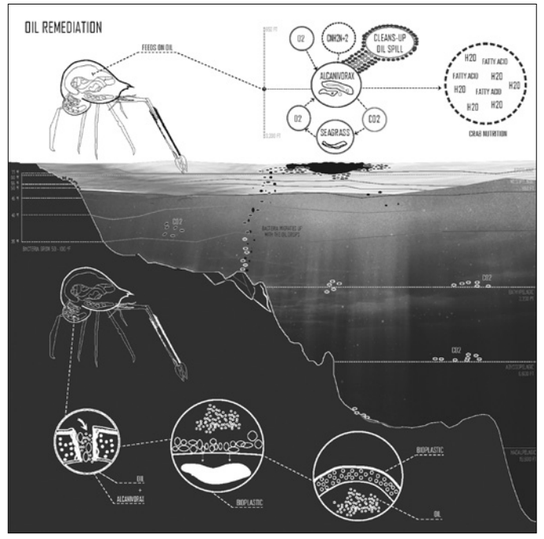
ECO-HABITAT | PETROFILTRUM

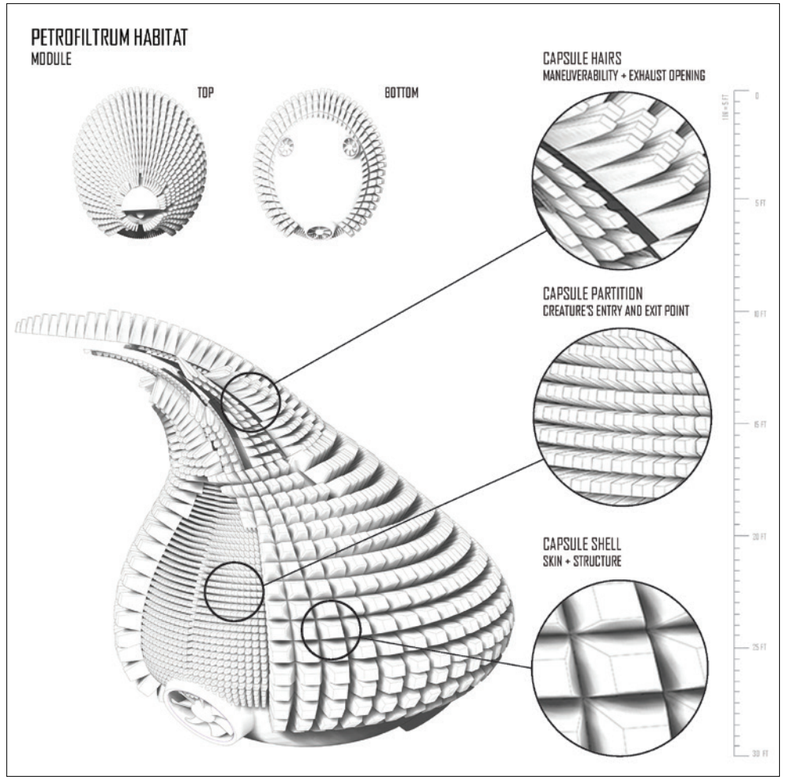


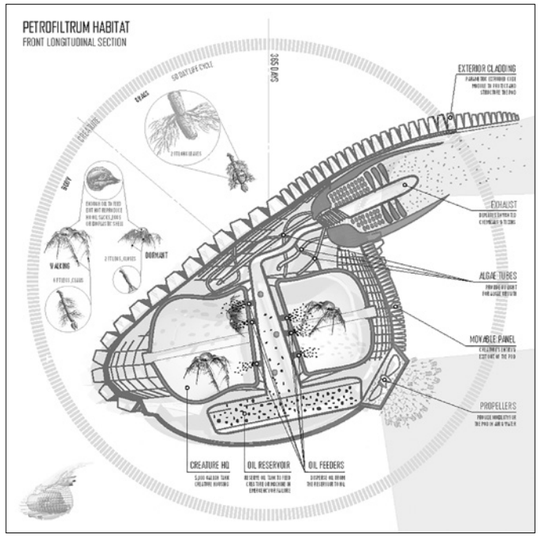


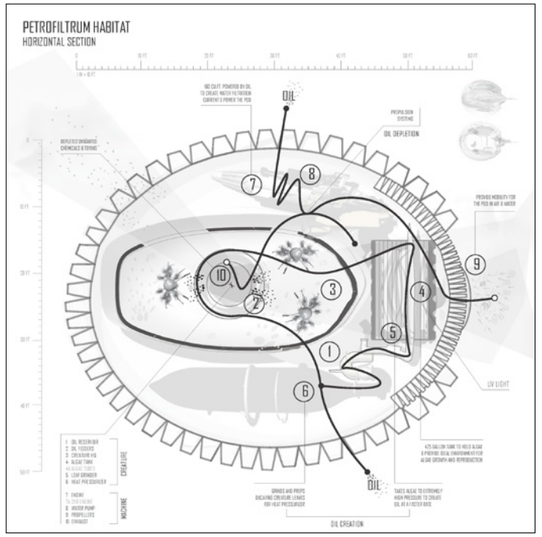


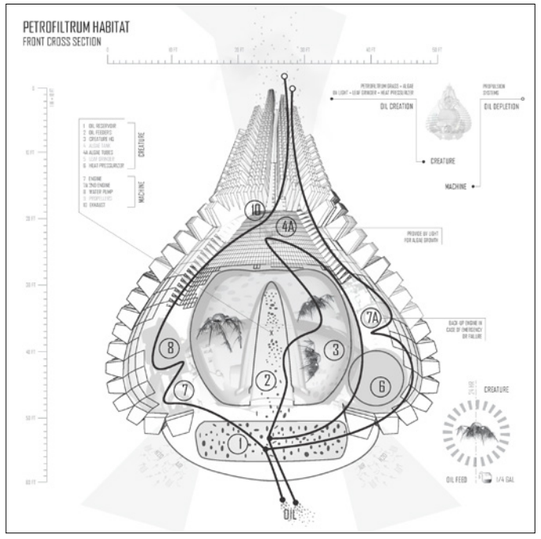


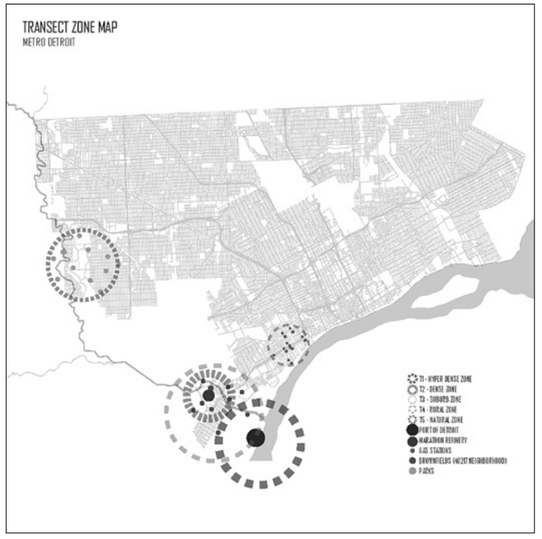


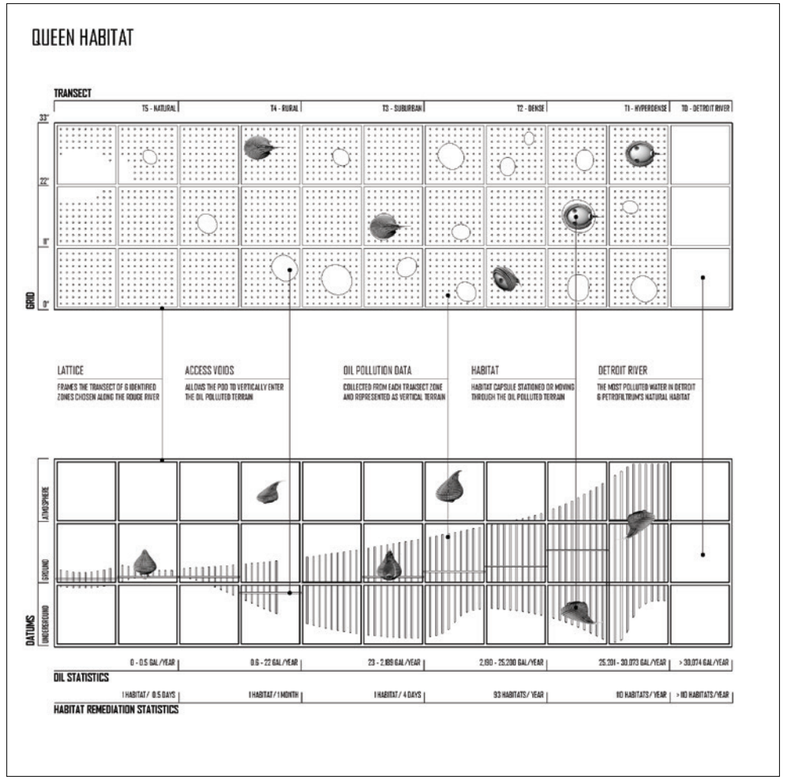

PETROFILTRUM HABITAT
MODULE
TOP
BOTTOM
CAPSULE HAIRS
MANEUVERABILITY + EXHAUST OPENING
CAPSULE PARTITION
CREATURE'S ENTRY AND EXIT POINT
CAPSULE SHELL
SKIN + STRUCTURE


PETROFILTRUM HABITAT
FRONT LONGITUDINAL SECTION
EXTERIOR CLADDING
EXHAUST
ALGAE TUBES
MOVABLE PANEL
PROPELLERS
CREATURE HQ
OIL RESERVOIR
OIL FEEDERS

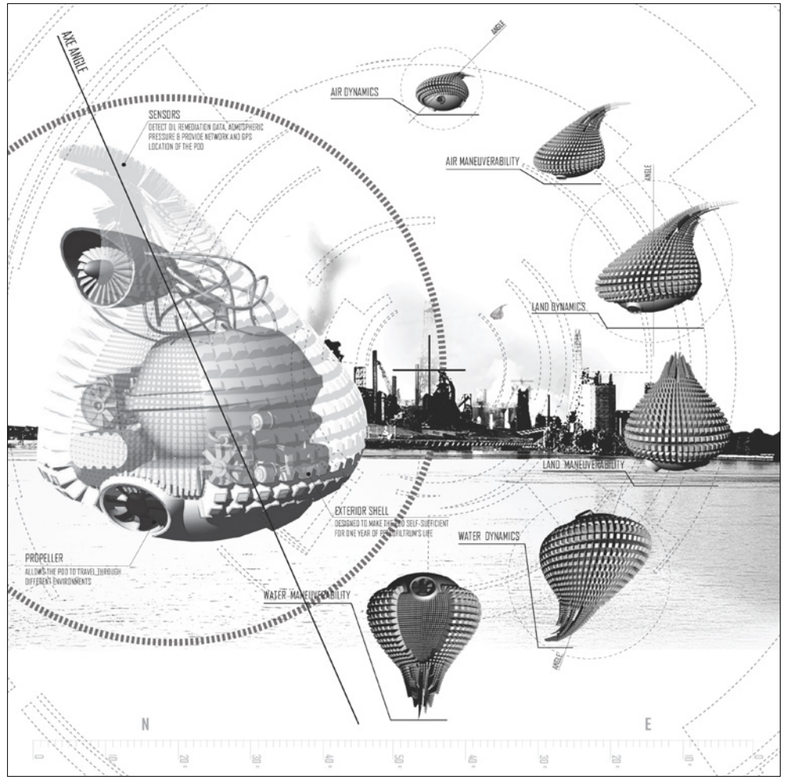

PETROFILTRUM HABITAT
HORIZONTAL SECTION
OIL
OIL DEPLETION
UV LIGHT
OIL CREATION

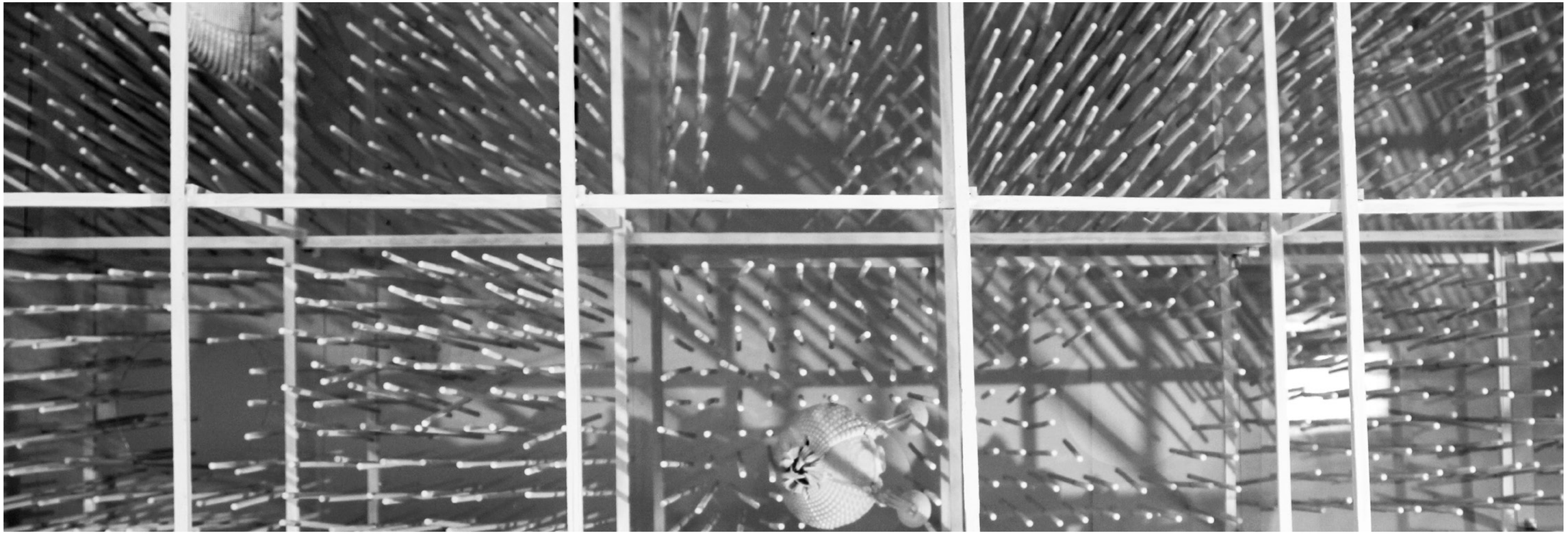

PETROFILTRUM HABITAT
FRONT CROSS SECTION
OIL CREATION
OIL DEPLETION
CREATURE
MACHINE
OIL


TRANSECT ZONE MAP
METRO DETROIT
T1 - HYPER DENSE ZONE
T2 - DENSE ZONE
T3 - SUBURB ZONE
T4 - RURAL ZONE
T5 - NATURAL ZONE
DOWNTOWN DETROIT
MARATHON REFINERY
GAS STATIONS
BROWNFIELDS (NEXT NEIGHBORHOOD)
PARKS

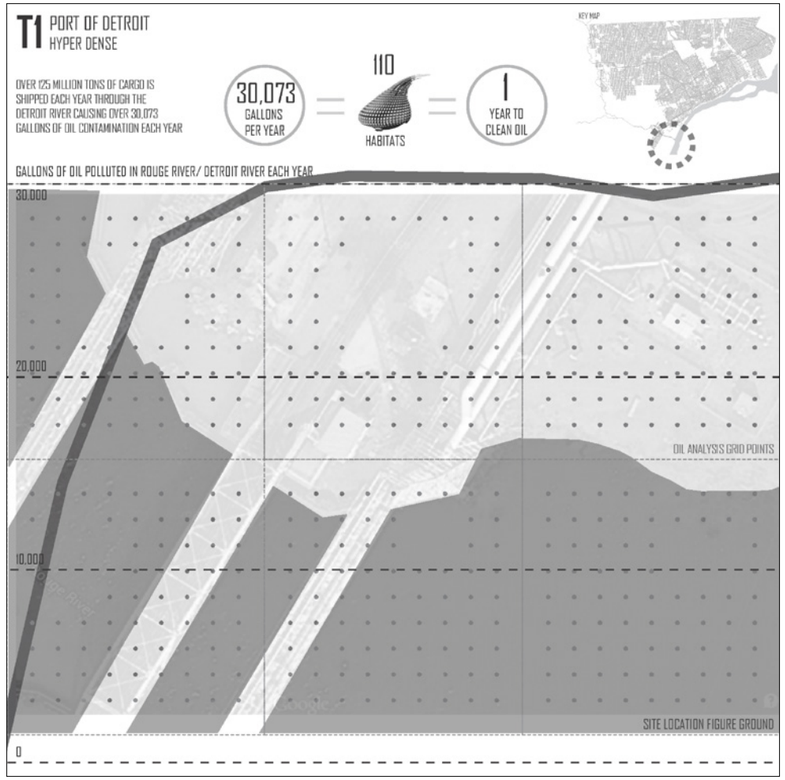


ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.

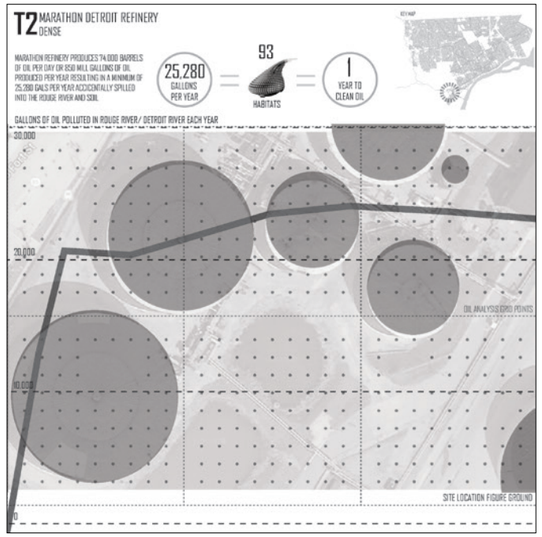


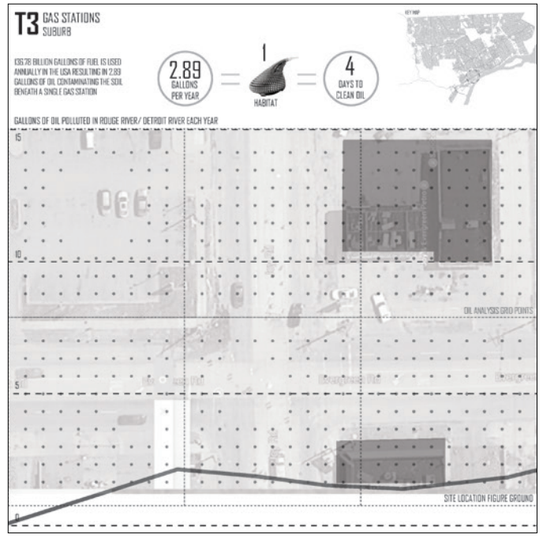


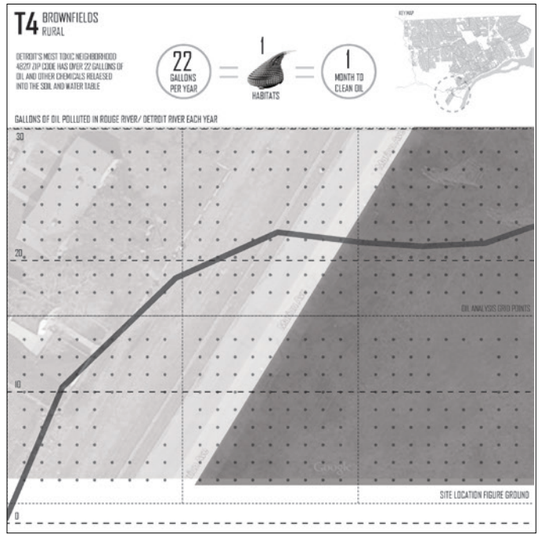
ECOTARIUM | PLAN VIEW

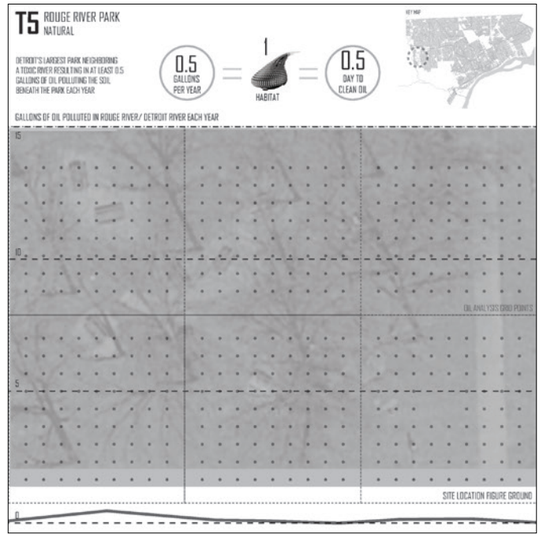


ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.

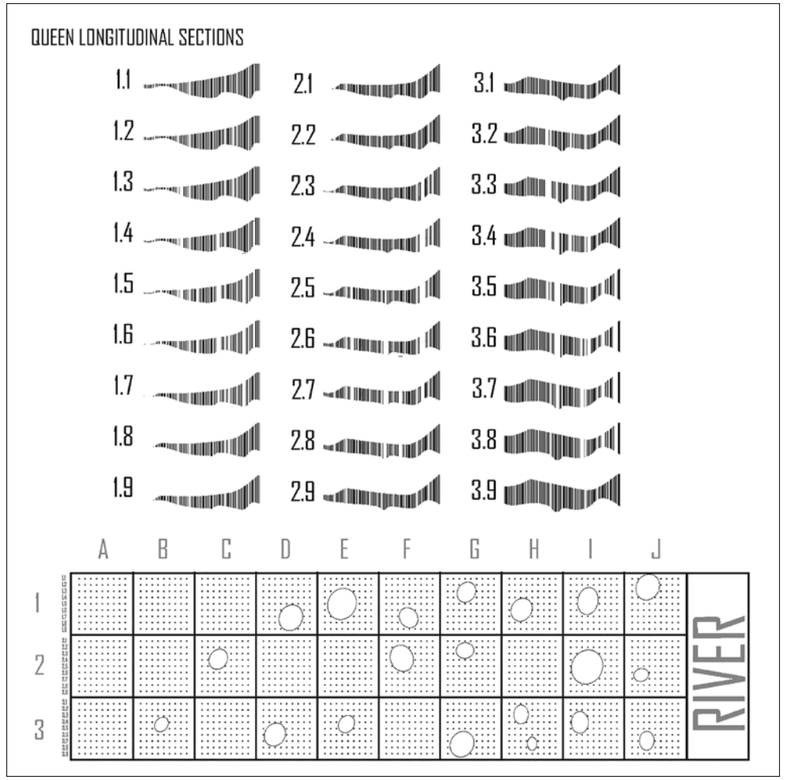


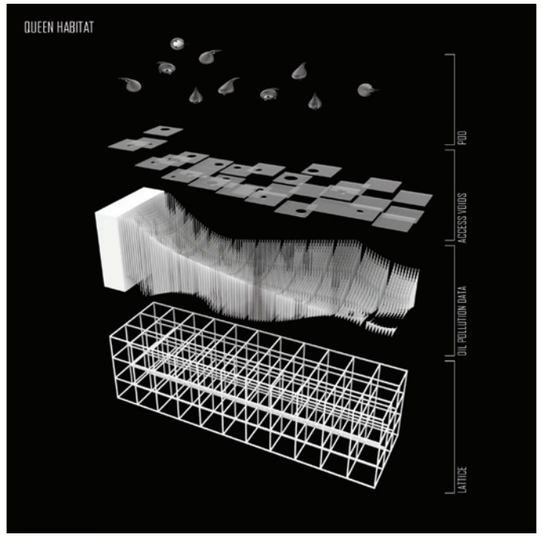


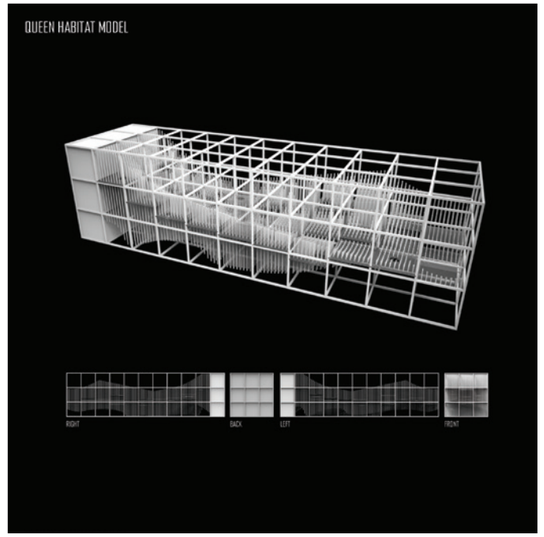


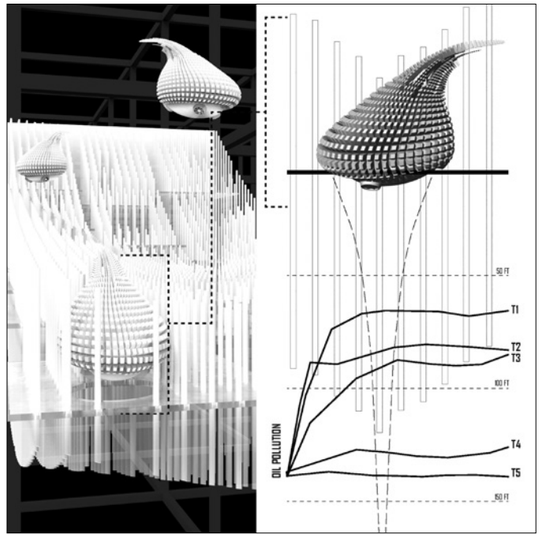


ECO-TRANSECT | PETROFILTRUM





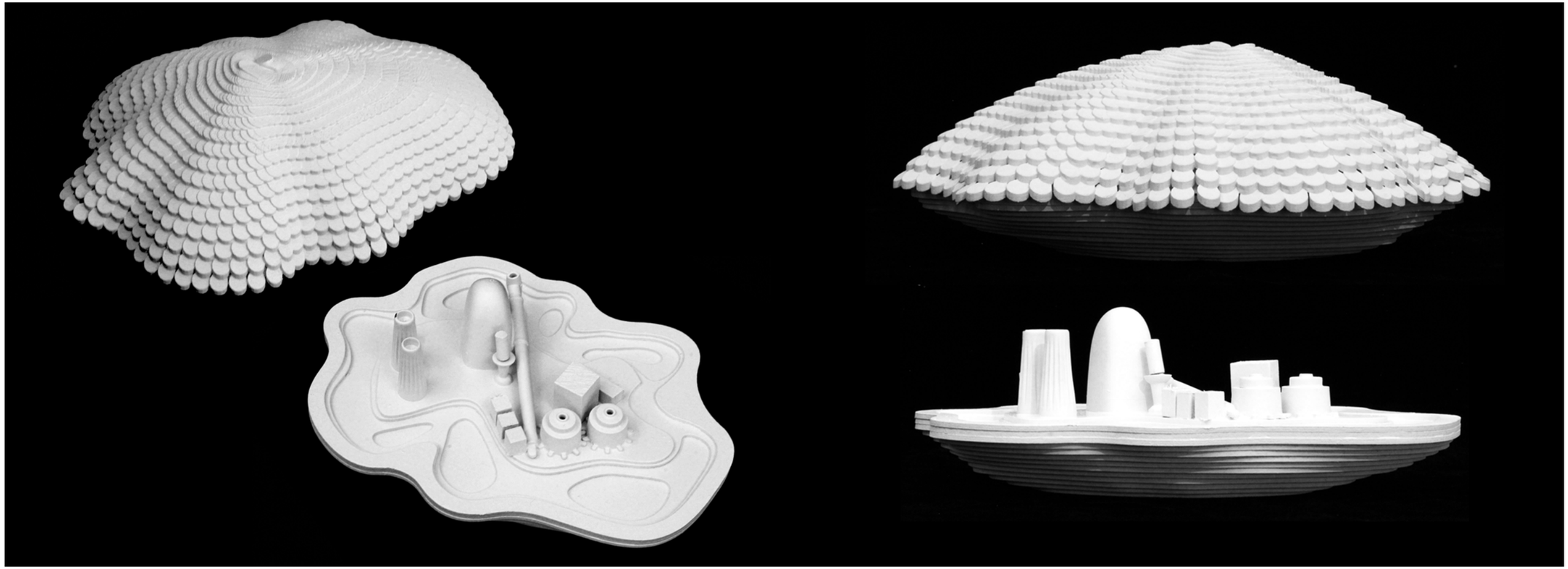




ECOTARIUM | AXONOMETRIC VIEW

MERGING AND TRANSFORMATION AT MULTIPLE SCALES ALLOW SPECULATION AND CELEBRATION OF A NEW ECOLOGY THROUGH BIO-GENETIC INFRASTRUCTURE.

ESCHERICHIA VESICULARIA CHAMEDRYFOLIA



ECOTARIUM | A SPECTACLE OF ECOLOGY

ESCHERICHIA VESICULARIA CHAMEDRYFOLIA

ESCHERICHIA VESICULARIA CHAMEDRYFOLIA

Latin Name: Escherichia Vesicularia Chamedryfolia

Common Name: EVC or Mobile Moss

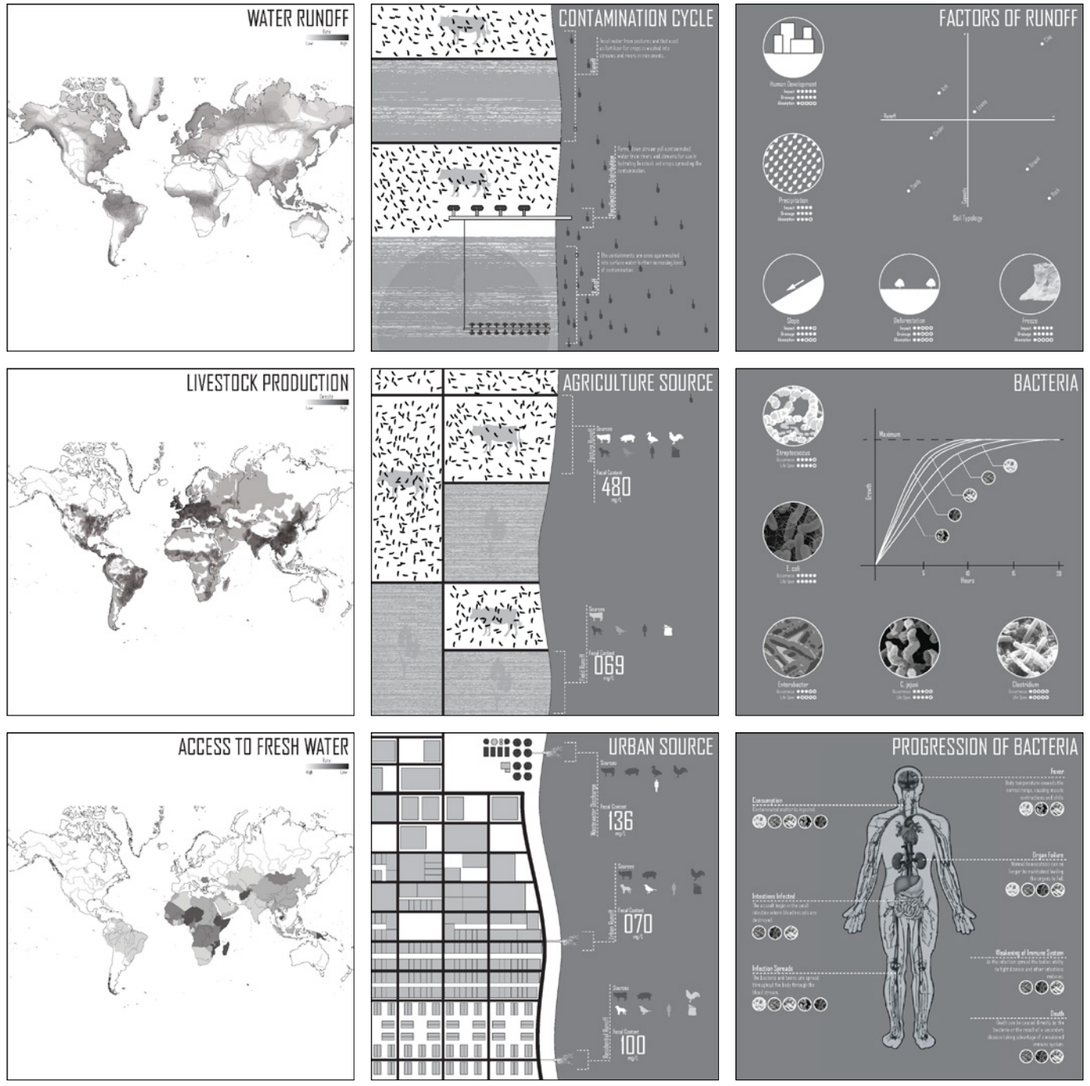
LIFECYCLE OF CREATURE

The EVC natural lifespan ranges between three and five years, depending on food source and concentration. During the first eight months of life, EVC spawn take shelter within the dense mat of stalks, tails and foliage of their mothers for protection from predators and development of their own protective coat. Eventually the creature's organs wear out due to the intensity of the pumping and filtration required for food consumption. The cortical region of the creature is unable to adequately supplement bacterial consumption with photosynthesis. The creature starves and dehydrates to the point of death.

SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

Mobile Moss is hermaphroditic and possesses both male and female sex saprophytic stalk organs, but cannot procreate individually. The creature oscillates between sexes based on pheromone communication among the schooling group for maximum reproduction. The male stalk releases spores which

ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.



are accepted by the female sporophytes during fertilization, hatching after 90 days. Once nymph EVC's leave their mothers, they begin feeding on aqueous fecal borne bacteria and are capable of reproduction after roughly nine months.

HABITAT OF THE CREATURE

The EVC thrives in slow moving streams and rivers with a bacterial concentration between 5,000 and 20,000 coliforms per gallon. Ideal velocity for the creature is five ft/s with a neutral PH of between 6.5 and 7 – but can survive in more acidic conditions below 6; basic conditions above 7 are not hospitable. Average stream water ranges between 6.5 and 8.5 PH.

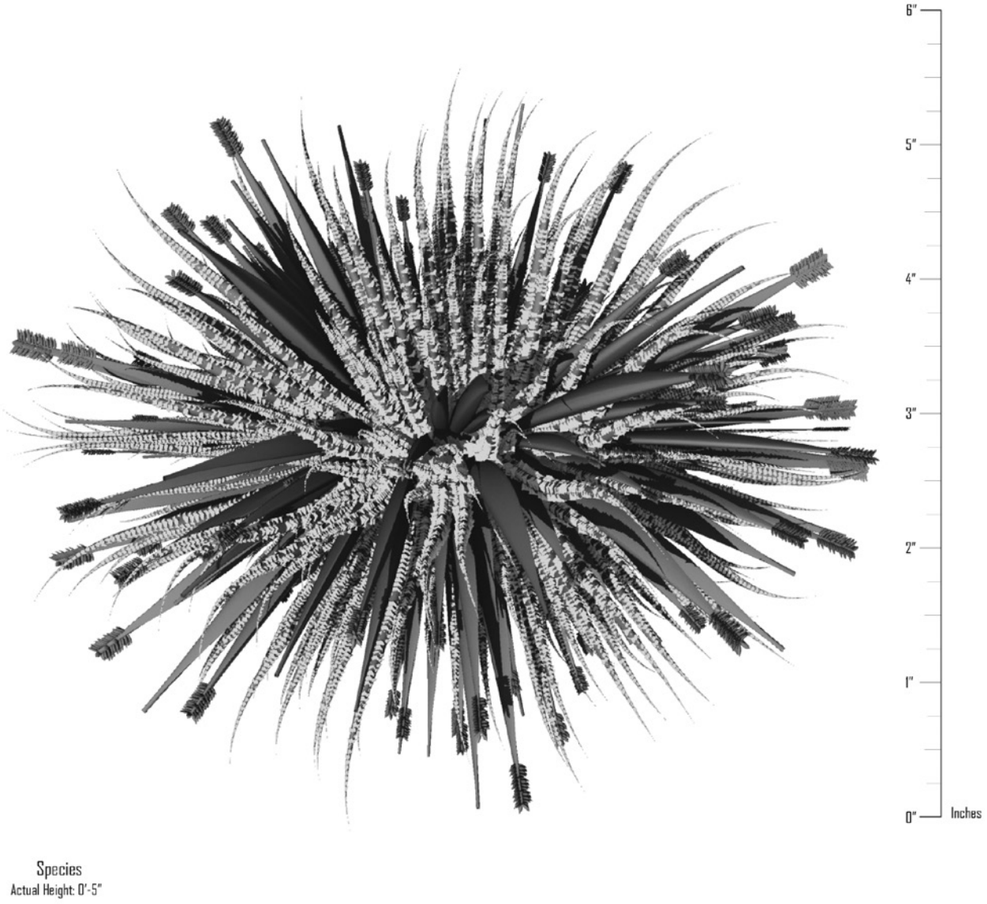
FOOD CYCLE

Bacteria are extracted through filtering between 0.1 and 0.5 gallons of water per day. Photosynthesis supplements the bacterial consumption and produces sugars further sustaining the creature.

INTERACTION WITH ENVIRONMENT

Mobile Moss is a diurnal creature with reduced function during dark skies when photosynthesis cannot provide energy for filtration and digestion (but the creature's circadian rhythm is such that constant light or total light deprivation would not completely disable its ability to feed and mate).

ESCHERICHIA VESICULARIA CHAMEDRYFOLIA SCALE



ECOTARIUM | ESCHERICHIA VESICULARIA CHAMEDRYFOLIA

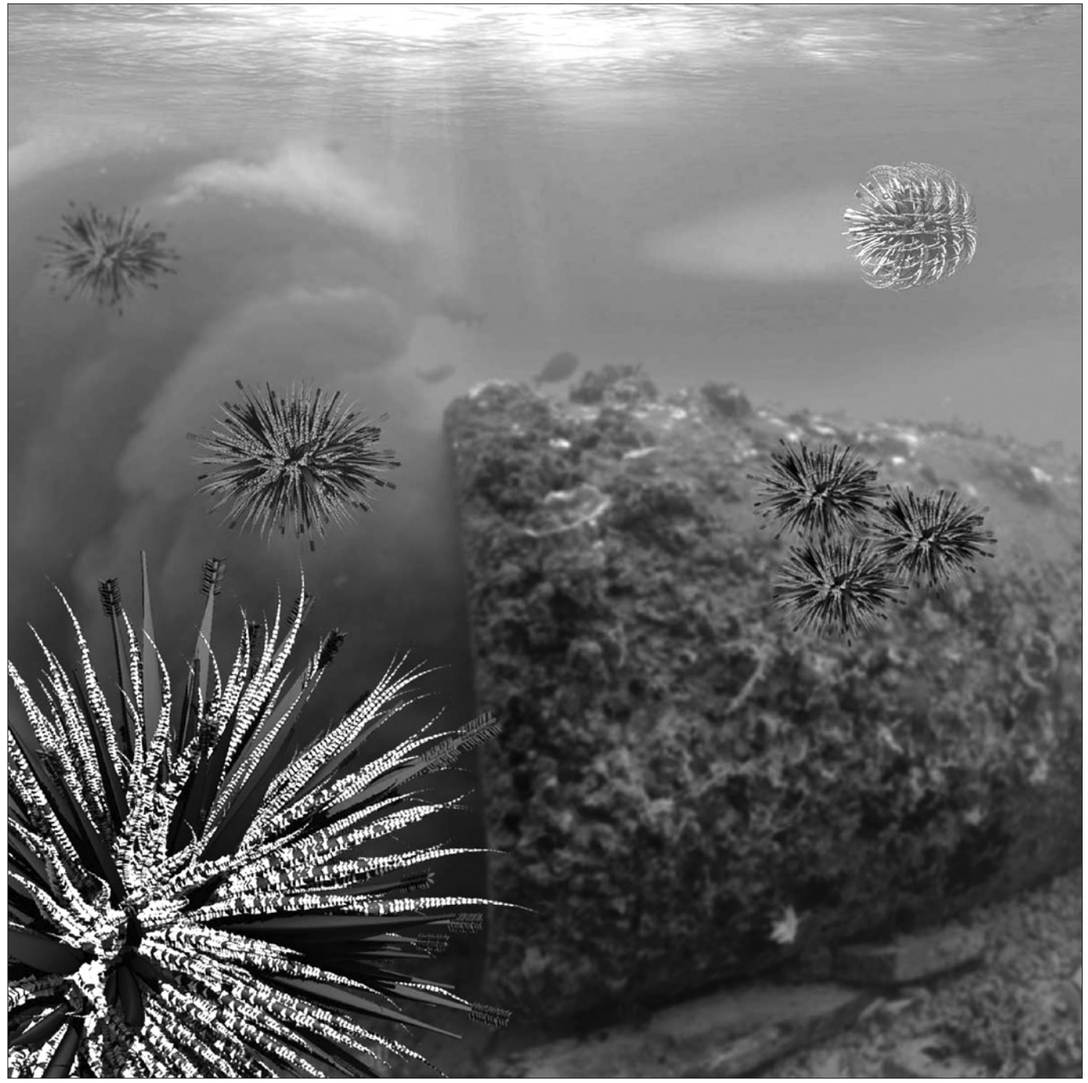
REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION

Moss: photosynthesis, water absorption through leaves, sclereids, hydrome and leptome into rhizoids, water filtration, consumption of CO2 and release of O2, method of reproduction through spores.

Frog: hermaphroditic, water passes through skin, food consumption (rather than photosynthesis) possession of internal organs including circulatory system for distribution of nutrients to cells, expansion/contraction similar to croaking but is instead part of the water filtration/food consumption process, tail muscle like tadpole tail.

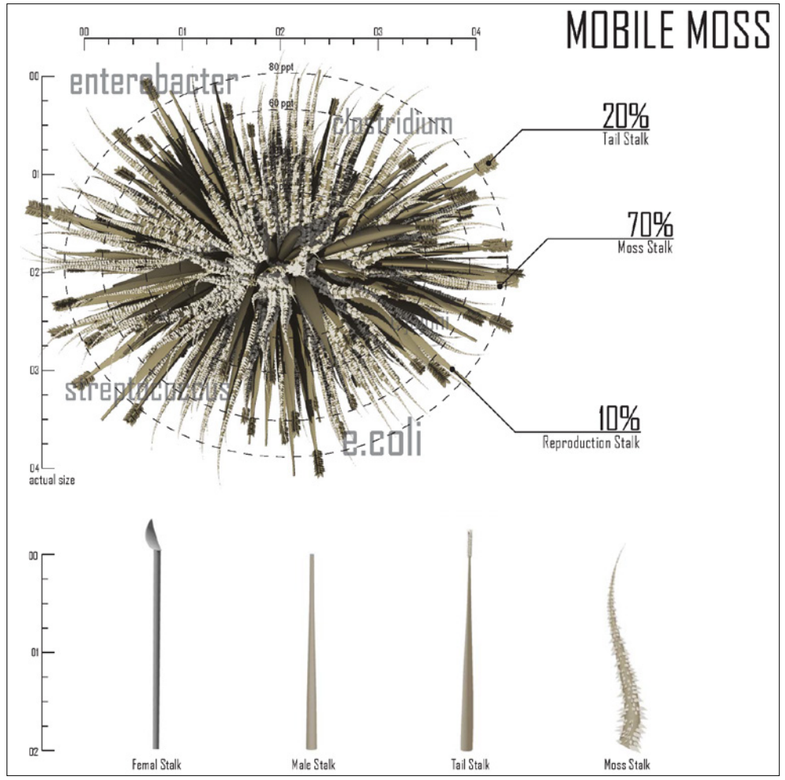
CHARACTERISTICS OF THE MERGER

The creature has a specialized stomach for the intake of water humans would consider contaminated, filtration, then releases water free of particulates. A portion of the water free of particulates is retained for the digestive process in the "fluid sac" which carries the filtered particulates from the division between the two stomach chambers to the liver. The liver receives enzymes from the pancreas to break down bacteria while the liver creates tissue that adheres to the nonbacterial particulates which are then processed in the kidney and released as sediment-like waste. The bacteria and enzymes travel through the intestinal rhizoids where, as the bacteria

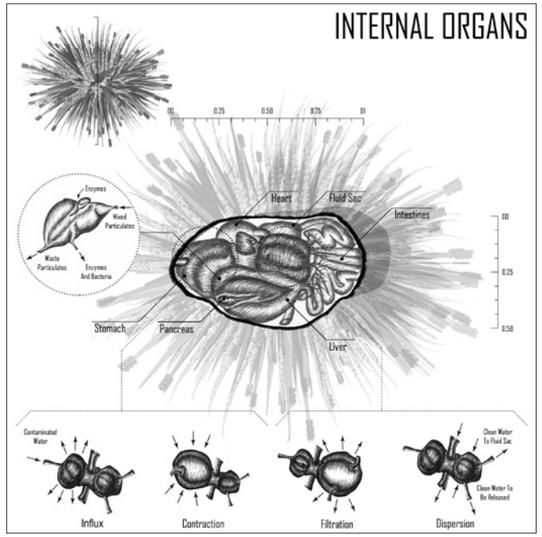


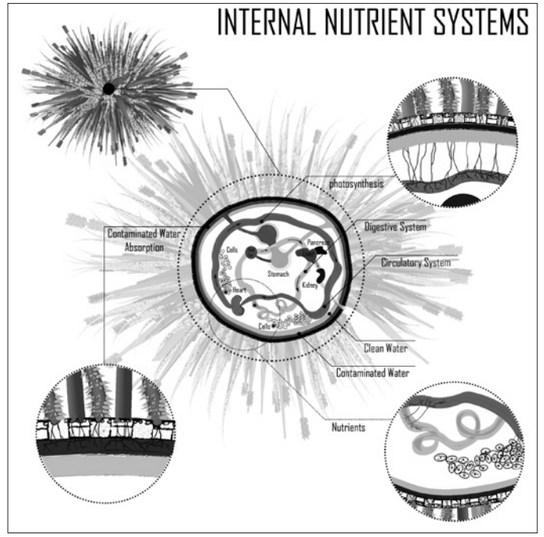
are broken down, absorbed into the bloodstream for nutrient distribution to the cells. The creature has tails distributed around its body for steering of the jetting motion produced by the contraction of the stomach as well as general rotation while floating to improve water intake. Each tail has barbs at the end to grip other creatures during schooling and mating, but also to grasp rocks and soil to remain stationary.

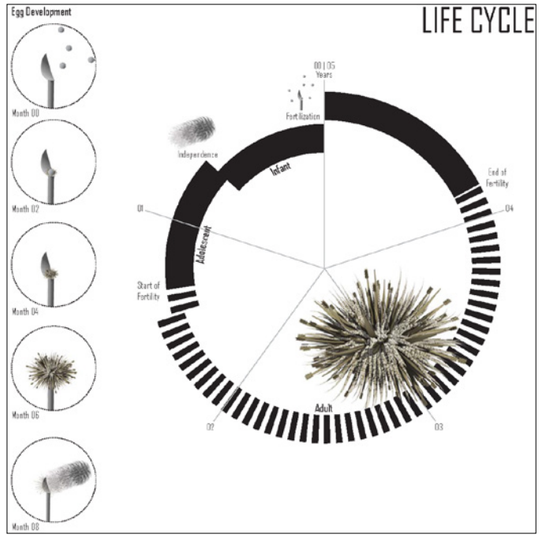
ECO-CREATURE | PETROFILTRUM

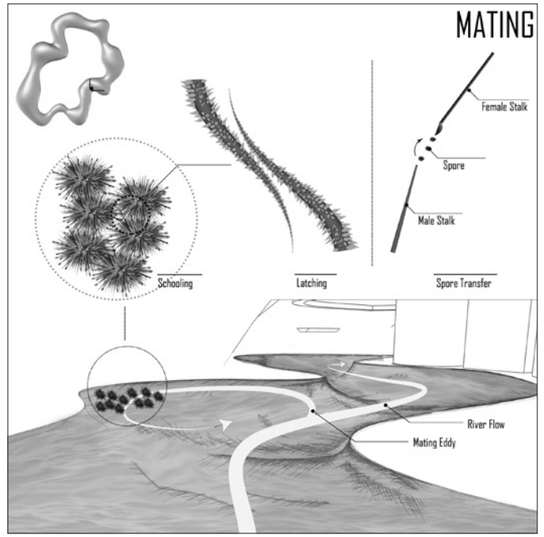


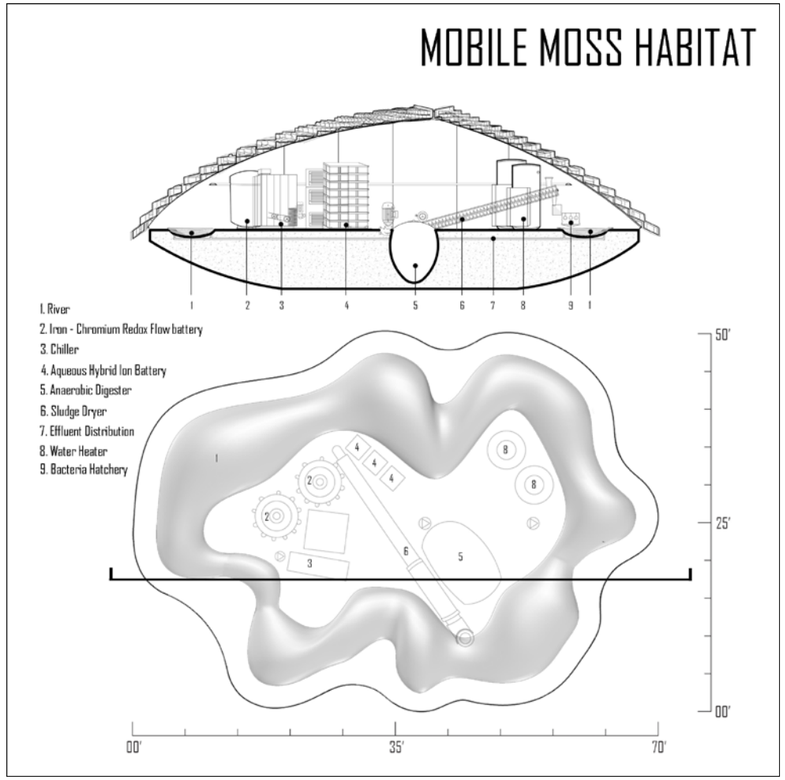
ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.



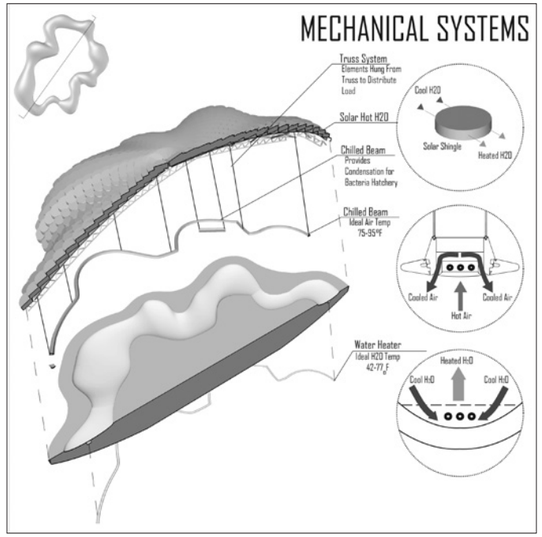


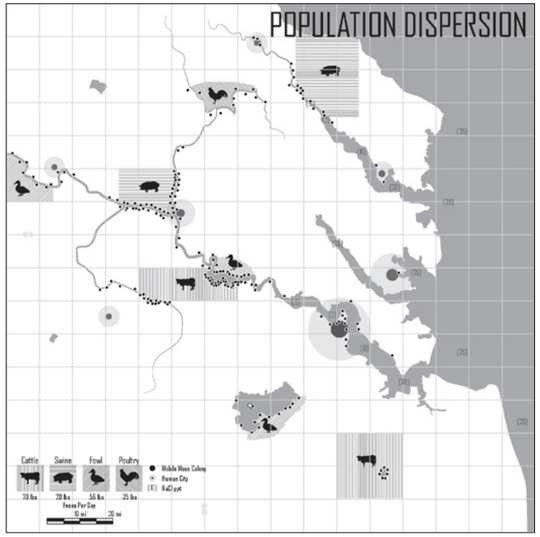




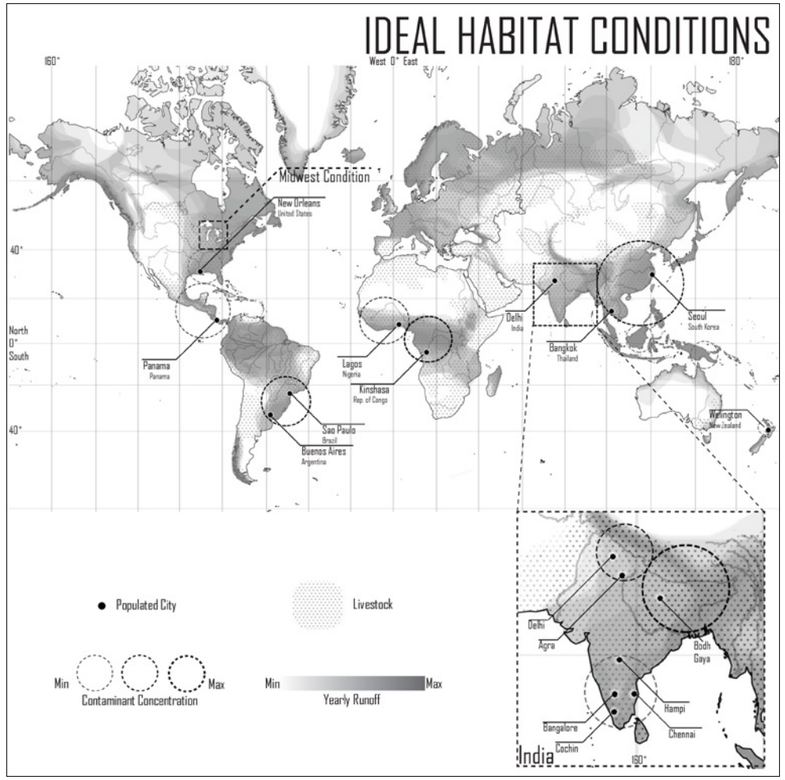


ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

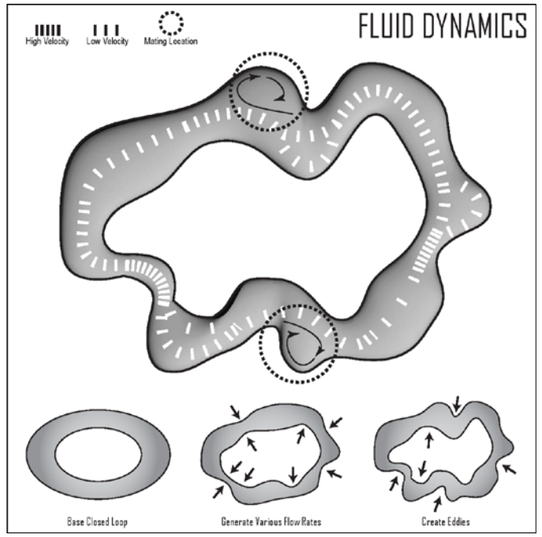


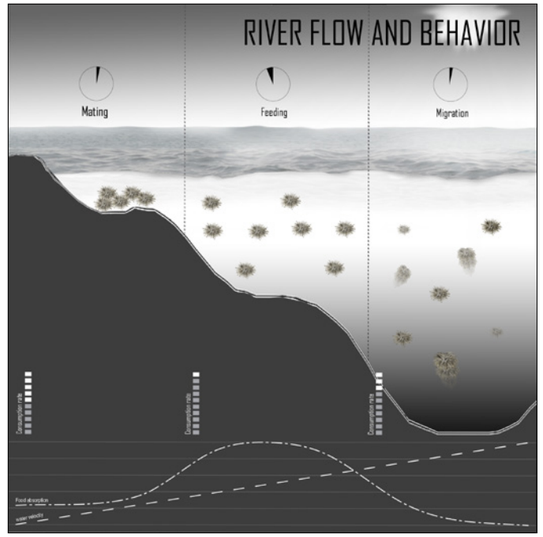


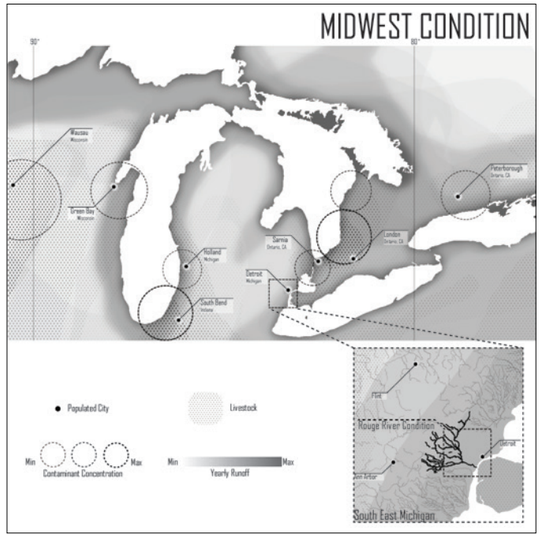
ECO-ASSEMBLY | ESCHERICHIA VESICULARIA CHAMEDRYFOLIA

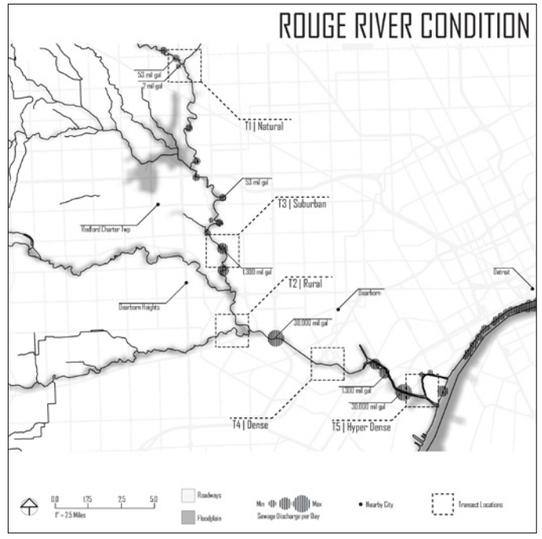


ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.



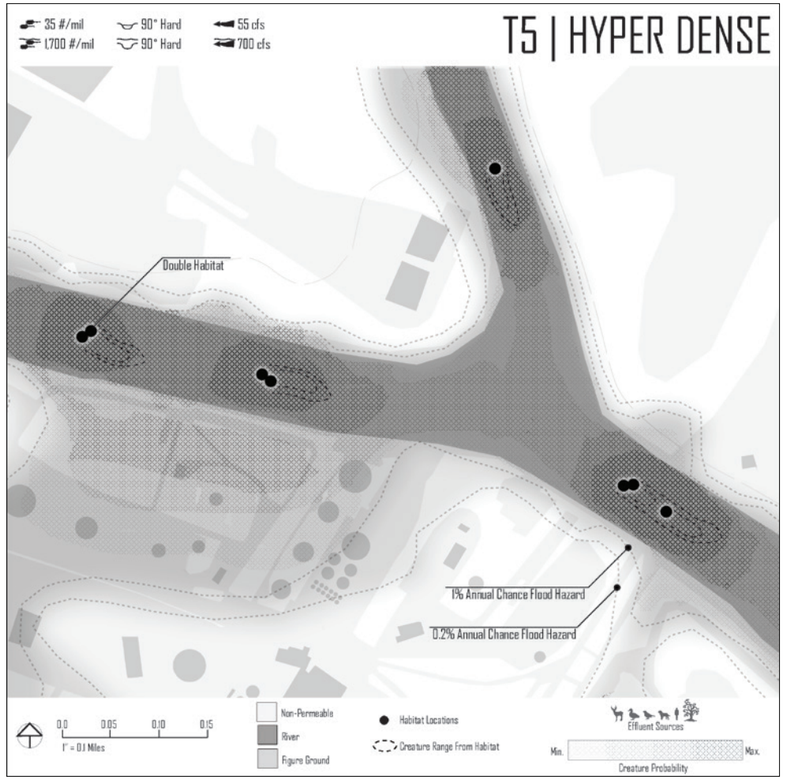




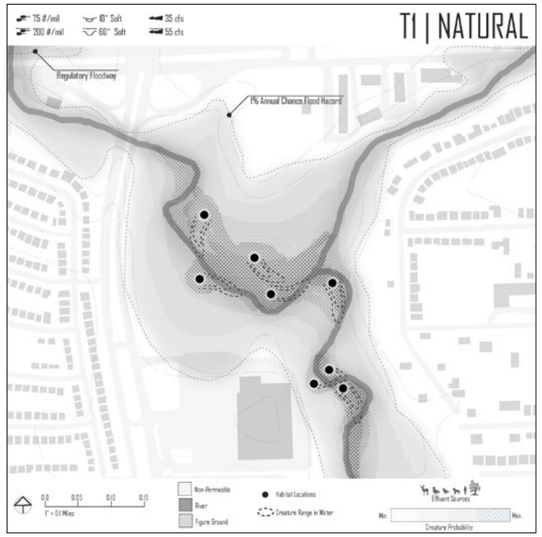


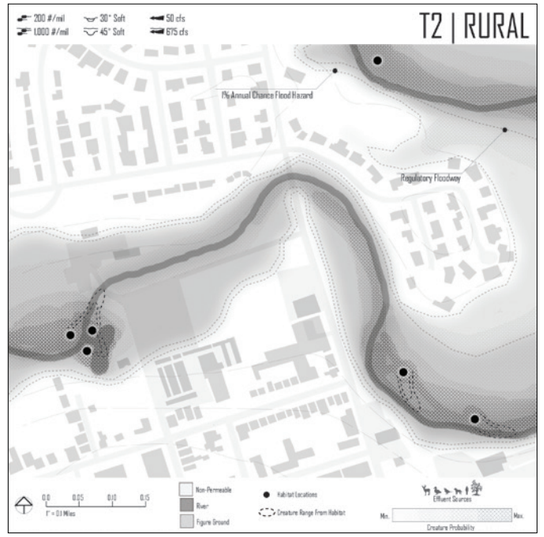
ECOTARIUM | PLAN VIEW

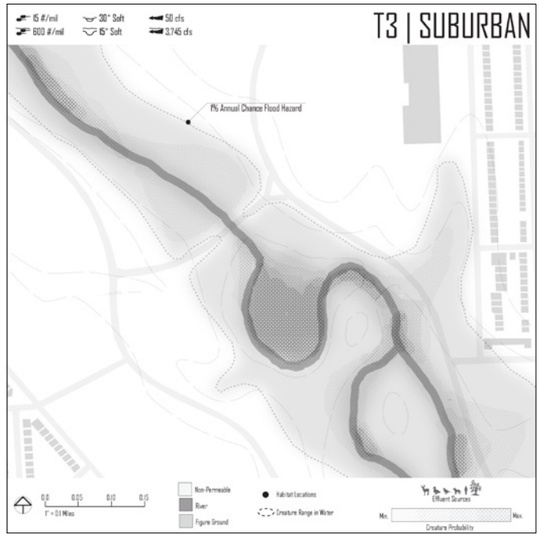
ECO-TRANSECT | ESCHERICHIA VESICULARIA CHAMEDRYFOLIA

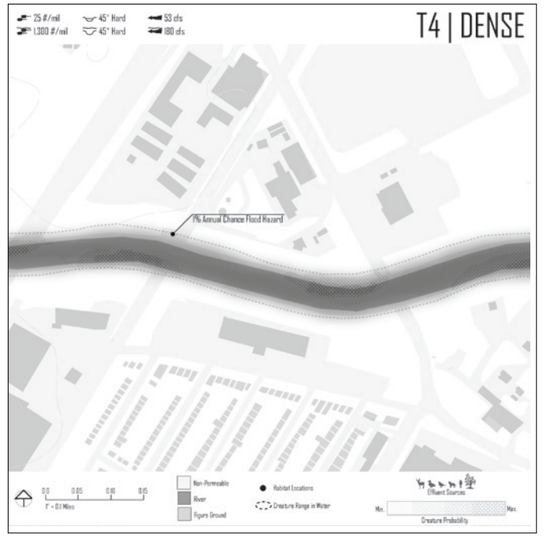


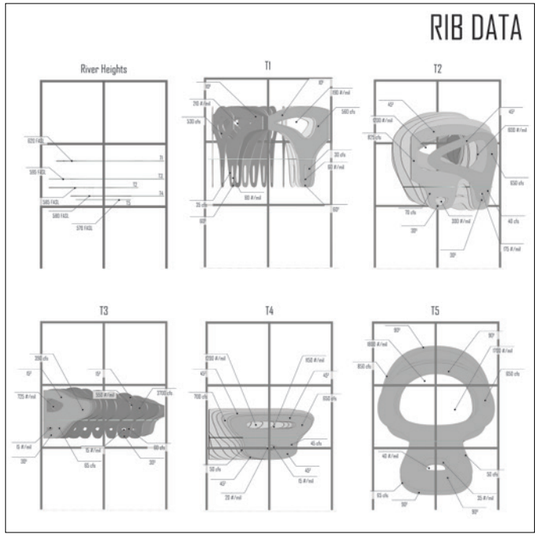
ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.

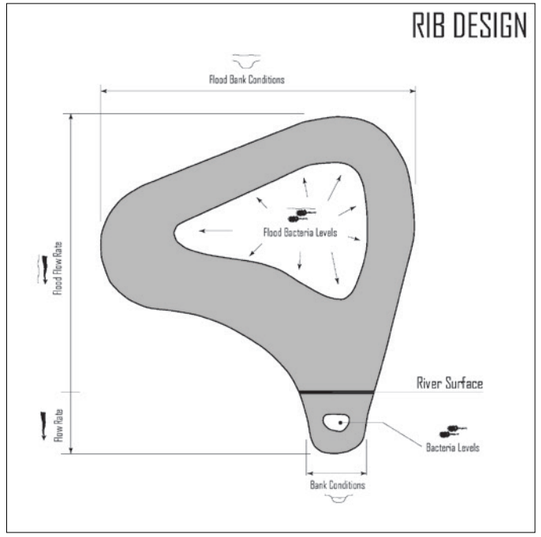


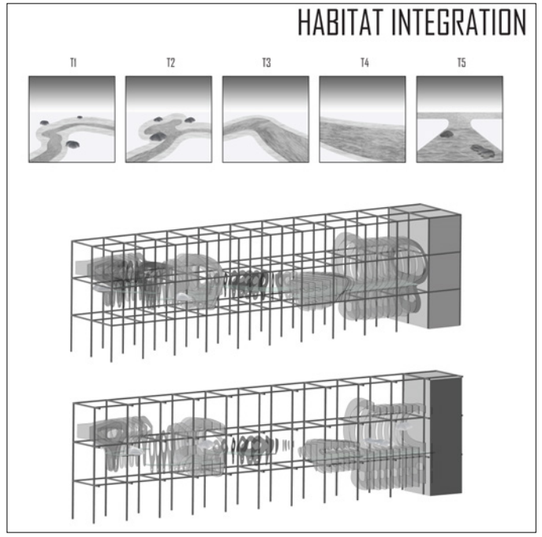


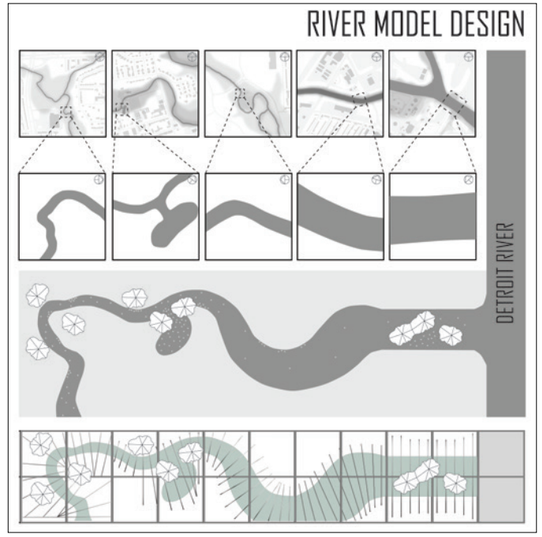


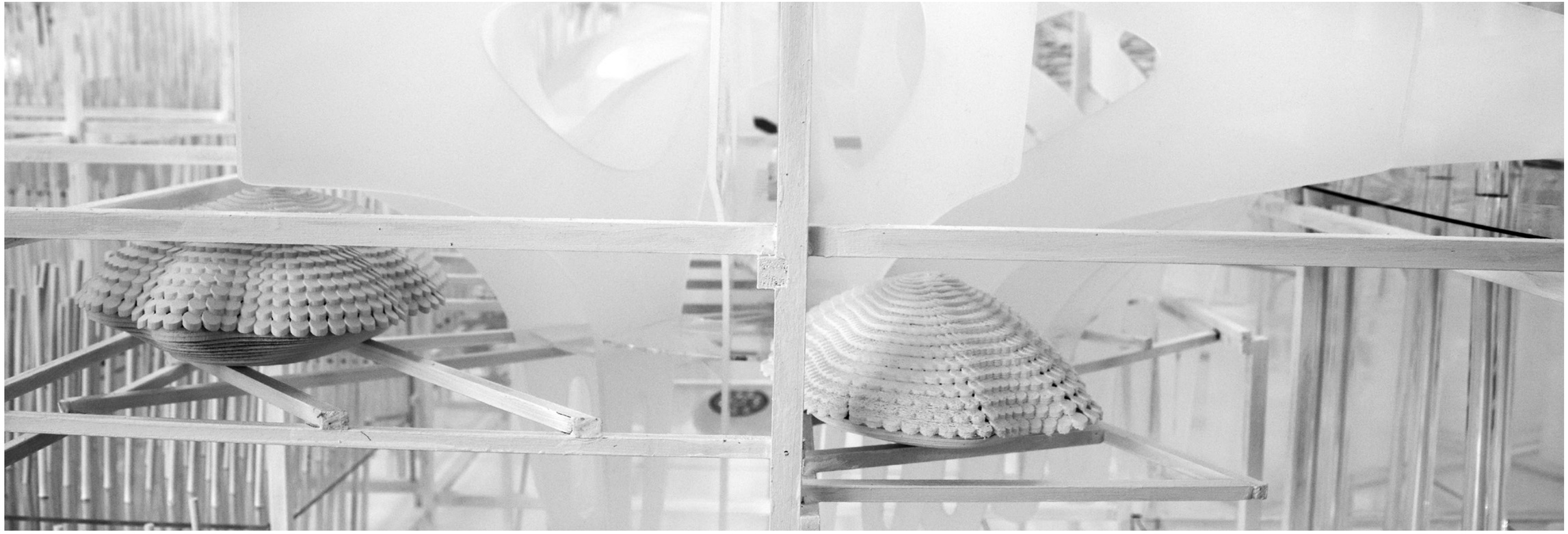



RIB DATA
River Heights
T1
T2
T3
T4
T5


RIB DESIGN
Flood Bank Conditions
Flood Bacteria Levels
Flood Flow Rate
River Surface
Flow Rate
Bacteria Levels
Bank Conditions


HABITAT INTEGRATION
T1
T2
T3
T4
T5


RIVER MODEL DESIGN
DETROIT RIVER



ECOTARIUM | ELEVATION VIEW

IF INCREASED TERRESTRIAL ACCESSED COULD BE MAXIMIZED, THROUGH THE UTILIZATION OF BIOENGINEERING, IT IS ASKED WHAT ARE THE SOCIAL, ECONOMIC, AND CULTURAL IMPLICATIONS?

SELAGINELLA PARADISAEA (SELA-TERN)

ECOTARIUM | A SPECTACLE OF ECOLOGY

SELAGINELLA PARADISAEA (SELA-TERN)

SELAGINELLA PARADISAEA

Latin Name: Selaginella Paradisaea

Common Name: Sela-Tern

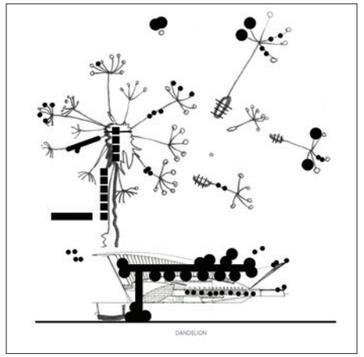
LIFECYCLE OF CREATURE

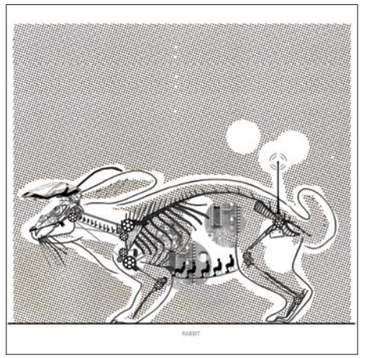
The Selaginella Paradisaea is an early Animalia Plantae hybrid which merged the Selaginella (plant) with the Arctic Tern (bird). The genetically modified creature showed early promise in unique hydration properties, especially as they pertain to suspended animation due to desiccation or "extreme dryness". The combination also created, for the first time, a nutritionally complete single food source which provides all nine amino acids required for human diet. These attributes of suspended animation and complete nutrition further coupled with asexual, spore based reproduction and a relatively ubiquitous terrestrial habitat. The result of this fusion provided a nutritionally complete food source with undetermined life cycle which is easily cultivated by the individual human across all terrestrial regions.

SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

The Sela-Tern is genetically modified organism which adopts asexual reproduction biology of spore based lycopods.

ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.





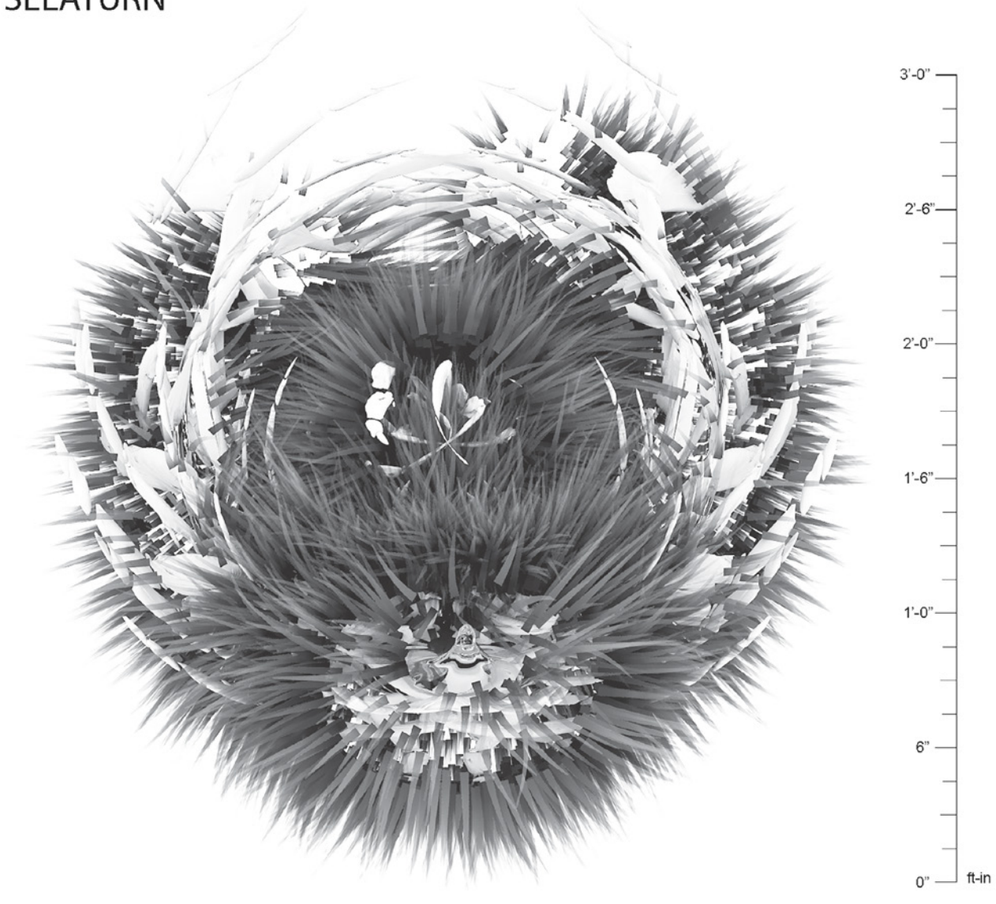
ECOTARIUM | SELAGINELLA PARADISAEA

The organism requires certain initial conditions of water and sunlight to move from zygote stage into a plant based membrane for embryonic development of the avian biology. The incubation period of this anatomy takes approximately 20 days. Once complete, the organism "hatches" and unfurls with the membrane as an epidermal surface. Within 10 days this process will repeat, with a single mature organism shedding up to a thousand individual spores. A mature Sela-Tern will increasingly adopt avian instinct and capabilities - including flight. The creature incorporates its migratory aspects in an effort to infiltrate new geographies.

HABITAT OF THE CREATURE | FOOD CYCLE

The Sela-Tern is a land and air based organism. The creature will spend the first phase of its life connected directly to the soil and gestate through root based and osmotic systems. Upon maturity, the creature will uproot and begin an omnivorous existence where nutrition is met through osmotic systems and avian digestive biology. The creature must receive sunlight, water, and a mixture of plant, mineral, and animal food sources. The creature therefore thrives within regions with distinct seasons, and adapts to limited food source through both migration and an ability to suspend animation (desiccate) into tumble weed phase.

SELATURN



Species
Actual Height: 3'-0" +/-

ECOTARIUM | SELAGINELLA PARADISAEA

INTERACTION WITH ENVIRONMENT

The Sela-Tern was engineered to have maximum terrestrial access - and therefore have proximity to all of the Earth's surface. The creature interacts with the various aspects of the environment based on regional climate and food source. Under ideal land based conditions, the creature will remain root bound and under reoccurring reproductive cycles. When food sources become stressed, the avian migratory instinct will have the creature uproot in search of resources. Once uprooted, the creature will not again connect with the ground. Under extreme conditions, such as lack of food or water, the creature can assume a state of suspended animation and exist for an undermined amount of time as a "tumble weed". In this state, the creature can blow across landscapes, and occasionally travel through bur-like connection to animal fur.

REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION | CHARACTERISTICS OF THE MERGER

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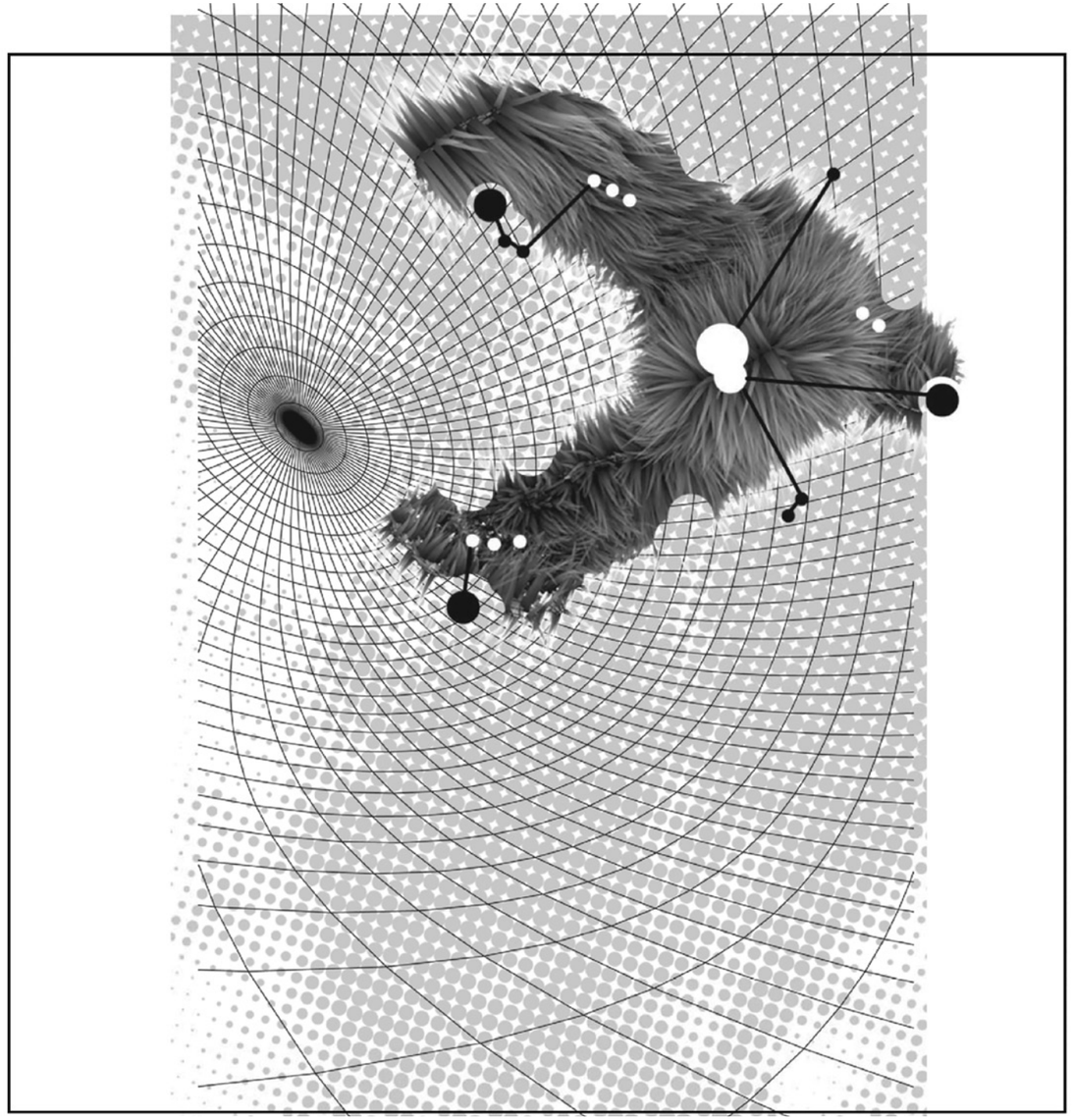
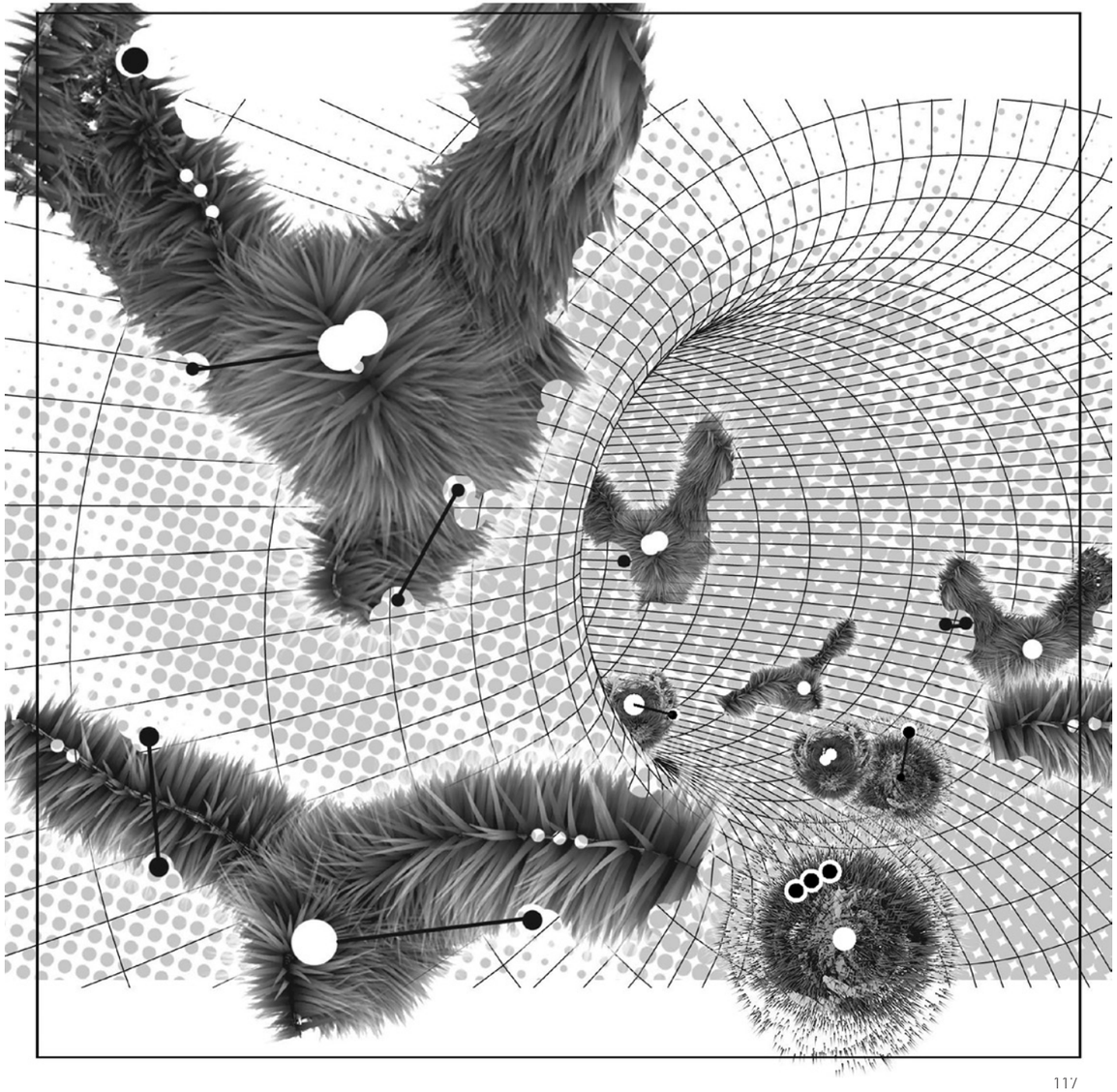
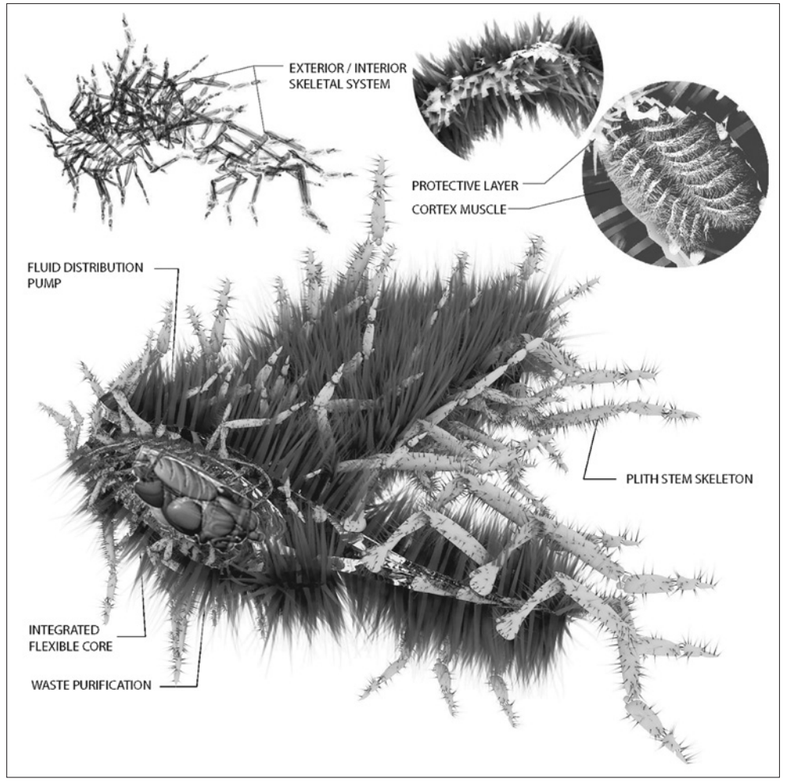


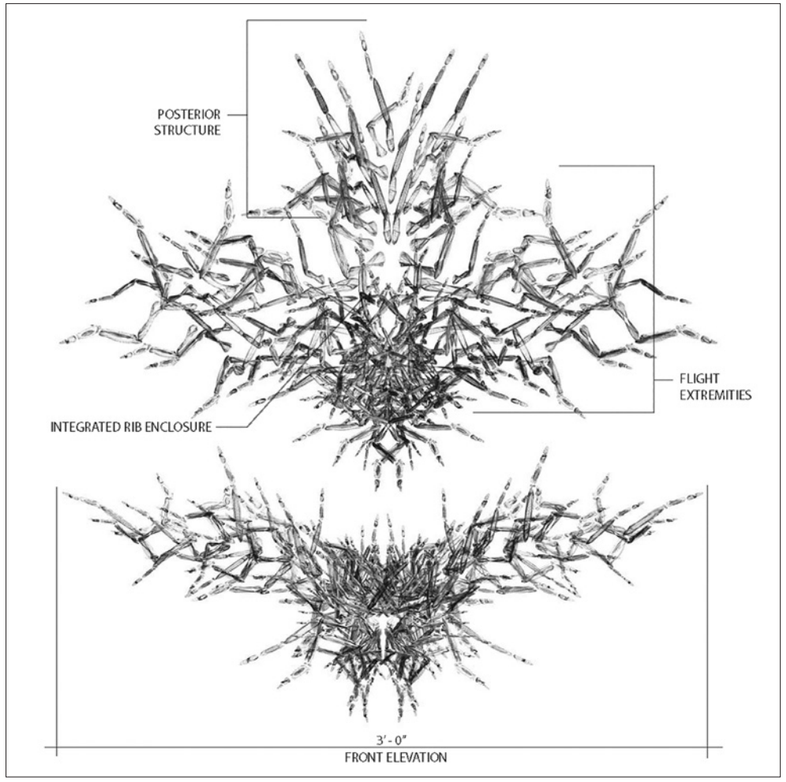
will have the creature uproot in search of resources. Once uprooted, the creature will not again connect with the ground. Under extreme conditions, such as lack of food or water, the creature can assume a state of suspended animation and exist for an undermined amount of time as a "tumble weed". In this state, the creature can blow across landscapes, and occasionally travel through bur-like connection to animal fur.

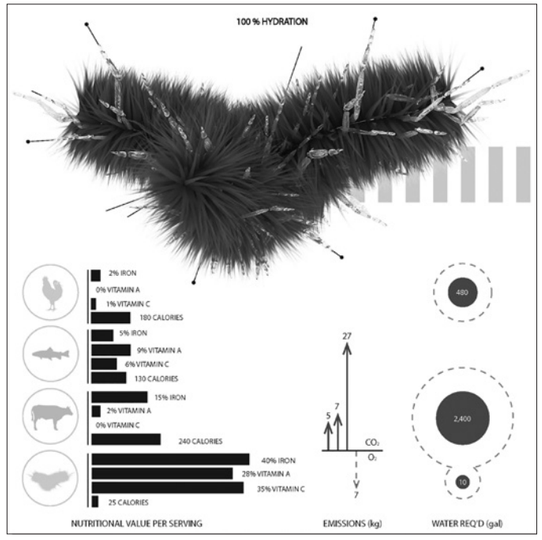


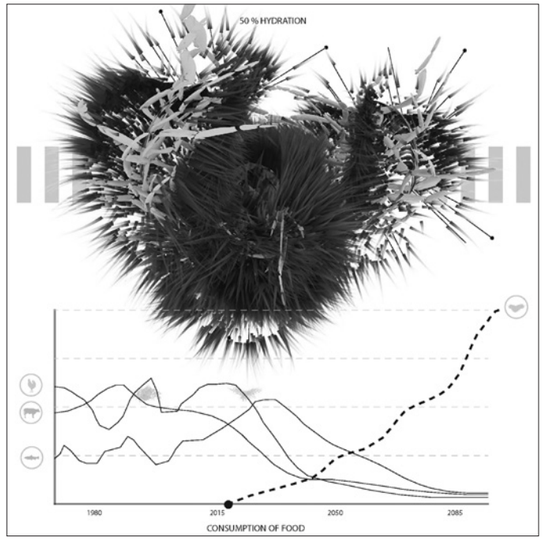
ECO-CREATURE | SELAGINELLA PARADISAEA

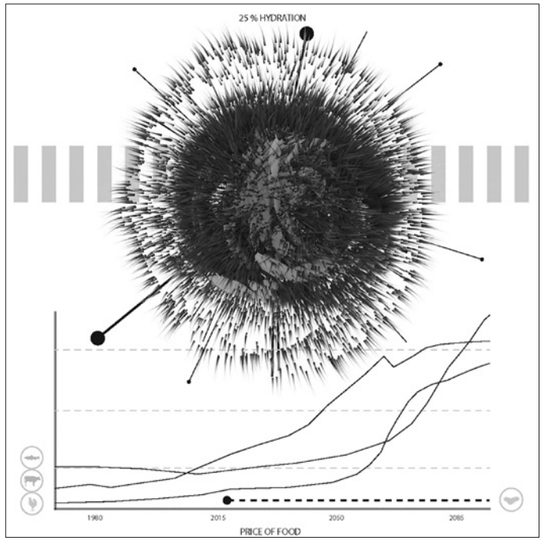


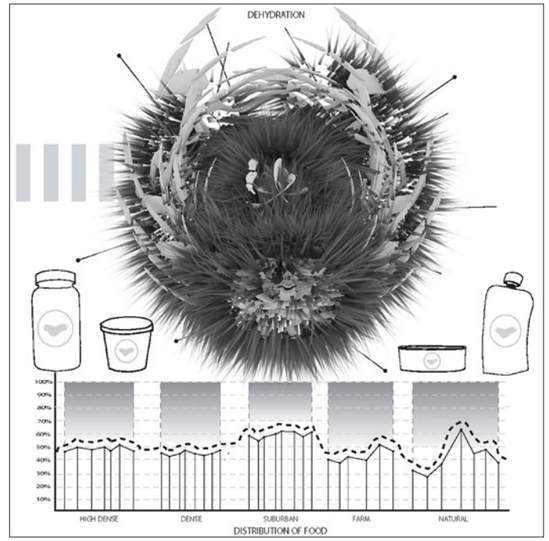
ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.



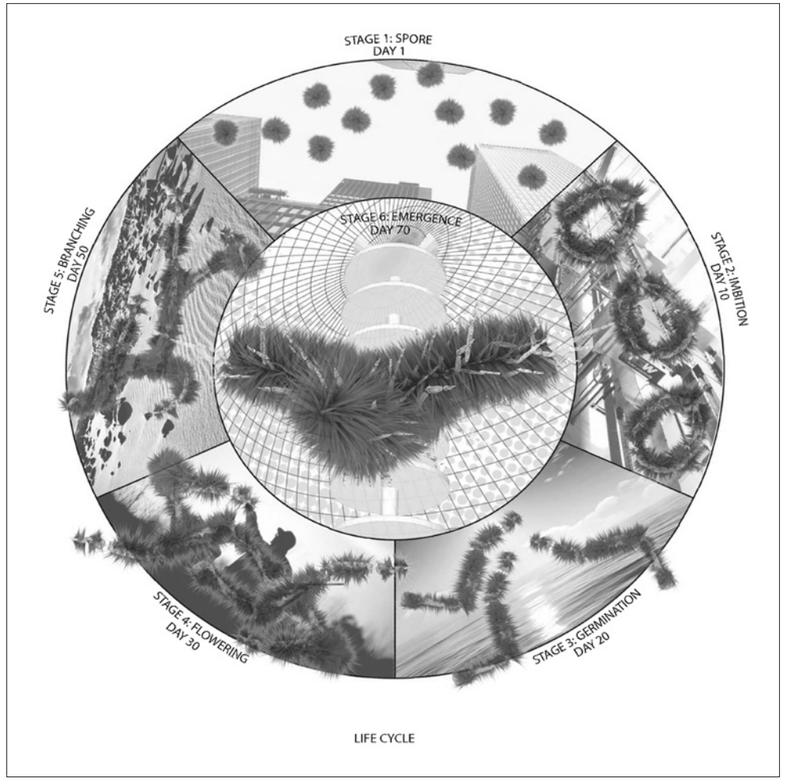

100 % HYDRATION
2% IRON
0% VITAMIN A
1% VITAMIN C
180 CALORIES
5% IRON
9% VITAMIN A
6% VITAMIN C
130 CALORIES
15% IRON
2% VITAMIN A
0% VITAMIN C
240 CALORIES
40% IRON
28% VITAMIN A
35% VITAMIN C
25 CALORIES
NUTRITIONAL VALUE PER SERVING
27
7
5
CO2
O2
7
EMISSIONS (kg)
480
2,400
10
WATER REQ'D (gal)

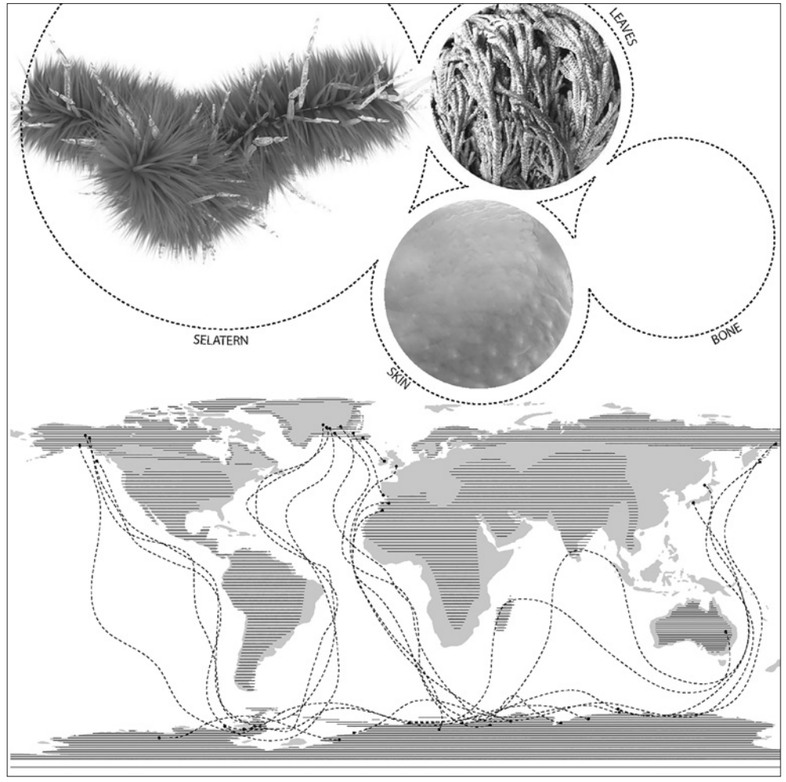

50 % HYDRATION
1980
2015
2050
2085
CONSUMPTION OF FOOD


25 % HYDRATION
1980
2015
2050
2085
PRICE OF FOOD

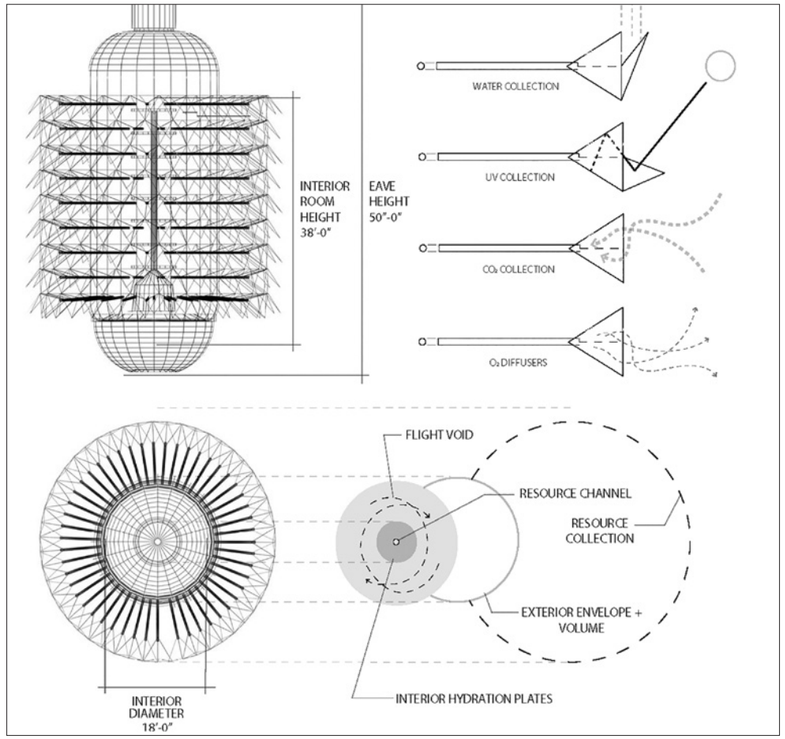

DEHYDRATION
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
HIGH DENSE
DENSE
SUBURBAN
FARM
NATURAL
DISTRIBUTION OF FOOD

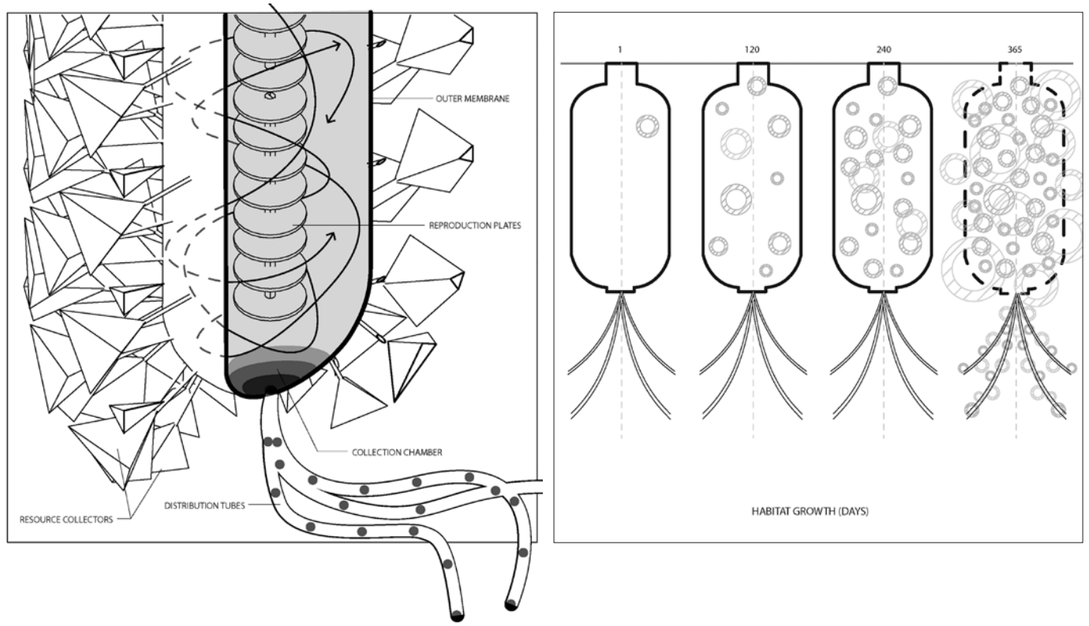
ECO-CREATURE | SELAGINELLA PARADISAEA





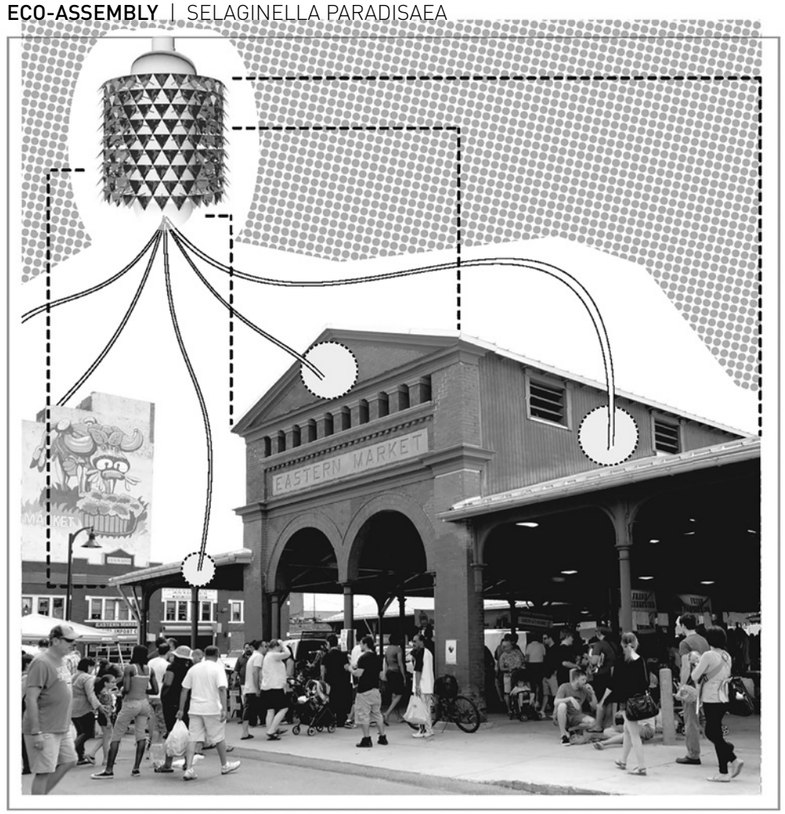
ECO-HABITAT | SELAGINELLA PARADISAEA



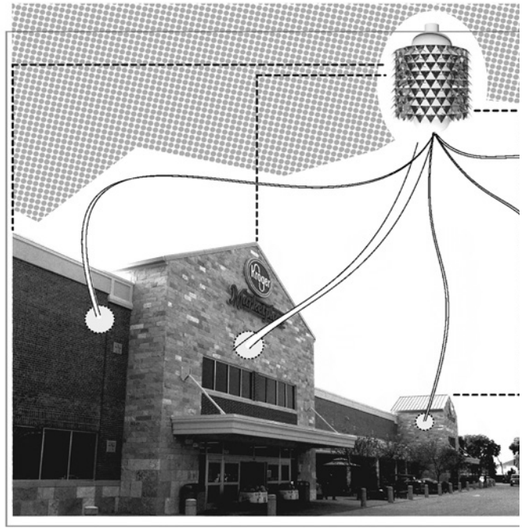


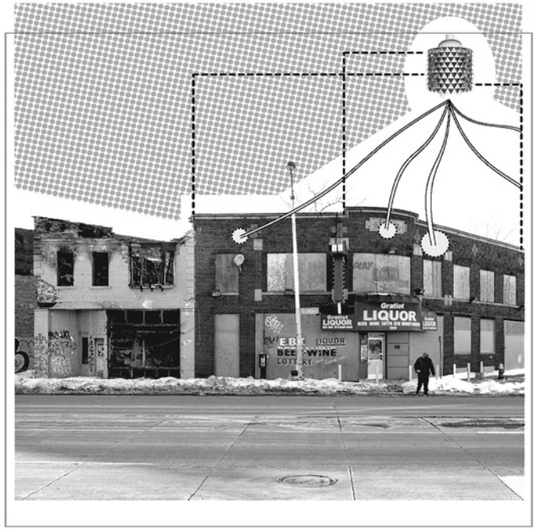
ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

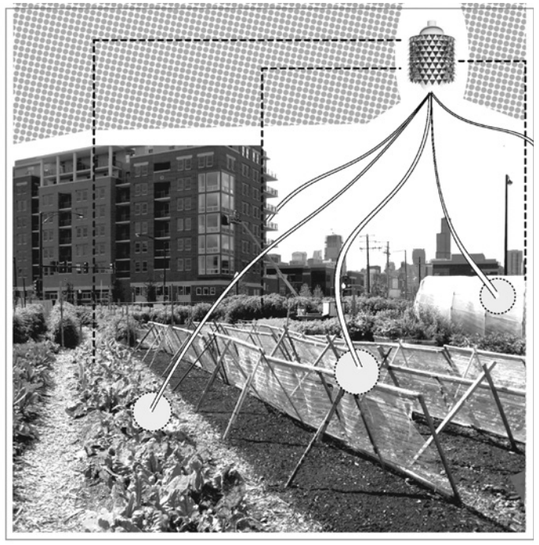
ECO-ASSEMBLY | SELAGINELLA PARADISAEA

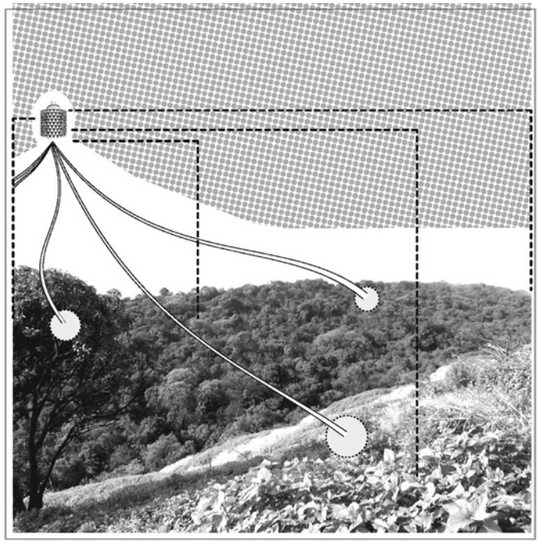


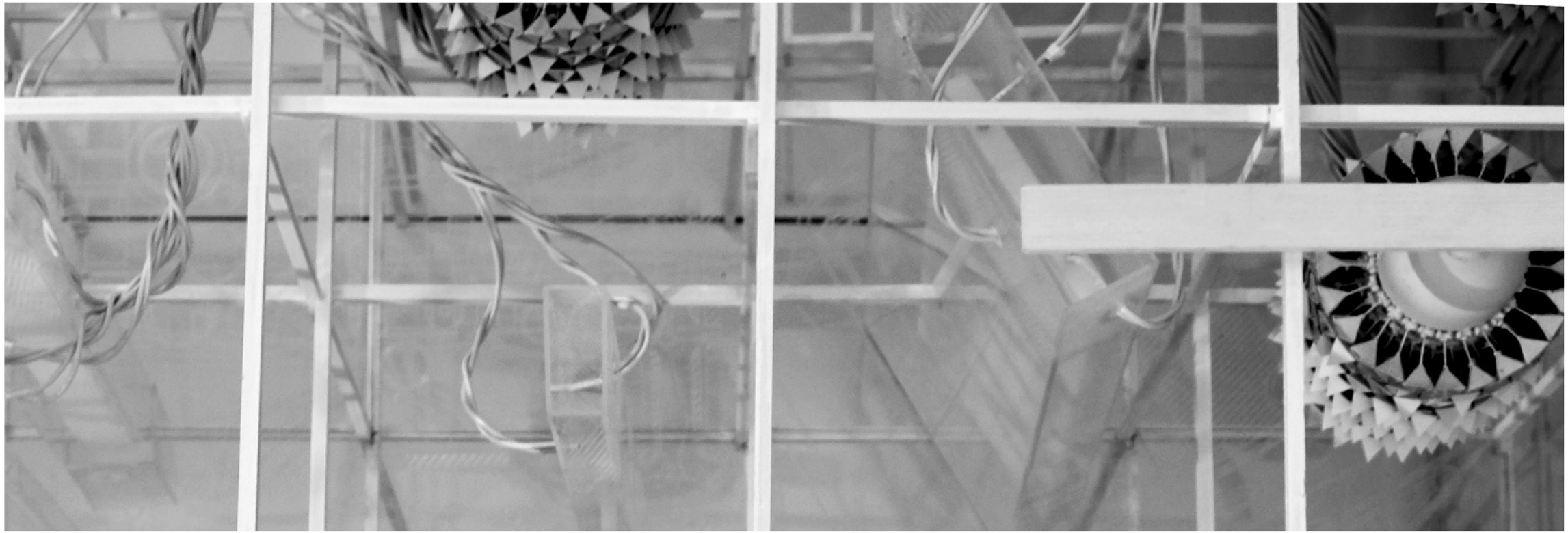
ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.





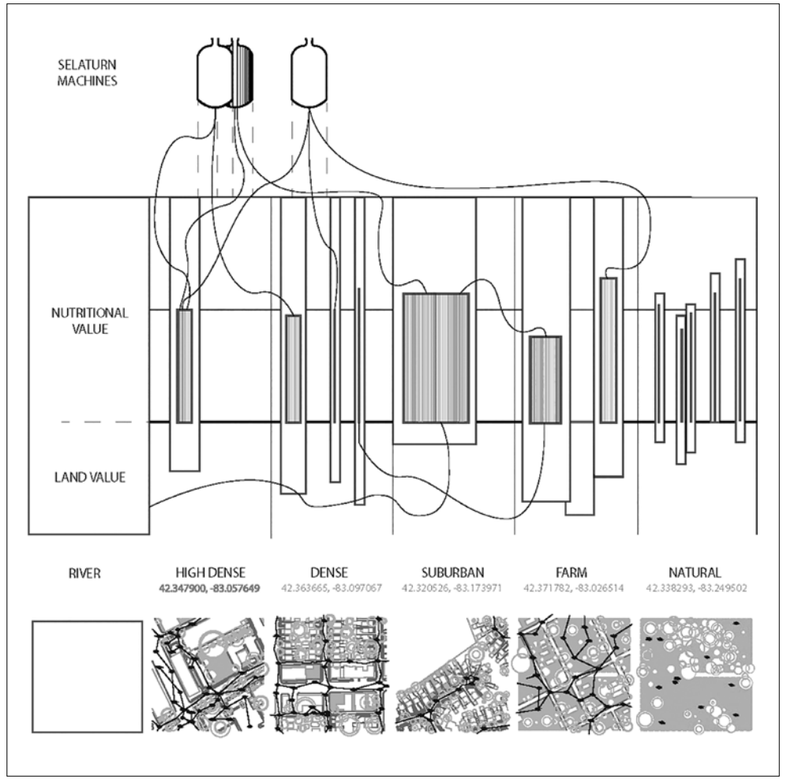




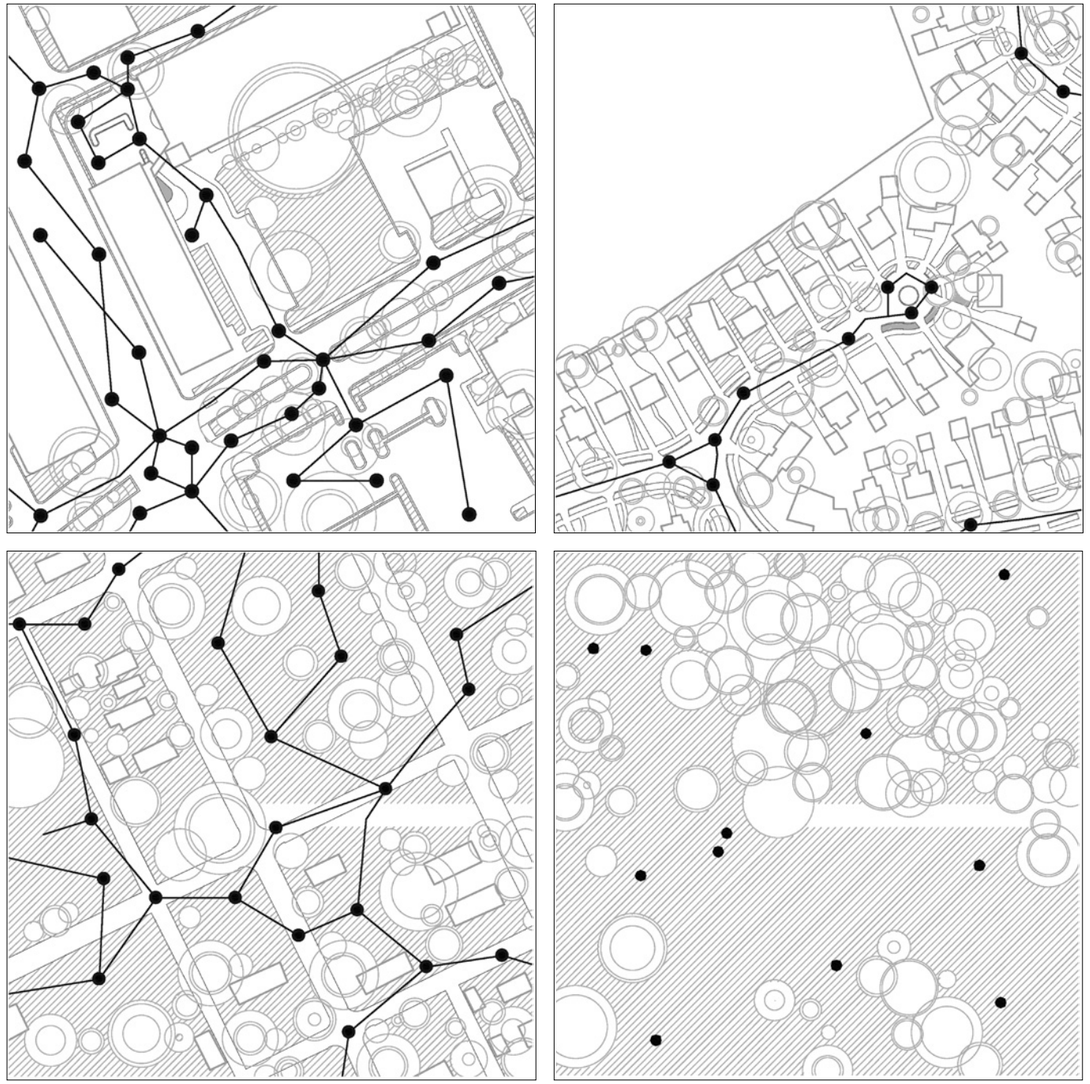


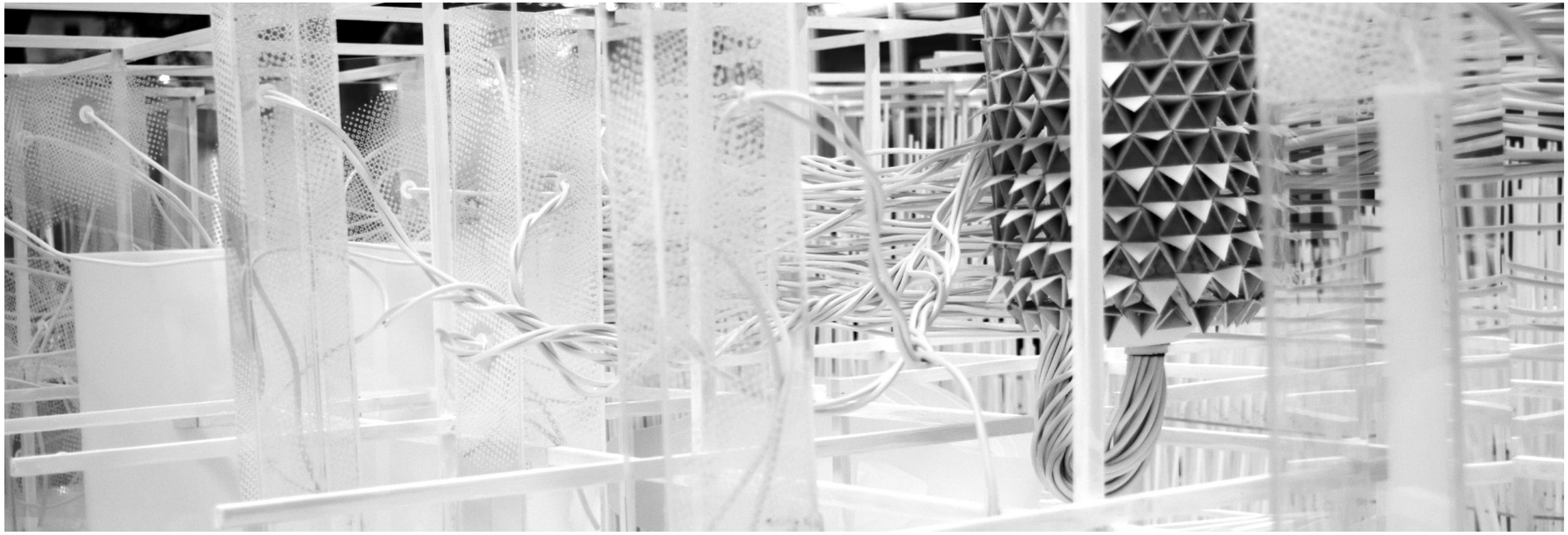
ECOTARIUM | PLAN VIEW

ECO-TRANSECT | SELAGINELLA PARADISAEA



ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.

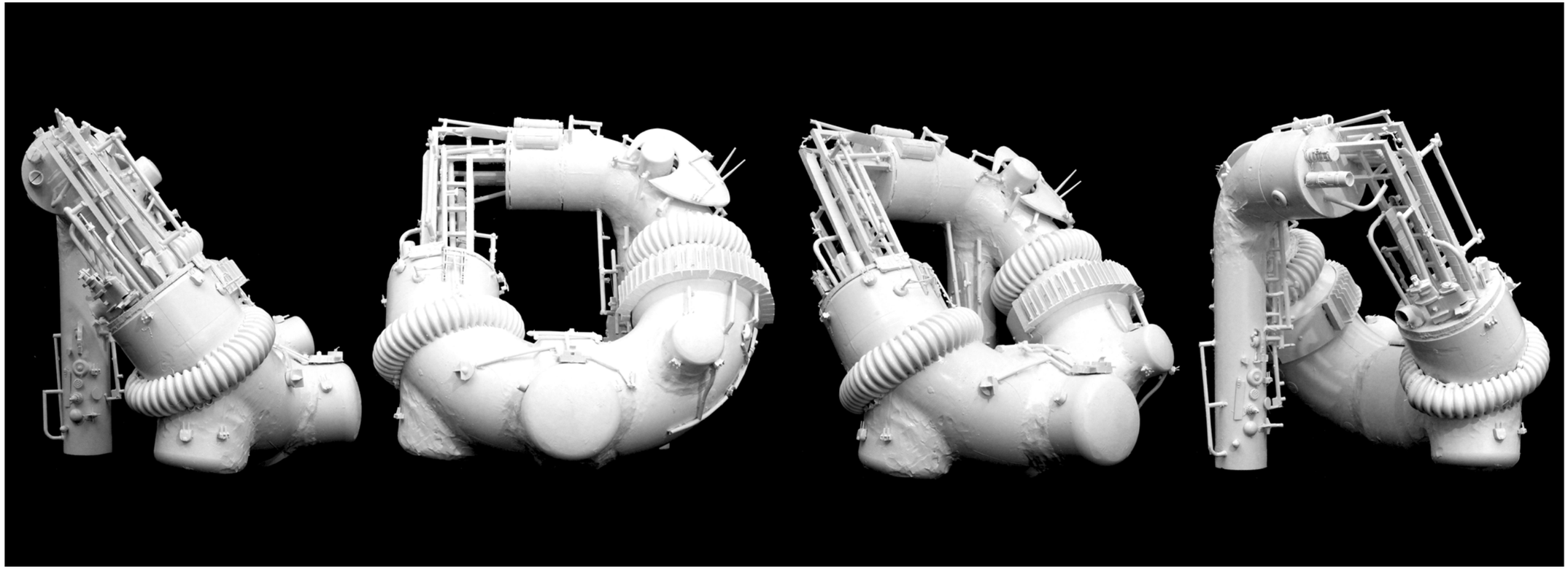




ECOTARIUM | PERSPECTIVE VIEW

IN THE FACE OF RESOURCE SCARCITY AND NATURAL HABITAT LOSS, SUCCESSFUL SPECIES WILL BE THOSE WHO EXPLOIT UNTAPPED RESOURCES, ESPECIALLY THOSE RESOURCES THAT ARE BY-PRODUCTS OF HUMAN ACTIVITY.

TROCHILUS FEBRUA



ECOTARIUM | A SPECTACLE OF ECOLOGY

THUNNUS GLYCINE MAX

TROCHILUS FEBRUA

Latin Name: Trochilus Februa

Common Name: Threshingbird

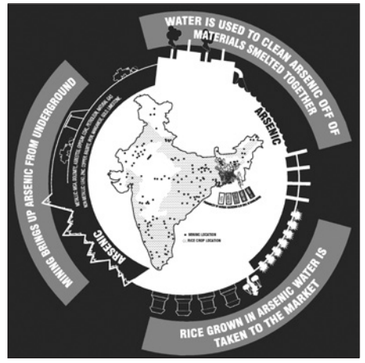
LIFECYCLE OF CREATURE

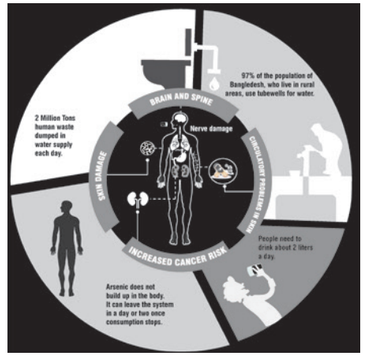
The threshingbird begins life as a traditional egg embryo, laid by females and fertilized by the males of the species. After six weeks of incubation, the hatchlings remain in the nest for another three weeks, growing almost six inches every week, at which point they are fully capable of flight and foraging for food on their own, with a digestive system that developed to the point where it can filter arsenic. Adult threshingbirds reach maturity after three years, averaging four feet in height. After maturity, creatures continue to grow at a reduced rate; some example have been to known to grow up to six feet in height, living for as long as 15 years. In recent years, domestication efforts aimed at increasing both the water and arsenic capacity of the threshingbird have resulted in larger creatures (averaging 8 to 12 feet) with shorter life spans (averaging 5-7 years).

SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

Typical of most hummingbirds, the threshingbird doesn't pair bond, finding a new mate with each successive mating season.

ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.





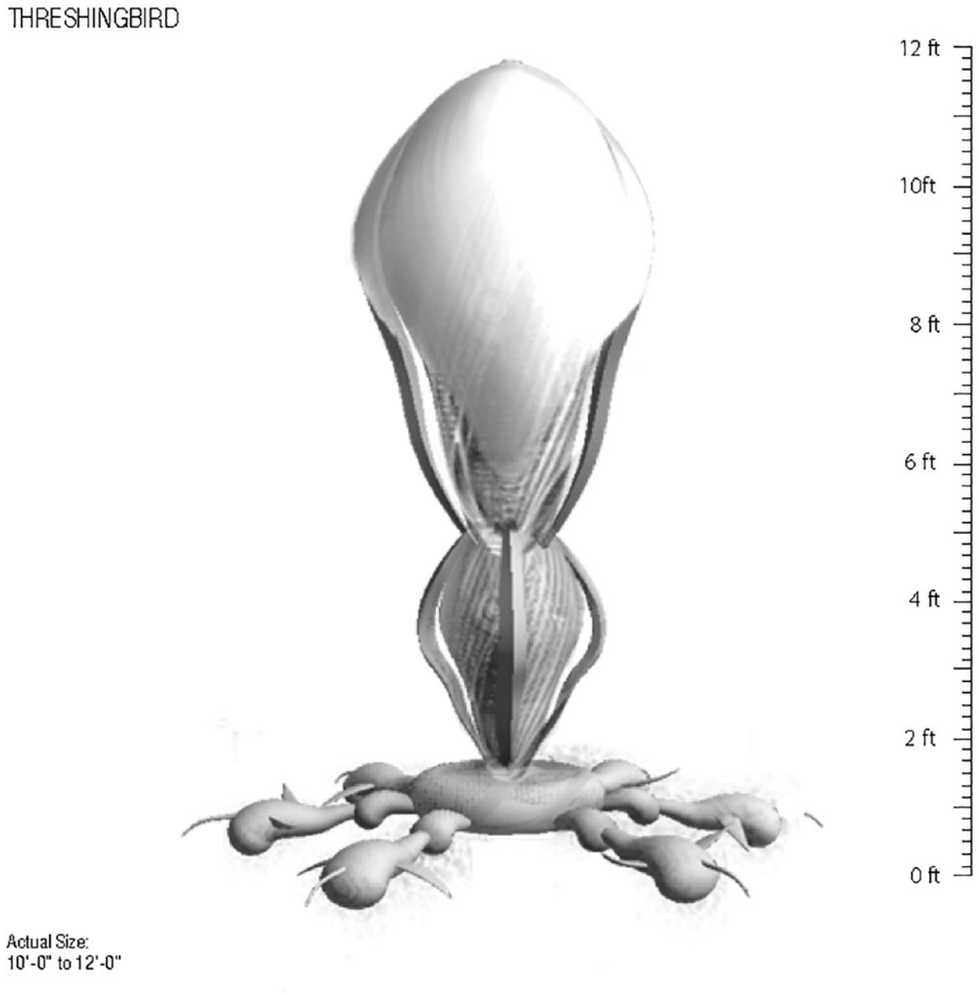
Females tend to produce an average of 2 eggs per mating season, in the nest which they build that the male visits to fertilize eggs. Most creatures tend to return to their original nesting grounds when they reach sexual maturity.

HABITAT OF THE CREATURE

Threshingbirds are originally native to southeast Asia, finding a niche through its adaptation of feeding on surface water that is rich in arsenic. Their ideal habitat consists of tall trees within a relatively sparse or open forest (old growth) with a large open arsenic surface water source within a short flight. While capable of living in higher elevations, threshingbirds are most densely found in the low-lying swamps and wetlands of India and Bangladesh. Though only found natively in these regions, recent domestication has shown that the creature, when provided with an abundant food source, can thrive in almost all temperate climates.

FOOD CYCLE

It is easiest to observe the threshingbird when it feeds on arsenic surface water sources, as it prefers to feed on large bodies of water away from a shoreline, as it is most susceptible to predators close to the ground. The species tends to feed an average of 3-5 times a day, consuming up to one gallon of water per day. Because of its specific taste for arsenic water, it has little competition for food, and tends to thrive in the



rapidly urbanizing environments of southeast Asia. In fact, the threshingbird population experienced a large increase in population in the 1960s, owing in large part to the increase of tubewell groundwater construction, which brought higher concentrated arsenic water to the surface in large amounts. This development has also led to the successful domestication of the species in other environments, such as wastewater treatment plants in North America, where there is a large amount of arsenic for the threshingbird to feed on.

INTERACTION WITH ENVIRONMENT

Due to their slow movement and large size, threshingbirds are diurnal creatures, nesting or roosting high in trees at night to avoid predators. During daylight hours, the creatures forage for food, but tend to remain near the upper canopy for protection. In order to fly between the upper canopy and surface water, the creatures use a hydrogenous bladder to create positive and negative buoyancy, allowing to rise and fall, while using its wings for propulsion and steering.

REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION

The threshingbird is extraordinary in that its closest relatives are both a plant and animal species; it shares biological attributes of the prickly pear cactus (optunia ficus indica) and the giant hummingbird (patagonia gigas). From a distance, the

threshingbird looks like a cactus, possessing similar skin, as well as body shape and structure. Upon closer inspection, one should be able to see beaks and wings on each articulated arm, like that of the giant hummingbird.

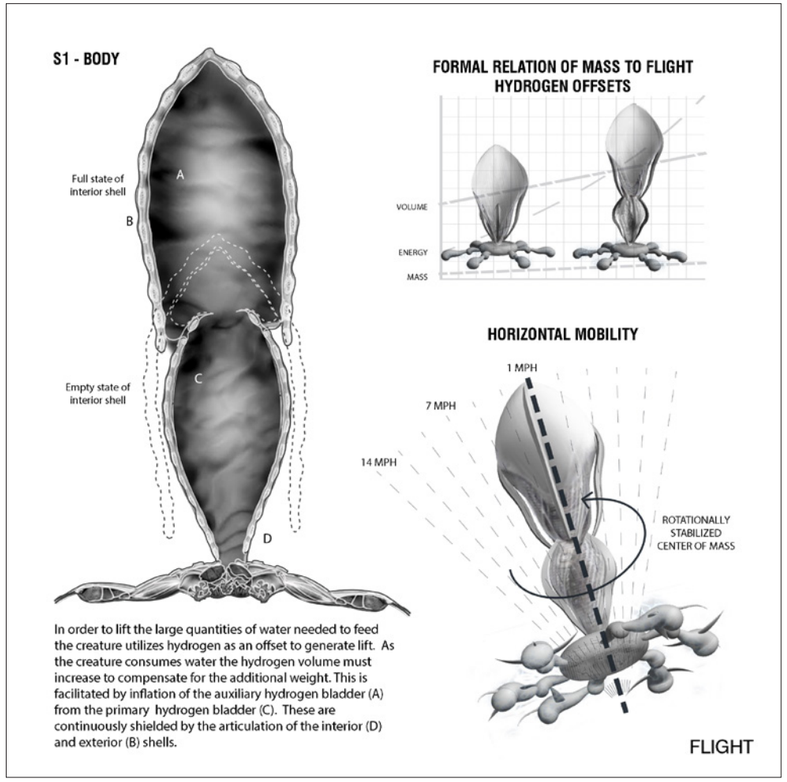
CHARACTERISTICS OF THE MERGER

Like a giant hummingbird, the threshingbird feeds through a similar beak and crop, and oxygen is distributed to the body through a circulatory system that closely mirrors that of the hummingbird species. While this creature does have wings that are typical among giant hummingbirds, these wings are not used to hover in place (owing to the creatures large hydrogenous bladder which creates positive buoyancy), but as a rudder, using them to change direction. Unlike a typical hummingbird, which feeds on nectar, the threshingbird has adapted a taste for arsenic-laced water. It's digestive system, mirroring the mucilage flesh of the prickly pear cactus, filters out arsenic to keep the creature from being poisoned. The separated arsenic is captured in the threshingbirds fruit, similar to that of the cactus. In addition to energy from feeding, the creature has a photosynthetic dermis, which provides additional energy through sun absorption.

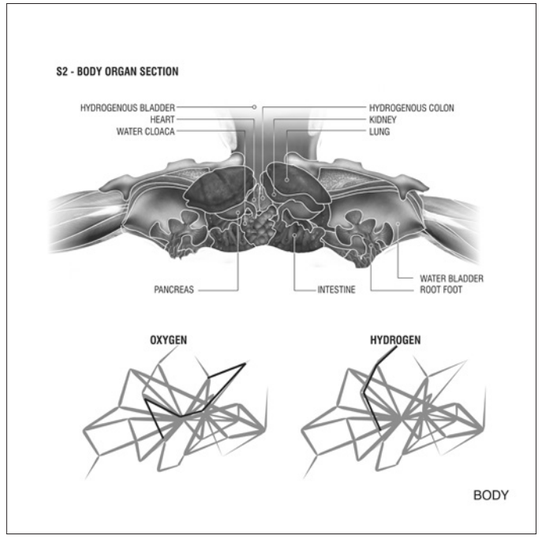
The females lay eggs which the males then fertilize. The eggs hatch after approximately 6 weeks and grow to full maturity within 3 years. The facility stimulates the hybrid's growth by artificially accelerating the night and day cycles.

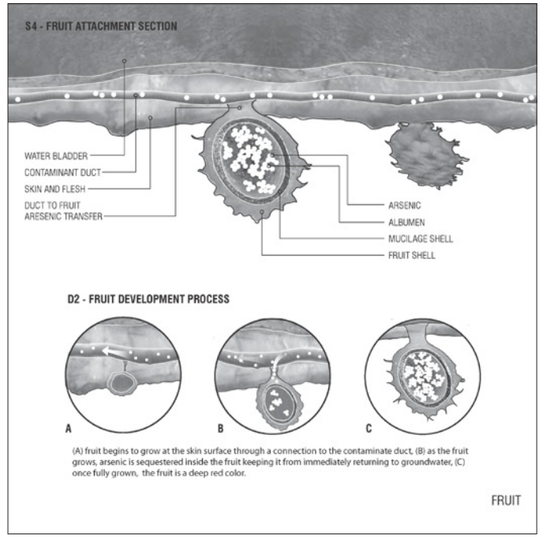
R2 - NESTING POD IN TRAINING FACILITY

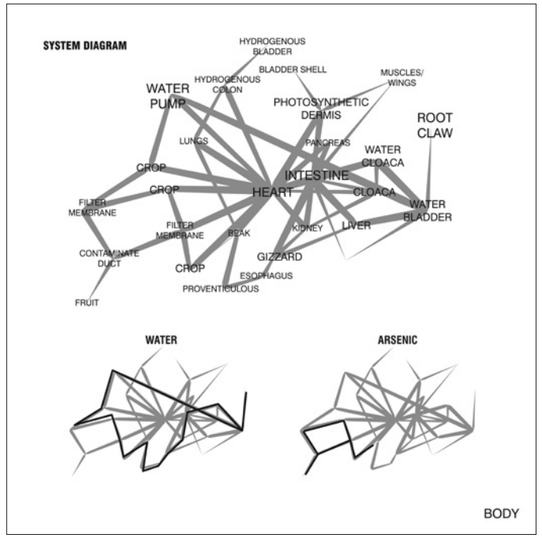
ECO-CREATURE | TROCHILUS FEBRUA

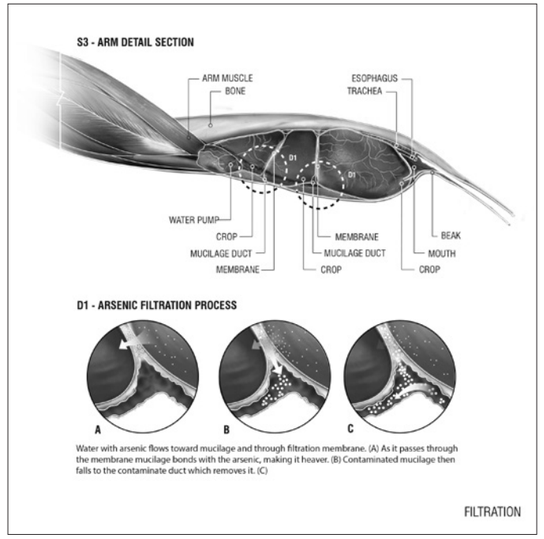


ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.

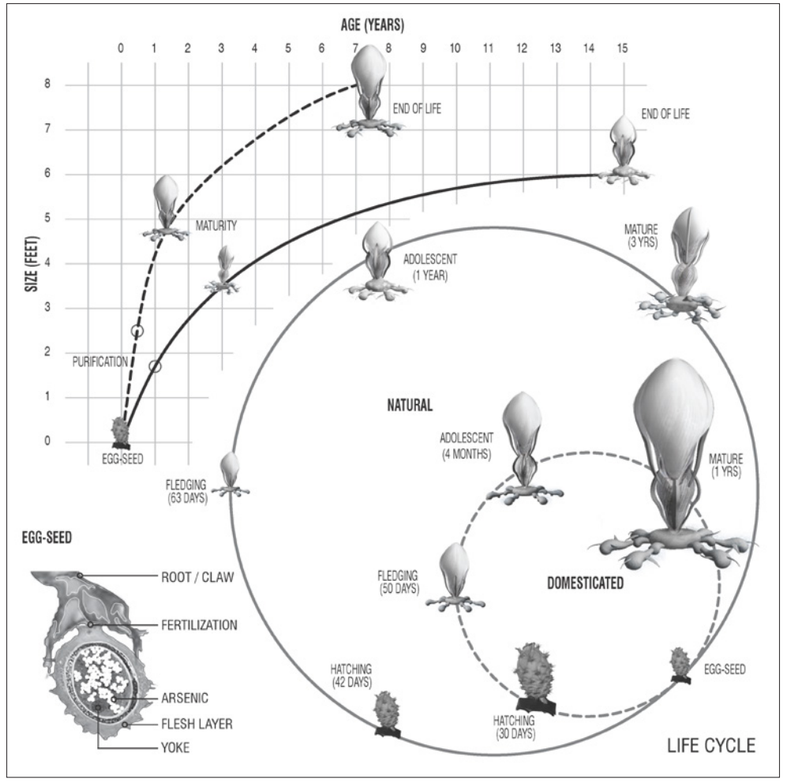


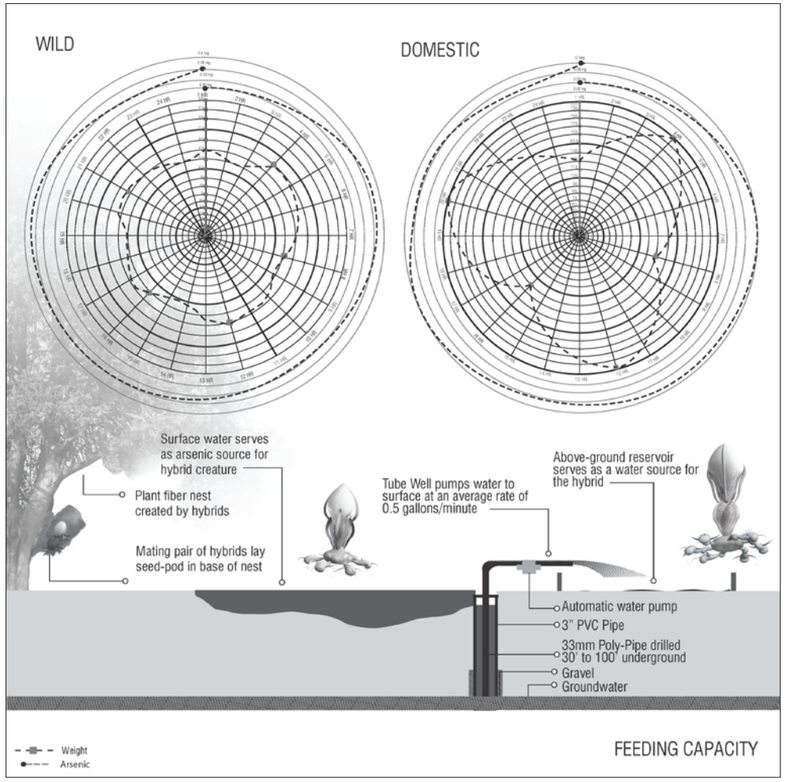




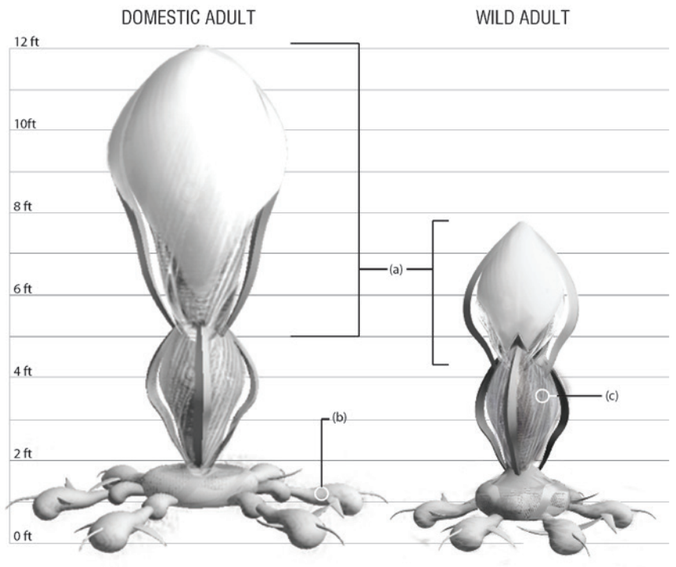


ECO-CREATURE | TROCHILUS FEBRUA



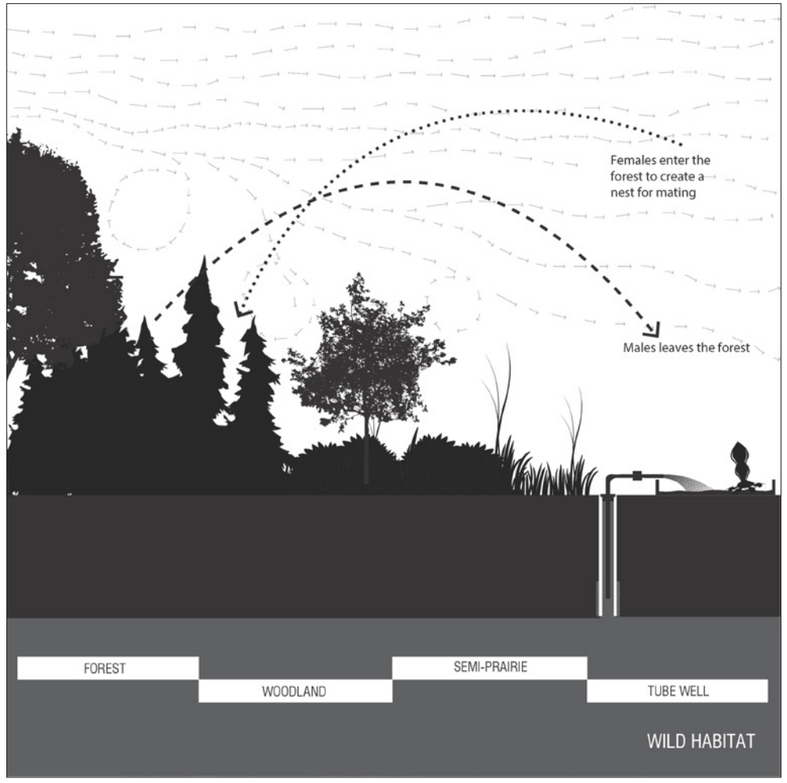


ECO-CREATURE | TROCHILUS FEBRUA

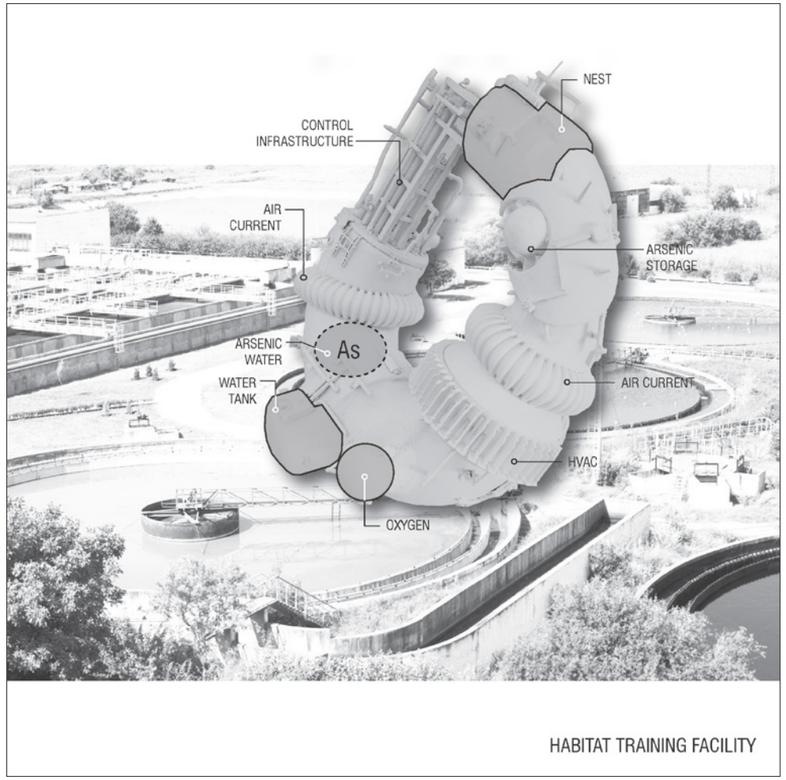


(a) The domestic creature was engineered to be larger in order to carry more water in flight. It has a hydrogenous bladder twice the size of that of the wild (b) The domestic creature was bred with an extended arm in order to filter more water faster (c) The wild version has a more camouflaged exterior in order to protect itself from potential predators.

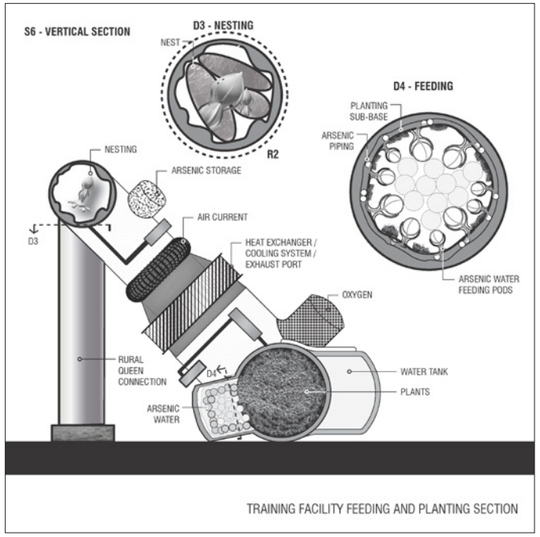
DOMESTIC + WILD COMPARISON

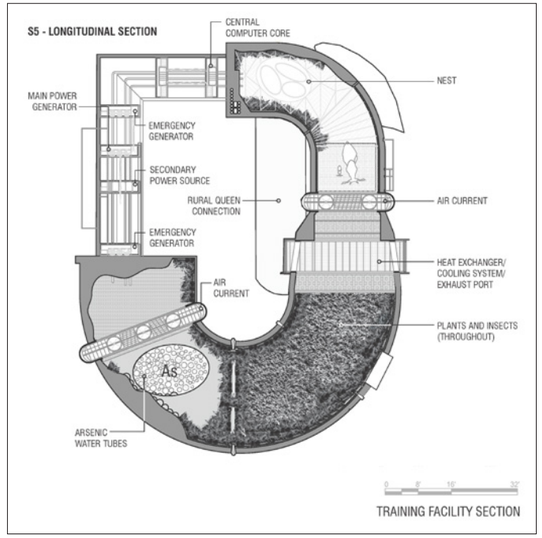


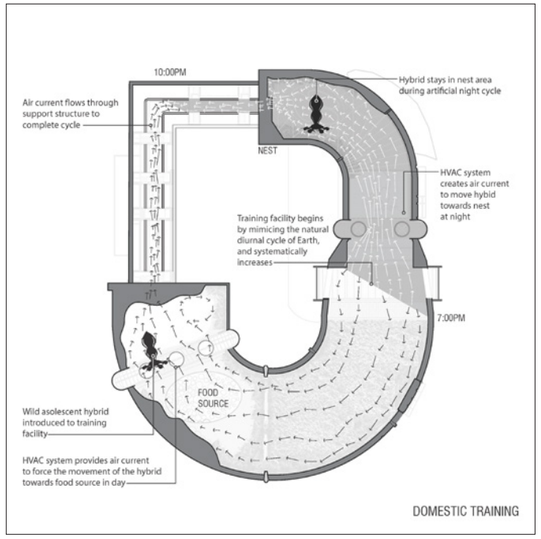
ECO-HABITAT | TROCHILUS FEBRUA

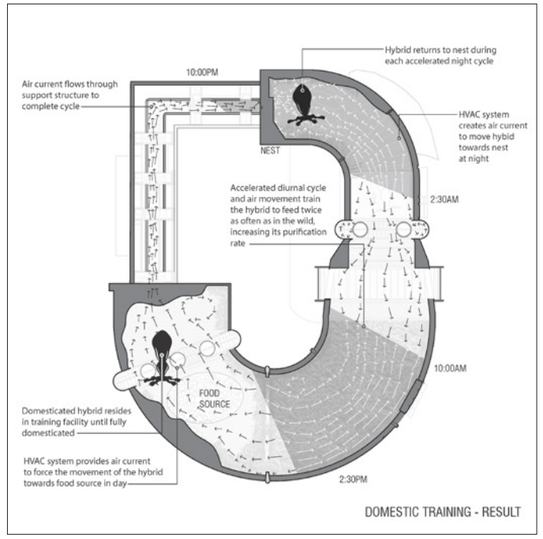


ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

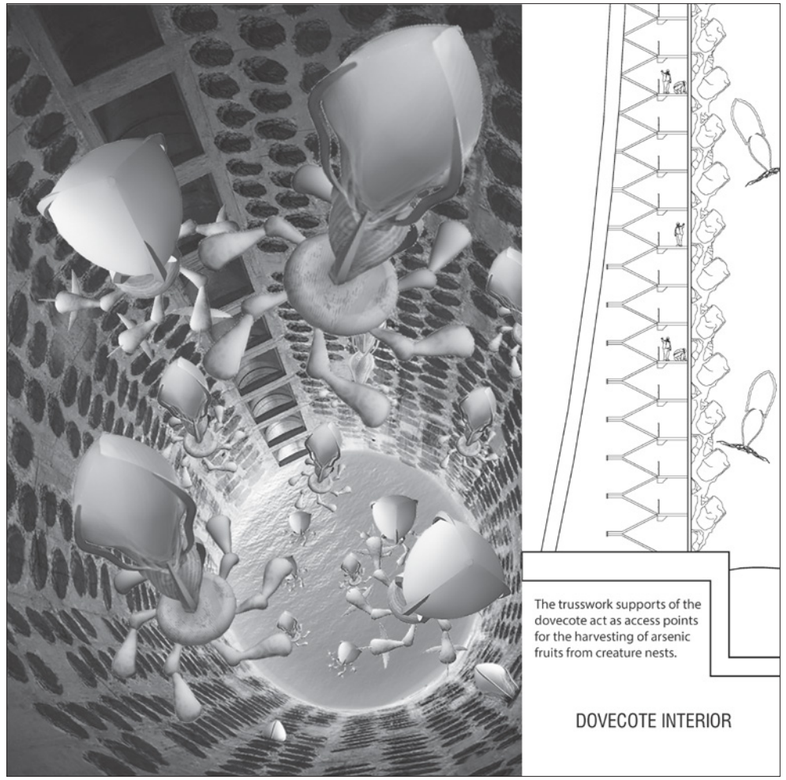




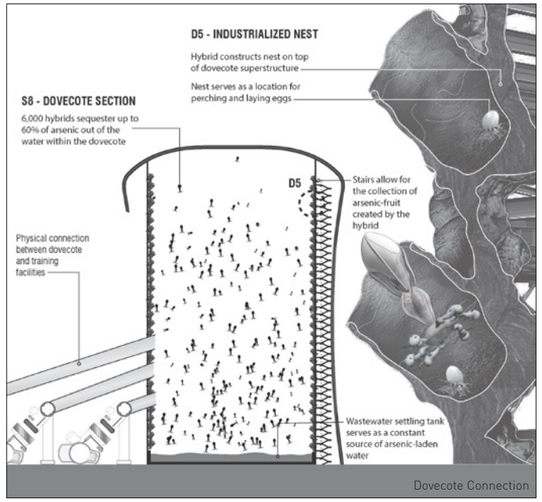


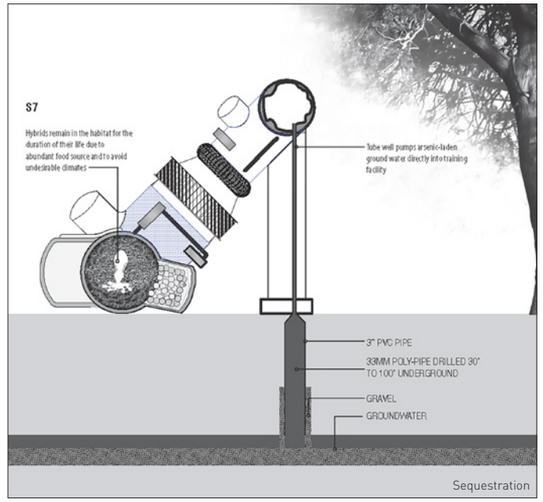


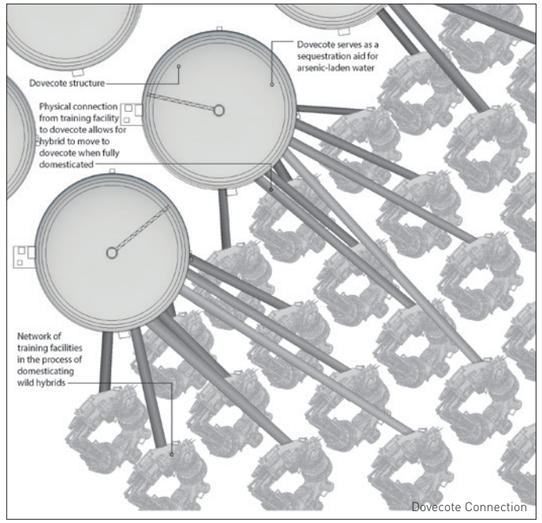
ECO-ASSEMBLY | TROCHILUS FEBRUA

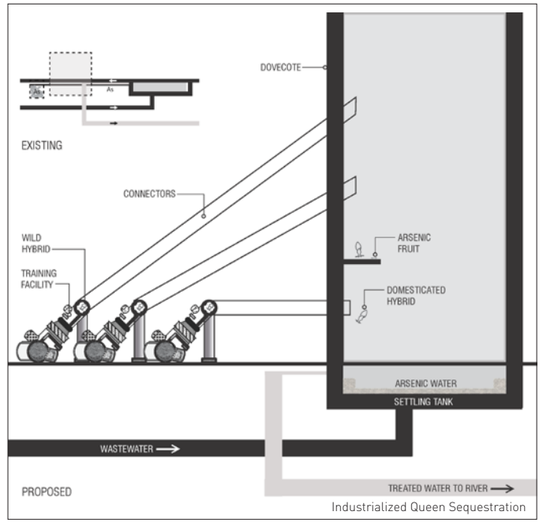


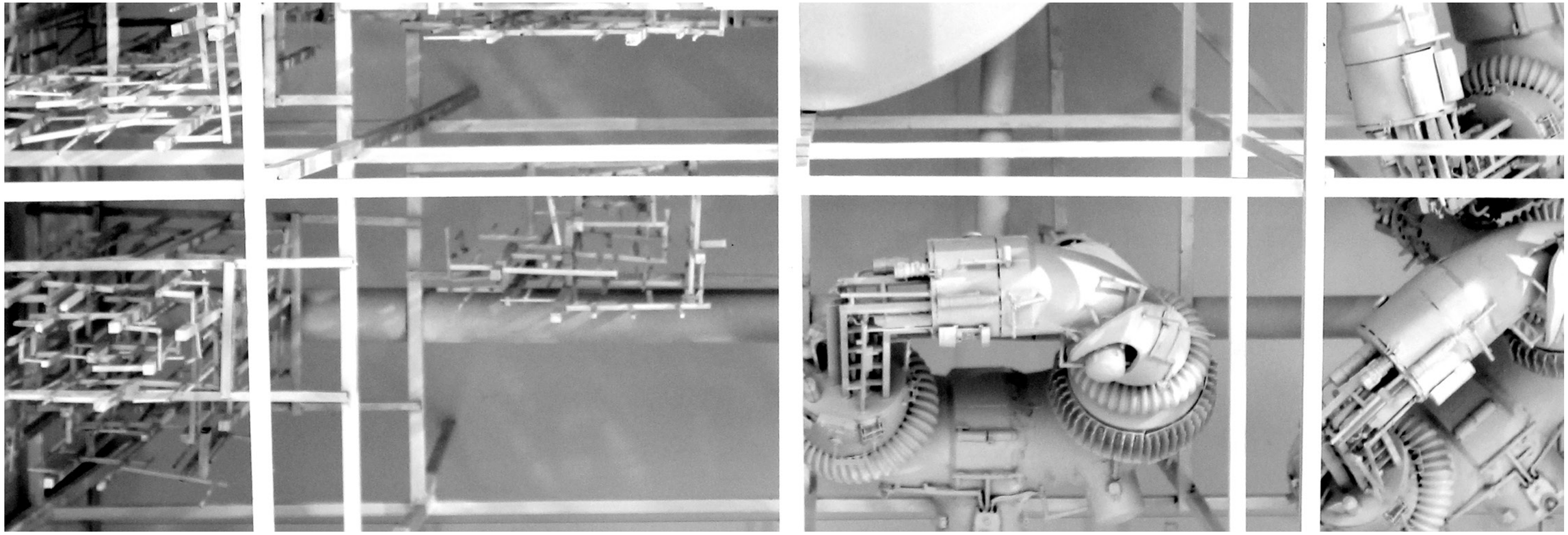
ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.





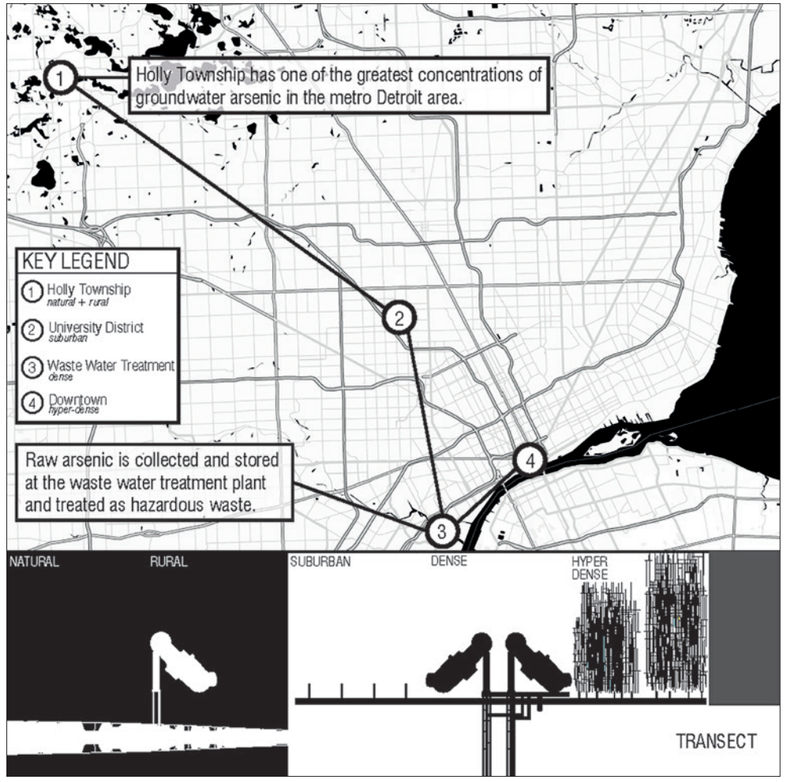




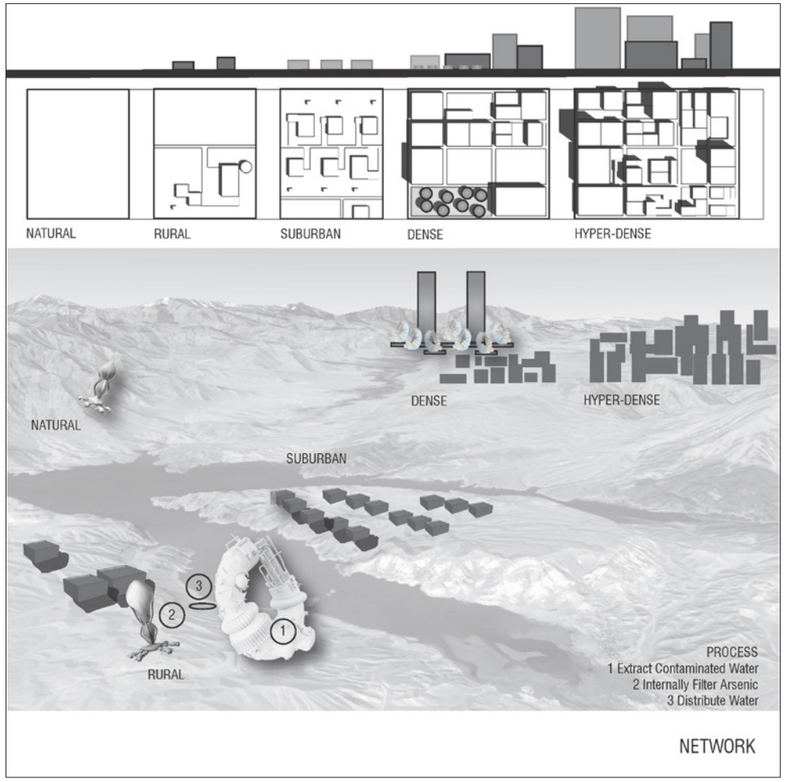


ECOTARIUM | PLAN VIEW

ECO-TRANSECT | TROCHILUS FEBRUA



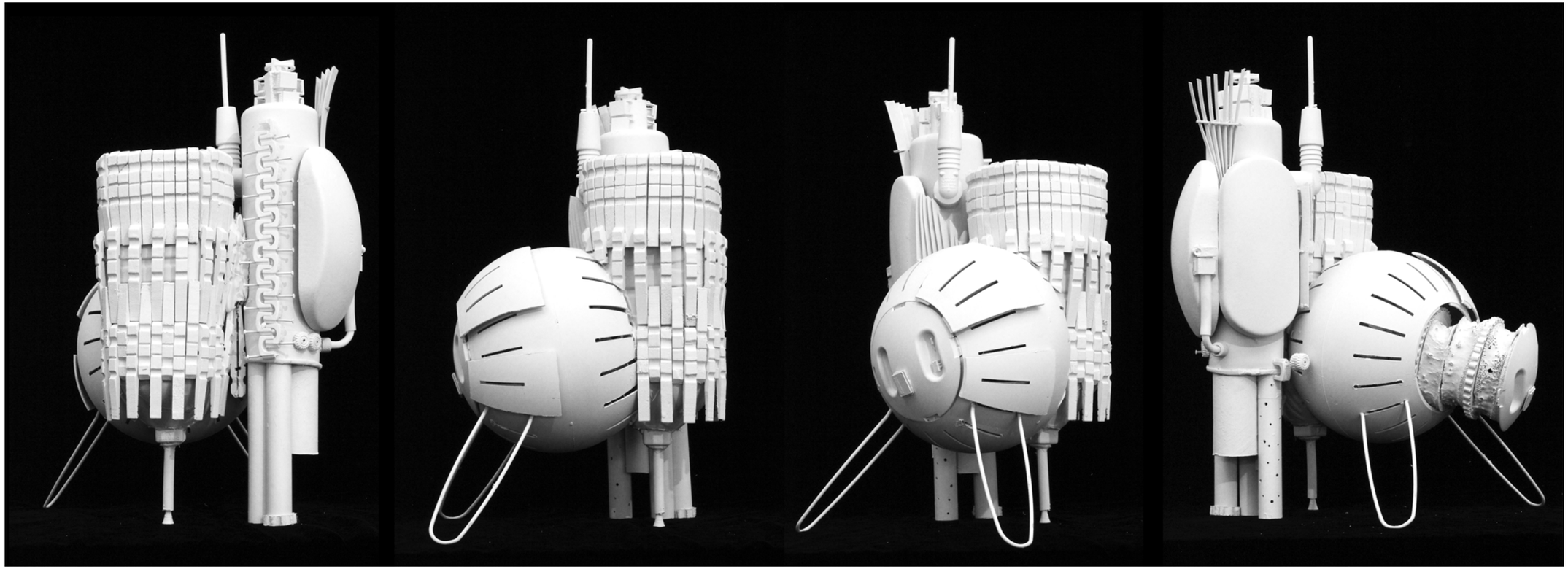
ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.



ECOTARIUM | ELEVATION VIEW

GLOBAL USE AND EFFICIENCY OF INFRASTRUCTURE VARIES DEPENDING ON SOCIO ECONOMIC POSITION. COMMON HARD/ENGINEERED INFRASTRUCTURES ARE FAILING AND SOFT/OPEN INFRASTRUCTURES ARE BEING IGNORED.

NYMPHAEACEAE HIPPODETRITUS



ECOTARIUM | A SPECTACLE OF ECOLOGY

NYMPHAEACEAE HIPPODETRITUS

NYMPHAEACEAE HIPPODETRITUS

Nymphaeaceae hippodetritus [sub-Saharan habitat]
Nymphaeaceae hippodetritus forma Defretus [formal variation]
Common Name: HPAD | Amphibious biogenetic creature

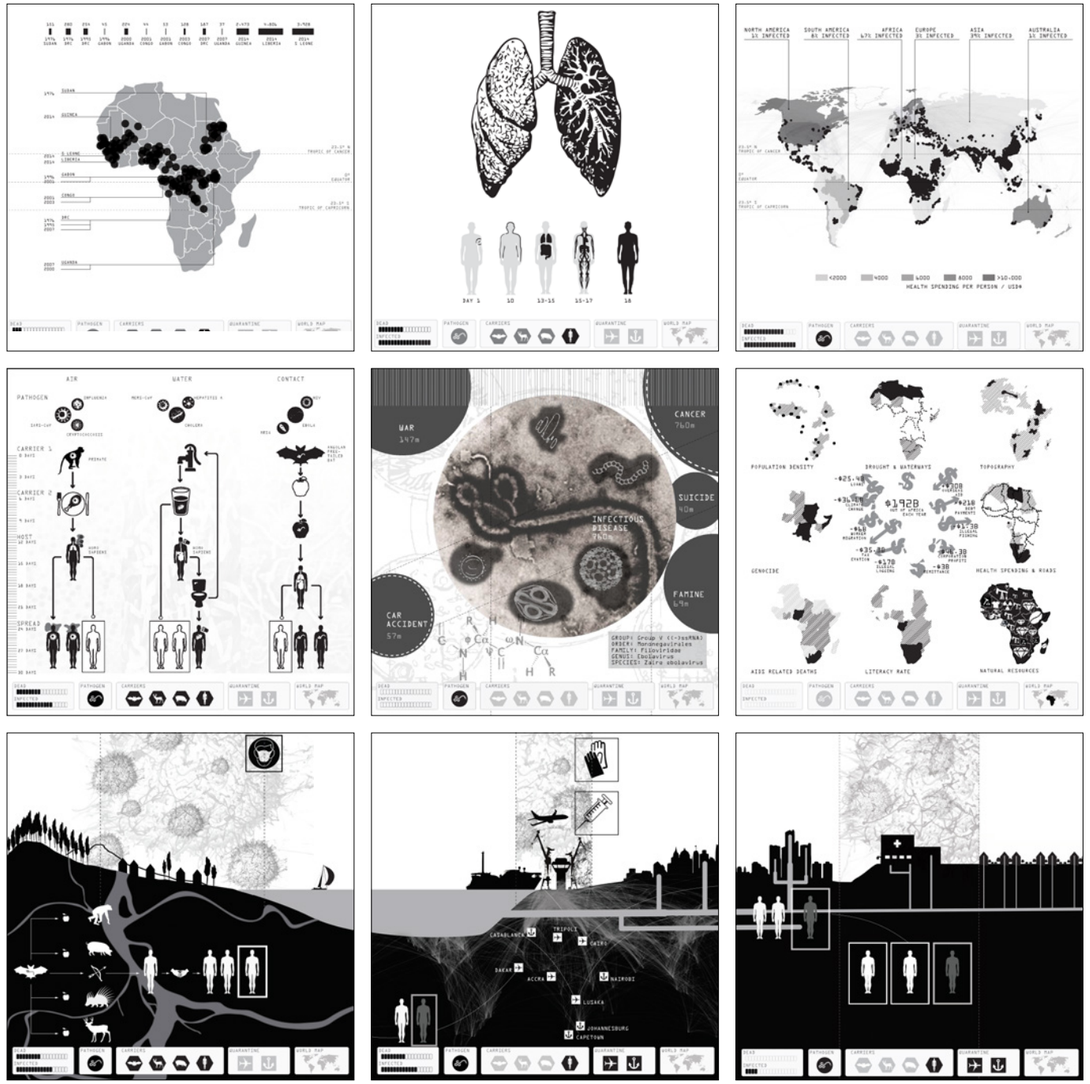
LIFECYCLE OF CREATURE

The lifecycle of HPAD has three stages: (1) newborn HPAD underwater (5-8 minutes), (2) a calf HPAD nursed and schooled underwater by their mother (5-8 months), and (3) an adult HPAD growing and maturing by the age of 3 years. HPAD's have an average life span of 50 years. Known for their diurnal cycle, HPADs are sedentary in water during daytime and are foraging on land during the night.

SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

HPAD is a monoecious hermaphrodite. HPAD's reproductive system is an integration of the female mammalian reproductive organs and the angiosperm reproductive strategy. A mature adult HPAD produces fertile appendages with flowers that reach water surface. During pollination, the pollens are transferred to the stigma through wind (self-pollination) or through hover-fly (agent pollination). Post-fertilization, the flower recoils into the uterus of the HPAD. Following DNA transmission and binary fission, an embryo is formed and sustained for 240 days, which

ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.



is followed by the birth of one HPAD calf. An HPAD is slow and sedentary. Pollination reduces hyper-sexual characteristics and female mammalian reproductive organs allow efficient gestation. Post-natal strong bond between an adult HPAD and its calf is common.

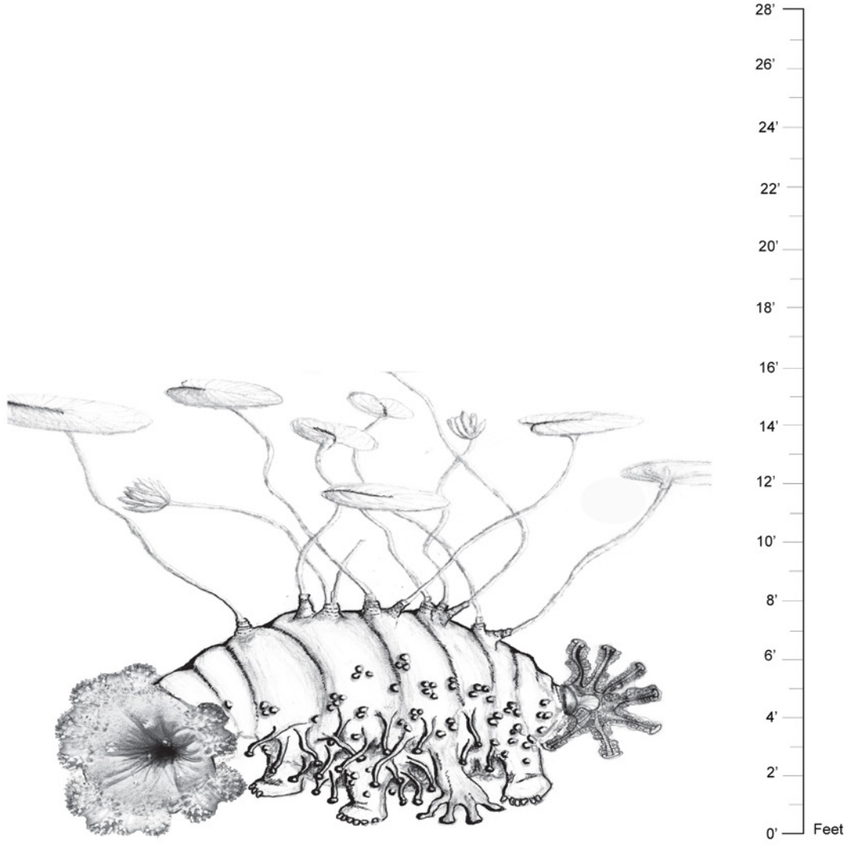
HABITAT OF THE CREATURE

Nymphaeaceae hippodetritus (HPAD) is an amphibious biogenetic creature. HPADs spend about 16 hours a day in water during day and forage for food all night, returning to the water before dawn. Traditionally, HPADs are found in slow moving lakes and rivers in sub-Saharan Africa, usually in herds of about 3 to 20 individuals. Nymphaeaceae hippodetritus forma Defretus (Great Lakes HPAD) is a formal variation common in the American Midwest, especially in the Great Lakes region. Maintaining some of the same characteristics, the Great Lakes HPAD has evolved to make the Combined Sewer Overflow sites as their primary habitat in this region.

FOOD CYCLE

HPAD is an herbivore feeding on guano as well as small grasses, aquatic plants, and half-eaten fruits. Its major food consumption is during the night when it forages on grasslands picking on the fresh guanos of nocturnal creatures like bats. It has a funnel-shaped intake orifice which sucks out the guano

HPAD SCALE



Nymphaeaceae hippodetritus
Actual Length: 21'-0", Actual Height: 7'-6" (Land) , 15 - 0" (Water)

and small loose grasses from the land (avg. eating capacity of 30 kilos/day). While underwater during daytime, it sucks in soil and organic detritus matters and uses its underbelly tentacles to draw in water from the river bed. The digestive system of HPAD consists of an esophagus (food pipe), a three-chambered stomach along with and a coiled intestine which ends in a fan like structure with multiple orifices for excretion (recta tail). HPAD stomach is a tuber-cell bio-morphed organ that sorts solid foods from liquid water using the first two gravity-based chambers. Solids are decomposed and composted in the third chamber, while water is pumped up using the phloem-suction to the large surface HPAD leaves connected through flexible tubular stem structures.

INTERACTION WITH ENVIRONMENT

HPADs are generally harmless creatures until they are being threatened. They are highly protective about their young ones. They usually form herds in water, while move around on land as single individual in lines following the same path again and again. They are herbivores with guano and half eaten fruits as their main food source and hence found in close proximities to bat habitats at night. They help in excessively filtering water and cleaning the land through their process of food and water intake. The combination of guano collection and intake (during night) and water suction and transfer to pad-surfaces make HPADs an effective system for pathogen destruction (like Ebola virus)

through UV radiation. HPAD is a territorial animal. It marks and defends a territory by urinating and defecating. During wet season as HPADs move around, they create channeled water holes. They create small tributaries branching out from river or lake which they inhabit. Thus HPADs are agents of new ecosystem as they increase fertility and water accessibility in dry areas of sub-Saharan Africa known for Ebola outbreak.

REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION

The species chosen for this merger was African water lily, Nymphaea Caerulea, (Blue Egyptian water lily) and Hippopotamus, Hippopotamus Amphibious (Common hippo). The animal part provides the basic morphological structure though it is now a 1.5 times larger, heavier, and slower creature. It is supported by two additional middle-legs for stabilization and water suction. The plant part renders the reproductive exchange along with acting as a pathogen collection and destruction system. The main adaptation features taken are the amphibious nature of hippos and their diurnal pattern, where they stay in water during daytime and forage for food on land at night. The features taken from the water lily is the actual morphology of the plants leaf which float on water like pads and are connected through coiled tubes to the main rhizome rooted on the water bed. The flowers in the HPAD are adapted to survive on land through integration of their tuber roots to the

stomach, tubular connection to the water-suction tentacles, and connection to the circulatory system, all of which supplant water needs of the lilies on land. The stomach has evolved as a cellular-tubular anatomy integrating Hippopotamus' multi-chambered stomach with tubular root structures of the lilies.

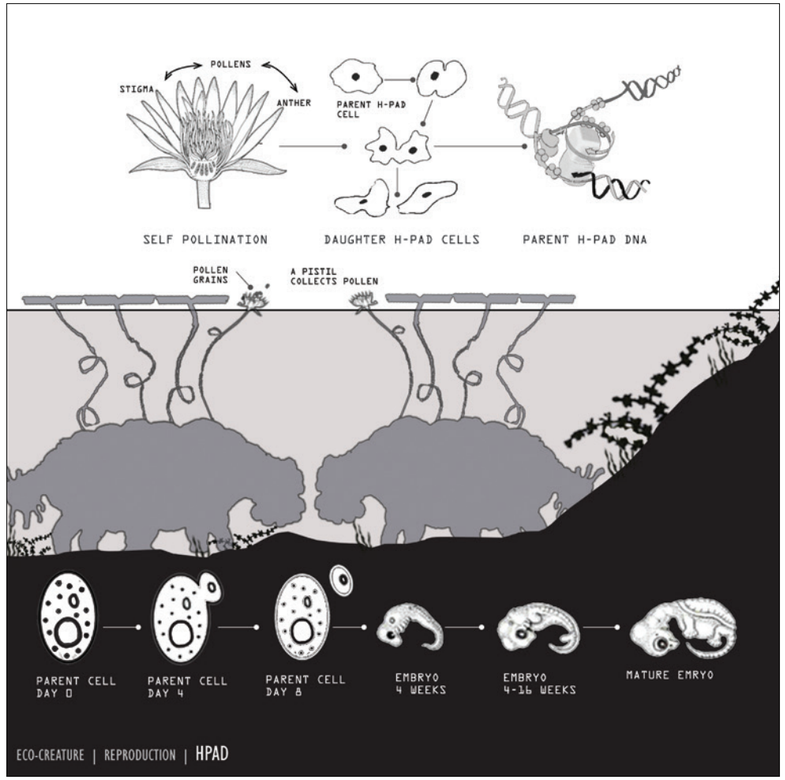
CHARACTERISTICS OF THE MERGER

Biogenesis of HPAD occurs in the event of a deprived environment, most commonly due to lack of water. For survival, lily plants employ an epizoic insemination of their seeds into the cracked skin of the Hippopotamus, which roam around in shallow wetland area during the daytime. In search of water these floating lily seeds move into the cracks of hippo's skin and move deeper into the circulatory organs from where they generate rhizomes or roots that penetrate into the digestive and reproductive systems of the hippopotamus. Slowly, a DNA fusion occurs between the hippo and lily and eventually an HPAD embryo is generated. This HPAD develops through various embryo stages inside the mammalian reproductive organ and is eventually born after a gestation period of 240 days.

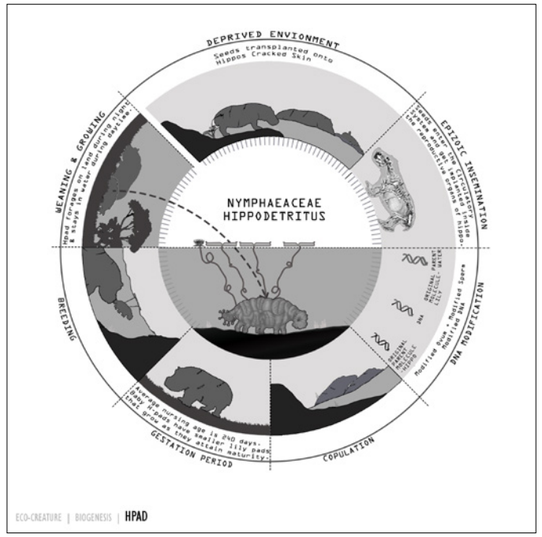
At a glance

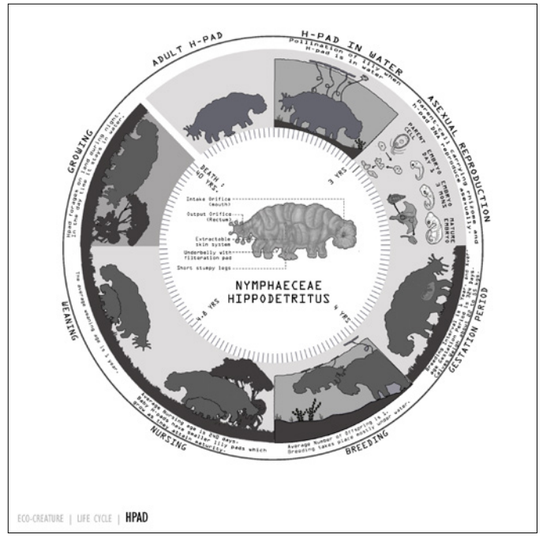
Common name	Hippopotamus	Water Lily	HPAD
Scientific name	Hippopotamus amphibious	Nymphaea caerulea	Nymphaea Hippodetritus
Habitat	Amphibious, lakes and rivers	Aquatic, lakes and rivers	Amphibious, lakes and rivers
Reproductive system	Mammal, bull-male & cow-female	Self- and agent pollination	Monoecious hermaphrodite
Digestive system	Herbivorous, esophagus, stomach, rectum	Xylem and phloem vessels	Tuber stomach, orifice mouth, recta tail, suction tentacles
Movement system	Quadrupedal (four legged)	Aquatic (rooted but floating)	Hexapedal (six legged)
Nervous system	Brain and spinal chord	Radicle (embryonic root)	Brain and radicle spinal chord
Circulatory system	Heart, lungs, arteries and veins	Xylem and phloem vessels	Phloem vessels connected to stomach, radicle integrated with arteries and veins
Muscular-skeletal system	Bone and muscles	Vascular structure and tubular construction	Bones and muscles integrated with vascular organic materials
Excretory system	Kidneys, ureter, bladder, intestine, and rectum	Leaf cuticle for transpiration	Minimal to maintain more water in the body; multi-rectal tail to enhance territorial behavior and support large quantities of soil and organic matter intake.
Commonly found in	Sub-Saharan Africa	Sub-Saharan Africa	Continental Africa and North American Great Lakes region

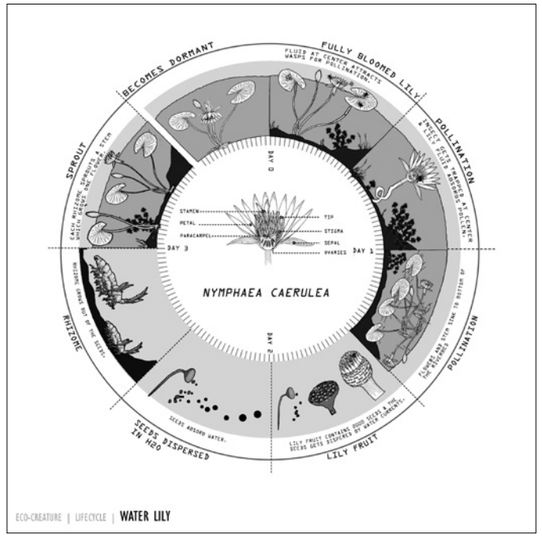
ECO-CREATURE | NYMPHAEACEAE HIPPODETRITUS

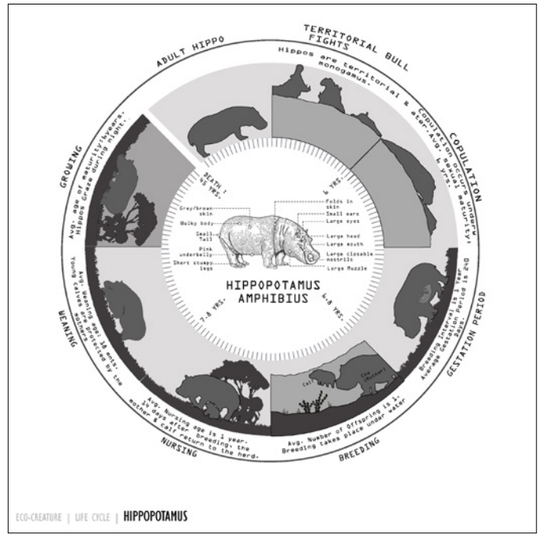


ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.

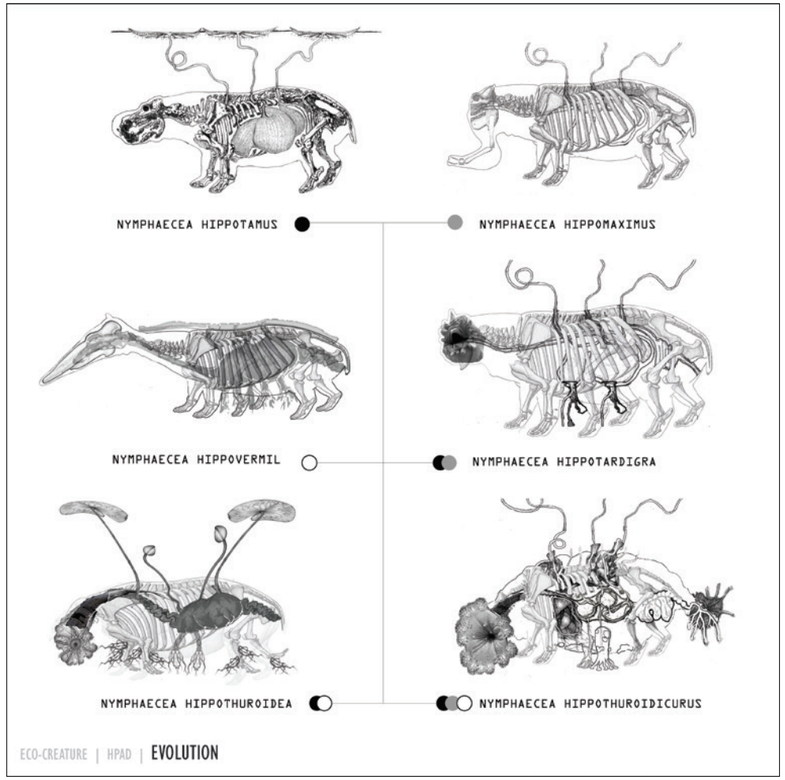


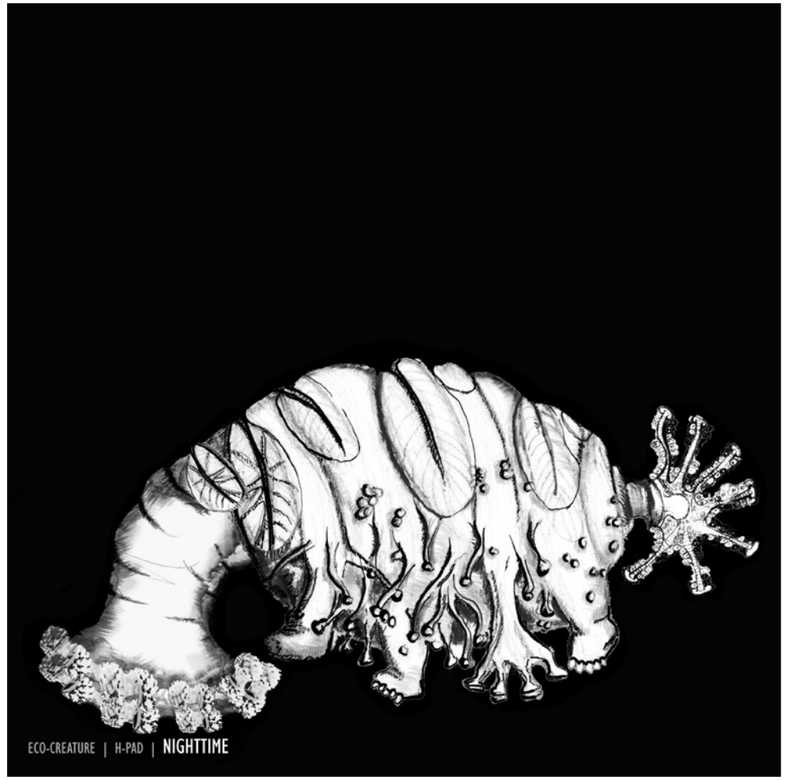


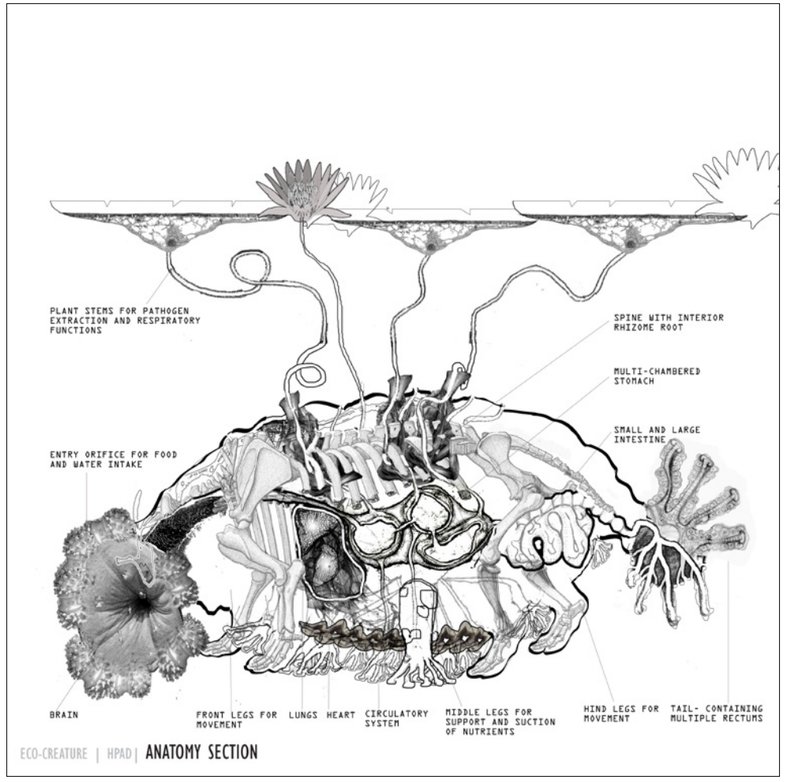




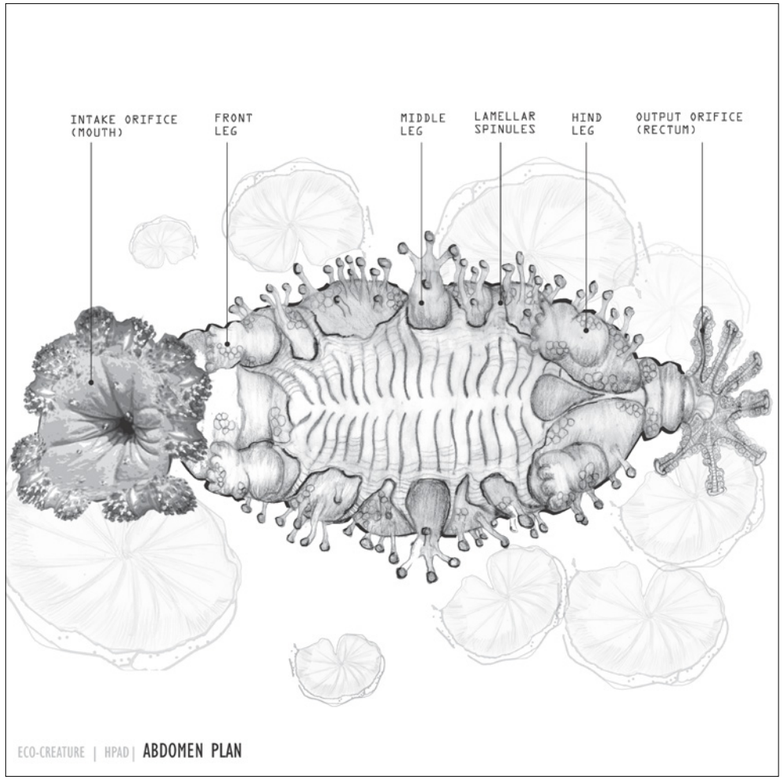
ECO-CREATURE | NYMPHAEACEAE HIPPODETRITUS





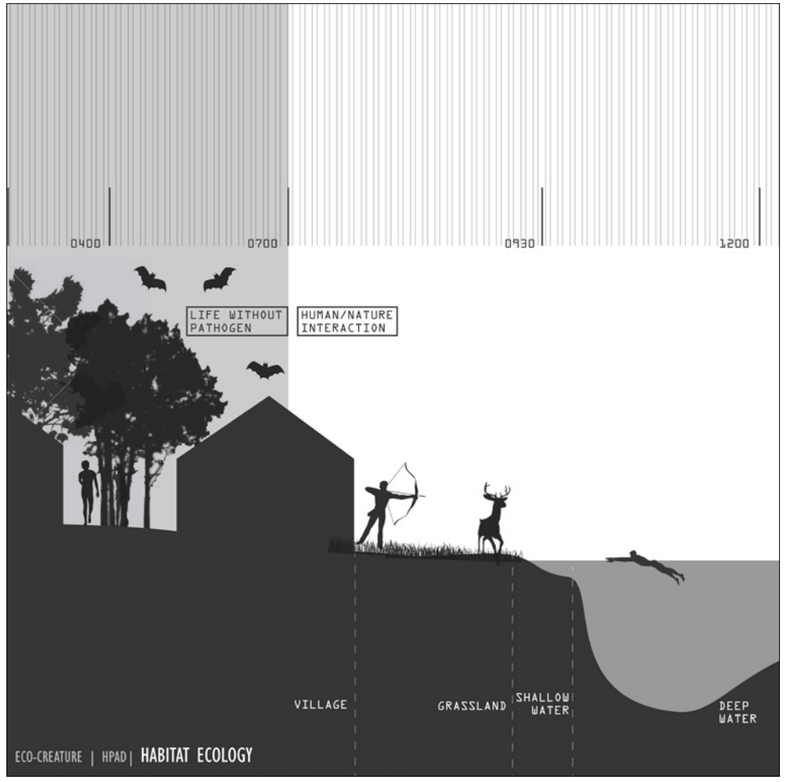


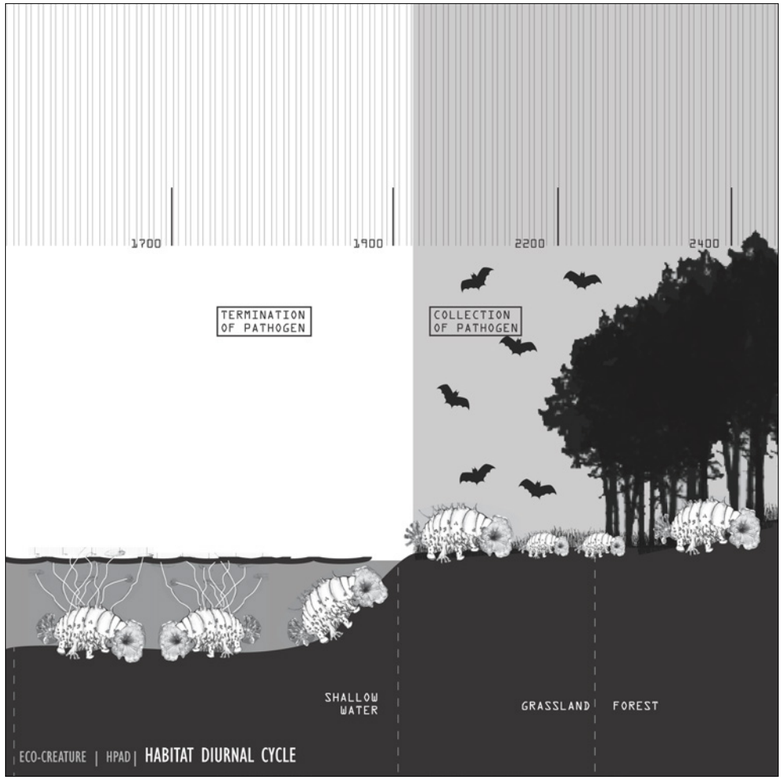
ECO-CREATURE | HPAD | **ANATOMY SECTION**



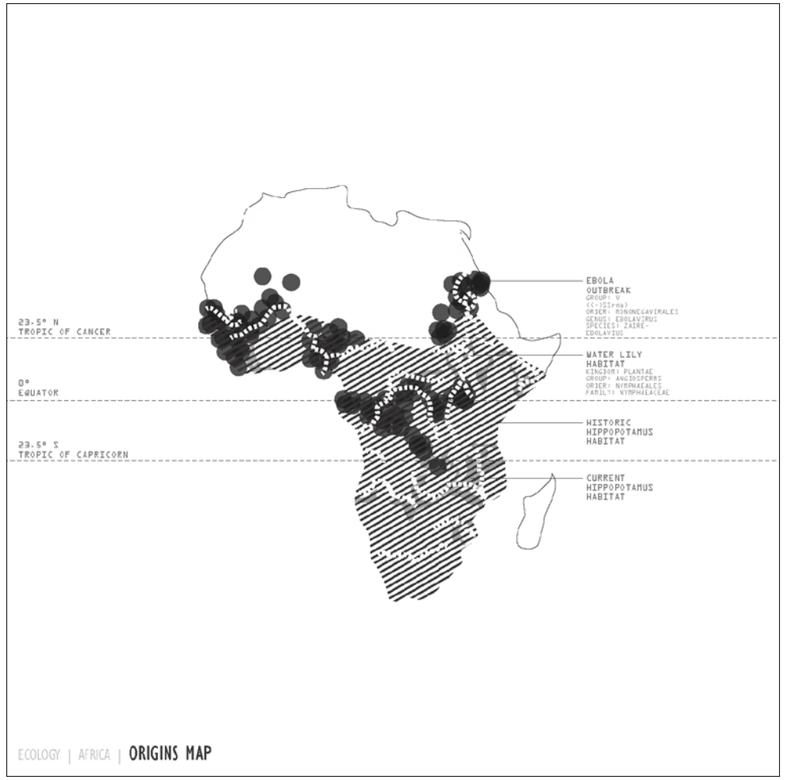
ECO-CREATURE | HPAD | **ABDOMEN PLAN**

ECO-CREATURE | NYMPHAEACEAE HIPPODETRITUS

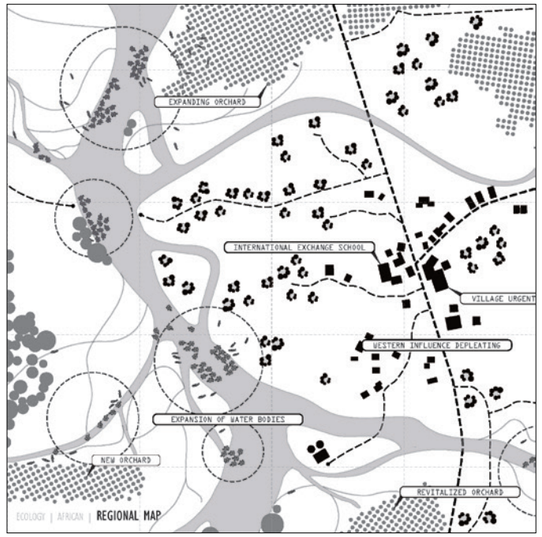


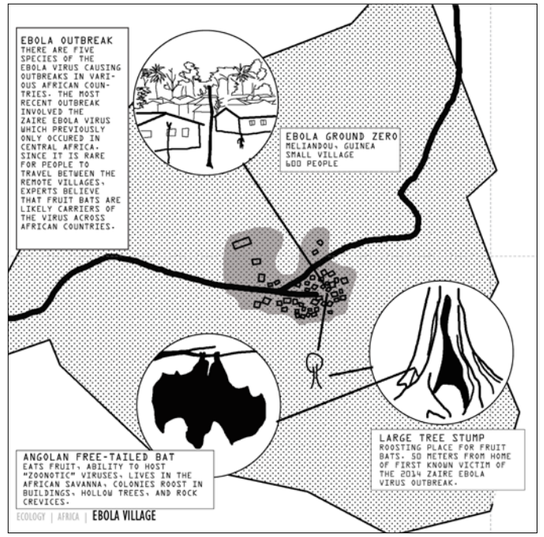


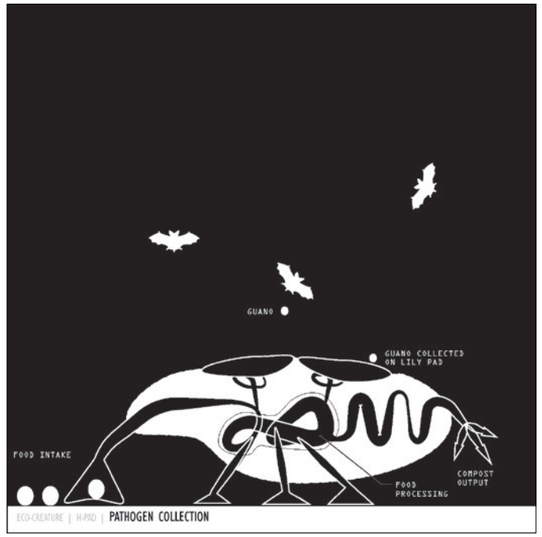
ECO-HABITAT | NYMPHAEACEAE HIPPODETRITUS

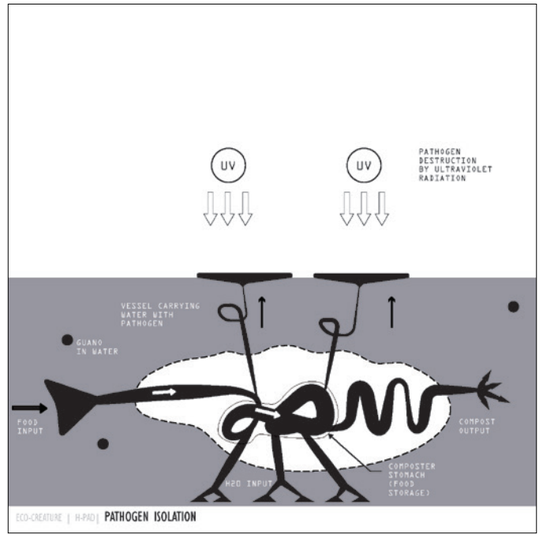


ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

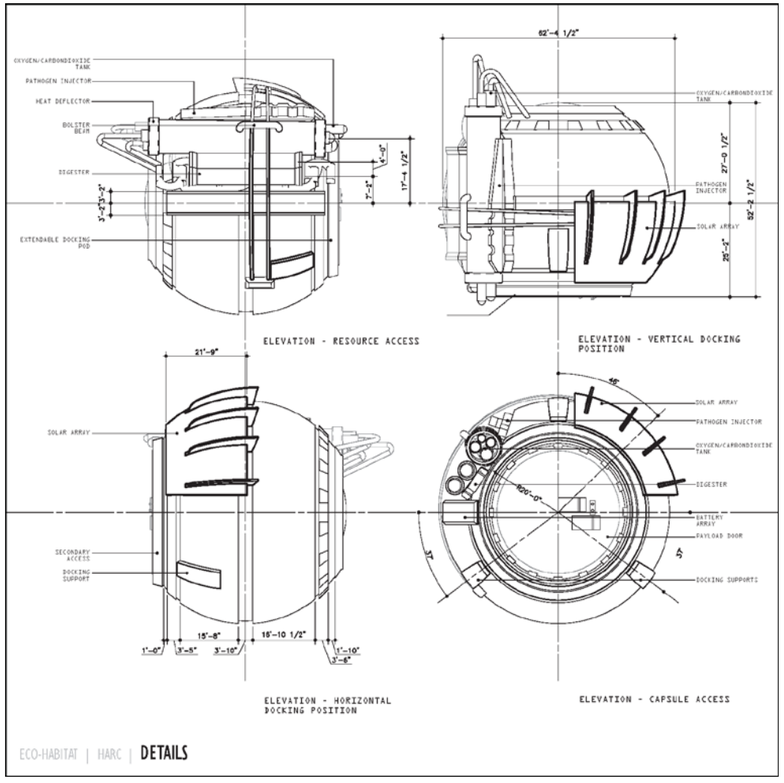






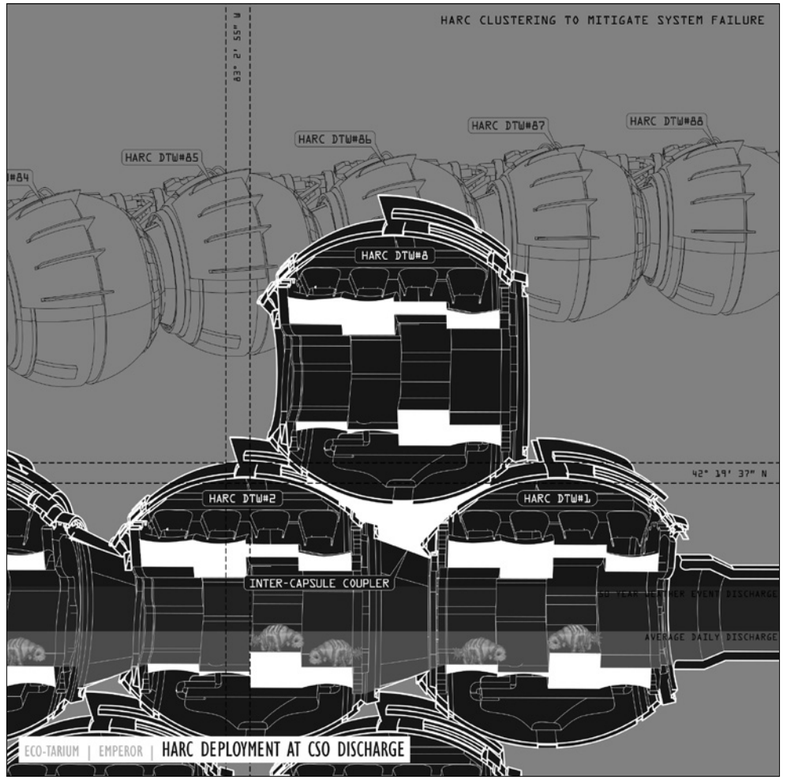


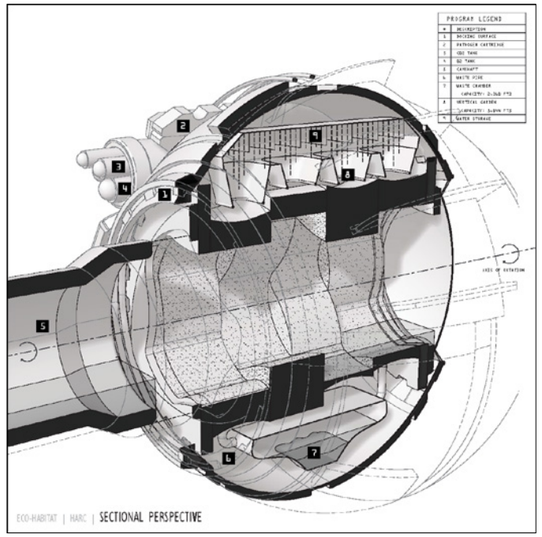
ECO-HABITAT | HARC | **EXPLODED AXONOMETRIC**

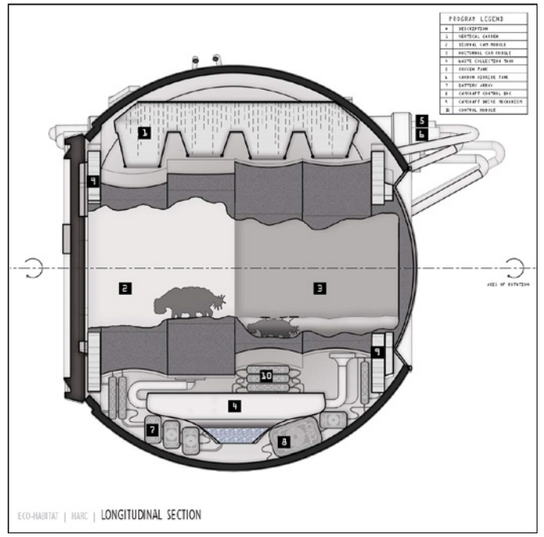


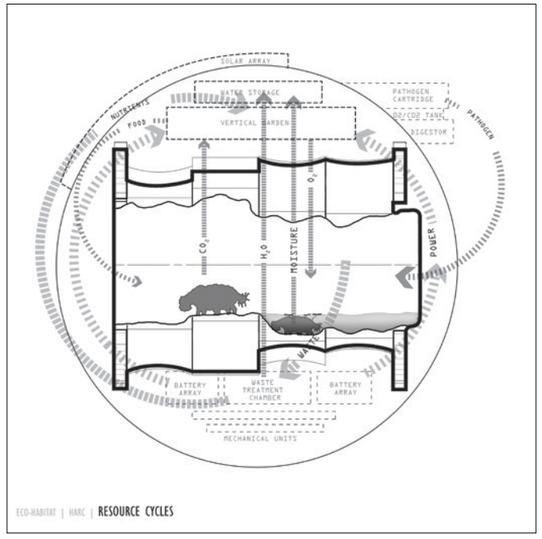
ECO-HABITAT | HARC | **DETAILS**

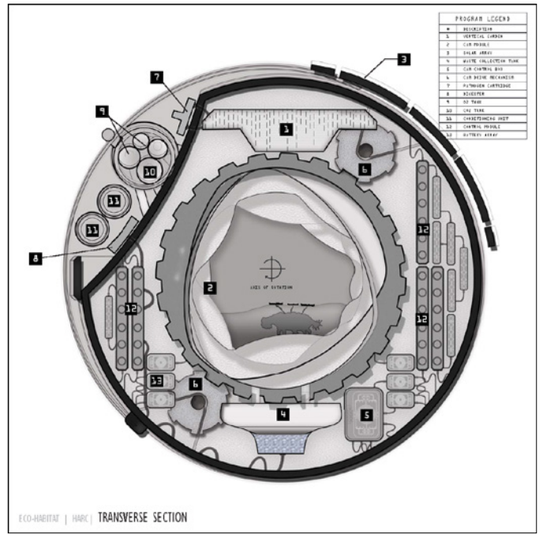
ECO-HABITAT | NYMPHAEACEAE HIPPODETRITUS



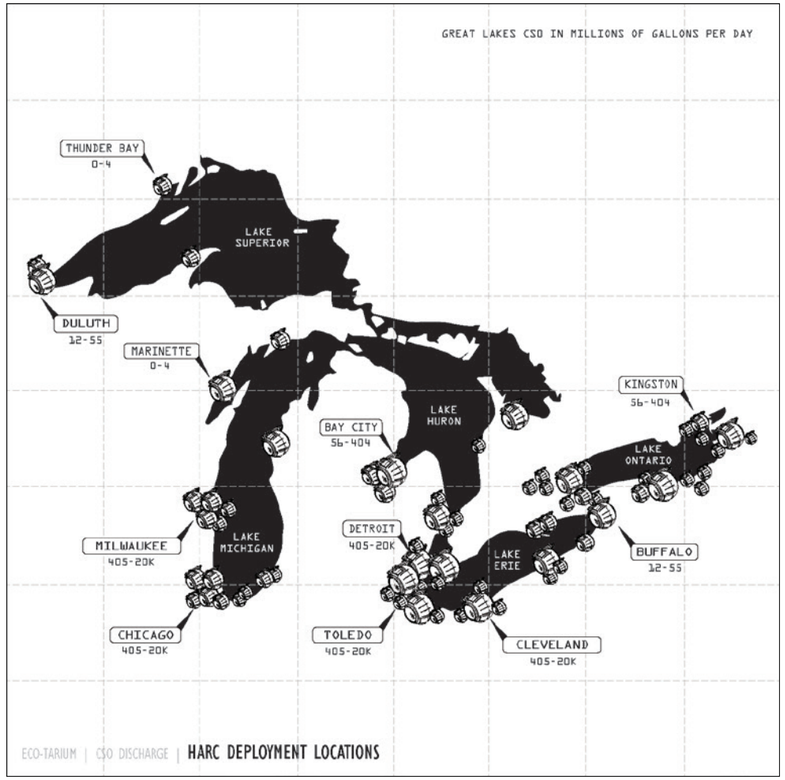




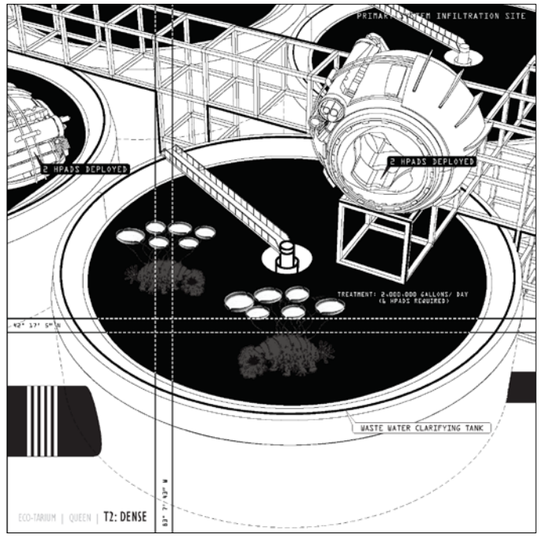


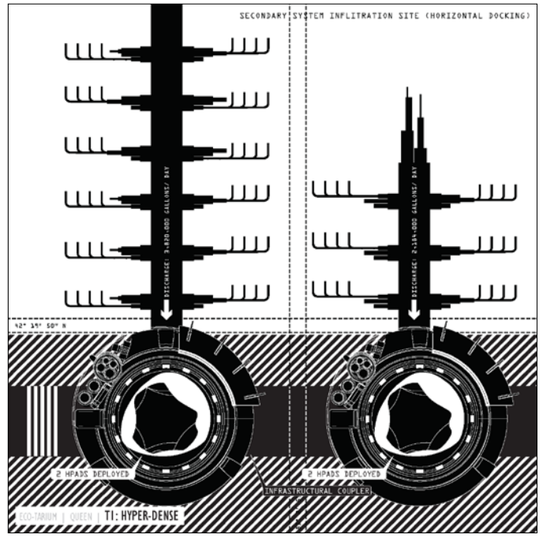


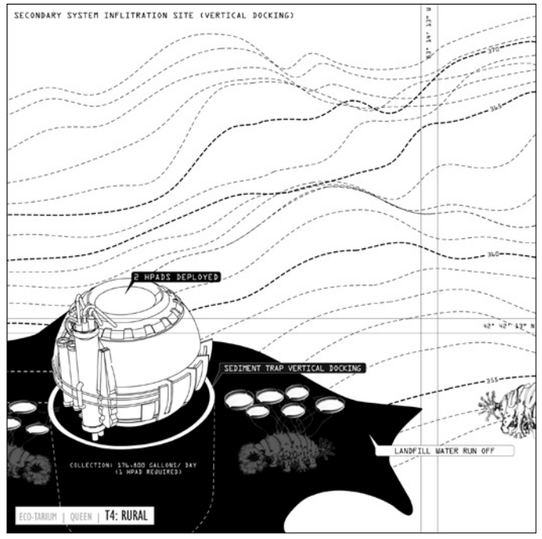
ECO-ASSEMBLY | NYMPHAEACEAE HIPPODETRITUS

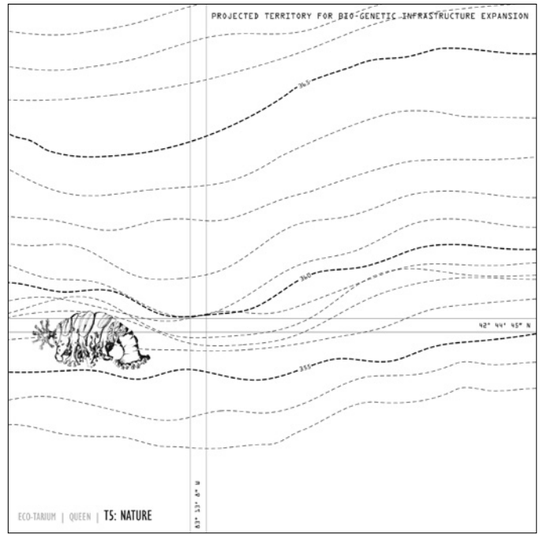


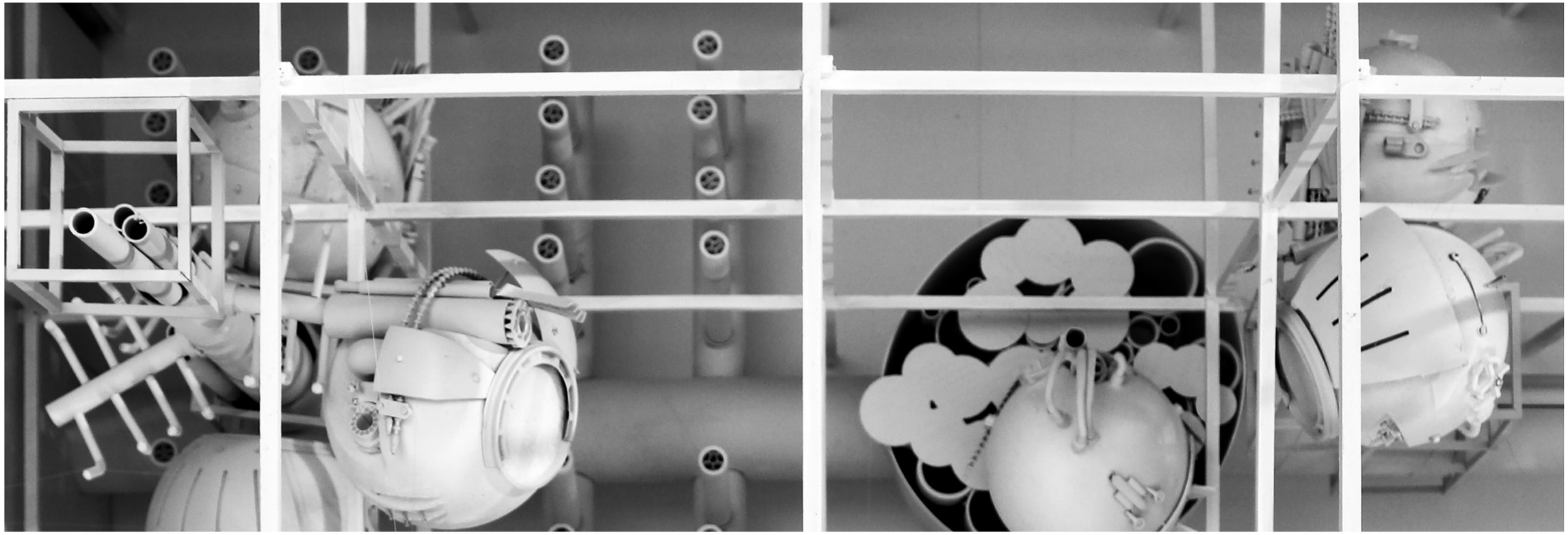
ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.





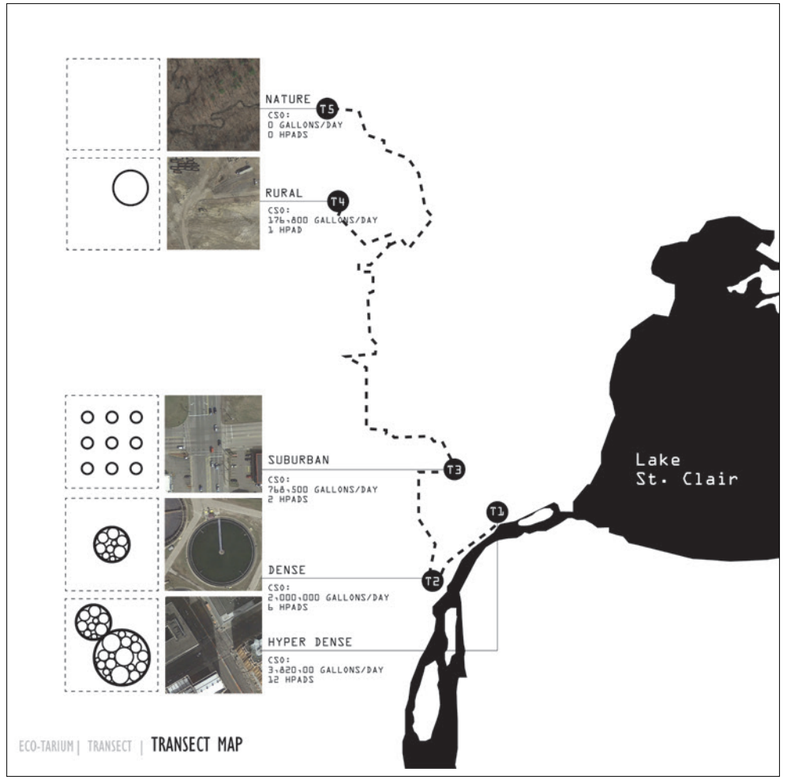




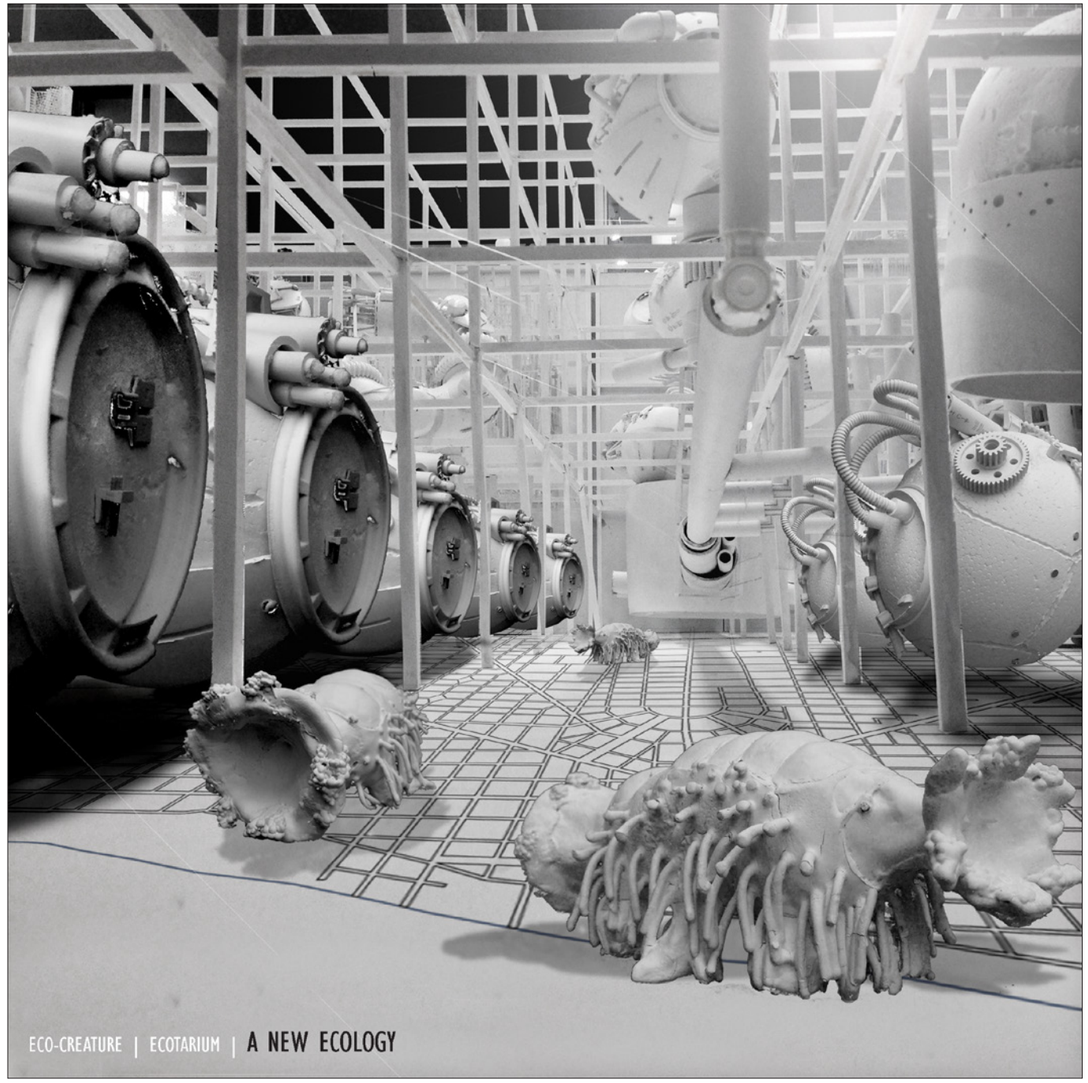


ECOTARIUM | PLAN VIEW

ECO-TRANSECT | NYMPHAEACEAE HIPPODETRITUS



ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.



ECOTARIUM | ELEVATION VIEW

THREATS TO BIODIVERSITY ARE FOUND TO HAVE GLOBAL EFFECTS. HUMAN INTERVENTION OF THE GLOBAL ECOSYSTEM THRUSTS SPECIES TO THE BRINK OF TOTAL EXPLOITATION AND/OR EXTINCTION.

THUNNUS GLYCINE MAX

ECOTARIUM | A SPECTACLE OF ECOLOGY

THUNNUS GLYCINE MAX

THUNNUS GLYCINE MAX

Latin Name: Thunnus Glycine Max

Common Name: Arkpod [ärk päd]

LIFECYCLE OF CREATURE

A typical Arkpod will have a lifecycle of 15-20 years with the first year of maturity occurring in year 5-6, giving the Arkpod approximately 10 to 15 years of reproduction as well as seed distribution.

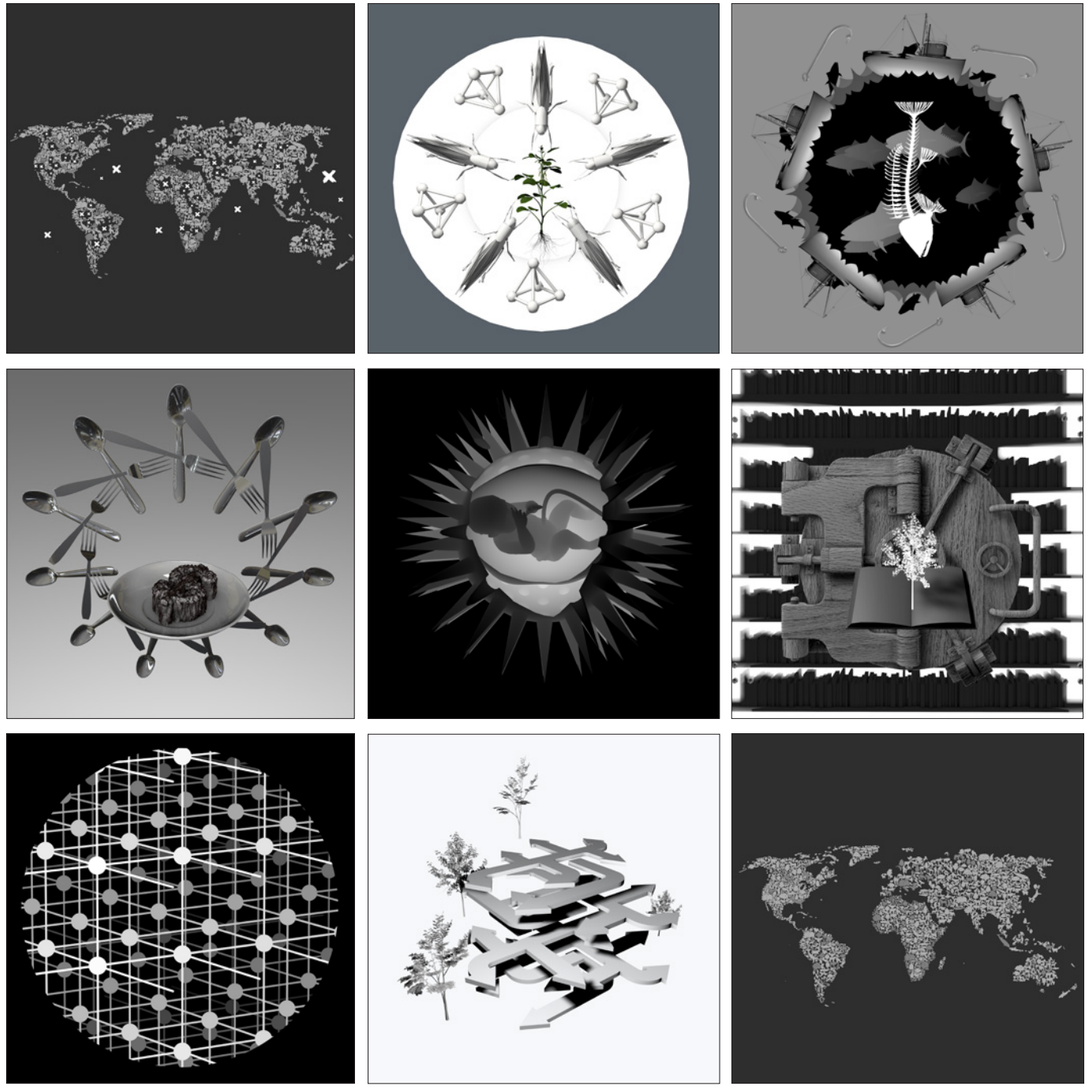
SEXUAL REPRODUCTION AND ACTIVITIES OF THE CREATURE

The Arkpod has an annual spawning event, guided by a biological migration pattern to search out shallower waters, which is also combined with a pre-determination of data to populate and dispense of seed banks. The female Arkpod dispenses her eggs into the water and the male Arkpod fertilizes them while they are in the water.

HABITAT OF THE CREATURE

The habitat of the Arkpod is a deep sea environment with varying water temperatures including the range found in the Atlantic ocean, Mediterranean Sea and Gulf of Mexico. These waters maintain the optimum temperature and pressure for the species.

ECO-GRAM | Instantly recognizable graphic that expresses a specific notion of modern man's relationship with the environment.

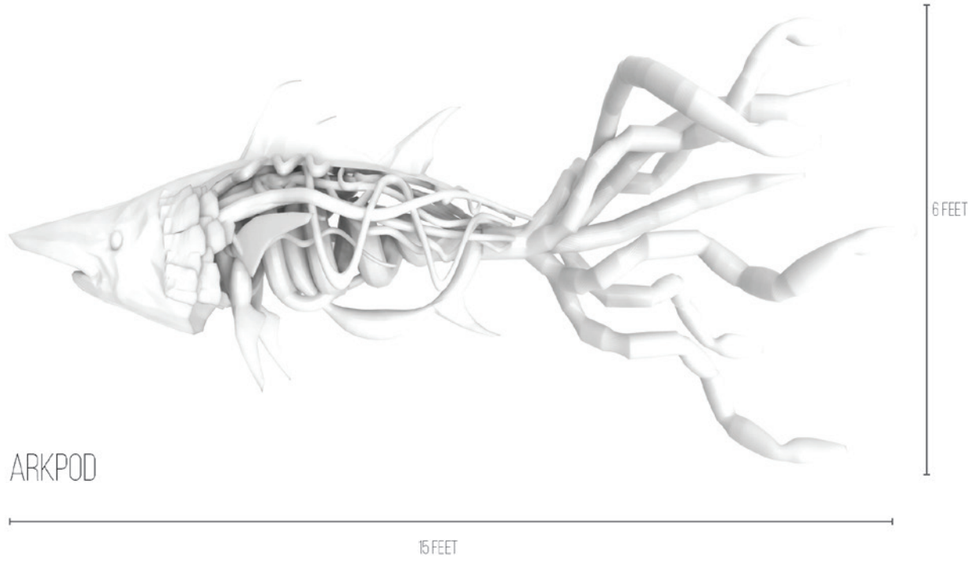


FOOD CYCLE

The Arkpod, although solely a water based creature, is able to absorbs nutrients via photosynthesis, using the integrated soybean tendencies for energy – requiring 1-1/2 to 2 hours of direct sunlight to maintain/complete this food cycle. In between periods were this process is unavailable to the Arkpod, it is able to compensate by a secondary method of carnivorous food intake. Juveniles feed on fish, squid, and crustaceans while adults feed on herring, bluefish, and mackerel. These dual abilities to obtain life sustaining nutrients coincides with the Arkpods natural manner of living near the surface in temperate waters but frequently diving to depths of 500 to 1,000 meters.

INTERACTION WITH ENVIRONMENT

Within their natural environment, the Arkpod are the top predators with larger creatures - sharks, marine mammals (including killer whales and pilot whales) – being their only ecological threats. The Arkpod is well adapted to the long distances it travels and the ability to escape potential risks with their enormous muscular strength, which it channels through a pair of tendons to its lunate shaped caudal fin for propulsion. In contrast to many other marine species, the body stays rigid while the tail flicks back and forth, increasing stroke efficiency. The Arkpod has an efficient circulatory system which possesses a high blood hemoglobin concentration, allowing



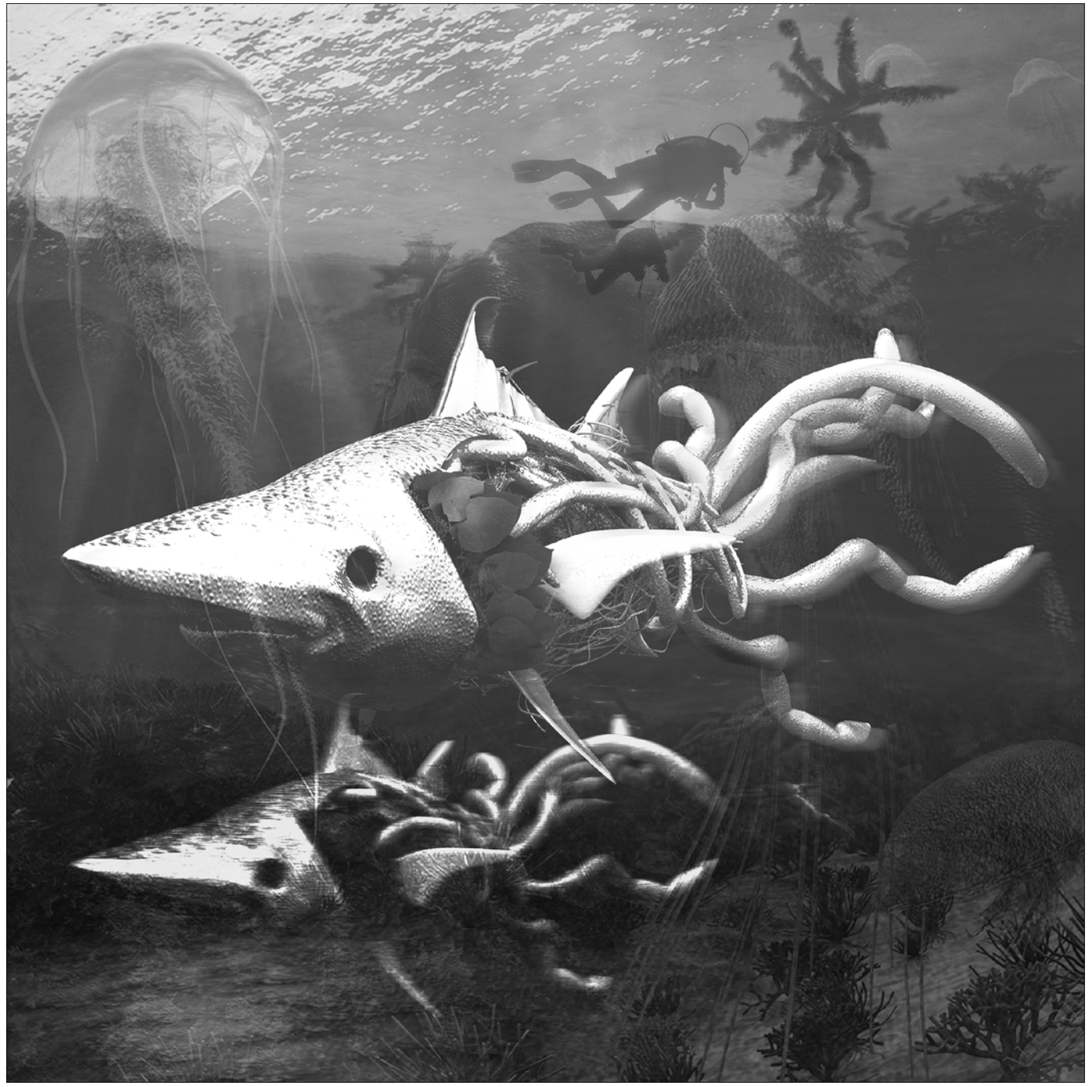
efficient oxygen delivery to its tissues, and a countercurrent exchange process to prevent heat from being lost to the surrounding water.

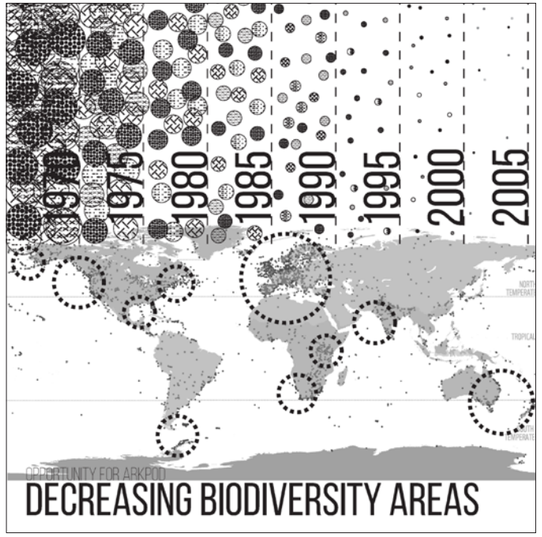
REFERENCES TO THE SOURCE SPECIES AND THE IDENTIFIED VALUED PROCESSES ADOPTED FOR ADAPTATION

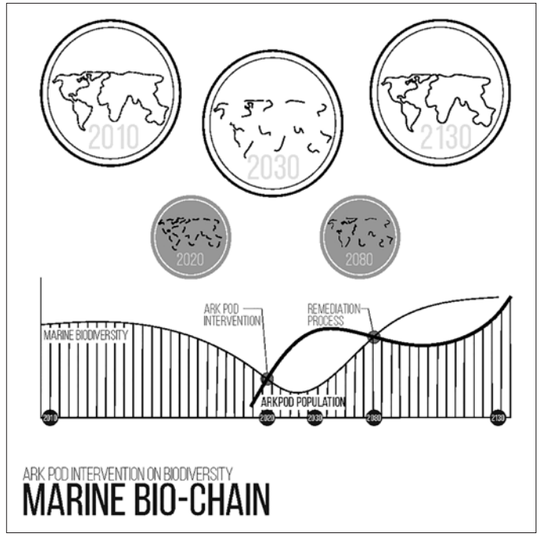
The Arkpod is the result of a meticulous genetic fusion of two strong, versatile and adaptable species – the bluefin tuna and the soy plant – taking the abilities of both species to adapt to a variety of environments while also acquiring the characteristics of strength, size and lifespan from the former and a durable, scaly epidermis and photosynthesis capabilities from the latter. The arkpod uses this hybridization to also develop a transportable "seed bank" to promote plant distribution across varied habitats.

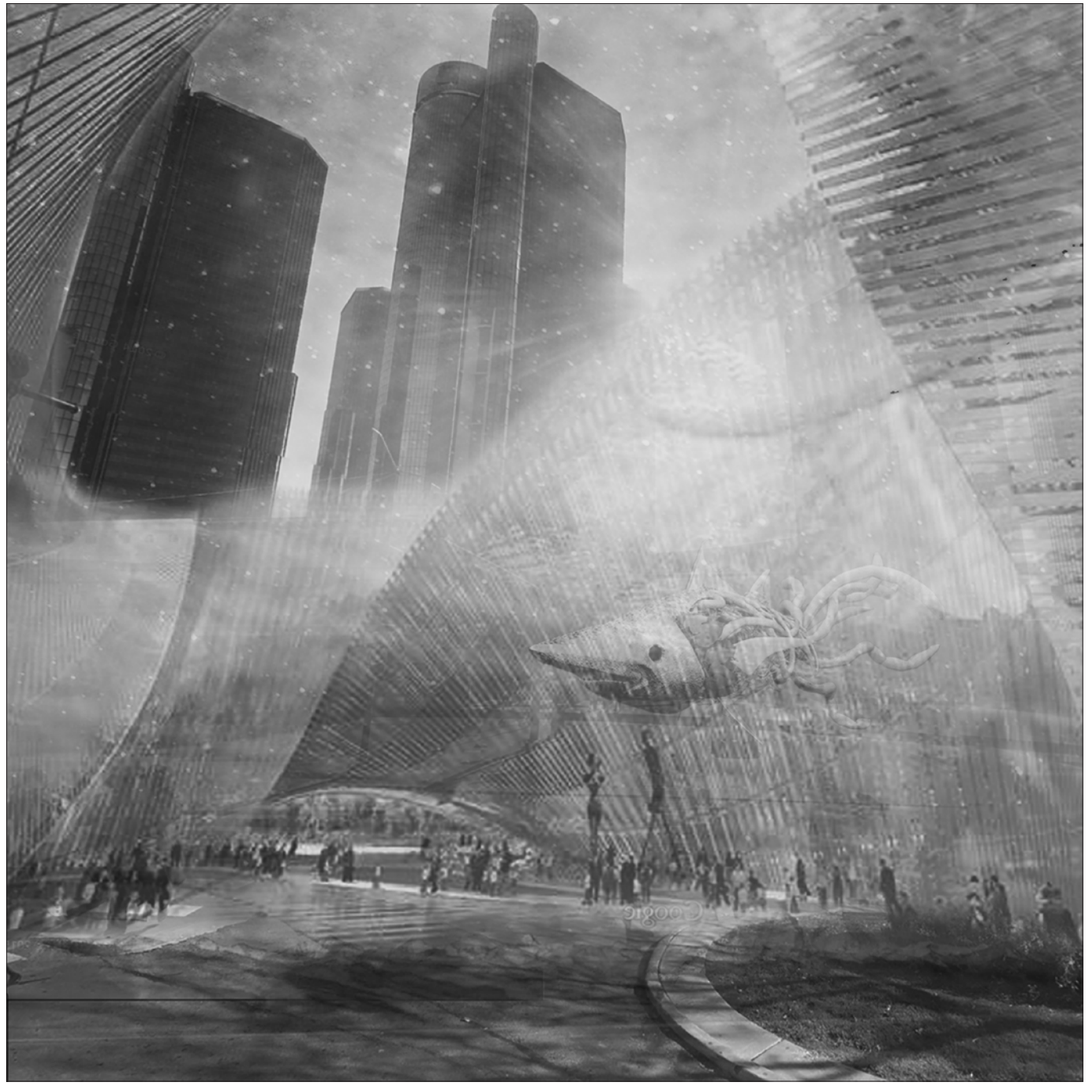
CHARACTERISTICS OF THE MERGER

The Arkpod retains the following physiognomies from both the tuna and soy plant. Characteristics of soy pods are found within the intestinal cavity to operate as analogues of seed banks. Leafy scales with soy plant stem and leaves integrate with tuna morphology at top of dorsal fin. A strong propulsion tail is reinforced by a soy-based tentacle appendages (male only). The soy bean plant fuses with the tuna digestive system, allowing the ability to produce internal energy by photosynthesis.

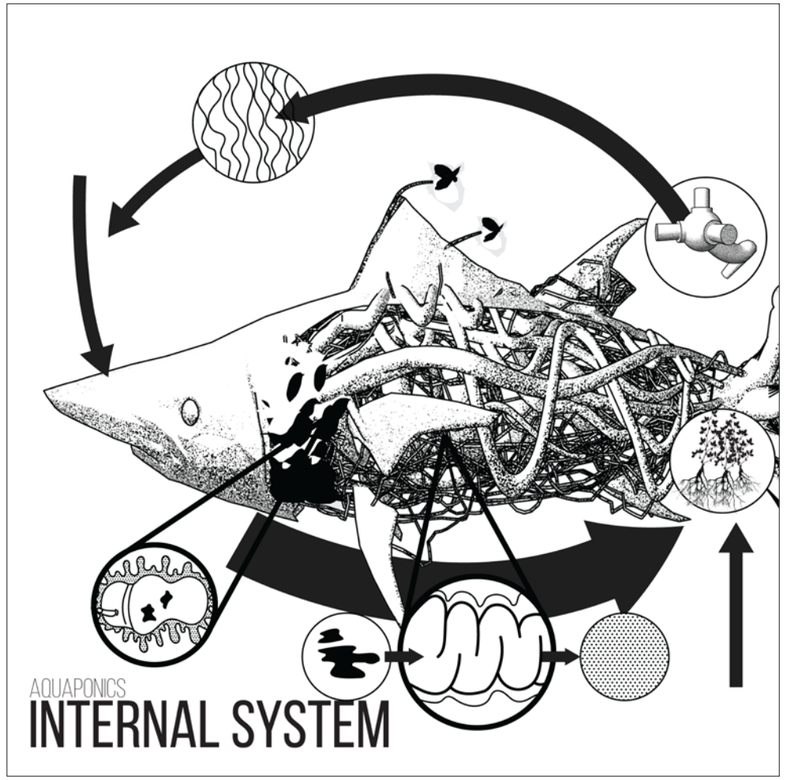



1970
1975
1980
1985
1990
1995
2000
2005
OPPORTUNITY FOR ARKPOD
DECREASING BIODIVERSITY AREAS

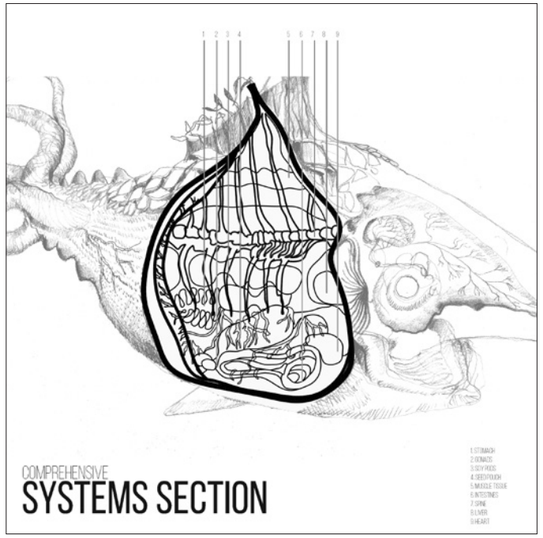

2010
2030
2130
2020
2080
MARINE BIODIVERSITY
ARK POD INTERVENTION
REMEDIATION PROCESS
ARKPOD POPULATION
ARK POD INTERVENTION ON BIODIVERSITY
MARINE BIO-CHAIN

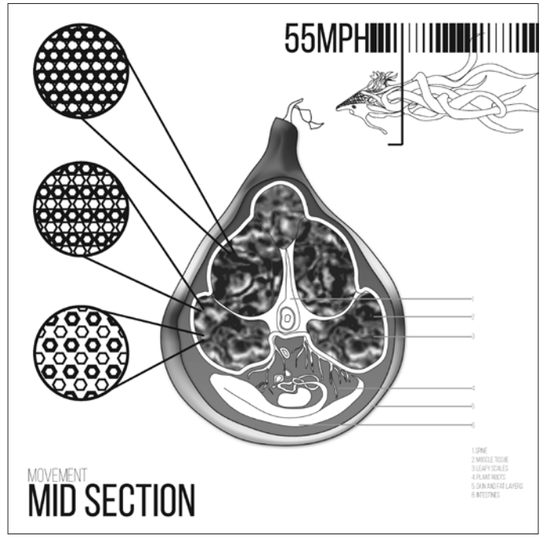


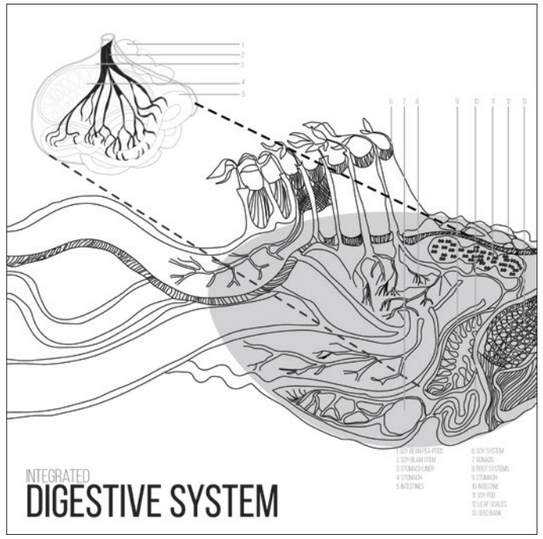
ECO-CREATURE | THUNNUS GLYCINE MAX

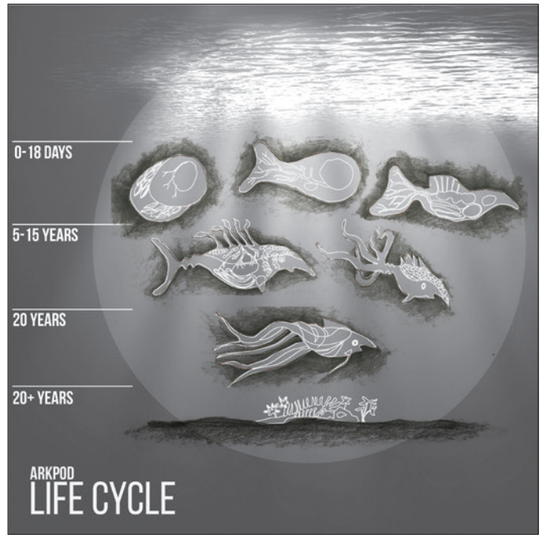


ECO-CREATURE | Anticipation of a future species, part plant and creature, complete with its unique life-cycle, habits, needs, and social patterns.

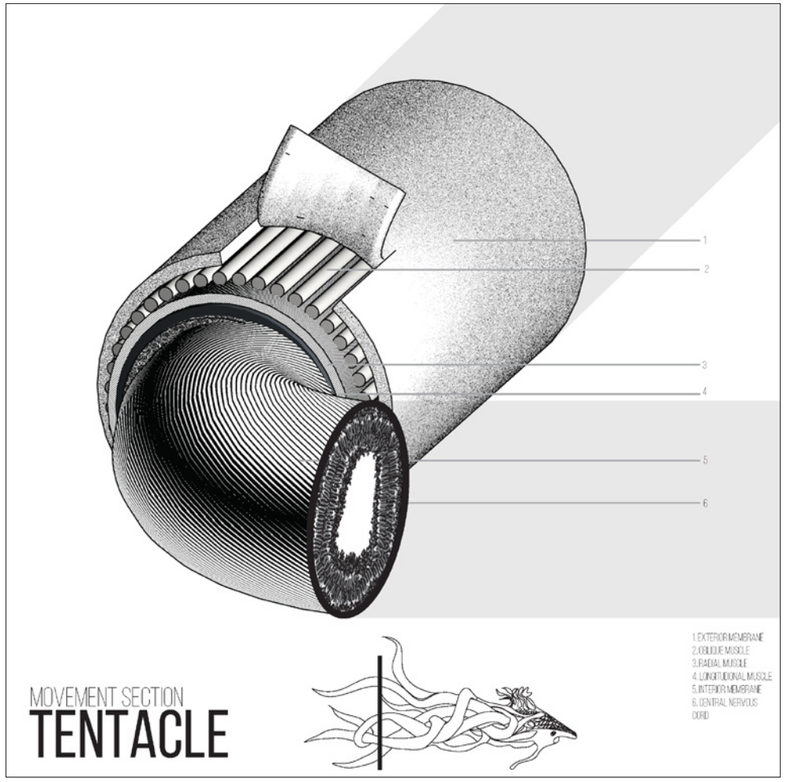






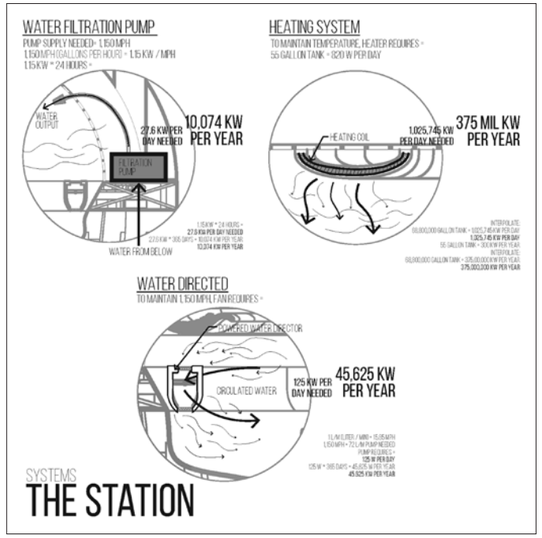


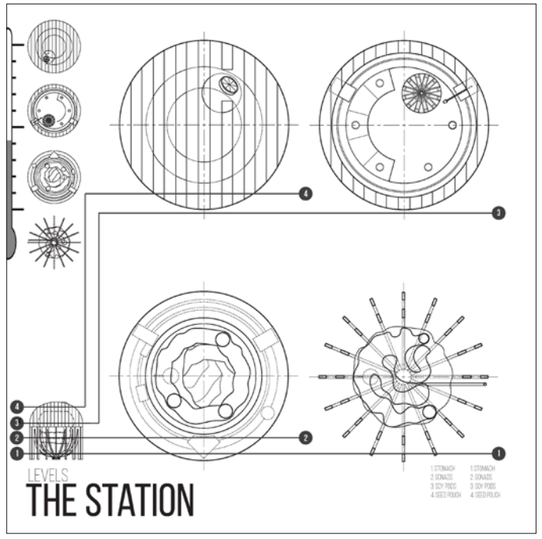

MOVEMENT
ARKPOD TAIL


1
2
3
4
5
6
MOVEMENT SECTION
TENTACLE
1.EXTERIOR MEMBRANE
2.OBLIQUE MUSCLE
3.RADIAL MUSCLE
4.LONGITUDINAL MUSCLE
5.INTERIOR MEMBRANE
6.CENTRAL NERVOUS
CORD

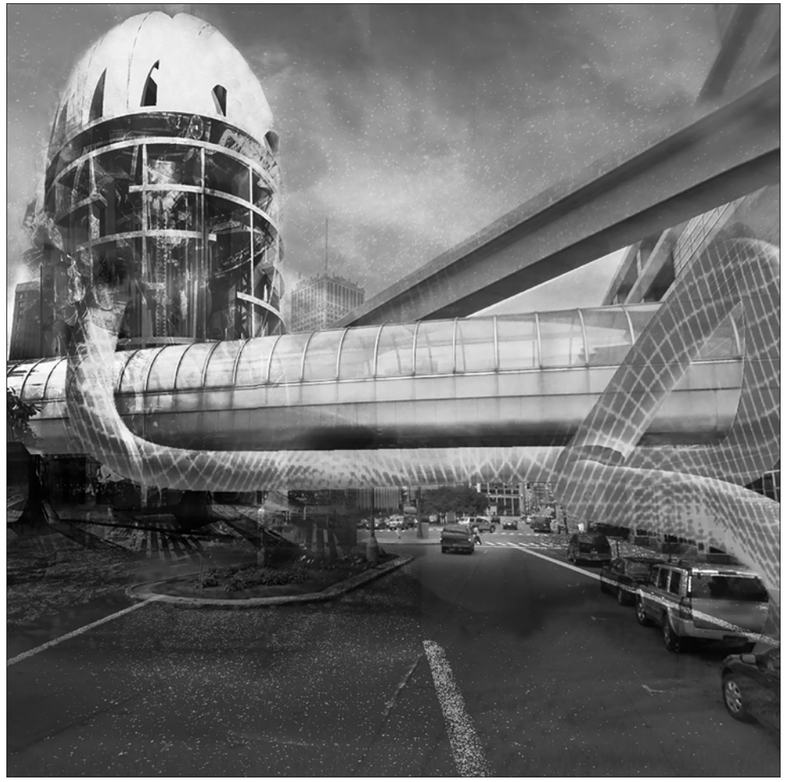
ECO-HABITAT | THUNNUS GLYCINE MAX

ECO-HABITAT | Design of a habitat for this new species that supports its life for at least one year.

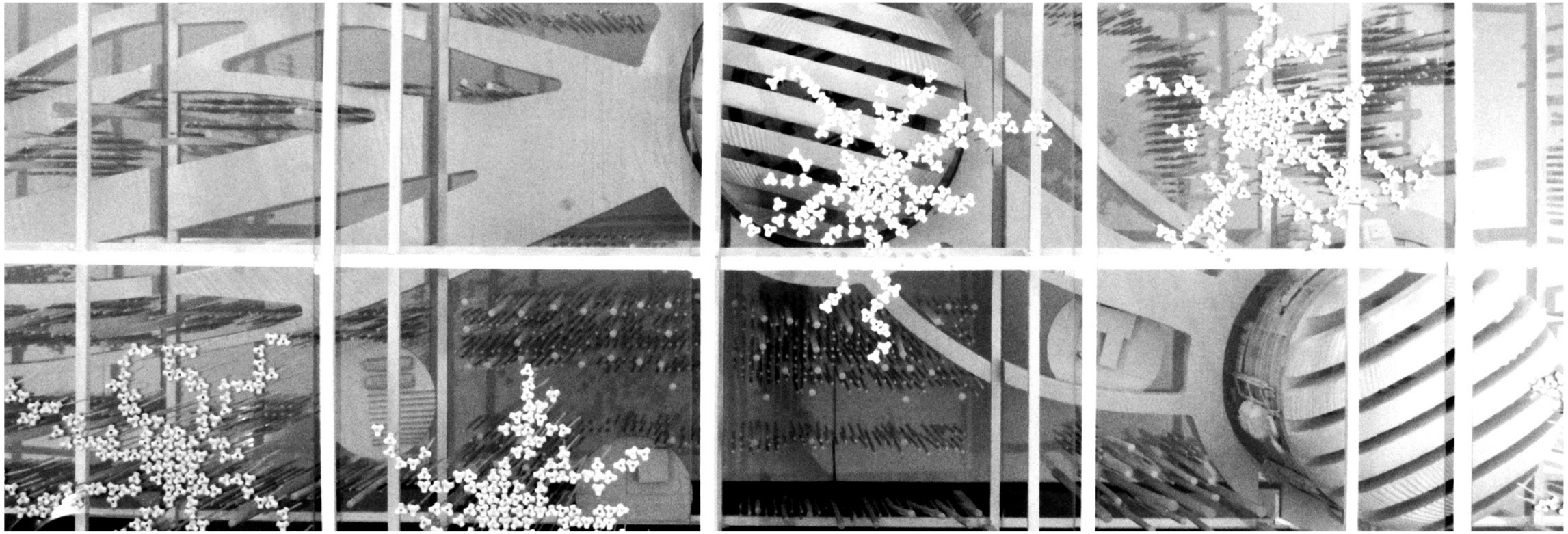




ECO-ASSEMBLY | THUNNUS GLYCINE MAX

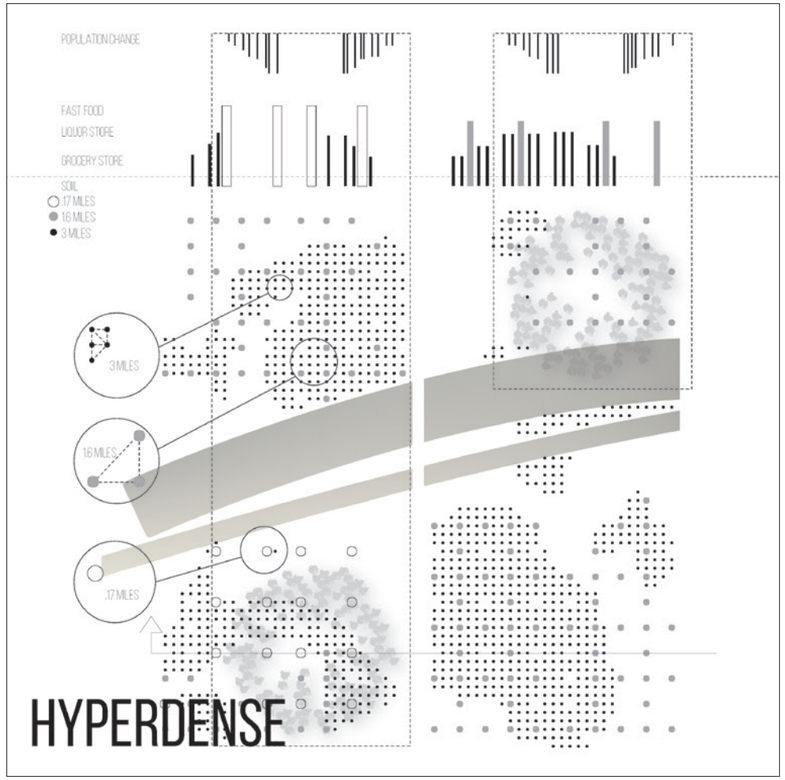


ECO-ASSEMBLY | "Mixing facility" houses several of the habitats, allowing them to connect and interact.

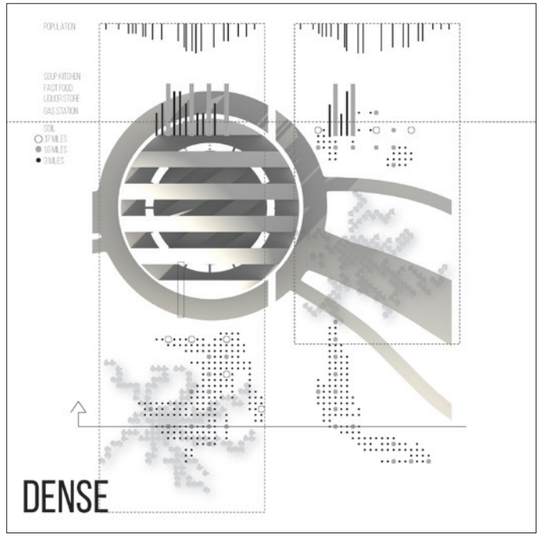


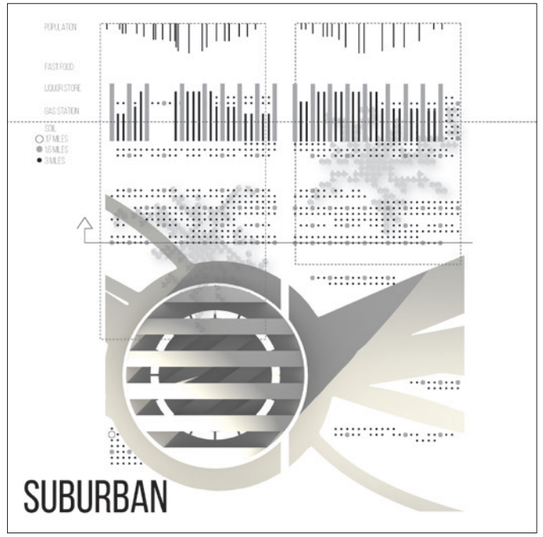
ECOTARIUM | PLAN VIEW

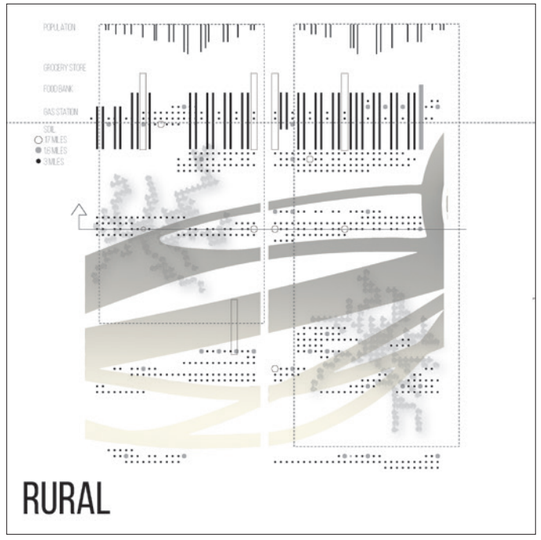
ECO-TRANSECT | THUNNUS GLYCINE MAX

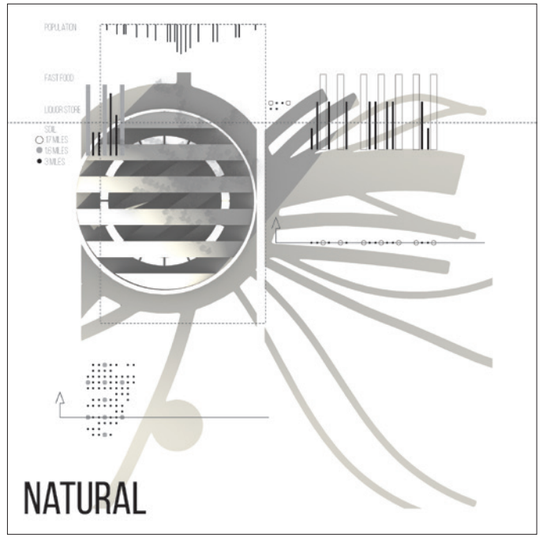


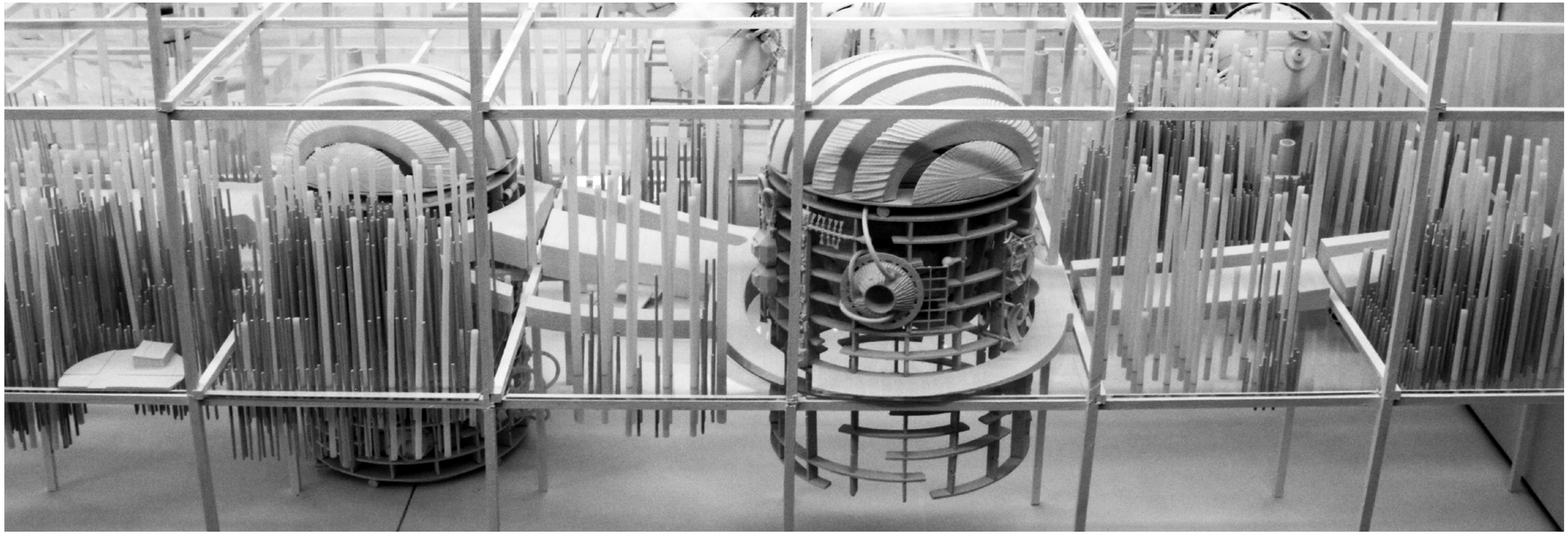
ECO-TRANSECT | Transverse section across Detroit's urban and peri-urban quality explores a range of different habitat conditions for Ecotarium interaction.



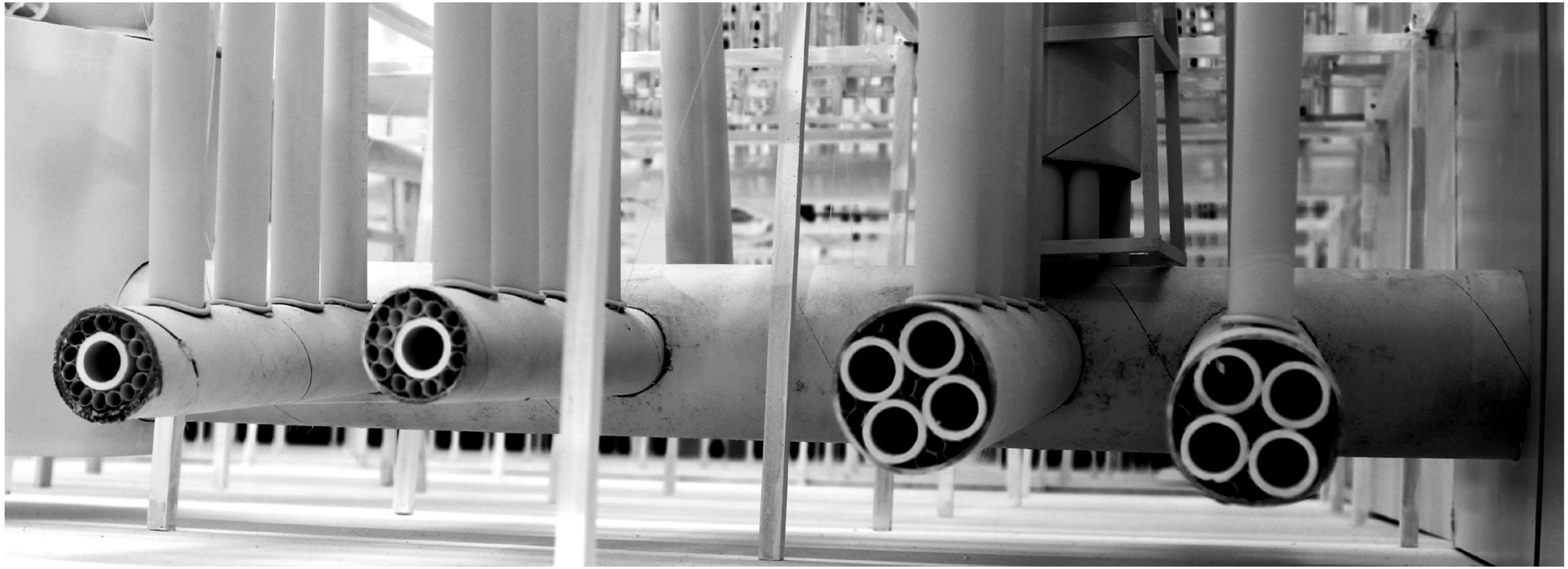








ECOTARIUM | ELEVATION VIEW



ECOTARIUM | A SPECTACLE OF ECOLOGY

SEVEN CREATURES AND THEIR HABITATS

BIBLIOGRAPHY

Alcanivorax Bacteria: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1482905/

Architecture, Jones Partners:. *El Segundo*. New York: Princeton Architectural Press, 2007. Print.

Benyus, Janine M. *Biomimicry: Innovation Inspired by Nature*. New York: Harper Perennial, 2002. Print.

Bettencourt, Luís M. A., et al. "Growth, Innovation, Scaling, and the Pace of Life in Cities." *Proceedings of the National Academy of Science of the United States of America* 104.17 (2007): 7301-6. Print.

Brown, J. H., et al. "Toward a Metabolic Theory of Ecology." *Ecology* 85.7 (2004): 1771-89. Print.

Burns, John. Arthropods: *New Design Futures*. New York: Praeger, 1972. Print.

Corner, James. *Taking Measure Across the American Landscape*. New Haven;London: Yale University Press, 1996. Print.

Eames, Charles, and Ray Eames. *Powers of Ten--a Film Dealing with the Relative Size of Things in the Universe and the Effect of Adding another Zero*. Santa Monica, CA: Pyramid Films., 1978. Print.

Grudin, Robert. *The Grace of Great Things: Creativity and Innovation*. New York: Mariner Books, 1991. Print.

Haeckel, Ernst. Kunstformen *Der Natur (Art Forms in Nature): Hundert Illustrationstafeln Mit Beschreibendem* Text, Allgemeine Erläuterung Und Systematische Übersicht. Leipzig: Bibliographisches Institut, 1904. Print.

Handbook for the Assessment of Capacities at the Human-Animal Interface . Geneva: World Health Organization and World Organization for Animal HealthPrint.

Hejduk, John, Ulrich Franzen, and Alberto Perez-Gomez. *Education of an Architect: The Cooper Union School of Art and Architecture*, 1964-1971. New York: The Monacelli Press, 1999. Print.

Jackowski, Nannette, and Ricardo de Ostos. *Ambiguous Spaces*. New York: Princeton Architectural Press, 2008. Print. Pamphlet Architecture 29 .

Knapp, Sandra. *Plant Discoveries: A Botanist's Voyage through Plant Exploration*. Buffalo: Firefly Books, 1995. Print.

Kny, Leopold. *Botanische Wandtafeln*. 1874-1911.

Marine Species Identification Portal: http://species-identification.org/

Mau, Bruce, and Jennifer Leonard. *Massive Change*. New York: Phaidon Press, 2004. Print.

McCandless, David. *The Visual Miscellaneum: A Colorful Guide to the World's most Consequential Trivia*. New York: Harper Design, 2012. Print.

Miller, Frank. *The Hard Goodbye (Sin City)*. Milwaukie, Oregon: Dark Horse Books, 2010. Print. Sin City (Book 1).

Moore, Alan, and Jacen Burrows. *Alan Moore's Writing for Comics Volume 1*. Rantoul, Illinois: Avatar Press, 2003. Print.

Morton, J. K. *West African Lilies and Orchids*. London: Longmans. Print.

Morton, Samual G. *Additional Observations on a New Living Species of Hippopotamus of Western Africa (Hippopotamus Liberiensis)*. Philadelphia: Merrihew & Thompson, 1849. Print.
Natural History of Animals: Containing an Account of Remarkable Beasts with Many Interesting Particulars Concerning them. Dublin: M. Goodwin, 1818. Print.
National Oceanic and Atmospheric Administration: http://www.noaa.gov/index.html
NOAA Agencies, Oceans: http://www.noaa.gov/ocean.html
NOAA Agencies, Fisheries: http://www.noaa.gov/fisheries.html
NOAA Agencies, Research: http://www.noaa.gov/research.html
NOAA Agencies, Satellites: http://www.noaa.gov/satellites.html
NOAA Ocean Prediction Center: http://www.opc.ncep.noaa.gov/Pac_tab.shtml
NOAA OceanWatch LAS: http://oceanwatch.pifsc.noaa.gov/las/servlets/dataset
Peterson, Roger Tory. *A Field Guide to the Birds: A Completely New Guide to all the Birds of Eastern and Central North America*. Boston: Houghton Mifflin Co., 1980. Print.
Photosynthesis vs Chemosynthesis. [Video file]: https://www.youtube.com/watch?v=gN_v2JJmNPk
The Petropolis of Tomorrow . Eds. Neeraj Bhatia and Mary Casper. New York: Actar Publishers, 2013. Print.
Quammen, David. *Ebola: The Natural and Human History of a Deadly Virus*. New York: W. W. NortonPrint.
Sanchez, Anthony, et al. "Reemergence of Ebola Virus in Africa. Emergence of Infectious Diseases." *Emerging Infectious Diseases* 1.3 (1995)Print.
Thompson, D'Arcy Wentworth. *On Growth and Form*. Cambridge: Cambridge University Press, 1917. Print.
Tufte, Edward. *Beautiful Evidence*. Cheshire, CT: Graphics Press, 2006. Print.
---. *Envisioning Information*. Cheshire, CT: Graphics Press, 1990. Print.
Welty, Joel Carl. *The Life of Birds*. Philadelphia: W.B. Saunders Co., 1962. Print.
West, Geoffrey. *The Surprising Math of Cities and Corporations*. [Video file]: TEDGlobal 2011, 2011. Print.
Wolman, Abel. "The Metabolism of Cities." *Scientific American* 213 (1965): 156-74. Print.

BIOS

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Philip Plowright is an Associate Professor of Architecture (Design & Theory) at Lawrence Technological University in Southfield, Michigan, USA; and Editor-in-Chief of Enquiry, the ARCC Journal of Architectural Research. He earned degrees in studio art, art history and architecture from the University of Guelph and the University of British Columbia, Canada and pursues advanced research in cognitive linguistics at the Universidad de Castilla-La Mancha, Spain. His research centers around issues of process, meaning, interpretation and knowledge transfer in socio-formal environments.

Scott Gerald Shall is Associate Professor and Interim Associate Dean in the College of Architecture and Design at Lawrence Technological University. He is the founding director of the International Design Clinic (IDC), through which he has realized much-needed creative work with communities in need on four continents. Scott's work has been featured in a range of peer-reviewed presentations and publications, including works by the AIA Press (2010) and the University of Indianapolis Press (2010). He has exhibited his creative work in venues around the world, including the Goldstein Museum of Design (2010), the 2012 Venice Architecture Biennale (2012) and the Museum of Modern Art (2014). Scott earned a B.Arch from the University of Cincinnati and a M.Arch II (post professional) from Tulane University.

Anirban Adhya is an Associate Professor of Architecture and Urban Design at Lawrence Technological University. He is a founding member of the synchRG systems-based think tank and an active proponent of the Detroit Studio service-learning outreach program. Adhya's research focuses on sustainability as ecology with emphasis on well-being and social ethics in places. He earned a PhD in Architecture degree from University of Michigan, a Master of Architecture degree from the University at Buffalo, and a Bachelor of Architecture degree from India.

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Alina Chelaidite is a Romanian born architectural designer practicing in the Detroit area. Her work concentrates on parametric design and how "social landscaping", urban growth using parametric design, engages urban typology. She earned degrees in architecture from Ion Mincu Institute of Architecture, Romania and Lawrence Technological University.

Aaron Jones is a registered architect, illustrator, and fabricator based in Detroit, MI. Aaron's work aims to prompt alternative urban discourse and empower positive change at varied scales. He maintains a practice on Detroit's Eastside and teaches various architectural coursework within Lawrence Technological University's College of Architecture and Design. Recent accomplishments include solo exhibition within NEW PROJECT'S (Chicago), group exhibition within The Storefront for Art and Architecture (NYC), and summer tenure as Architect in Residence for the Bronx River Art Center. He earned a Master of Architecture from Cranbrook Academy of Art and was a summer Fellow within CEMAT - Centre d'Etudes Maghrébines à Tunis - based in North Africa and sponsored by the US Department of State.

Wesley Taylor is a graphic designer, fine artist, musician and curator. He has spent many years "scene building" in the Detroit hip-hop community as both an emcee and graphic designer. Wes is co-founder of Emergence Media, along with Invincible. In 2011, his work was presented in the two-person show Brandished at Re:View Gallery in Detroit. Taylor earned a graduate degree in 2-D Design from Cranbrook Academy of Art and teaches design at Eastern Michigan University and Lawrence Technological University. He manages a five-person artists' studio collective in Detroit called Talking Dolls.

Jhana R Frederiksen is an architectural designer working on issues of latent forces of culture, economics and everyday practices that go unseen through habit and insular practices. Jhana has worked on many architectural projects in Michigan, Washington DC, Illinois and California. She earned a Master of Architecture from the Taubman College of Architecture and Urban Planning, University of Michigan.

Ross Hoekstra is an architectural designer at McIntosh Poris Associates. He received a M.Arch and a M.Sc. in Design Research from the University of Michigan and a B.A. in History from Calvin College. He is a recipient of the Booth Traveling Fellowship, studying the role architecture plays in open-air museums.

Aaron Blendowski is a 3D artist working in the East Side of Detroit, Michigan and the Fabrication Coordinator for the Cranbrook Academy of Art. He operates Real OK, a small-scale furniture design studio and was the co-founder of OmniCorpDetroit, a collective of creatives working out of Eastern Market. Aaron Blendowski earned a Master of Fine Arts from the Cranbrook Academy of Art.

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