ASTROVITAE

"A GLIMPSE OF LIFE ON OTHER WORLDS"

FEATURES:

ISSUE 1

Featuring 6 unique speculative biology projects, 3 artist spotlights, and creatures illustrated by artists from the community!

APRIL 2021

ISSUE CONTENTS:

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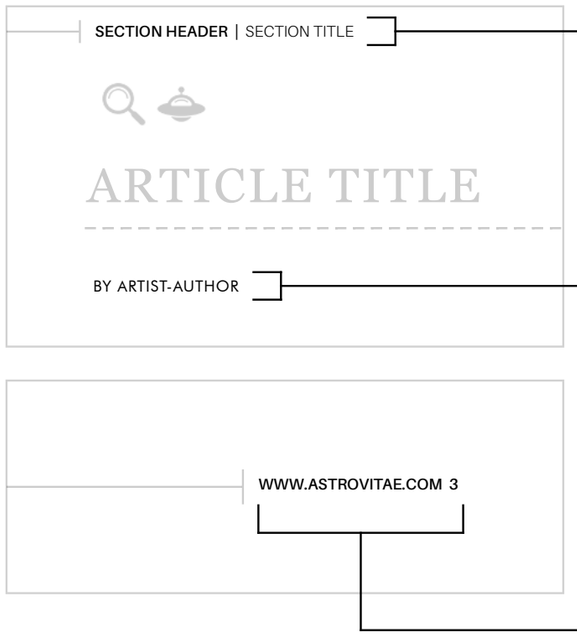

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Clicking on any section heading will take you back to the contents page.

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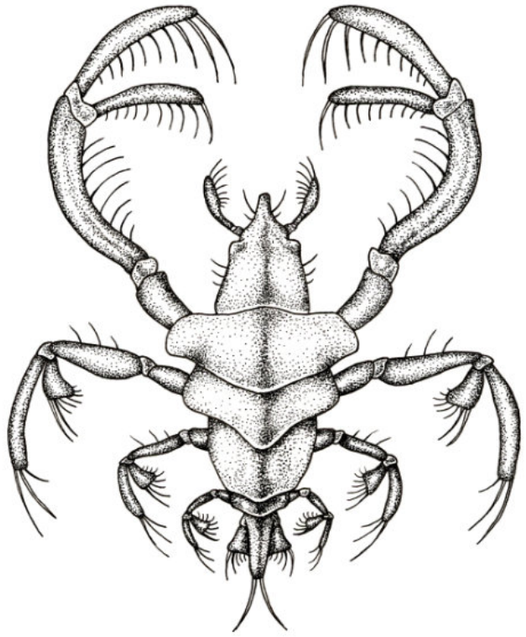


Onyx Flutter Flea. *The creature found on the cover of Astrovitae is the Onyx flutter flea, a species of microscopic plankton found on the planet of Perditus. (Illustrated by Domenic Pennetta)*

Dear Reader,

Before you explore the contents of this first issue I would like to share with you the magazine's objective and a bit of it's origin. I began my own worldbuilding project back in March of 2020 focused on the evolution of fictional organisms. As an artist, much of my work plays with the intersectionality of art and biology. I feel that speculative biology is the perfect combination of both, so it was inevitable that I would come to embrace the genre!

At the time the other artists belonging to my university were not interested in collaboration. Quite frankly many of us remained distanced from each other and our work (and this distance was magnified by the incoming pandemic). Closed off, my peers and I replaced a sense of community with our own imaginative worlds. As someone who is socially reserved, this wasn't much of a problem at first. However it went against my perceived notions of what an art program can offer, that is, a community of creatives that could challenge each other to become better artists. As I started posting my work onto social media other artists in the community began to acknowledge me. Eventually I became acquainted with these artists, and soon acquaintances became good friends and teachers. By putting myself out there I was finally able to find a sense of community that would inspire me to improve as an artist and creator.

Astrovitae is essentially my gift back to the speculative biology community that continues to support me. I want the magazine to highlight the amazing projects and art created by friends and other artists interested in the genre, and collect all these amazing creations in one place. By doing so I believe this will broaden our sense of community and give many new artists the chance to be noticed. I guarantee that you will find the contents of this first issue intriguing, and I hope that there will be many more issues to come!

Sincerely,

Domenic Vincent Pennetta

Founder & Chief Editor of Astrovitae Magazine

Creator of Project Perditus

SECTION CATEGORIES:

Most featured projects within the magazine are tagged with an icon that best summarizes the type of content it contains. Listed below are all of the existing category icons for readers to familiarize themselves with:

SOFT SPEC
Light research with an emphasis on conceptualization

HARD SPEC
Heavy research or use of data in worldbuilding

EARTH SPEC
Involves Earth or organisms from present day

PALEO SPEC
Involves organisms from Earth's past history

MICRO SPEC
Focus on small organisms like mites, viruses, and cells

ALIEN SPEC
Xenobiological anatomy, biology, and evolution

PLANET SPEC
Focus on planets and their unique features or physics

UNIVERSE SPEC
Unnatural or otherworldly physics and matter

MYTH SPEC
Related to cryptids, fantasy, or mythology

ENVIRO SPEC
Emphasis on environment, landscapes, and scenery

WHAT IS SPECULATIVE BIOLOGY?

An Excerpt from *Speculative biology: a Chase for a Blue Chimera*

> **“When one sees how squids of the far future evolve onto land—rabbits into long legged counterparts of antelopes—and giant descendants of zebra parakeets run across terraformed Mars, we are most likely dealing with a special literary movement called speculative biology...**
>
> – PAVEL VOLKOV & NIKOLAY KILYACHKOV

BY PAVEL VOLKOV & NIKOLAY KILYACHKOV

Pavel Volkov *and* ***Nickolay Kilyachkov*** *are two Russian authors interested in the speculative biology movement. Their article “Speculative Biology: A Chase for a Blue Chimera” contains a detailed explanation and overview about the history of the genre. Speculative biology is notoriously difficult to define, and many varying explanations, definitions, and meanings have been proposed. Some may or may not take issue with the definition of speculative biology presented here, however, I chose this excerpt as an introduction due to several key elements mentioned. Most notably are the physical and literary depictions of creatures, their evolutionary relationships, and a set of underlying principles that fabricate the illusion that these creatures are indeed scientifically plausible in some form. - Domenic Pennetta*

Speculative Biology is a unique genre of fiction which has emerged between the boundary of science fiction and the underlying principles that make up the field of biology.

Before we can begin to have a discussion about speculative biology, it is necessary to narrow down the defining characteristics that make up the genre. If we analyze any speculative project, we will typically come in contact with detailed descriptions of fictional creatures and the ecosystems which they inhabit. We will learn about the general features of these creatures, their physical appearance, anatomy, habits, and also their phylogenetic relationships with other creatures in their environment. Depictions of these organisms may be detailed, thorough, and possibly even faultless from a scientific perspective. Speculative bio-logy often adapts many biological subject matter and scientific qualities—often at a high degree. This makes the genre feel like its own science, as many inquiries, theories, and biological concepts are explored, critiqued, and applied.

The objective of science is to uncover how the natural world functions, often through methods involving examination or experimentation. Theories and concepts are then created which grant us the ability to extract verifiable facts from objective reality. These facts are distinguished either by proving prior claims as true or by refuting them. Similarly, speculative biology is guided by a theoretical base of knowledge derived from biology and other natural Sciences. Some speculative projects form a factual basis for what is true and what is not, however this basis is partly or completely a product of the author’s or researcher’s imagination. In a way, speculative biology appears to become its own distinct science, one which looks at particular subjects with underlying principles and modifies them, or studies these existing principles to generate a completely new set of ones. These principles can be directly stated or illustrated by the author-researcher, but verification and falsification of fact never truly disappears. The verification and falsification of facts is always present, either in the discussion inside the collective of author-researchers, or in the comments and critique of readers and viewers.

CAPTIVATING WORLDS

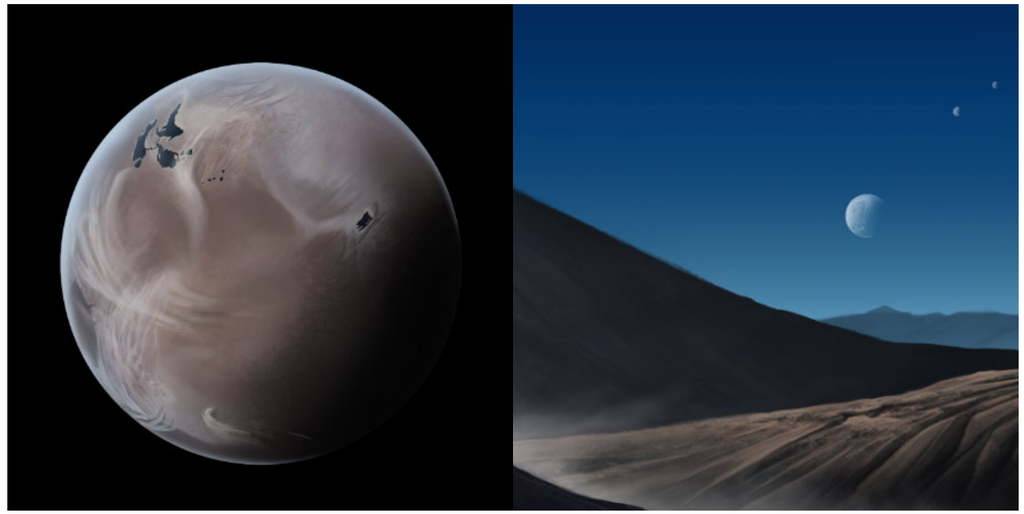
Sneak Peak of an Uncharted Planet. *The spread depicts an environment on a never-before-seen world. (Illustrated by Christian Cline)*

AN EXTRA-TERRESTRIAL FIELD GUIDE

BY CHRISTIAN CLINE

I've been working on my book project for over a year, and my aim is to create a science-oriented field guide illustrating fictitious alien planets and creatures. My book, called *The Teeming Universe: an Extraterrestrial Field Guide*, will explore a diverse collection of planets, environments, and creatures. So far there are ten unique planets, all of which I've spent months on worldbuilding. Copious amounts of writing and planning went into each page to develop the encyclopedic nature-focused feel I'm pursuing.

Many of the book illustrations have been finalized since July. I have to say I've had a lot of fun doing it, and it seems that a lot of people have as well, which delights me greatly! While I won't be showing everything I have planned for the book, I would like to use Astrovitae to share some of the worlds and paintings I've completed thus far. The first chapter, one of my personal favorites out of my whole roster of planets, focuses on the planet Menir.

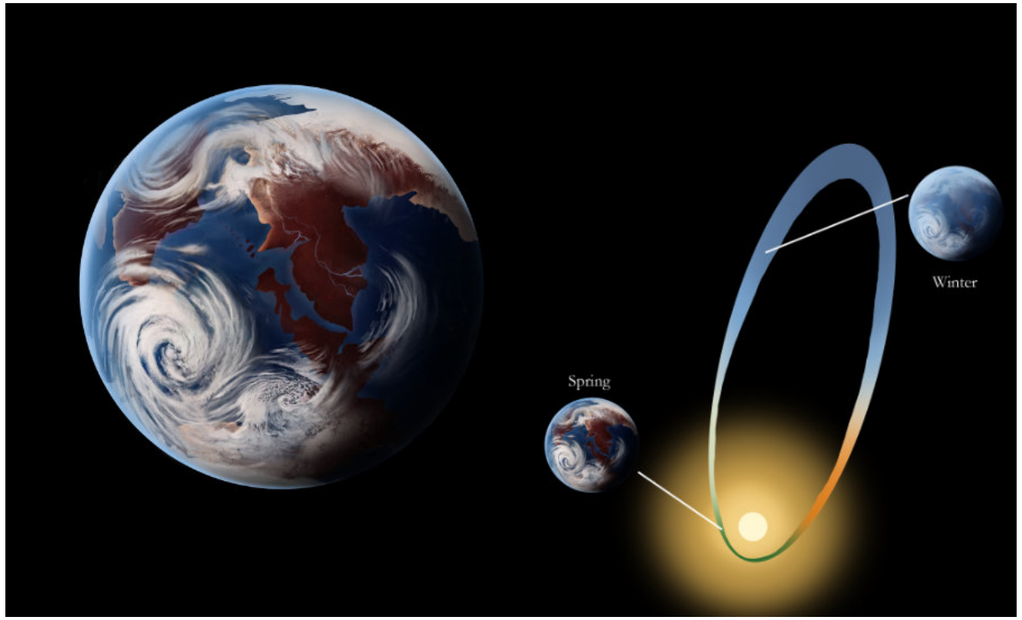


Planet Menir. *On the left is a render of the planet Menir in all of its gray glory. Average surface temperatures measure -60°F degrees, meaning the planet is covered in exposed stone and solid ice. The right image displays a landscape found in the Planus Laterus region. Most locations are barren deserts however there are sometimes short plateaus, hills, and glaciers that add interest to the otherwise seemingly empty environment.*

Menir. You can think of Menir as a much bigger version of Mars. It orbits a sun-like star, and it's over twice the mass of our Earth. Its iron core is partially dead, and despite being so large its atmosphere is far thinner than Earth's. Menir has a really quiet and cold type of vibe. I enjoy the seemingly expression-=less atmosphere because the empty scenery was really fun and meditative to paint. The planet is home to forms of bacteria, which I figured would serve as the best introduction for life in the book. I explain the biology and biochemistry of these bacterial life forms in great detail—and as of now it is one of my personal favorites.

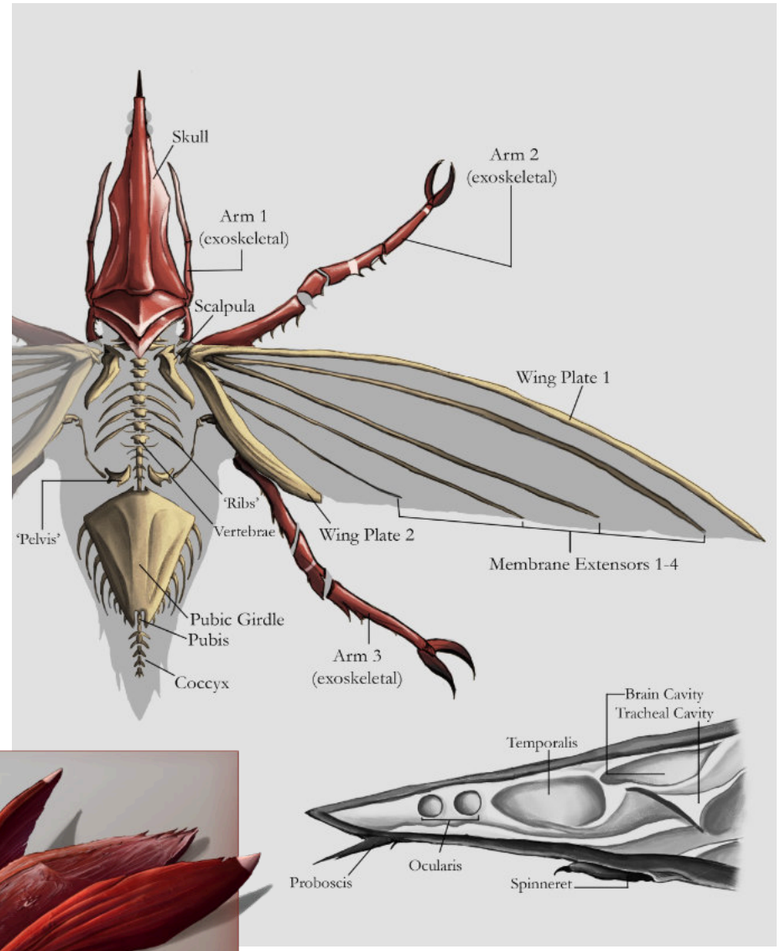
Chapter two is a stark contrast from the non-earthlike planet of Menir. The worlds featured within the book are not in a conventional chronological order. Planets that are extremely alien-like are shown first, and then planets that are similar to Earth come after—essentially there is a gradient ranging from foreign worlds to more Earth-like ones.

Ateria. While Ateria, the world covered in chapter two, is far more like Earth than Menir is, it's still incredibly different in many ways. Each planet in the book has its own unique characteristic, and Ateria's in particular is it's elliptical orbit (elliptical orbit is a form of orbital rotation that has a parabolic path instead of a circular one). This orbiting pattern can be wildly



Planet Ateria. *Ateria has features similar to Earth. The left image is a render of the planet during the middle of the spring season. Due to an elliptical orbit (shown on the right) Ateria's spring is brief and warm, while the winter period lasts two savage years.*

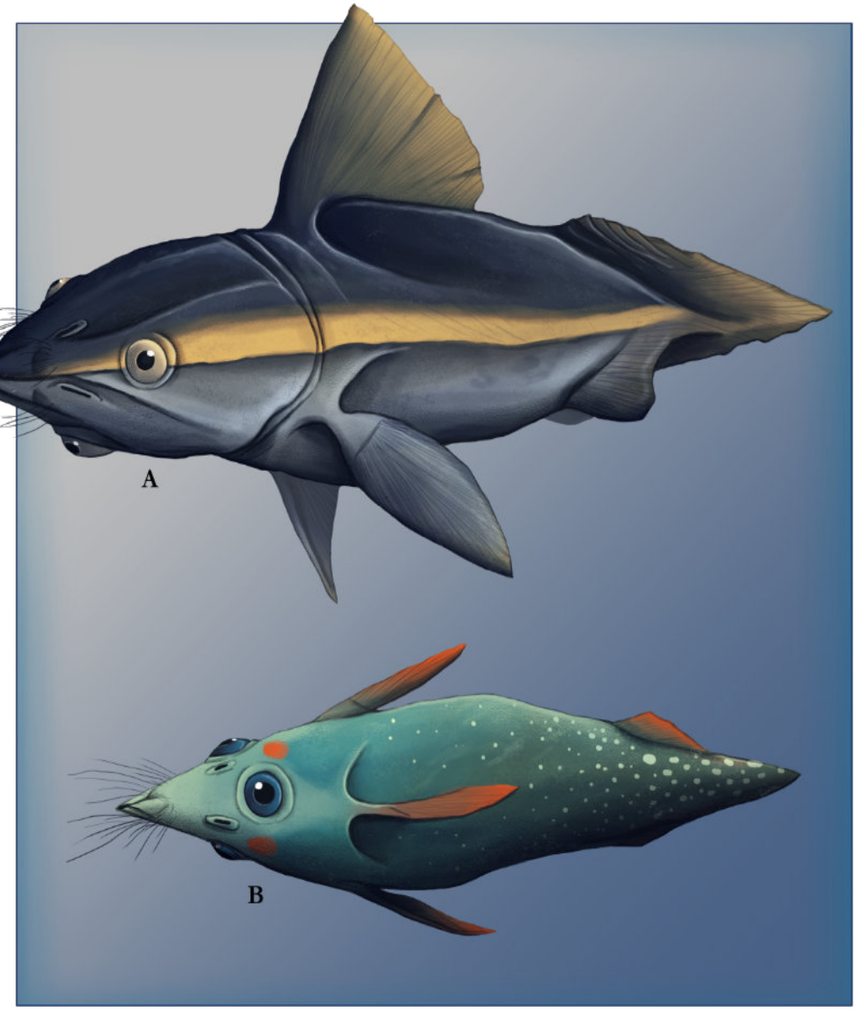
eccentric and have profound effects on the planet's surface. The majority of summer months are warm and wet, while the winter months are savagely cold—lasting over two years. Both plants and animals on Ateria have to adapt accordingly to this bizarre circumstance, and the most prominent group of animal life is the Arthostreptans. This chapter was really fun to worldbuild, even after completing the manuscript. I could expand upon my writing with my art, and the arthostreptan lineage is a good example of this. Much like how dinosaurs were the dominant animal group for tens of millions of years, arthostreptans are very similar to Ateria. An example of an arthostrpean, the alien I wrote most about for this chapter, was the fisher crame, a small flying alien which is similar to beetles or spiders found on Earth.



Fisher Crame. *Skeletal anatomy of an adult fisher crame (above). Superficially these animals are similar to Earthly arthropods, but their internal physiology is incredibly alien. Adult male fisher crames are larger then females and are a bright hue of red (left).*

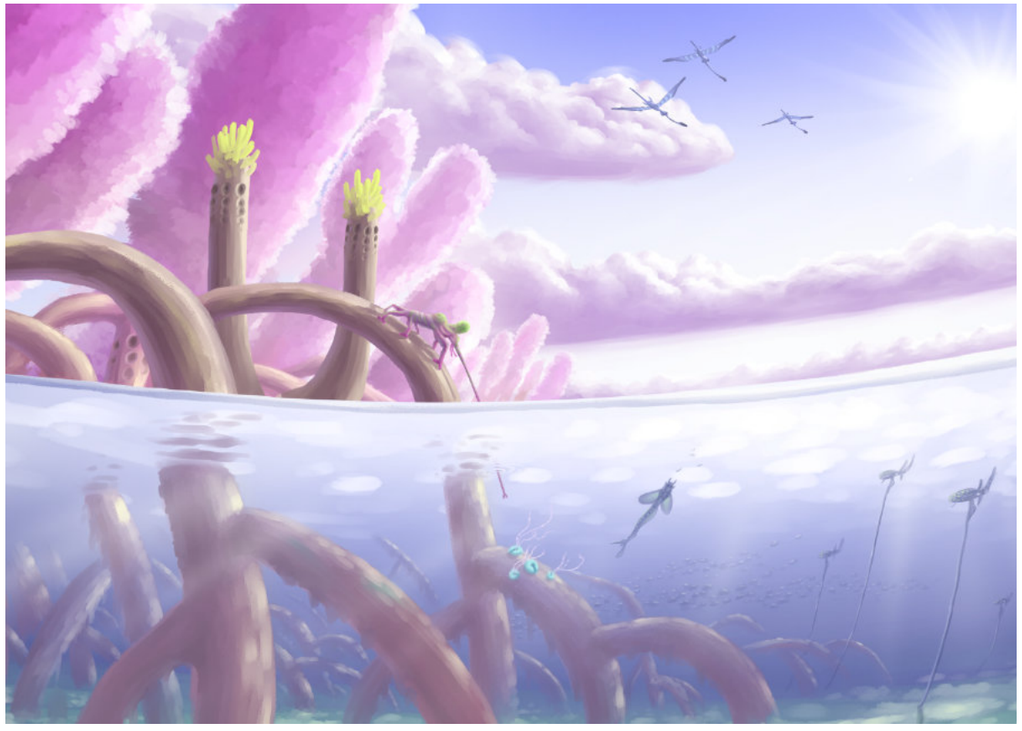
Southern Tourmaline Sea. *The image above depicts a typical aquatic scene among the kelp tree forests on Toreya. Phesh use the kelp as cover as they dart back and forth from location to location. A peaceful Panda Phesh can be observed on the left grazing on kelp.*

Toreya. The last world is Toreya, the planet explored in chapter three. Toreya is a world unlike any in our Solar System—an ocean planet. This world is the second largest planet in the book, measuring in at nearly seven times the mass of Earth. It orbits an F-star, and Toreya is special in that nearly 100% of its surface is covered in liquid water. I elaborate on the various types of biomes, life forms, and environments across the world both in literature and illustration.



Pelagonareans. *Pelagonareans, pelegs for short, are a family of phesh containing 650 unique species. The majority of pelegs reside in the region between Lazuli Ocean to the Tourmaline Sea. The species shown on the top is the Southern Micanian Slipper and measures four feet in length. Below is the Spotted Dasher, a smaller scavenger that consumes the carcasses of other phesh.*

THE PERALISSIAN COTTONCROWN MANGROVE



Peralissian Cottoncrown Mangrove. *A glimpse into the littoral zone within a typical cottoncrown mangrove. Many organisms seek refuge in this wonderful ecosystem. (Illustrated by Megens)*

This feature is a collaboration between Mathijs Megens and Savely Kochnov. Even though both artists contributed equally to this ecosystem, the illustrations depicted display artistic interpretations of the same organisms, resulting in some visual differences. Hopefully the variance in artistic expression and style adds to the enjoyment of this collaboration!
- Mathijs Megens & Savely Kochnov

BY MATHIJS MEGENS (FOLDWAVE) & SAVELY KOCHNOV

Welcome to Peralis C, the third planet in the binary star system of Peralis. Accidentally Discovered by the Markhan Transverse Interplanetary Sensor Array (MTISA) during military training operations in the Claude Sector around the Pleiades Exclusion Zone. The planet soon became a must-visit destination for scientists and enthusiasts all across colonised space. With a slightly lower gravity than Earth, research can be done quite effectively and, even though the atmosphere is unbreathable for humans, it is not toxic allowing for extended stays in the open air. This feature focuses on a particularly interesting and somewhat familiar ecosystem found frequently along the coasts of Peralis C's vast equatorial oceans. A tropical climate and steady upwelling of nutrients from deeper waters allows for a thriving community of organisms never seen before by mankind. Regardless of the strangeness of these lands they undeniably resemble the mangroves that are found on Earth today. The following is a collection of images and organisms from this unique ecosystem.

View of the Mangrove. *Wide-angle view of a Needle Sern catching its prey in the cottoncrown mangrove. (Image by Kochnov)*

1. *Needle Sern: Agile and graceful flying creatures, piercing their prey with the extended last segment of their jaw.*

2. *Glittering Sandsnouts: Small omnivorous fish that live in small schools.*

3. *Mantaverm: Invertebrates with an elongated body and six fins. They feed on small animals, digging them out of the sand.*

4. *Pink Rayfish: An invertebrate that feeds on small creatures, filtering them out of the water.*

5. *Bentakite: These sessile organisms attach themselves to the ground by a long tether. They feed on small aquatic creatures, catching them with an elongated tentacle-like mouth.*

6. *Mangrove Snapper: A large predatory fish with powerful flippers and jaws with hooks at the ends.*

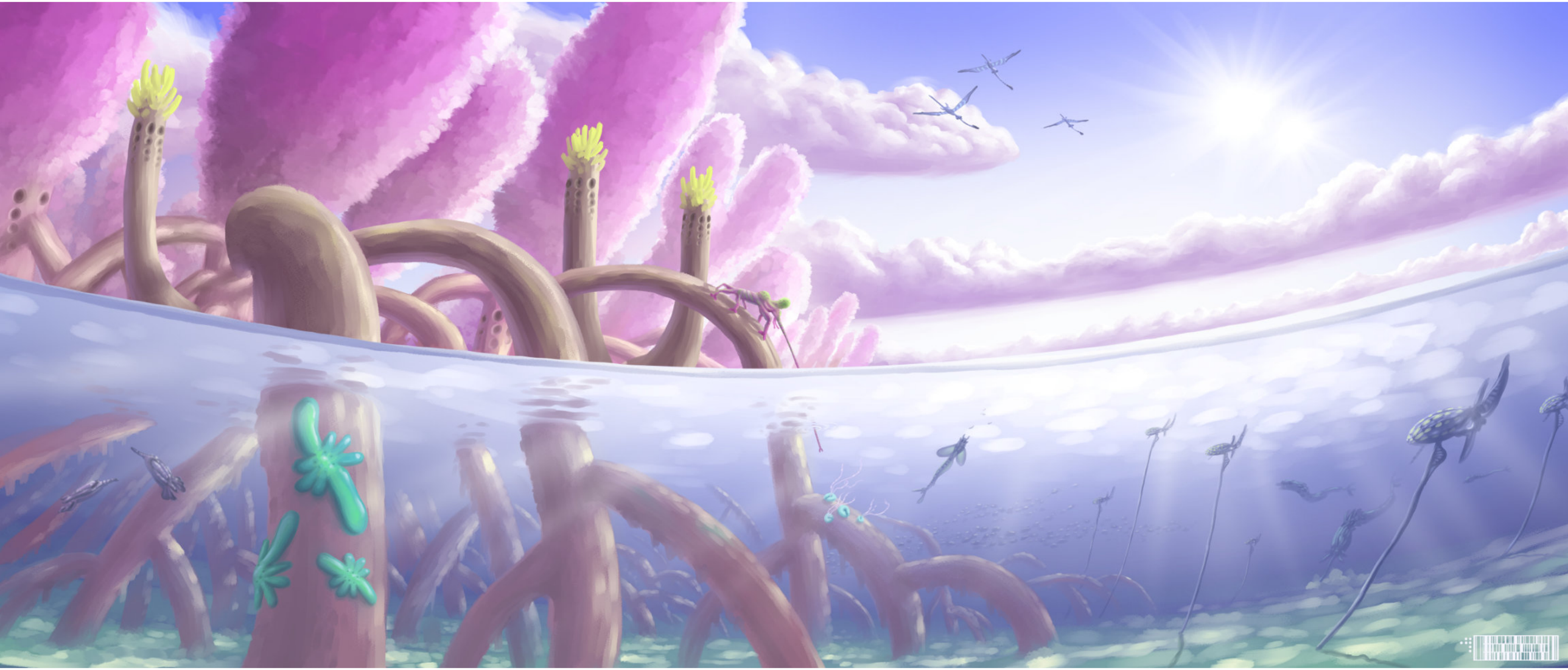
7. *Goldfins: Small schooling creatures that feed on small aquatic animals.*

8. *Sicklebeak: A fast and dangerous predator with sharp spines on its tail.*

9. *Sandy plowman: A small fish sifting through the sand with its strange jaw in search of small animals.*

10. *Larvae Emperor Greatfin: Small schooling filter feeders living among the roots of cottoncrown mangroves.*

11. *Mangrove Eyes: Strange invertebrates protected by a shell, resembling barnacles.*



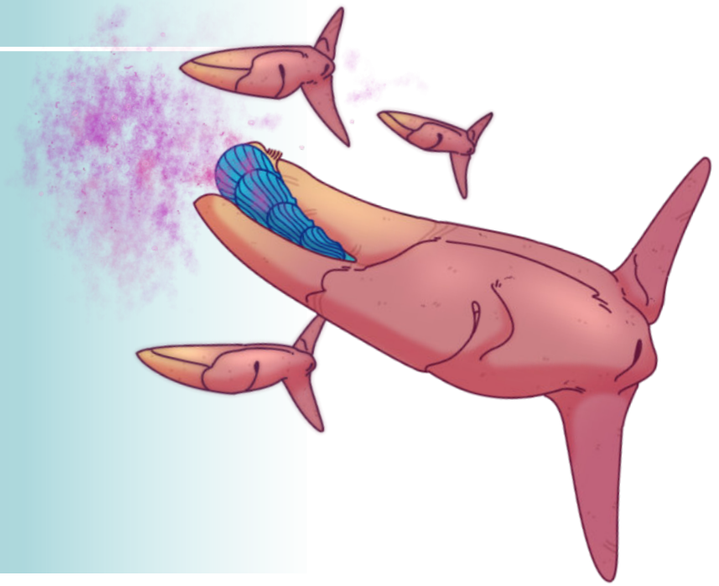
Peralissian Cottoncrown Mangrove (Enlarged). *Wide-angle view of the littoral zone within the cottoncrown mangrove ecosystem. (Illustrated by Megens)*

COMMON COTTONCROWN:

Cottoncrown trees line the sandy shallows which harbour a variety of peculiar organisms. The curving stilt roots branch out from the Cottoncrown's trunk forming a maze-like curtain trapping nutrients in slow currents and enriching the sediment. On the sides of its trunk and pillar roots emerging from the clear water, rows of orifices are found which are part of the passive gas exchange system. Topping the pillar roots are yellow reproductive structures strongly resembling composite flowers on earth. The exact function of the large and soft crown is not yet understood, but it houses a variety of structures aiding in the processing and storage of minerals and water. Future research will hopefully provide answers to its fluffy appearance.

EMPEROR GREATFIN:

These creatures are small larvae of the Emperor Greatfin. Reaching about 15 centimetres in size, they swim in small schools among the roots of Cottoncrown mangroves. They feed on plankton with their feathery filter fans hidden in their large mouth. Although rather slow, when danger arises, they can quickly swim away with the help of jet propulsion through holes on the sides and back of their bodies by quickly contracting its body cavity.



NEEDLE SERN:

Needle Sern are large flying organisms soaring the skies of Peralis C living in the cottoncrown mangroves. They live and nest in these strange pink trees, feeding on the fish that live in the brackish blue waters. They hunt almost any aquatic fauna that suits them in size and catch their prey by diving into the water at high speed, piercing their prey with the elongated end of the last segment of their mouth. They then eat in a secluded place with the help of their tongues hidden in their five mouths and two short segmented arms on the sides of their head.

BENTAKITE:

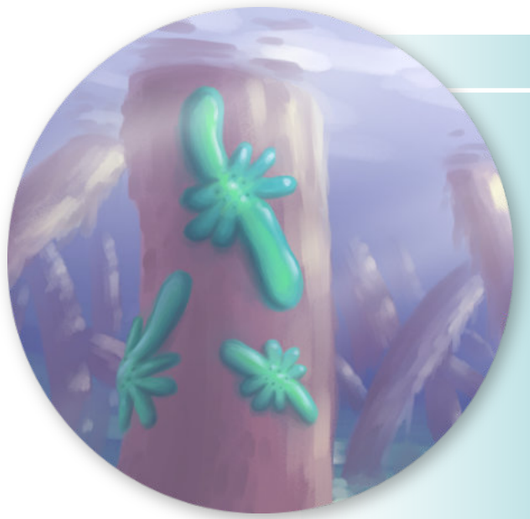
A bit further offshore the assemblage of organisms takes a different shape and is now dominated by large aggregations of Bentakites slowly swaying in the gentle currents. These strange sessile creatures have attached themselves to the ocean floor with a long tether and catch slow moving detritus and macroplankton with a flexible proboscis. Yellow spots dot their backs adding a splash of colour to the ecosystem. When conditions are optimal, Bentakites can cover vast expanses of shallow seas forming, though rare, "forests" acting as a detritus filter due to the amount of Bentakites feeding on it.

PINK FISHERMAN:

Another noticeable inhabitant of Cottoncrown mangroves is the Pink Fisherman, undoubtably the strangest creature of the bunch. This six-legged organism hides among the roots and is adorned with bright pink and yellow patterns. It spends most of its days silently waiting with a long proboscis deployed in the water waiting for potential prey. Due to its rarity, not much is known about its ecology and reproduction, but extended monitoring programmes are planned to find out more about this elusive critter and various other variants that were reported.

GLITTERING SANDSNOUT

Glittering Sandsnouts are small creatures, 10 to 20 centimeters long, residing in Cottoncrown mangroves. They live in small flocks, feeding on a wide variety of aquatic creatures, catching them from the water or digging them out of the sand with their many-jawed mouth. This unique jaw structure is characteristic of all animals on Peralis C that have a skeleton and consists of an articulated structure with several throats located between each joint of the mouths. All these pharynxes combine into one inside the body forming one digestive tract. Glittering Sandsnouts also stand out for their unique eye structure reminiscent of a tape or a ski mask; in such eyes there are several pupils at once which gives them an almost 360-degree vision.



ROOTSTAR:

Rootstars are starfish-like organisms with six eyes, one at the base of each of its six central arms. Often found on Cottoncrown roots, they graze on exudates deposited on the surface by the Cottoncrown. Interestingly, research has shown that they deposit a different substance in place of the exudates which are then absorbed by the Cottoncrown again. It seems they form a mutualistic relationship in which they both provide each other with nutrients. Another interesting observation is that they are usually found in small groups on large roots, with none to be found on smaller roots suggesting the Cottoncrown can control where its exudates are deposited.

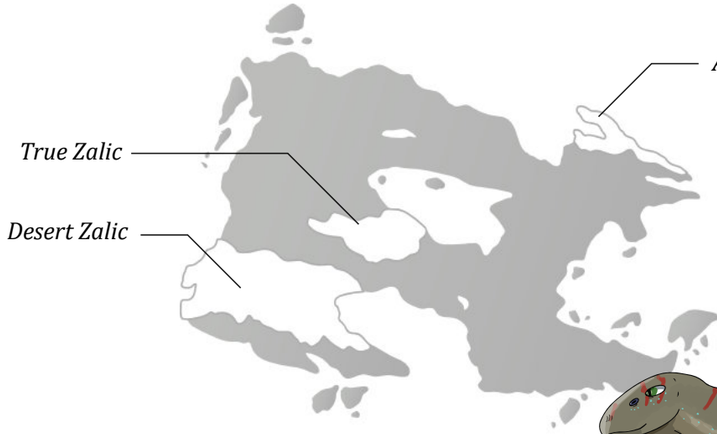
A GLANCE AT PLANET FENI

BY EVAN PROCTOR

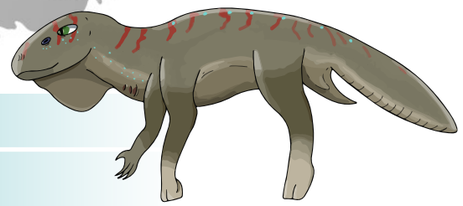
My project centers around the speculative world of Feni. This planet much like earth has its own sapient life form collectively known as the "Zalic". These beings are intelligent organisms belonging to the Diplognaths, a taxonomic group which is defined by a special jaw evolutionarily derived from a pair of proboscises that have merged together. Unlike Earthly hominids who have only one living species, Zalics have multiple surviving groups in its taxonomic family. Three of the closest related species are illustrated on the right.

These Zalics display intelligence similar to that of the modern human, and have developed many of the same facets of civilization. Their societies are made up of countries and large cities, each containing their own cultures and languages. Zalics have also domesticated a wide array of plants and animals which they use to sustain a thriving agriculture.

Their morphology is defined by their six pairs of limbs, each performing different functions. The first two limbs have hands, however each are used differently: The first pair has three fingers as well as an opposable thumb. The second however has two thicker fingers which are padded on the knuckles and used for walking. Zalic clothing is designed with the functionality of their limbs in mind. Interestingly, most species of Zalic also have many small patches of fluorescent skin, which they use for social and emotional signalling.



Map. *On the left is a map of two connected continents known as Vibamin and Oarao. The areas in white show where specific populations of Zalic are located.*



DESERT ZALIC

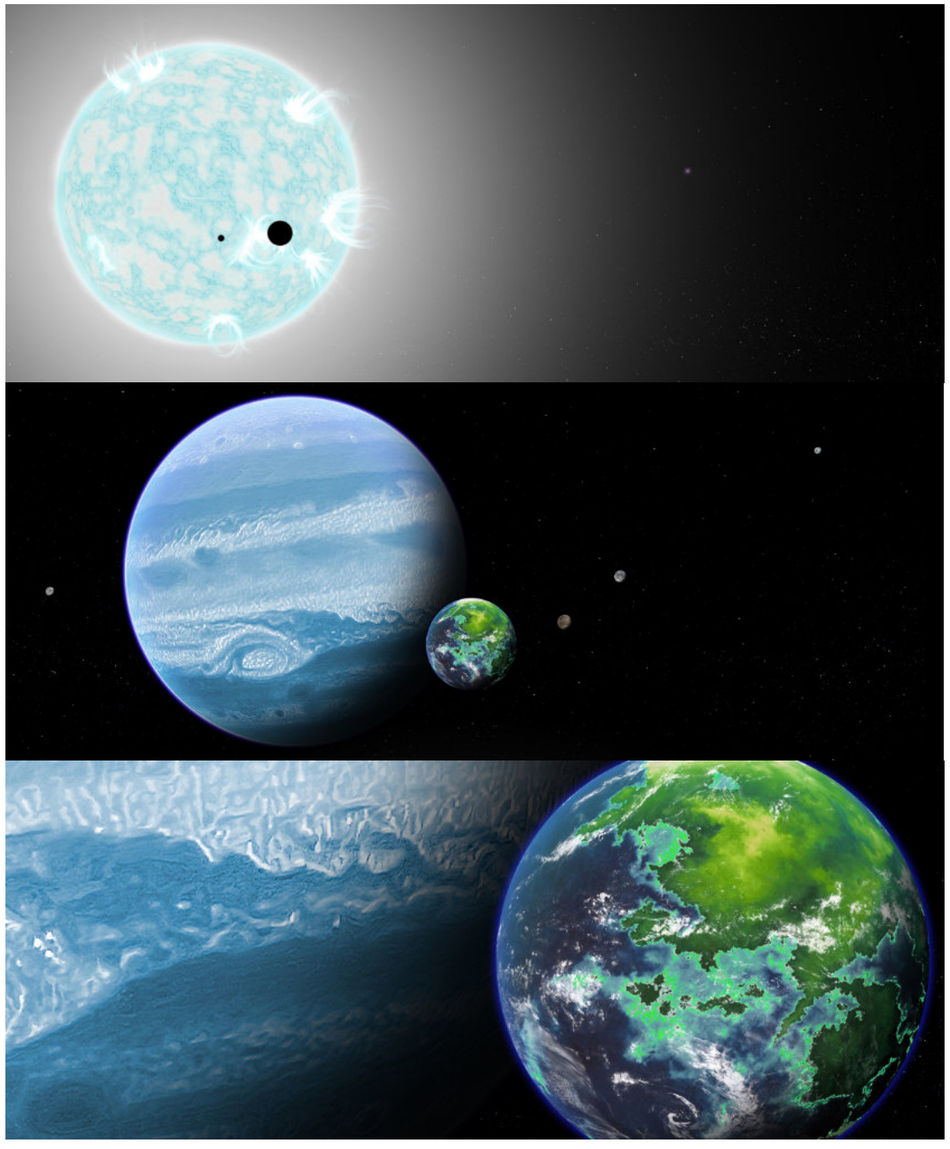
Scientific Name: Pithecosaur sapien arenicolus
Origin: The Oaratilian Desert

TRUE ZALIC

Scientific Name: Pithecosaur sapien
Origin: The Womb of the World
(a small steppe near Dragon's Lake)

ARCTIC ZALIC

Scientific Name: Pithecosaur sapien borealis
Origin: The Crest Tundra



Vekia. *The moon of Vekia orbits the large gaseous planet of Vek (best seen in the middle image). The top image compares the planetary bodies with their respective sequence star Veksol.*

LIFE BEARING MOON OF VEKIA

BY VEKNOR

The alien world of Vekia is a project that I started thinking about during the initial COVID-19 lock-down. The YouTube video series that inspired the projects was *Alien Biospheres,* by Biblaridion. I had a lot of free time and I started making simple sketches with graphite on paper. Then it occurred to me, why not start the formidable enterprise of structuring my work in a world of my own? I ran out and immediately purchased a Wacom One drawing tablet to digitize my initial sketches.

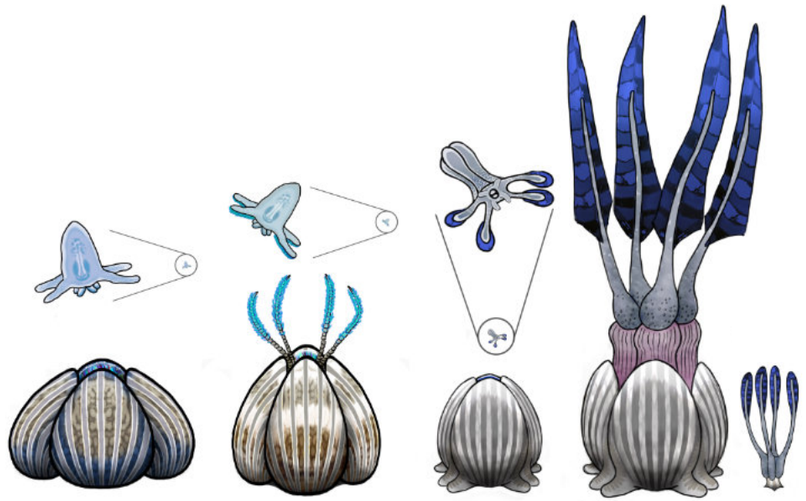
Most alien speculation projects take place on brown planets with red plants, whereas Vekia is dominated by vivid colors like greens and blues. My world is not a planet like Earth, but a moon that revolves around a gaseous planet, Vek, which is the size of Neptune or Uranus. Luckily, Vek is right in the Goldilocks Zone. My system's sun is called VekSol, and it is a blueish-white star with a mass of 1.4 sun. However, the moon is protected by the gigantic magnetic field of Vek, which protects it from the veksolar radiations.

General Overview of the Climate and other Physical Characteristics. Vekia's climate is very complex due to the presence of Vek. In short, the axis of the moon and the planet, Vekia and Vek, are alike. They are on the same plan and they have a similar rotation axis to Earth's, about 23.4 degrees. This explains why the seasons on Vekia resemble the ones on Earth.

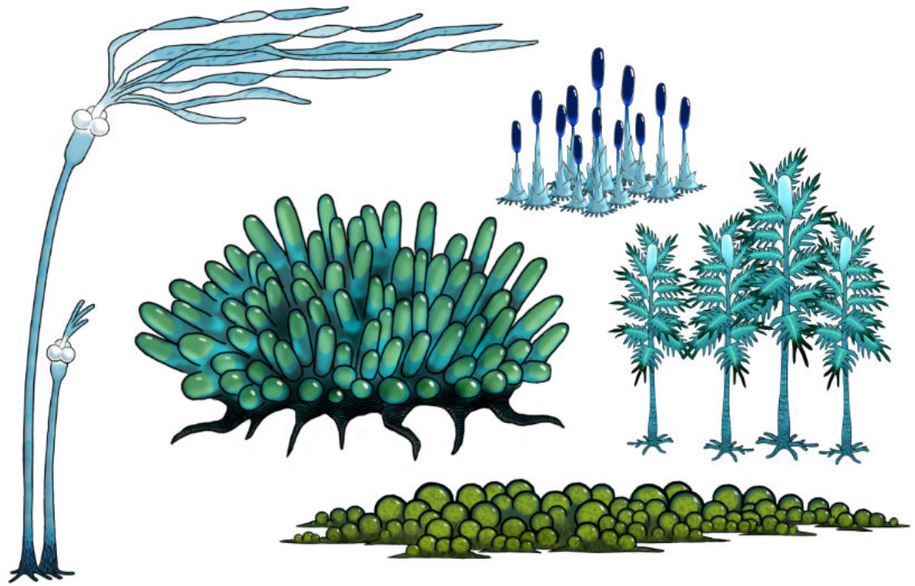
Moving away from the sun and coming closer to it, and then moving away again as Vekia rotates around Vek affects the climates of the moon. These variations in distance from the sun, which are due to the orbit, are much smaller than the seasonal hemispherical change in distance from the sun, but they still affect both hemispheres of the moon at the same time. This affects overall temperatures rather than the general climate. If we combine Vekia's orbit (climate) with Vekia's axial tilt (seasons) then, in theory, we have "winter" months with cooler weeks (Veksol-side) and very cold dark weeks, and "summer" months with very hot and sunny weeks (Veksol-side) and cooler weeks.

Tectonically, the moon is active and contains many geysers and volcanoes. The moon is locked with the gas giant, so the tides are very low and only due to the movement of other moons and VekSol. The oceans directly under Vek are also deeper, and that is because of the gravity that the planet exerts on Vekia; it literally pulls the ocean in. In the hemisphere that faces Vek, the planet occupies almost the entire sky and never moves. Vek appears to be about 30 times of the size of the moon in our sky. The Hemisphere that is facing Vek is therefore continuously bathed by the light reflected on the thick clouds of the gaseous planet. This hemisphere knows very rare true nights; moments of complete darkness occur periodically during the few hours of eclipses. The energy constantly reflected to one face of Vekia causes a slight atmospheric and hydrospheric currents between the energetic pole and the opposite pole. In addition, majestic auroras can be seen in the sky almost all the time.

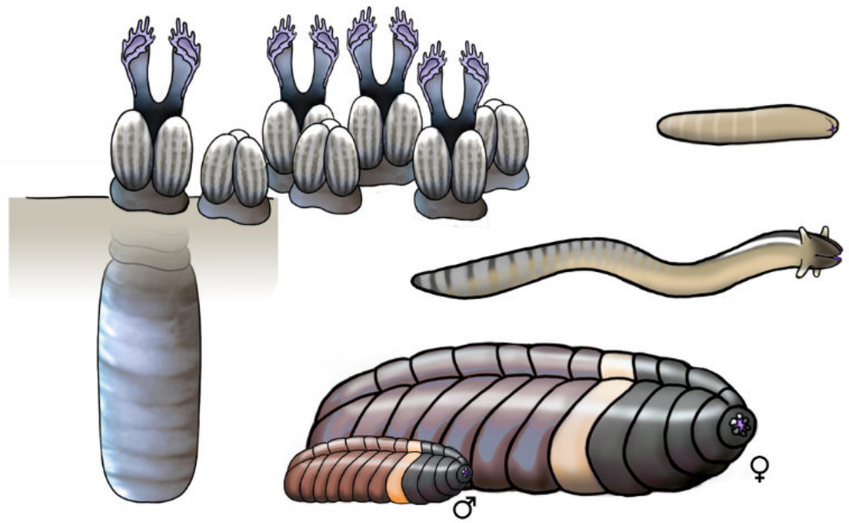
Major Phyla found on Vekia. So far, there are four major phylogenetic families on Vekia. One is obviously the plants which would play a similar role to that of the ones found on Earth. I planned for Vekia to be a somewhat of a lush moon. The plants would grow in turquoise, green, and blue hues due the



Family Quadrivalidea. *Bottom left is the primordial four-valve form and directly adjacent is the true four-bristle valve. Their larval forms are scene above respectively. The three forms on the right are the feather mouths.*



Family Photophagous. *A collection of glowing algae forms that inhabit the benthic region of Vekia's expansive oceans.*



Family Cassididea. *Top left illustrates a colony of helmet bearers which possess bodies submerged in the benthic substrate. The four specimens on the right are varmints. The lower two are male and female pulpy varmints, and the the specimens above are common elongated varmints.*

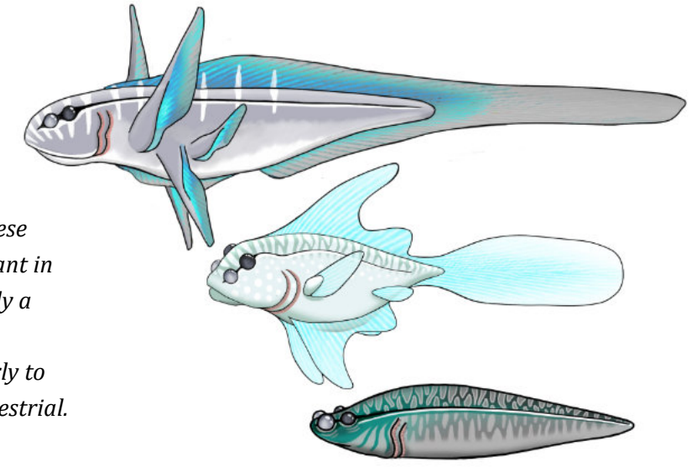
light spectrum of Veksol. This family is referred as the Photophagous (see page 32).

A second family, named the Quadrivalvidea, evolved from small molluscoid. One trait that unites this family is that their body is made of four equal structural parts (see page 33). Since I started the project by drawing the early members of this family, the initial clades are strongly influenced by the work of Biblaridion. I plan to diverge from this at some point. A fourth family branch starts as underwater fish called the Piscidea. Members of this great family will become the main fauna and megafauna of the moon. At some point in the distant past, they were probably close to the early Vermicidea, but they separated early on and evolved to live on the water column instead of the seabed. So far, they have started off as small fishy things, but they will also become terrestrial (which I tentatively have named “vekiastrial”.)

Future works and general direction. Bioluminescence is an evolutionary trait that is commonplace in my world. Although all organisms have the bio-luminescence gene, it will not be used by all species because it requires a lot of energy. The gene is always present, sometimes it is activated and sometimes it is switched off.

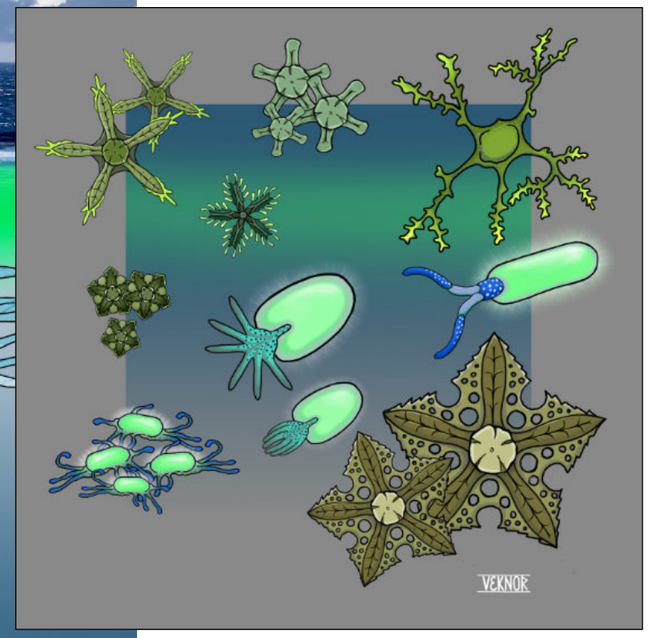
The plants will be the family with the most bioluminescence-prone clades. I imagine a world of glowing alien flowers pollinated by creatures which are attracted by a particular light spectrum. In an environment with sparse light, some creatures will develop glowing attributes and body parts just to blend into their surroundings. Predators and prey may selectively coat parts of themselves in bioluminescence. In extreme cases, perhaps some creatures will use light as a way to signal they are ready for reproduction and perhaps this use of bioluminescence will become entrenched in that role via Fisherian runaway in the creature’s descendance. It may produce wonderful alien creatures full of glowing features.

My world only started coming to life around Christmas 2021, so there might be plot holes relating to physics and biology, but hey! It’s for fun! And, whilst always trying to keep with the spirit of scientific accuracy, I feel like I can use creative license wherever I want. Who knows what the creatures might end up looking like as I continue to find inspiration to fill Vekia's different habitats?



Family Archopiscidea. *These Piscidean forms are abundant in the oceans of Vekia. It is only a matter of time until the contingently evolve, similarly to tetrapods, and become terrestrial.*

Vekia's Ocean. *A colorful depiction of life beneath the surface of Vekia's sea. Plant-like forms and sessile animals attach to the floor, while Piscideans swim freely in the water column above.*



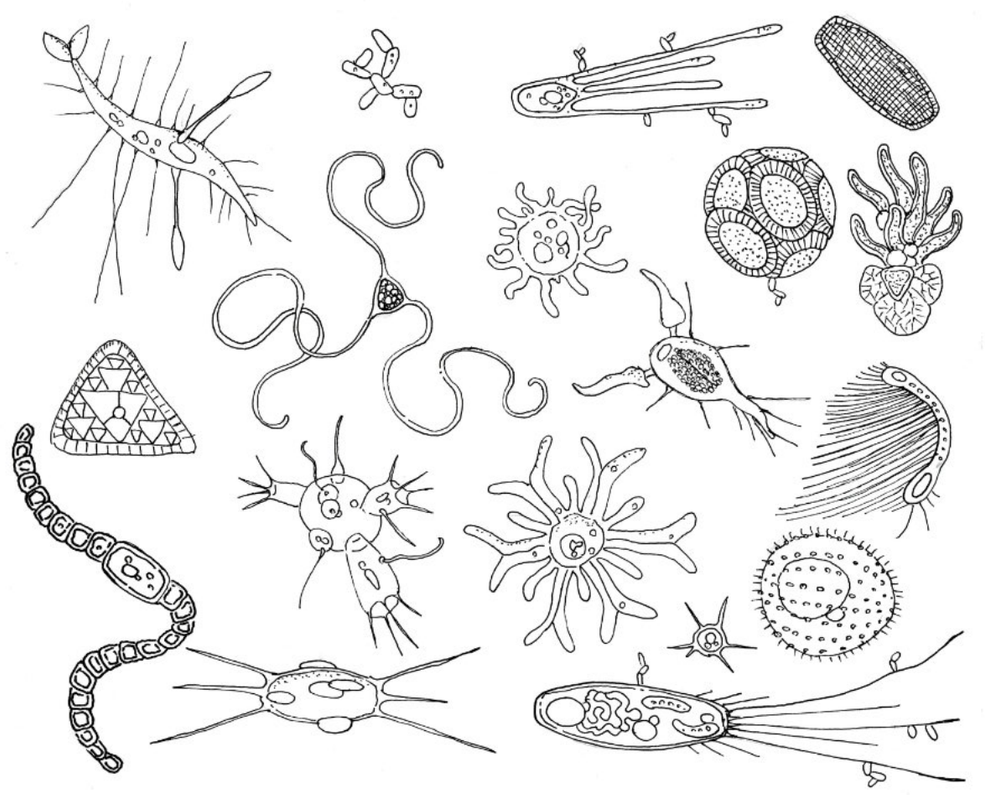
Macrophytoplankton. *Small bioluminescent forms that populate the superficial surface of the ocean.*

LETTERS FROM SATURN

BY JOHN MESZAROS

I first developed this project over ten years ago as a Peterson-style field guide to a fictional gas giant called Amaterasu that was heavily inspired by Saturn and its rings and moons. At the time I wasn't really sure what to do with the whole project. Should I post it all online? Make it into a book? Though I got busy with other art over the years, this remained one of my favorite projects, and I always planned to go back to it eventually. Now I feel like I'm in a place with my art and writing where I can finally flesh this idea out completely.

For the revamp I decided to actually make the setting an alternate version of our own ringed planet. I wanted a background story to the field guide, so I'm working on a plot inspired by *A Princess of Mars by* Edgar Rice Burroughs and other Sword and Planet fiction. Thus the guide is presented as a series of letters between explorer and scientific artist Jessica Lacerta and her girlfriend Hyacinth Leavitt. Hyacinth is contacted by a species of highly-modified humans inhabiting the Saturnian moon Titan. They reveal that she carries a gene which allows her to operate the long-distance hyperdrive ships developed by an ancient Titanian civilization. Hyacinth agrees to travel to the frozen moon and learn to pilot the ancient technology but insists that they allow Jessica to come. Jess loves biology and this would be a once-in-a-lifetime opportunity to study a whole new planet. Both women have their bodies drastically altered through genetic engineering in order to survive the freezing temperatures and liquid hydrocarbon-based biology on Titan.



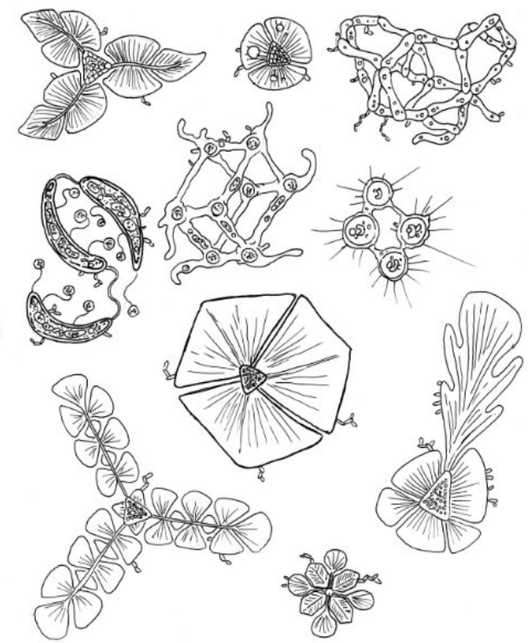
Planktonic Forms. *Ice and the liquid around it on Saturn is surprisingly teeming with lifeforms. Many samples of ice show that there are microorganisms present that are able to sustain themselves.*

While Hyacinth goes through grueling training to learn how to pilot Titanian jump-ships, Jessica joins an exploration team studying the life of Saturn system. She illustrates the team's discoveries for eventual publication on Titan and Earth, though she sends the first versions of her work to Hyacinth to keep the young pilot motivated. Eventually Hyacinth herself starts to explore the flora and fauna of Titan and sends her own findings to Jess.

The following descriptions of organisms have been adapted from excerpts within Jessica's first letter to Hya:

PLANKTON:

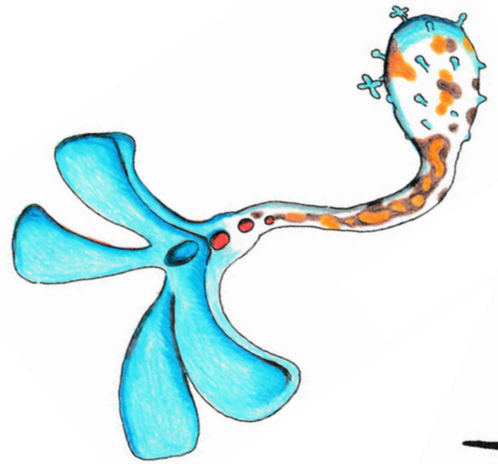
The foundations of Saturn's ring ecosystems are the plankton organisms living in, on, and floating between the ice particles. The diversity is just overwhelming, Hya! Every time we haul in the sample scoop we bring in at least five new species. I could spend the rest of my life cataloguing and drawing all our finds. There are photosynthesizers with broad leaves for catching the dim light from the sun. Others feed directly off the strong magnetic fields and radio waves emanating from Saturn. Still others consume trace minerals in the ice particles of the ring or from space dust. Then, of course, there are predators who have evolved ways to capture prey in freely-tumbling orbit.



HEIKEGANI:

Scientific Name: *Boukolarva heike*

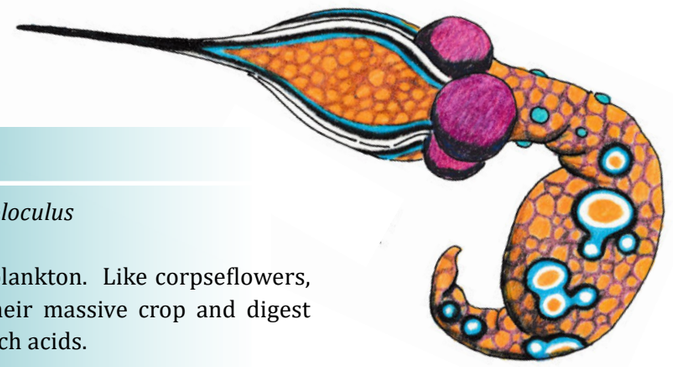
This specimen is named after an old Japanese legend. There is little known about this species, other than that it's related to the corpseflower. The face-like markings are actually bulges on the body that I believe are quite vivid and enticing.



BLUE-FACED CORPSEFLOWER:

Scientific Name: *Floricorpus caeruleus*

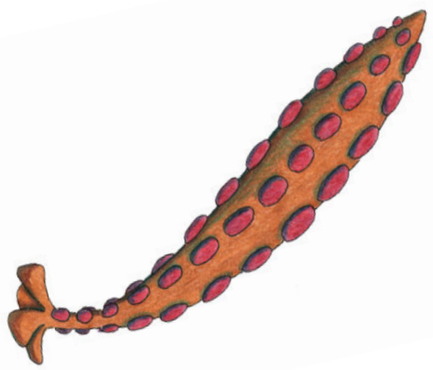
According to the literature found on Titan, the corpseflowers are believed to closely resemble the boukalizoan ancestral form. F. caeruleus is an active, voracious predator that feeds by enveloping prey in its lips and liquefying them with regurgitated stomach acids.



RED-EYE BOTTLE-GHOST:

Scientific Name: *Albidumbra diaboloculus*

Another aggressive hunter of the plankton. Like corpseflowers, bottle-ghosts trap their prey in their massive crop and digest them alive with regurgitated stomach acids.



SUNDRINKER:

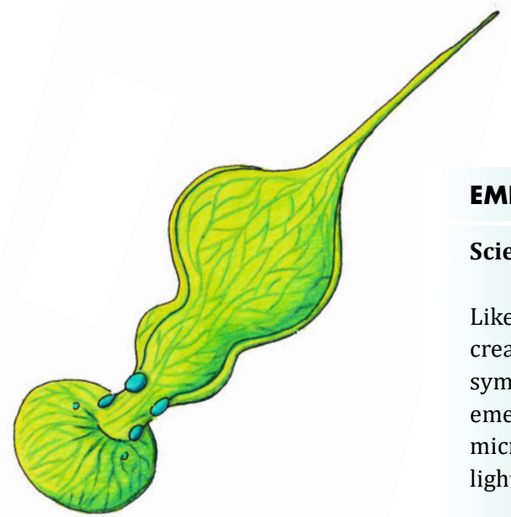
Scientific Name: *Lumenabibitor purpureus*

The sundrinker's eyes have evolved into purely photosynthetic organs utilizing retinal inside a rhodopsin-like molecule to capture light. They number of eyes has also multiplied until they almost completely cover the animal's body.

SPOTTED HOOKGUARD (LEFT) & TANGLEGOURD (RIGHT):

Scientific Name: *Nodophoramorphis maculosus and Nodophora oculocaulis (respectively)*

Although I don't yet know why the tail and tip of these animals have hooked together, such an arrangement seems to serve some important purpose since the hookgourds and tanglegourds are some of the most populous and diverse groups in the rings. The hook-arrangement prevents these creatures from opening their mouths, so they've developed a symbiotic relationship with photosynthetic microbes, which are visible on the skin as the patches of black and yellow.



EMERALD BOTTLE-GHOST:

Scientific Name: *Viridampulla venaphorus*

Like the hookgourds and tanglegourds, this creature gets most of its nutrition from symbiotic microbes living in its skin. In the emerald bottle-ghost's case, however, these microbes utilize a variant of chlorophyll to fix light.

BLUE-THORNED ANCHORHEAD:

Scientific Name: *Ancoricephalus caerulicuspis*

Anchorheads are parasites that remain dormant for most of their lives until they bump into a larger animal. Once contact is made, the anchorhead burrows into its host's flesh with its long, needle-like spines and proceeds to feed on the host's juices with its hollow tongue.

X. planuplokamiu. *This organism fills the role of Earthly cephalopods and cnidarians. Long tentacles are layered with sharp barbs that can ensnare unsuspecting prey.*

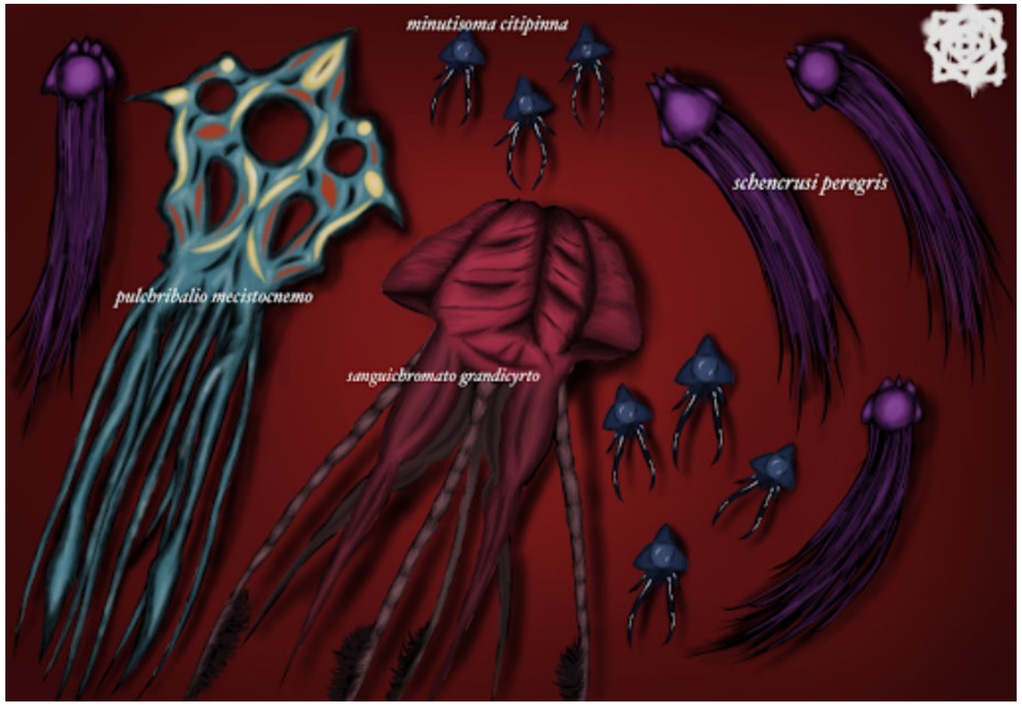
EARLY LIFE OF VERRACTA

BY BRAEDEN LAROCHE

The planet Verracta is slightly smaller than Earth, with a surface area of around 188 million square miles, and a planetary structure analogous to our own. At the current moment in the project, the oceans are split in two by a ring-shaped continent known as Ringvenum. The oceans cover approximately 70% of the planet's surface and their conditions foster an interesting brew of lifeforms.

It is important to mention that there are plenty of fantasy elements involved in the world-building of this planet, although there is no reason this should devalue any of the scientific foundation already in place. One of these fantasy elements is the constant brewing of storm clouds over Ennacta, the northern sea. This atmospheric feature would be impossible if the project was strictly scientific. Another bizarre element belonging to the planet is the water's thickness, which increases with depth. While this is a foreign concept, it is only a minor obstacle for life developing on Verracta. Early life in the oceans had several approaches to dealing with the thickness of the water. The two most common methods were the development of a body-plan including many legs, and migration patterns which take organisms from the deep into shallower waters to inhabit.

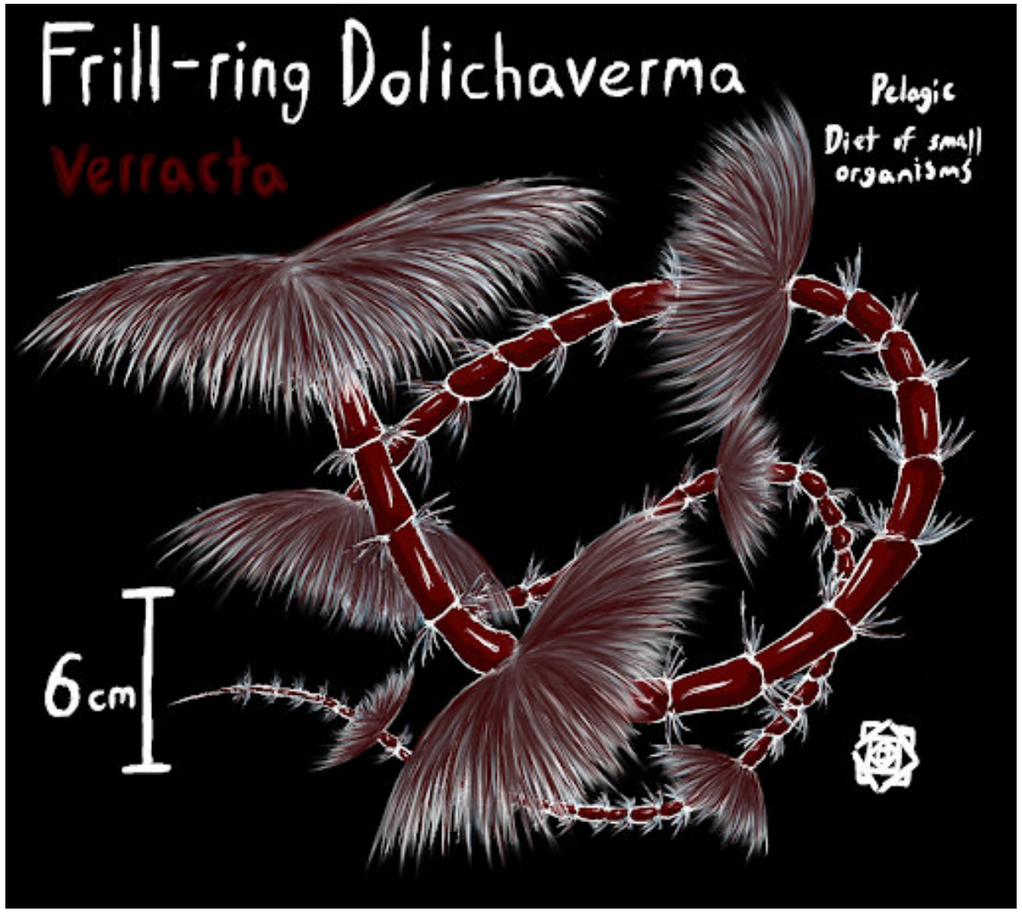
Some of the earliest organisms have remained unchanged for many millions of years. Two examples being the water-roaches and primitive water-mites.



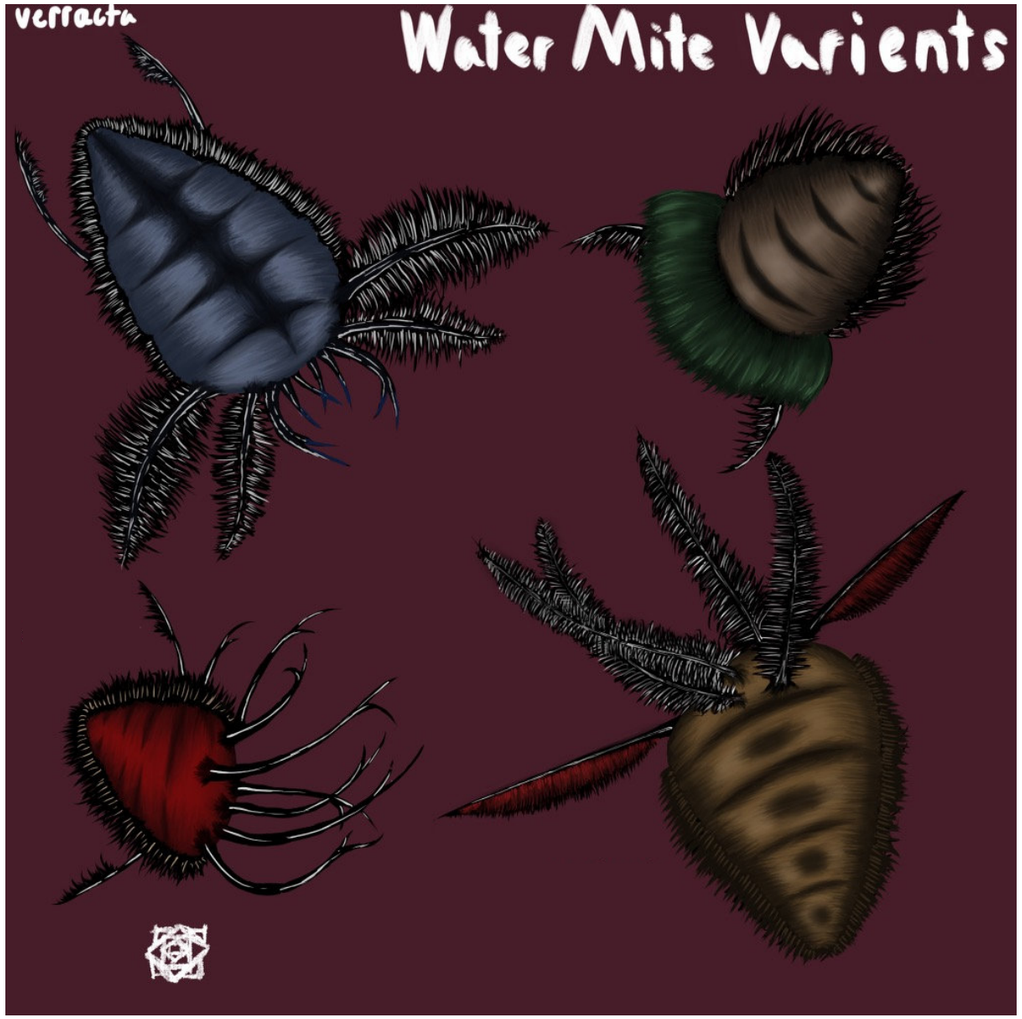
Luraste Species. *Animals belonging to the Luraste family come in many different shapes, colors, and sizes. Their tendrils are often covered in small barbs and spiked projections to better grasp prey items.*

These insect-like organisms are segmented and lined with many small protrusions (either legs or hair) which are used for propulsion. Also pictured are dolichaverma or frill-ringed worms, named after their rings of long hairs which grow from evenly spaced segmentation. These rings beat in tandem for quick and uniform patterns of propulsion.

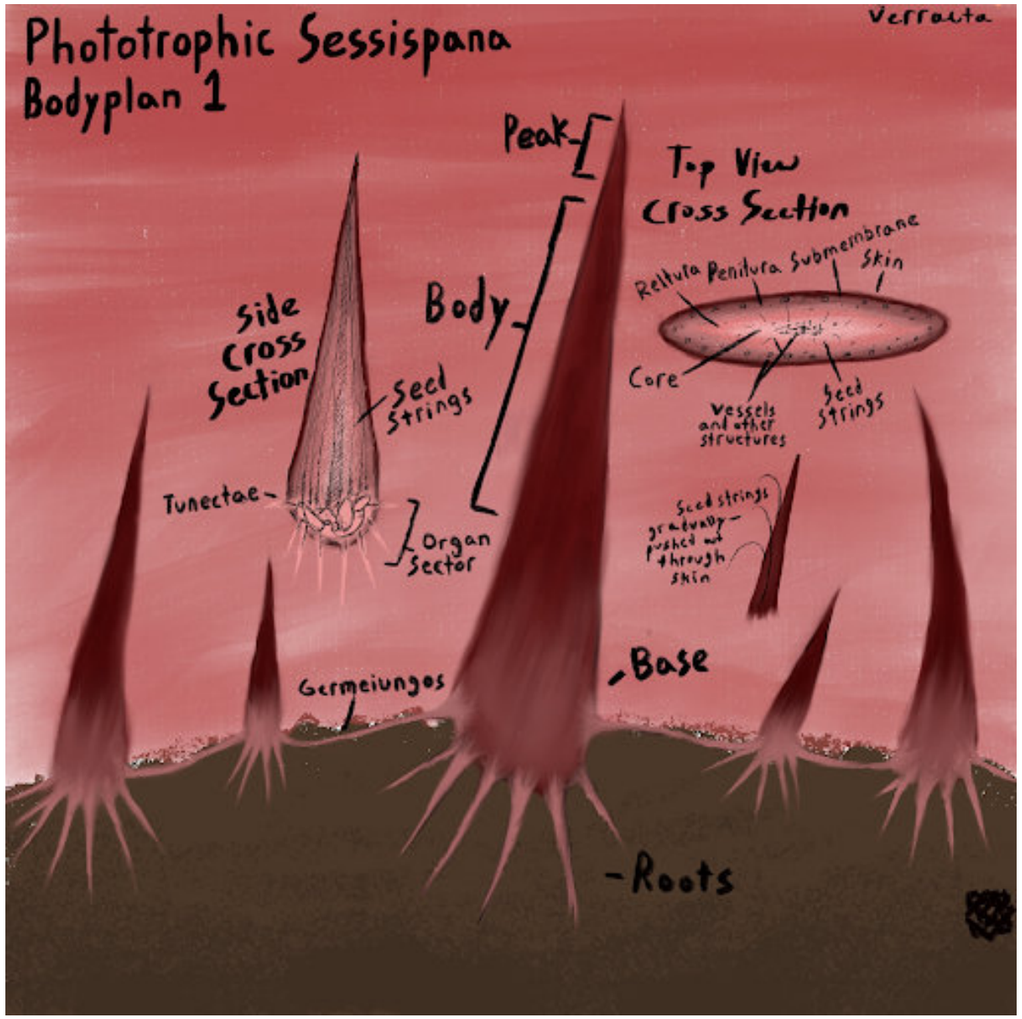
Additionally, some early land plants, known as Sessispana, are similar to the plants of earth. They are capable of reproducing both sexually and asexually in the right environmental circumstances. The first body plan or "body-plan 1" (seen on page 49) features spire-like formations while "body-plan 2" (not pictured) develops a bark-like shell and thinner leaves.



Frill-ring. *Frill-rings are pelagic creatures that are distantly related to most living species on Verracta. Their plumose hairs may be an ancestral link to the appendages and hair-like structures found on present day Verractan organisms.*



Water-Mites. *A collection of primitive water-mites, some of the earliest and smallest organisms to inhabit the sea.*



Early Plant Body Plan. *Most plant-like forms present on Verracta are spire-like in appearance.*

ARTIST SPOTLIGHT

Spotted Crab Mushroom. *Crab mushrooms are sentient, motile fungi named for their visual similarities to crustaceans from Earth, including long arachnomorphic appendages and colorful chitinous exoskeletons.*

BIZARRE BIOLOGY

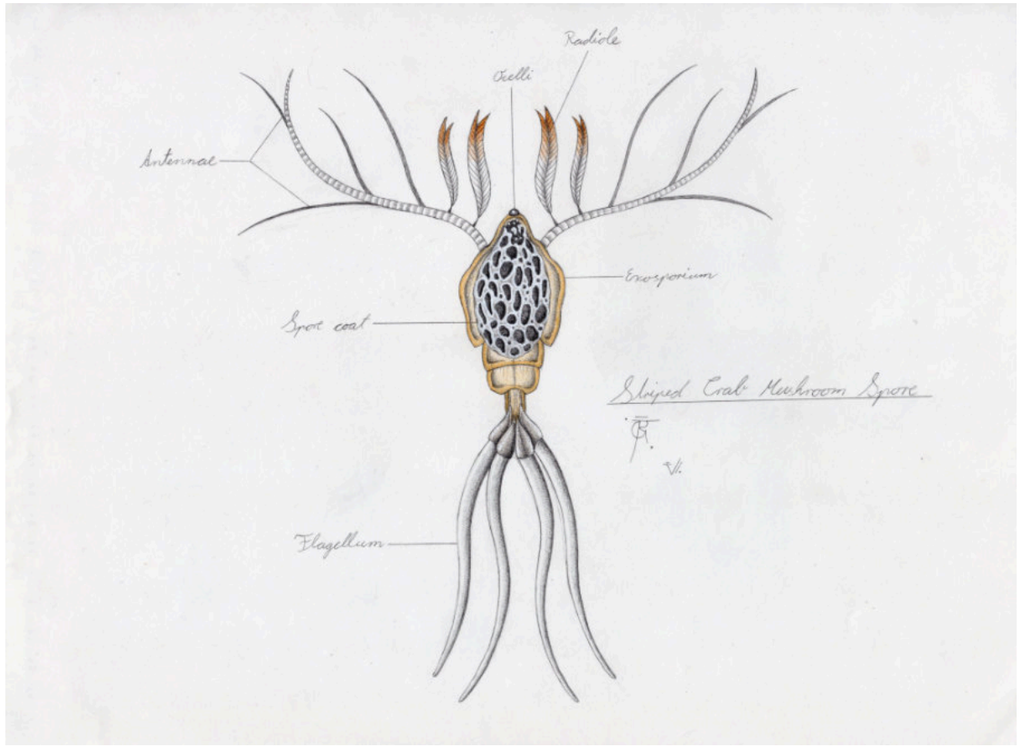
An Otherworldly Field Guide to Fauna & Flora

BY REINHARD GUTZAT

In the murky depths of the primordial ooze of my mind a nebulous idea takes shape. A creature emerges—a plant grows—and I catalog it in an ongoing bestiary. If I learn enough about its diet, behavior, habitat, and its ecological and anthrozoological impact, then I record this information in the otherworldly field guide which I have named *Bizarre Biology.*

I think of this process as a simultaneous act of creation and exploration. While I'm drawing a plant or an animal it's as though I'm also studying it. While I'm drawing a plant or an animal, it's as though I'm creating it, as well as learning about it at the same time. I imagine myself as both an explorer and a scientific illustrator,

Yellow Mantis Ant. *Despite bearing a visual resemblance to ants on Earth, the mantis ant is not in fact a type of ant at all but appears instead to be a case of convergent evolution.*

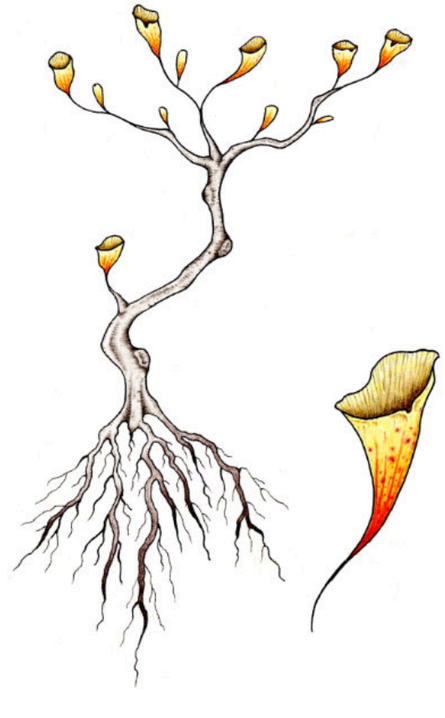


Striped Crab Mushroom Spore. *Most crab mushrooms reproduce asexually through the dispersal of sporopods, which are highly developed, complex spores. These spores are controlled by a rudimentary nervous system, guided by limited sensory systems, and capable of motility to aid in seeking out fertile grounds for germination.*

whose mission is to document new and exciting organisms. Bizarre Biology is a meta compendium of all the speculative creations that I generate while at the same time exploring the hard canon and lore—which creature belongs to what world, and how they all fit together contextually.

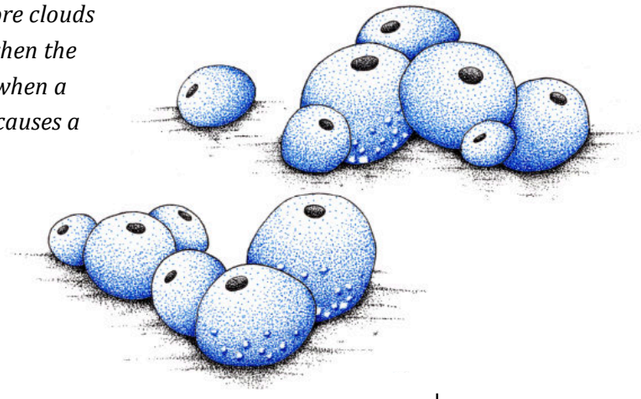
My approach varies from one piece to another. For some I have a clear concept in mind from start to finish. However for others my mental image of the subject is vague, and the organism seems to evolve and take shape as I work. The details behind it will begin to unfold as I become better acquainted with my creation, and sometimes I am struck by inspiration for additional species or related creatures.

While I value a sense of plausibility in all my creations as well as a scientific basis for my biota, it is sometimes the case that the need for scientific accuracy is outweighed by aesthetic decisions or references to thematic tropes. Finding a balance between realistic and thematic elements as well as original artistic style can be difficult to achieve. I find this challenge to be ever-evolving, not dissimilar to the endless motion toward harmony within Nature itself. Ultimately it is my hope to evoke a sense of wonder and reverence toward the universe as well as the natural world.



Herald of Dawn. *Common across Vanaheim, the Herald of Dawn is a flowering tree that thrives in well-draining soil in semi-arid shrubland biomes. While yellowish-orange appears to be the most prevalent color, red and white blossoms have also been observed.*

Puffballs. *Blue puffballs (right) are fungi that grow in clusters in open woodland areas of both coniferous and deciduous forests. Spore clouds release through ostioles when the fruit body is disturbed or when a buildup of mature spores causes a burst.*



THE XENO-ENCYCLOPEDIA

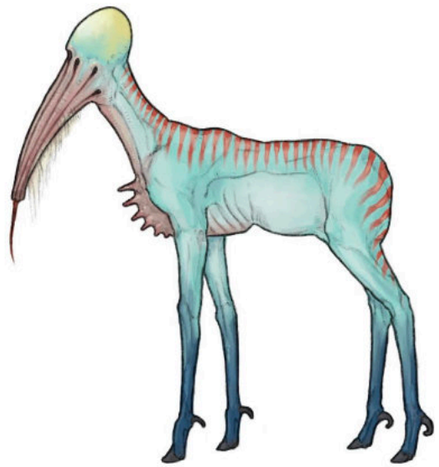
An Alien Encyclopedia in the Making

BY MILES ROSENBLOOM

I've been drawing creatures practically my entire artistic career, even since I was in kindergarten! I always had an interest in science as well, which had an influence on my art for a large portion of my life. But only in the recent past did I really make the formal connection between the two. This manifested in the project that I have been working on for more than two years now; an encyclopedia-style nature book of alien fauna from around the universe.

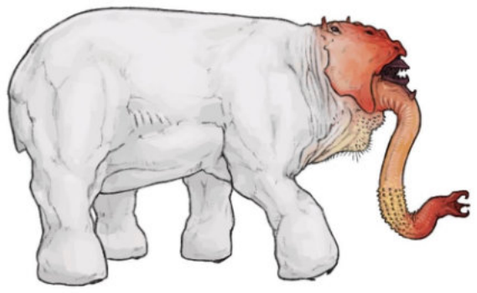
To say that the construction of this book has been the biggest developmental period in my life would be an understatement; this project has been the entire focus of my artistic efforts for two years and it has made me hone my abilities and really see the clear path of my art. It has challenged me to always strive to out-do myself and improve, and to broaden my horizons.

This book is an effort to try and tackle as many different designs, body plans, concepts, and niches as I can. While the entire time so far has been used for conceptual development of thumbnails, I know that someday when I have satisfied my exploration I will transition into making the final art for my book.



QUERN:

Quern are large herbivorous pollinators endemic to Goliquen, a lush and biologically diverse planet covered with purple vegetation. They feed on the nectar of large flowering bodies, picking up spores on the fine hairs and mucus of its proboscis. They are mostly docile creatures, but in a moment of defense, will spray a mildly corrosive and extremely irritating toxin synthesized from a byproduct of nectar digestion stored in the gland that would appear–falsely–to be its head.



BLOOD BEAR:

Blood bears roam the barren and frigid rock plains near the southern pole of Brurn 0794. They are adept predators but regularly engage in scavenging habits, picking apart the remains of larger creatures that have died from dehydration or solar radiation exposure. Human colony populations boarding the plains have a certain mythic identity surrounding the beast, considering it a portent of death. The Blood Bear's native Brurn name roughly translates to "the Moons' messenger."

ARJOALL:

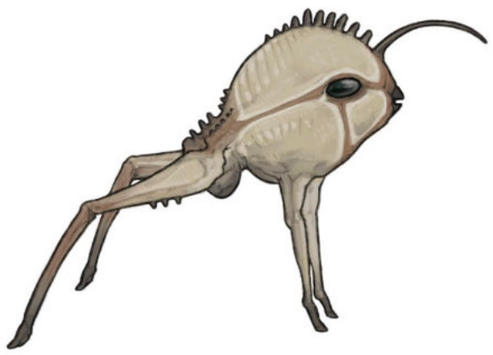
The arjoall are relatively intelligent, slow arboreal creatures with a diet consisting largely of fruit and large insectoids. With highly developed learning skills, wild arjoall have the basic intelligence of an average 3 year-old human child, and can craft rudimentary tools for extracting fungi and insects from the hollows of trees. Capable of a wide range of communal vocalizations, arjoall also have dedicated names for one another, and even develop "nicknames" or shortened vocalizations for friends or relatives.

PROBODONTID:

The dense forests of Priventues 6 are home to a diverse biota of arboreal creatures, one of the most fascinating being the probodontids. Insectivorous in nature and incredibly widespread, these octopedal animals are a primary component of their ecosystem. Although being relatively slow, they are rarely preyed upon. They have a very mild poisonous substance in their blood, but seem to just have very little nutritional value in general.

STRIDER:

Striders are graceful bipedal creatures that stalk the wetlands of Lau 03, a humid and warm planet orbiting an F-type star. The skies on Lau 03 can appear blindingly white, but the heavy atmosphere dulls the brightness for most of the 17-hour day. Striders use this light to their advantage, as they possess reflective membranes on their underside that they flash in patterns to communicate and attract mates.



KU'AJOA:

Ku'ajoa are small creatures that typically live near the few bodies of water that Gneon UEZ has. A large planet orbiting a relatively small M-type star, Gneon UEZ is a strange planet with most of its multicellular life concentrated in isolated "oasis" biomes. Ku'ajoa are semi-aquatic generalists
that hop around the oases searching for essentially anything edible. Sometimes they will even poach eggs from other ku'ajoa nests built in the thick of dark-pigmented vegetation. (Additional planetary lore not included in the thing: Gneon UEZ was farther away and had more water, but it got closer and water levels dropped, creating the oasis biomes. Some are close enough together that creatures can/were once able to migrate, and some are far apart but have similar creatures due to common ancestors being environmentally isolated. Ku'ajoa fit both these models.)

TOUNN:

The scorching grasslands of Kuvis are host to multitudes of species, the largest of which are the tounn. Tounn are members of a group of mammalian-esque creatures that has radiated to encompass many different niches since the convergence of Kuvis' current supercontinent. Tounn are large solitary herbivores that congregate in herds every 19 years to mate and give birth, going their separate ways to raise their young until they are old enough to mate in the next congregation.

STROULISH:

Stroulish are a variety of piscine organisms that inhabit the shallows of Mitribos, a watery moon of the gas giant Goashivin. Stroulish occasionally gather in small shoals of about a dozen individuals, but often can be seen solitarily sifting through the sediment for decaying matter or filamentous yellow algae. Their stripes are a way of deterring small aquatic parasites, and are a spectacular display coveted by collectors in the xeno-pet trade.

Humble Beginnings. *A pair of Stagmoichthys natans meander onto land to hunt for insects during the Middle Devonian Period. These amphibious fish are the first vertebrates to conquer land and are the forerunners of all modern day tripod species.*

SPECULADERMIA

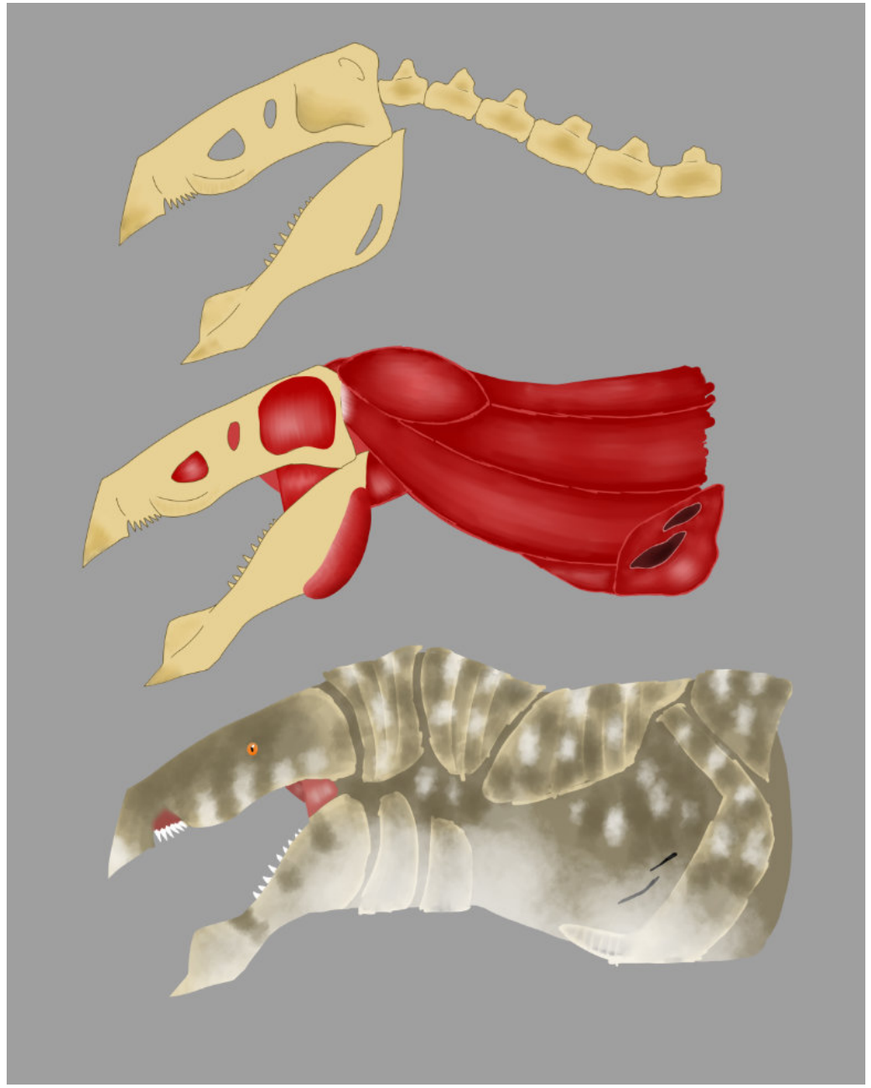
If Placoderms Conquered the Land

BY URIEL PEGUERRA

I'm rather new to the genre of speculative biology and only learned about it a couple years ago. The whole concept is mind-boggling, but the idea of creating a whole other world with creatures of your design truly compels me. I had several ideas in mind, ranging from a world of birds to the future evolution of humans. But one idea stuck out the most for me—a group of armored fish called the placoderms who ruled the Devonian Period until they were driven to extinction. In my project dubbed *Speculadermia*, the Placoderms survived and took over the land instead of our fish ancestors. These terrestrial armored fish, called "Tripods", run on three sturdy legs and breath from nostrils on their necks descended from gill openings. The project will explore the evolution of these tripedal beasts as they endure every major event that occurred in Earth's history, from the Permian Mass Extinction to the Ice Age.

Beached. *After a Miocene storm, an Osteocetus anodontus washed up in Europe. These "bone whales'' are a diverse group of aquatic deinotripods that took over after the K-T Mass Extinction that wiped out almost all biota in the oceans.*

Carnivourous Prionodontid. *A Prionodontid gallops through the lush plains of Africa. The hoof on the specimen's third leg evolved independently, a feature observed among many groups of tripods.*



Prionodontid Anatomy. *Above illustrates the general skeletal and muscular anatomy of a Prionodontid. Their "teeth" are actually extensions of the mandible and don't fall out like mammalian teeth. Instead, they are constantly sharpened by the constant action of opening and closing the mouth.*

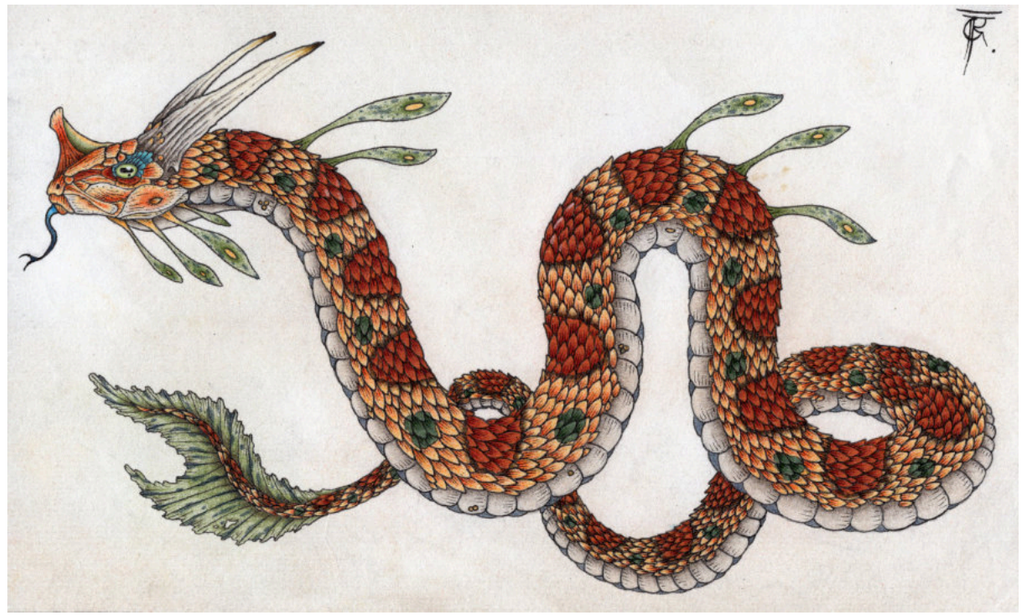
CREATURE COMPENDIUM

Arid Flats. *On planet Isla many locations are exposed to constant strong winds. With such harsh conditions, the majority of flora have evolved to grow into flattened colonies. In a way, these colonies can be viewed as one large superorganism. (Illustrated by Oliver Gries-Hoffman)*

FEATHER TONGUE

By Domenic Pennetta

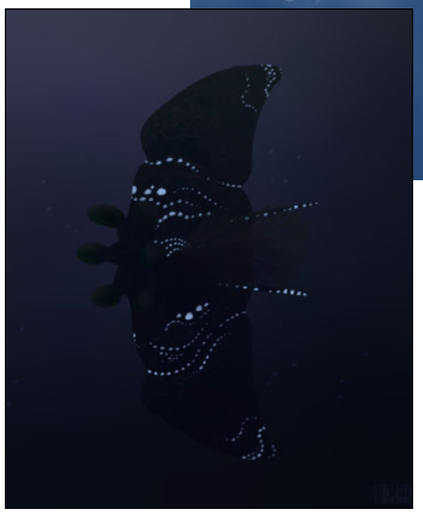
The oceans of an analog planet of Earth, named Perditus C, are inhabited by free-swimming organisms commonly referred to as “feather tongues”. This name references their unusual feeding mouthpart—a proboscis with modified appendages to filter feed on small planktonic animals. However, some species of feather tongue (like the depicted specimen) occupy shallow brackish waters, like marshes and the mouths of estuaries. There these animals will find an abundance of small shelled organisms to supplement their diet, using small barbs on their proboscis plumage to ensnare prey items.



NOSE-CRESTED SEA DRAGON:

By Reinhard Gutzat

Despite its name, the nose-crested sea dragon is not in fact a true dragon, and there is debate as to whether it is a type of Draconid (lesser dragon) or simply a serpent or snake. This is further complicated by the fact that the classification of Draconid is foggy due to inconsistent use—sometimes describing families in the class Reptilia, and other times as its own distinct class. Reaching an average length of eight meters (26 ft.), nose-crested sea dragons inhabit warm coastal waters where they prey on fish, smaller marine mammals, and other reptiles.

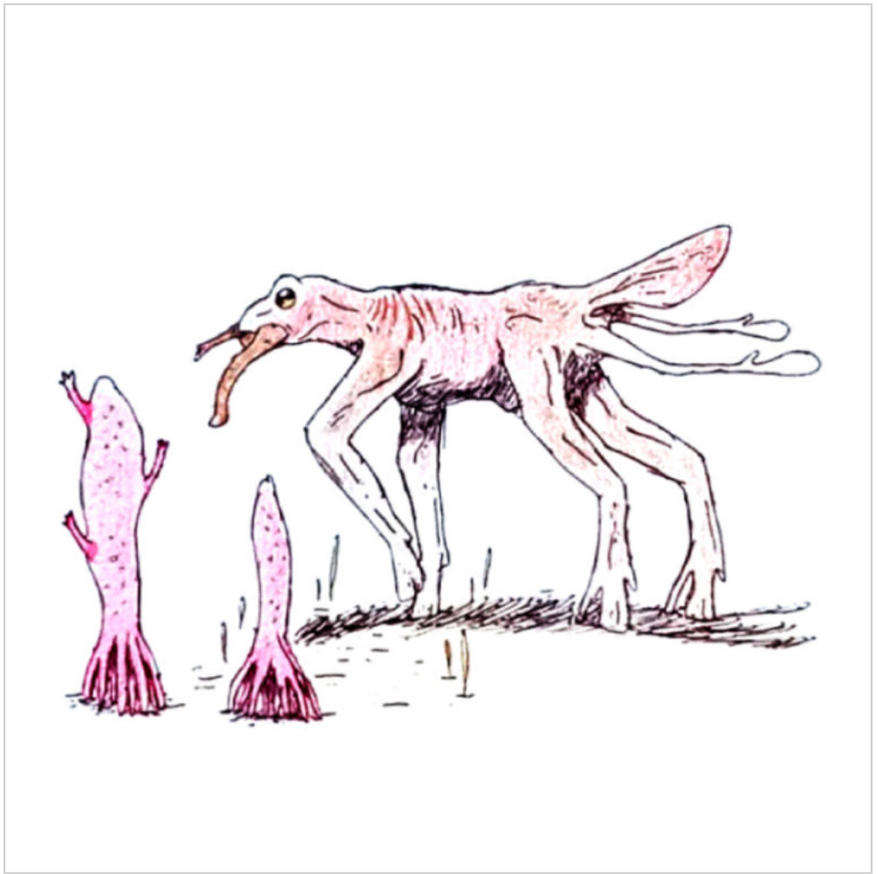


Glowing Nightfin. *The left is an image of the magnificent bioluminescent light display of the Nightfin right after sundown.*

NIGHTFIN

By Mathijs Megens (Foldwave)

While traveling the warm waters surrounding the Chiquon Archipelago, a fortunate traveler may come across the majestic but elusive Nightfin. Over two meters tall, this large filter feeder slowly moves through the highly saline waters and is kept neutrally buoyant by heavy ballasts inside its body. Water passes through its mouth and is propelled out the back pushing the organism forward. Usually, the Nightfin can be seen with its large fans extended on the sides of its body. With these fans, it catches plankton, marine snow, and other detritus periodically retracting them inside its body to eat the caught particles. The six semi-translucent green bulbs surrounding its mouth host various sensory organs to safely navigate the often shallow waters and sharp salt formations. Though this organism is a stunning sight during the day, it's true beauty is revealed when night falls, which is also the time it is most active. Rows of bioluminescent photophores wrap the Nightfin in a mysterious glow pulsating and flickering as it reacts to changes in its environment. Each Nightfin has their own distinct pattern and can therefore easily be recognized. Though rare, it is always a welcome sight for local people to spot a Nightfin. Most are well respected and looked after, often each individual having their own name.



UNTITLED PROBOSCIS CREATURE:

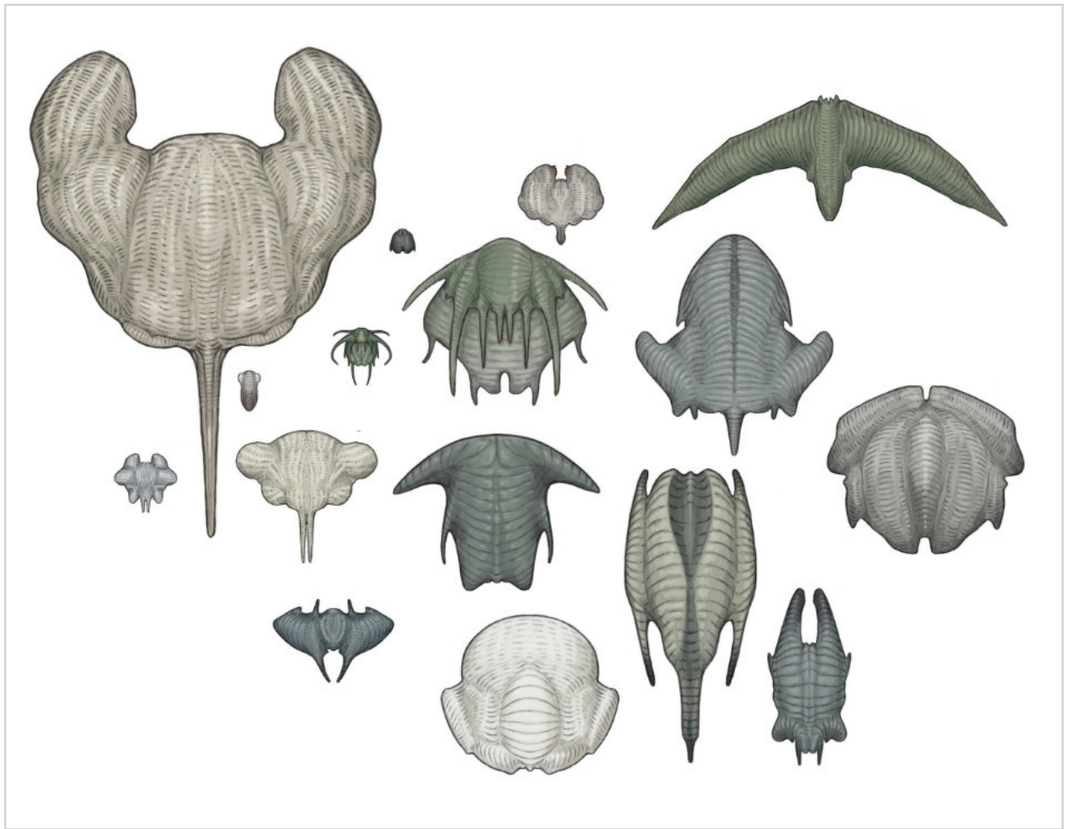
By Sasha Bagaev

These unusual creatures have two proboscises on their muzzles, one smaller proboscis for eating and a larger which is connected to a single lung and used for respiration. There is a wide array of organisms in this clade, as they have evolved to fill many ecological niches. Some species are completely terrestrial, others have evolved flight or have taken on aquatic lifestyles.

RED RHINO

By Genetrix

Commonly known as the “Red Rhino”, Dichalotos tropicus inhabits the tropical rainforest of the continent Glisser on the planet Genetrix. They are easily identifiable due to their five pointed crests and two pronged stabilizers. This particular species reaches up to 7ft (2.1m) long and 5ft tall (1.5m), which is quite sizable compared to the other organisms on their planet. Utilizing their flexible mandibles, D. tropicus browses the forest floor for food or occasionally reaches at lower branches of trees to nibble on leaves.



LIVING ROCKS

By Miles Rosenbloom

Petravivum, or the "Living Rocks," is a family of mostly sessile, tough-skinned creatures endemic to the planet Kilima. Kilima has a planetary biota that is about 86% less diverse than Earth's, with living rocks being the most widespread and successful multicellular organisms. Growing surprisingly large with populations on all continents and seas, their success is thanks to their inexhaustible sources of food.

Living rock diets range from phototrophic, chemotrophic, and radiotrophic in nature, with many species able to take advantage of multiple metabolic processes. Living rocks also tend to be extremely long-lived by Earthly biological standards; the average lifespan of T. Gigasaxosus falls between 350 and 400 years old. The largest species, H. Harenosum has an indeterminately long life span with few viable remains of dead individuals ever being found within the 13 years of research on Kilima.

Locomotively, living rocks are restricted to a near-sedentary lifestyle. They can only move forward incrementally by moving nearly microscopic ventral villi or from contracting and expanding body segments. Living rock species are extremely numerous, with dozens of species discovered each year. Having extremely high mutation rates relative to their long reproductive cycles, they are able to radiate and create new species within ten or fewer generations–many more species are yet to be discovered.

CRYPTOCOLA ALBOPICTUS

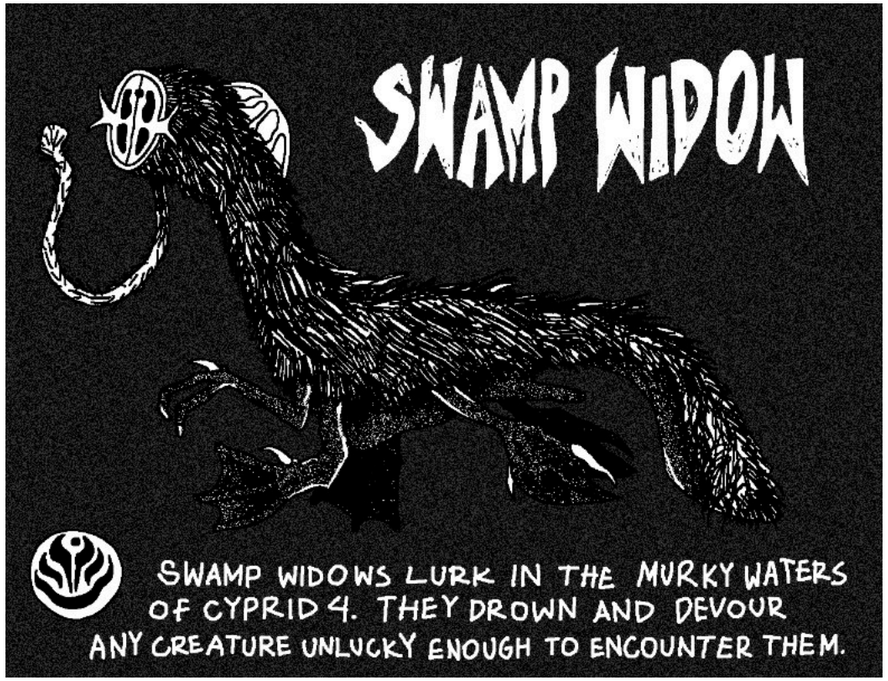
By Oliver Gries-Hoffman

Cryptocola albopictus is a species of deep sea eel-worm which can be found inhabiting these light deprived environments. This creature slowly swims searching the ocean floor for food. Its large jaws suggest that the fish is an apex predator, but in reality it scours the sandy bottom for small sessile invertebrates. C. albopictus swims slowly so as to conserve precious energy. Nutrients are scarce on the seafloor, so large species (3-4m) have evolved to be extremely territorial. A pair of large upward-facing eyes help it to watch for competition, while its aforementioned jaws can be used to dispel any encroaching individuals.

LOUNIAN DRAGON

By 4017jman

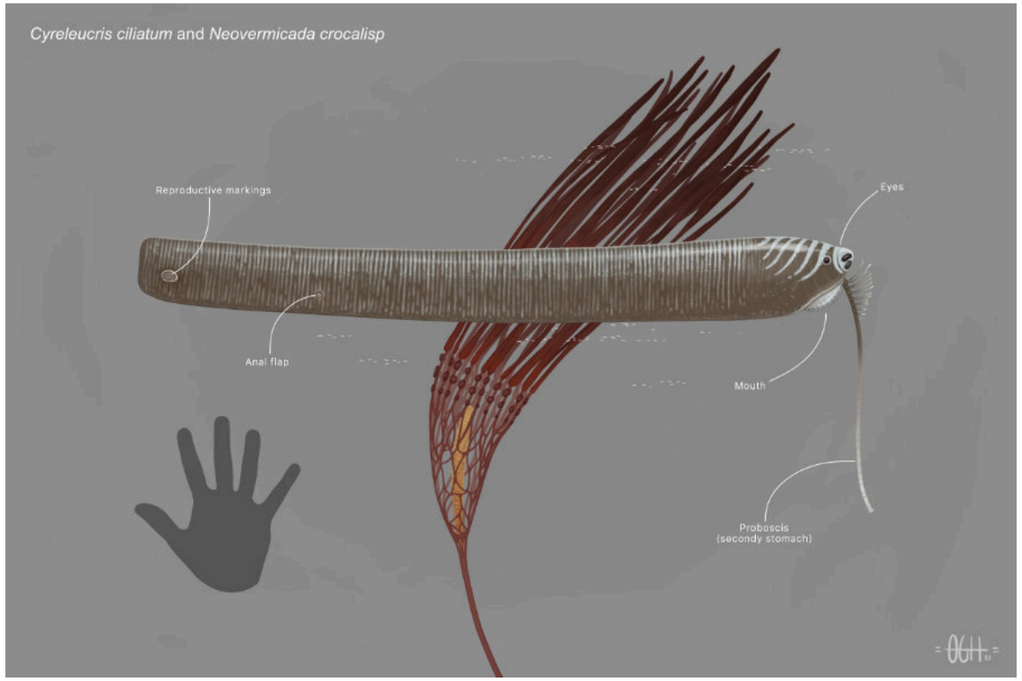
The only specimen thus far discovered. The Lounian Dragon represents a quite literally gigantic outlier among the creatures of Loune.



SWAMP WIDOW

By Ycyprid

On Cyprid 4 a beast stalks its unfortunate victims in the marshlands. The swamp widow will grasp its prey and pull them beneath the water, effectively drowning the animal before devouring it.



CYRELEUCRIS CILIATUM

By Oliver Gries-Hoffman

Cyreleucris ciliatum is a species of eel-worm which inhabits deeper waters along Islas coast. This species scours the ocean floor in search of tiny, shelled invertebrates. Such prey has a hardened calcified outside which makes them hard to digest, so eel-worms have evolved a unique means of consuming these creatures. They have developed a specialized proboscis which is actually on offshoot of the stomach. When feeding, these creatures suck their prey into this secondary stomach where it is broken down using special enzymes. The fish then shoots the contents into its mouth where it will go on to digest them fully. This process minimizes the amount of energy the fish must use to digest the small calcified microfauna. These proboscis organs can also be used for increased mobility. Eel-Worms are not particularly fast, however when threatened they can use this extended organ to push off the sea floor and give themselves a boost of speed. Ciliatum is named for the extraordinarily long sensory antenna which grow from this proboscis.

Dynamic Swimmer. *A Palaoan ishgalnera (Ishgalnera palaoense) pursuing a Palaoan armorkoi (Laniostracarpio palaoensis) and a hazy terrorduck (Deinanas amavronos), in the fens of Central Palao.*

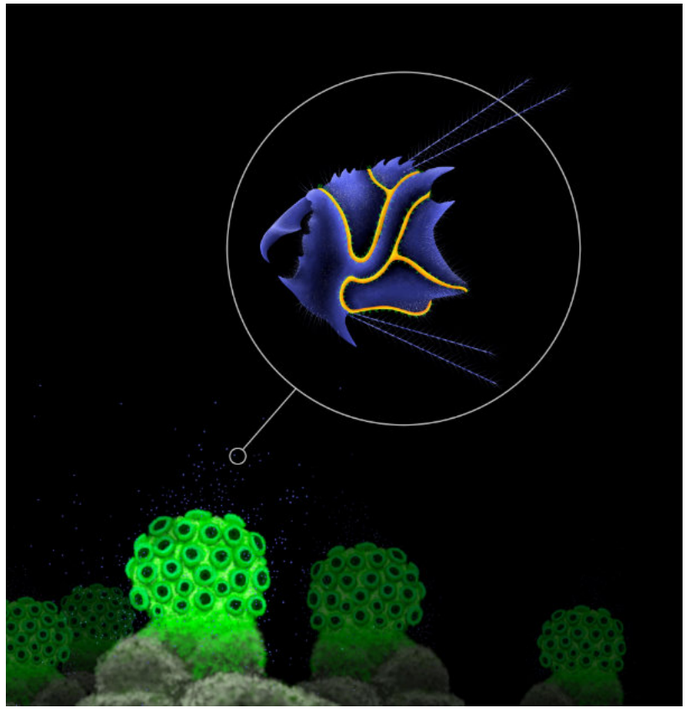
PALAOAN ISHGALNERA

By Stanton Fink

The ishgalnera are a successful genus of aquatic neoguanas ancestral to the phocasaurs: both genera form the neoguana subfamily Phocasaurinae (within Neoguanidae). Much like phocasaurs, ishgalnera feed in the water, though ishgalnera are more energetic and obligatorily carnivorous.

The Palaoan armorkoi is a peculiar, carp-like eupanoplid found in deeper portions of Palaoan waterways, alternately feeding on detritus in the sediment, or specific zooplankton in the water column. In particular, the very bottom of the Eye of Palao contains a species flock comprising of both Laniostracarpio and Palaostracarpio. Both genera are poorly studied, especially when compared to the armorkoi species flocks in Southern Iapetus, specifically the ones in Lakes Arucana and Guacayana.

Ishgalnera only attack to feed while in swimming. When they come ashore, it is only to sunbathe, rest, and digest their food. Numerous animals take advantage of this situation to use the ishgalnera as either sunbathing platforms, or in the case for the image on page 80, a buffet of algal scum and aquatic parasites.



HIVE SPONGE

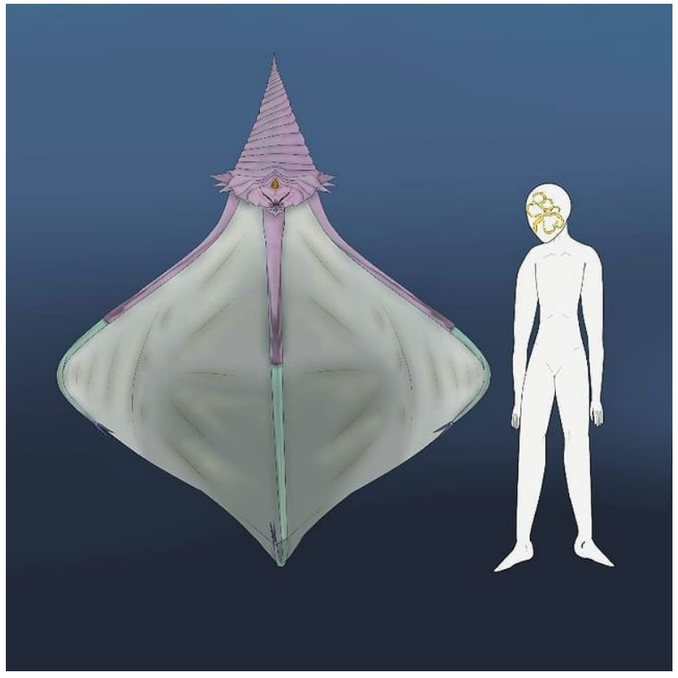
By Juanjo Aniorte

The immense tropical reefs of the planet of Polinices are mainly made up of the accumulation of calcareous skeletons of organisms called hive sponges. These diverse creatures are similar in appearance to corals, but their anatomy and physiology are radically different. Each individual is composed of one sessile queen that lives anchored to the substrate. The queen generates tiny mobile drones in charge of capturing and taking food (typically small plankton) back to the hive. The food will be digested and transformed into a nutritious nectar that will sustain the queen and the drones—both of which have access to the stored nectar through pores on the queen's exoskeleton. Despite being completely blind, the drones are able to return to the queen by following the radio signals emitted by specialized organs.

LOUNE LONGJAW

By 4017jman

A common sight in arid environments, long-jaws and their kin represent Loune’s simile for Artiodactyls and Perissodactyls. The dusty long-jaw is a core character of the Lounian central deserts and shrublands. They are grazing animals and macerate food inside their titular long jaws. Within the jaws are rings of musculature that are coated in grinding surfaces. As food travels up the jaws, it is entirely pulped before being swallowed.



SQUIBBLECRAB

By Yellowmoth606

This species of Tribblecrab resides between the Pelagic and Bathypelagic zones. Like the early evolution of Earth's cephalopods, the squibblecrab can control its buoyancy by gaining and losing gas inside it's shell. The shell is flexible, softening to be more lightweight while the lower parts of their legs are more elastic for maneuverability while hunting. The material of the webbing connected to their limbs is not well understood but it is theorized to be either unique mucus or a colony of symbiotic cells. Nevertheless the webbing is used as a net to trap prey where they will be ripped apart and digested. While more species are being discovered, they are an elusive organism that leaves many questions about their evolutionary path and niche.

MUSHROOM EARS

By Speculative Sloth

Within the seas of planet Toreya is a special phylum of organisims known as Boletusauria (Latin for "mushroom ear"). These animals are heterotrophs that are protected by chitin like proteins, though due to the aquatic environment they have specialized in feeding on organic debris and microscopic creatures.

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