

The Avalonian Diet & Digestive System



In this document, I will detail the digestive system of [Avalonians](#). It is recommended to familiarize yourself with the species as a whole first, if you are not already. Topics mentioned in this document covered in the [main species document](#) will not be re-explained in depth.



Fig 1†

Avalonians also have a very long tongue which extends from a sheath in their throat. This tongue is useful in both grazing/browsing, and securing prey. Avalonians use their tongues to retrieve fruit and small prey from harder to reach places. Being fully prehensile with a cartilaginous skeleton, it can grip quite strongly. Combined with their sticky oil-based saliva, it makes for an excellent tool to retrieve objects for ingestion. Their tongues also allow Avalonians to take advantage of some plant species on [Avalon](#) that produce nectar.

So-called "honeypot flowers" evolved with Avalonians, the flowers provide nectar and fruit, while Avalonians consciously pollinate and proliferate them. This relationship predates Avalonian civilization by millions of years. Typically, eating of leafy plant matter is only done in moderation, supplementing the rest of their diet. Though in the short term, Avalonians can sustain their caloric needs off of nothing but plant matter. Though eventually malnutrition will catch up with them.

Avalonians are classified as obligate carnivores, as they require complex nutrients that their bodies cannot synthesize, that are not found outside Avalon's wildlife. They are of course, practicing omnivores, but at least part of their diet needs to be meat, or an engineered substitute.

In this vane Avalonians have a long, sharp beak designed for predatory tasks. The edge of the beak is perfect for both slicing flesh and vegetation. Within their hard, beaked maws, Avalonians [also have teeth](#). Three sets of conical teeth up front, and four sets of molars in back.

The conical teeth up front help in gripping prey and tearing flesh from bone, while the back molars are used mostly for the plant based portion of their diet. Avalonians tend to go for sweet fruit and larger nuts and seeds when they can get it, though they are equipped for browsing and grazing as well.

Depending on the source of food, Avalonians may masticate, or swallow whole. Plant matter is typically more heavily masticated before swallowing, while most prey is swallowed in large pieces, or whole. Avalonians as a whole are equipped to ingest something roughly their own size whole if needed, though more typically, they tend to tear prey to more manageable bits. The logistics of moving about with such a large meal whole and possibly alive in their gut makes it an unwise proposition for most.

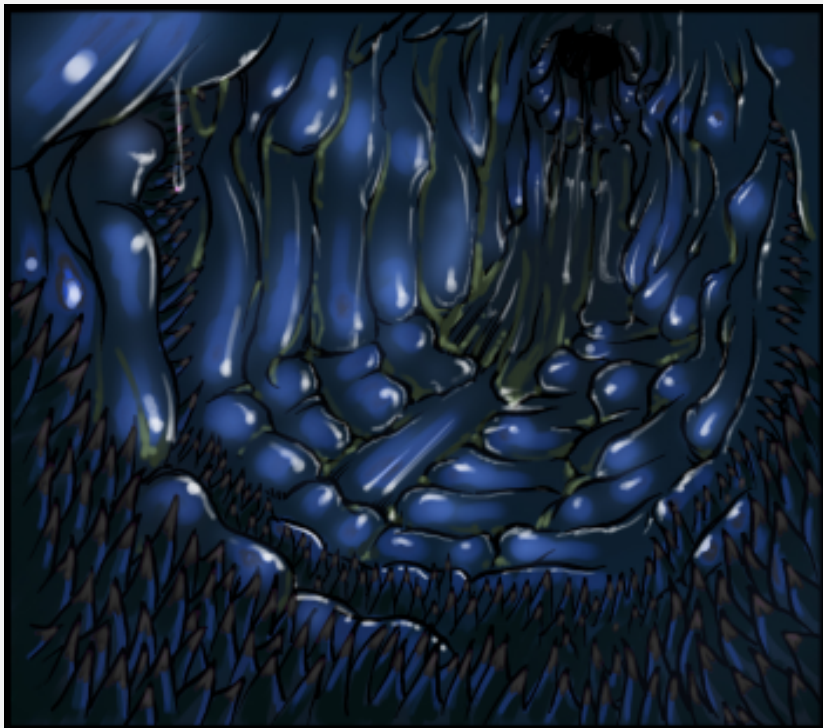


Fig 2†

Once ingested, food typically migrates down and into an Avalonian's crop. The crop is a muscular sack just inside the ribcage used to store food before digestion, though the amount it can store is limited due to sharing space with the lungs and primary heart.

Avalonians need not fear asphyxiation when ingesting large prey, as their airways are entirely separate from their esophagus. While Avalonians do inhale and exhale via their mouths, this is only as a means of them producing vocalizations and handled by a special air bladder.

The crop itself is lined with dense papillae and filled with enzymes and microbial gut-flora that help prevent food from rotting and pre-process it for actual digestion. The papillae increase the surface area for the flora to live in between fillings and entrap food sources for the flora. As noted in the main document, Avalonian biology is not based on water as their biological solvent, though it does play a role in their digestive process and their oil based solvent is poor for digestion.



Fig 3†

The next stop for food is within an Avalonian's dual chambered chemical stomach. This organ is divided up into two distinct chambers, one that uses high concentrations of lye, and another that uses a mix of acids and enzymes. The first is made to remove hard to digest low-nutrient hides from prey.

The first chamber chemically de-gloves most prey, and dissolves fur and scale on others. This is then wadded up and later regurgitated by the Avalonian. Many take these rather in-tact hides and tan them for use as clothing, a gruesome if practical practice that persists with many Avalonians.

Once prey is freed of their hard to digest hide, it's then sent on to the second chamber where acid and enzymes to do the rest in conjunction with a bit of hearty gut flora. Food is usually deceased by this point, though rarely some will survive long enough to experience the second part of the chemical stomach. What comes next though, it's entirely lethal to most any prey an Avalonian ingests.

Thanks to their gizzards, Avalonians can process most anything, bone, chitin and even metal. The inside is lined with sharp, hard denticles comprised of a biologically generated tungsten carbide ceramic. This tough material is the same found in their claws, scales and the surface of their bones. Given enough time, an Avalonian's gizzard can wear down almost anything into powder or pulp. The process is of course aided by their potent digestive juices as well.

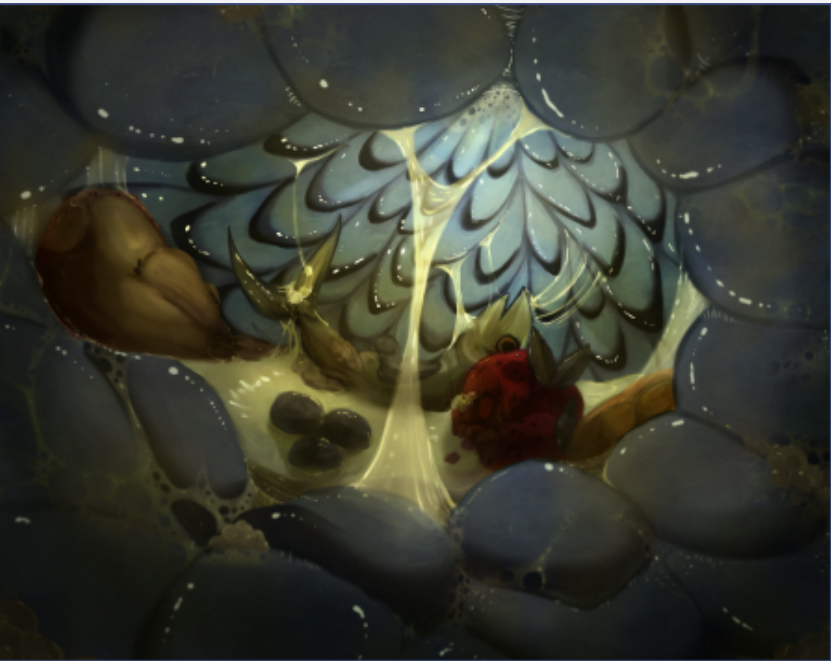


Fig 4†

During their rather long digestive process, Avalonians pass their food between their second stomach and gizzard many times. As the gizzard breaks apart materials, the stomach is able to further soften them, allowing the gizzard to pulverize more and so on.

Alongside the denticles, Avalonians also use a variety of gastroliths to aid in pulverizing the toughest parts of their prey. These range from swallowed stones and bits of metal to bones from previous prey. On Avalon, key nutrients Avalonians need are contained in the bones and marrow of their prey.

Having to extract nutrients from the tough tungsten-rich bones of other Avalonian organisms is why the Avalonians evolved such a potent gizzard. And given how potent their gizzards are, virtually no hard matter can make it through without being reduced to powder and being indistinguishably mixed with the rest of their food. The gizzard itself is backed by some of the strongest muscles in an Avalonian's body as well, able to crush down with more than enough force to crumble many materials.



Fig 5†

The gizzard itself hangs below the stomachs, slung in a rough U shape. This position makes it easier to press down on the gizzard and force materials back up into the second stomach to continue processing them. The exact shape of the gizzard varies by fullness of it and the rest of the digestive tract.

Once food is fully processed and rendered down to a slurry, the rather tight exit valve releases the gizzard contents into the intestines. Soft, but fibrous plant material can tend to survive, as well as tougher bits of meat and connective tissue, though rigid materials are usually entirely pulverized.

The Avalonian intestinal tract is quite a long and complicated one. While the small intestine itself is fairly short, it's followed by a large ceacum, and very long bowels. The intestines are lined with long villi, which themselves are rather nobbled and ridged to increase surface area greatly. The long villi extend out far into the inner diameter, giving Avalonians excellent intestinal surface area. As well as the expected micro-flora, Avalonians also play host to gut fauna.



Fig 6†

Avarabraxa Avis, more commonly known as the common Avalon gut-leech, is a small symbiotic worm ranging from 35mm up to a full meter or more in length. These leech-like worms typically live inside the small intestine, ceacum, large intestine and abdominal cavity of Avalonians.

Gut leeches help Avalonians to process food, keep out foreign invaders and parasites and otherwise help maintain an Avalonian's body in exchange for shelter and food. Gut leeches are an important part of an Avalonian's immune system, just as microflora are for many, many other creatures.

But their most important role is as part of an Avalonians digestive tract. Gut leeches help reclaim nutrients that would otherwise be lost to their hosts, and carry them back up to the small intestine to help the host re-absorb them. Without this, the host would be nutritionally deprived.

An Avalonian's gut leeches also work to tend and cultivate the most beneficial of flora to their host, and work in tandem with the flora to produce key nutrients. Many essential chemicals for an Avalonian are produced by their gut leeches, billions of years of co-evolution make the two rather inseparably, biologically intertwined. Avarabraxa are quite surprisingly intelligent, fully sentient, and even bordering on sapience, which isn't commonly seen in parasites or symbiotes of their nature.

The relationship between the two species is quite a complex one, ranging from digestive and immuno-aids, to even performing surgical actions within their hosts. Avarabraxa have been observed eating cancerous growths in their hosts and even helping to stem internal bleeding and closing wounds with slime they produce. Perhaps the strangest interaction observed is that of aiding in child-rearing. Though not unexpected, as the fates of an Avalonian and their symbiotes' offspring is intertwined.

A. Avis will assist in child-rearing, even to the point of self sacrifice. In cases where a young Avalonian is orphaned, sometimes the symbiotes will entirely take over the role of parenthood. This requires an irreversible metamorphosis to the A. Avis that is ultimately fatal and cuts their lives shorter. Once metamorphosed, the A. Avis will grow large enough to care for the young Avalonian and take over feeding and other care. When the Avalonian is old enough to care for itself, the A. Avis will shortly thereafter expire.

This relationship has only been observed in rare cases, generally under the most extreme of circumstances. But it serves to showcase the complexity of the A. Avis-host relationship. In other, even rarer circumstances, host and symbiote share even greater interactions. These interactions are roughly along the lines of a master-pet type relationship. In most circumstances though, A. Avis and Avalonian co-exist without much conscious interaction at all.

You can see here in Fig. 7, a rough representation of the entire Avalonian digestive tract. Pictured is a fully matured Avalonian, complete with tail. You can see how the tongue extends from a curled state in a pouch just below the heart. Just behind it exists the crop, which is a modified section of the base of the esophagus.

Below that are the two stomachs, which sink further into the abdomen when filled more. The Crop itself is more constrained by the ribcage on how much it can expand. The gizzard sits below the stomachs, often squashed into different shapes by the two stomachs above, and other organs below.

The small intestines take up the frontal lower abdomen, just above and in front of the urinary bladder. The urinary bladder itself is primarily for removing any excess water that Avalonians do not need in their unique oil-based biology, but also rids them of other waste too.

When water is more scarce, a gland near the anus produces a thick, white waste product similar to uric acid seen from Earthen avians and reptiles. Behind the small intestine sits the uterus, and partially behind and to the side of the uterus is the ceacum.

The ceacum is a large, organ that is used to ferment food after the small intestines. It can greatly expand to accommodate large amounts of materials to ferment for additional nutrients and energy before being moved to the bowels where it can be absorbed.

Most excess water is absorbed in the small intestine, but some remains on into the bowels to keep waste soft and ductile enough to excrete comfortably.

The bowels themselves lengthen with age, eventually moving mostly into the tail after it grows in during adulthood. Within the rectal area in an Avalonian is also the entrance to the vaginal passage, exit for uric waste and scent glands.

The scent glands and urological waste glands are one in the same, pulling dual duty for an Avalonian. This is not surprising given how many organisms use urine or similar excretions to mark territory and deliver pheromonal signals. The main portion of the scent glands also plays a role in the male reproductive tract, connected to the base of the prostate where the vas deferens connects from the testis. This gland also functions as the seminal vesicle in Avalonians, working in concert with the prostate to produce ejaculate.

Excluded from Fig. 7 are the lungs, hearts, liver and filter organ. The Avalonian liver plays an important role in digestion, producing many needed chemicals and processing nutrients, but is technically redundant and can be replaced by their gut leeches. The filter organ is a one stop equivalent to the spleen and kidneys of Earthen organisms, filtering blood and other bodily fluids, and is similarly redundant and can be replaced by the gut leeches.

Fig 7†

Avalonians have a secondary heart located in the base of their tail. This helps to keep their thick blood moving smoothly, and combined with their blood being a shear thickening fluid, helps them mitigate high G forces. The entire vascular system also assists in keeping circulation going, doing some 35% of the work of pumping the tarry blood around. As one might expect, the vascular system is very deeply entwined with the digestive tract, to move materials in and out of the digestive system similar to the vast majority of complex life forms.

Another unique feature to the Avalonian digestive tract is the overall sensitivity and consciousness that an Avalonian has of their gut. In particular the nerve-dense papillae that line their stomachs, bowels and ceacum. This makes food, particularly live food, quite enjoyable for Avalonians. It also allows for communication and awareness between Avalonian and their gut leeches, as to avoid accidentally excreting them. As one might imagine, this sensitivity can be a double edged sword as well, making it easy to upset some Avalonian's guts.



Fig B†

The final stop for all food is the singular genital-anal exit under an Avalonians tail (or just tailfeathers, for younger Avalonians). Solid waste from the digestive system is packed into tight balls, with colour varying with diet. These hard, dry balls are well lubricated with anal slime so they slip out comfortably.

Avalonians tend to eat larger meals, consolidating the entire nutrition of an [IST day](#) into one large meal when possible. This generally results in one very large bowel movement with similar frequency. And given most Avalonians can ingest their own weight in food in just one sitting, one can imagine the potential waste output.

Avalonians also use the same hole to eliminate low-water uric waste, to breed as a female, and to lay eggs. Their anus also contains the outlets for their scent glands, and is used to scent-mark in various ways. To top it all off, the anal vent also had the highest concentration of nerve endings in an Avalonian's body.

This makes it a very sensitive, and potentially pleasurable hole to be played with. Many Avalonians associate anal stimulation with pleasure, be it intercourse of some kind, defecation, or oviposition. It's also notable that stimulation of the anus results in the production of extra musk oil. When marking, an Avalonian will generally grind their anus on what they wish to mark. Though they can also squirt their musk at will when worked up enough, or badly backed up. Avalonians tend to need to regularly discharge the musky oil produced by their rectal glands for comfort and health.

Another large part of an Avalonian's waste is of a gaseous nature. Being that Avalonians ferment their food in their hind gut, they make quite a bit of waste gas. This ranges from odourless carbon dioxide and methane to more pungent gasses like hydrogen sulphides. Typically a healthy Avalonian with a good diet has pleasantly pungent and earthy gas with strong overtones of musk and [amphiomones](#). Expelling gas is a way Avalonians spread their scent for purposes of flirting and mating as well as dominance.

Though an Avalonian with a gastric sickness, or bad reaction to unfamiliar food can be quite strong in sulphides and other repulsive chemicals. Oddly, the scent of an Avalonian's bowels is a good yardstick for their overall health. Generally the worse it smells, the worse health they are in, or the worse their diet. It can also be a good indicator that an Avalonian's horde of shiny trinkets has gotten large enough to cause more serious issues to their gastrointestinal tract.

The last major note on the Avalonian digestive system is that young Avalonians who are being weaned off milk are moved onto a diet of partially digested food from their parents. Hormonal changes cause adult Avalonians to both overeat and digest food less, leaving a nutritious and easy to process meal for their young. This is also how young Avalonians populate their guts with flora and fauna, getting it from their parents directly. Notably, the hormonal state is brought on by emotional stimulus.

This means that it can be triggered by things other than giving birth, and thusly abused or utilized at will for a dedicated avalonian. The same can be said of lactation and other processes in an Avalonian's body, as they are not necessarily tied to pregnancy for parents. Younger Avalonians are also incapable of digesting proper food until their guts have been seeded with the proper flora and fauna from their parents. This makes them very dependant upon their parents for nourishment for the first Avalonian year of their lives.

Glossary:

- **IST:** The [Imperial](#) standard Time, with a year, equal to about 3.1 Earth years and a day comprised of 25 IST Centons, or 34.75 Earth hours total.
- **Avalon:** The home planet of Avalonians, which is a unique system of a super-earth, several moons and a nebulous cloud of dust and gases. From a distance, this system looks like a low-density gas giant, masking its habitable nature. One Avalonian year is just short of the IST year, at ~2.965 Earth Years.
- **Amphiomones:** Amphiomones are [semiochemicals](#) that work within species, as well as outside of the species. These incorporate functions of pheromones, allomones and/or synomones. For Avalonians, these tend to have an intoxicating effect on many other species across a few biological archetypes.
- **The Empire:** A vast interstellar Empire within the milky way, and the largest singular faction within it. Its full name is the Pan-Galactic Oligarchic Hibiki Empire. The Empire is built of many races with a fairly egalitarian society. While semi-autocratic, it's leaders are specifically engineered for the role of leadership.

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