Corpse Flower & Company

Corpse Flower & Company

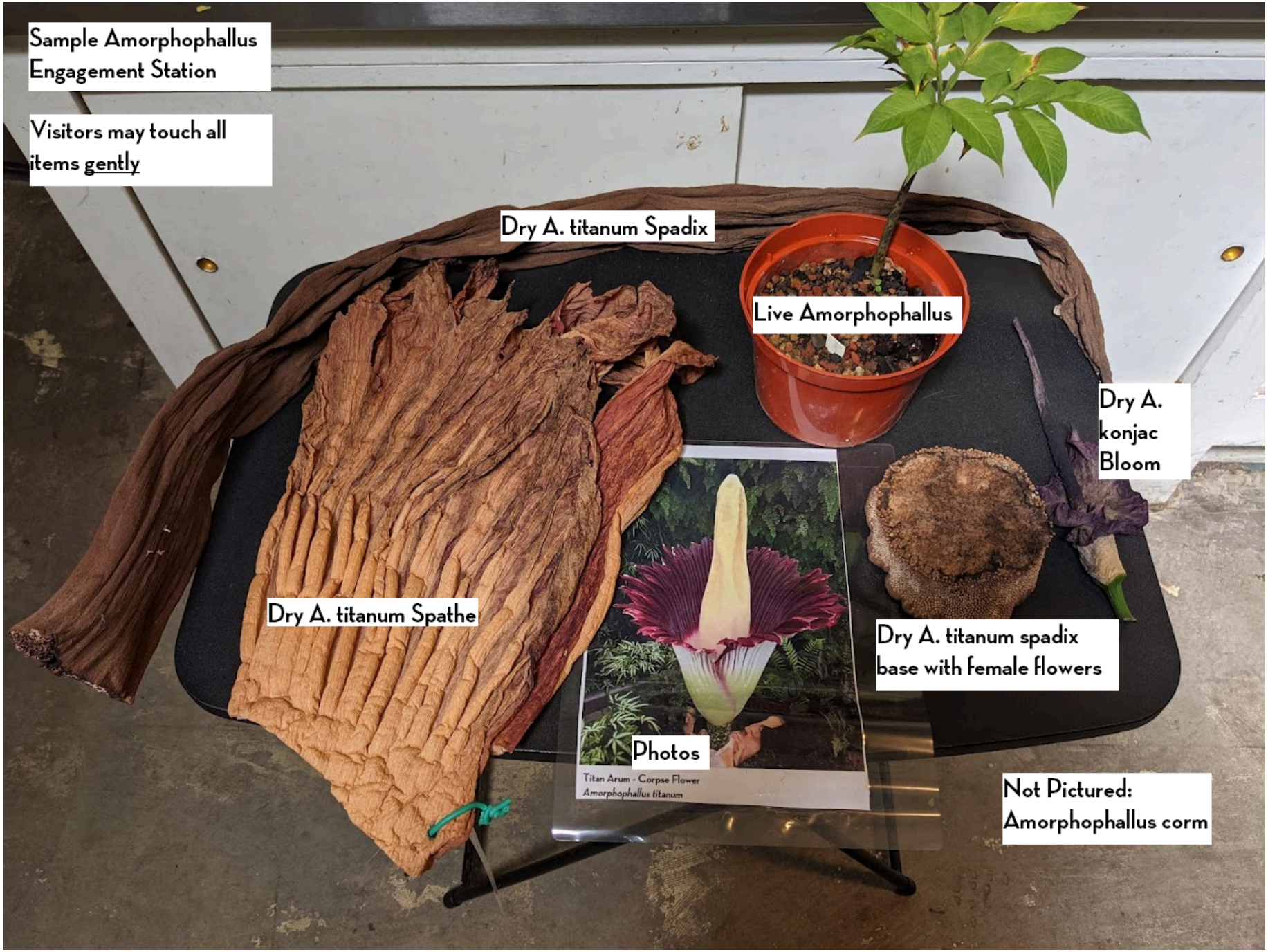
No event draws curious visitors to the Conservatory more than a bloom of the infamous Corpse Flower. People flock to see the flowering structure's odd shape and get a whiff of its pungent stench.

The Corpse Flower is the flowering structure of *Amorphophallus titanum* or the Titan Arum. While this species blooms are infrequent and brief, visitors at other times may get a chance to see the Titan Arum's massive leaf or get to see blooms of smaller species in the genus *Amorphophallus* in the Conservatory's collection.

Location: Potted Plants, West Gallery, or wherever *Amorphophallus* species are on display

Focus Species: ● Titan Arum (*Amorphophallus titanum)* aka the Corpse Flower ● Other *Amorphophallus* species including *A. konjac, A. bulbifer, A. henryi* and more!	**Props:** ● Dried *Amorphophallus titanum* spathe ● Dried *Amorphophallus titanum* spadix ● Dried *Amorphophallus titanum* spadix base with female flowers ● Dried *Amorphophallus bulbifer & Amorphophallus henryi* bloom
Live Plants: ● *Amorphophallus* species with leaf (if available).	**Photos:** - Photo book

• *Amorphophallus* corm (if available)	


Sample Amorphophallus Engagement Station
Visitors may touch all items gently
Dry A. titanum Spadix
Live Amorphophallus
Dry A. konjac Bloom
Dry A. titanum Spathe
Dry A. titanum spadix base with female flowers
Photos
Titan Arum - Corpse Flower
Amorphophallus titanum
Not Pictured: Amorphophallus corm

***Amorphophallus titanum* plants are quite famous, though mostly known for their 'Corpse Flower' bloom. Asking what visitors what they know about corpse flowers & what questions they have is the best way to guide a conversation about this species and its relatives. As such, this guide is structured as a Q & A.**

What Is a Corpse Flower?

A "Corpse Flower" is a common name for the bloom of the species *Amorphophallus titanum.* Also called the 'Titan Arum' this endangered species is native to Sumatra and most famous for its infrequent and pungent blooms.

How often does it bloom?

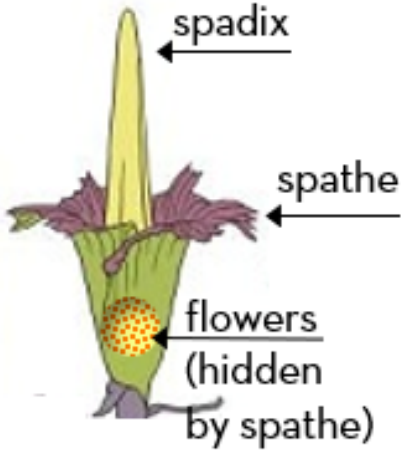
An *Amorphophallus titanum* plant typically lives for 7-10 years before it produces its first bloom. After its first bloom, it is more likely to have subsequent blooms every 3-5 years.

Is the Corpse Flower the largest flower in the world?

The Titan Arum, *Amorphophallus titanum,* has the largest unbranched inflorescence in the world, which can be up to 10 feet tall.

An inflorescence is made up of many small flowers. In that sense, Corpse Flower is a misnomer because it is really many tiny flowers!

In this case the inflorescence is also called the **spadix**. The individual flowers of this bloom are actually quite small and difficult to see. They are hidden beneath the maroon **spathe** that surrounds the base of the spadix.



What's the actual largest flower in the world then?

The largest flower on earth is *Rafflesia arnoldii*, which produces a bloom that measures ~3 feet (1 meter) across. It is a parasitic species native to Sumatra and Borneo, and not closely related to *Amorphophallus.*

Why does the Corpse Flower smell so bad?

The flower's infamous scent is a deception device that tricks carrion beetles and flies into visiting and pollinating the flowers. These insects lay eggs on decaying animals so their larvae can feast when they hatch. They are attracted to the corpse flower by the scent of decomposition.

The bloom heats up on the first evening of the bloom to further disperse the odor.

Where does the Titan Arum grow in the wild?

The Titan Arum (*Amorphophallus titanum)* is endemic to the Indonesian island of Sumatra. It grows on steep hillsides in tropical rainforests.

Is the Titan Arum endangered?

Yes, the Titan Arum is an endangered species. Its population is currently declining due to habitat loss. A major cause of deforestation in Indonesia is expansion of oil palm plantations. Palm oil is an ingredient in many candy bars, cookies, shampoos and cosmetic products. We can help by pressuring manufacturers to use sustainably produced palm oil, and conserving critical forest area. Indonesia's rainforests are believed to be home to 10% of the world's plant species, and is also home to critically endangered species including the Sumatran Tiger, Javan Rhinoceros, and

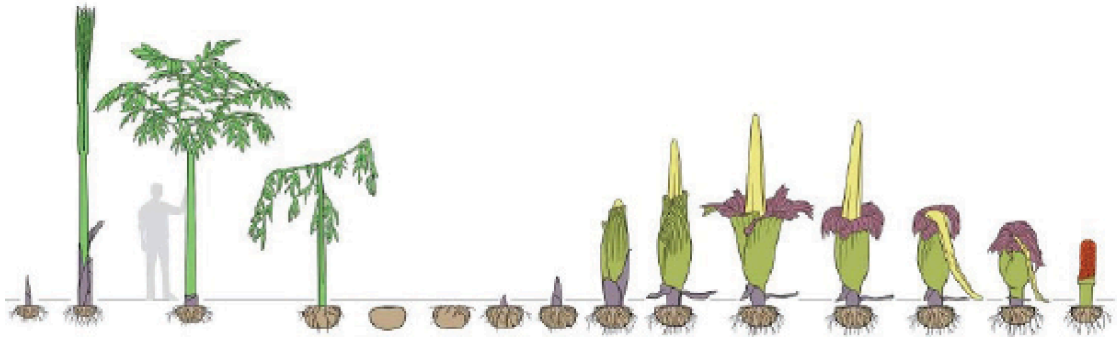
Sumatran Orangutan.

What is the life cycle of the Titan Arum?

The seed grows into a small leaf with an underground corm, an underground storage organ that is similar to a potato. After a year, the leaf dies back, and the plant goes into dormancy for months. The plant will go through years of these dormancy and leaf cycles.

Meanwhile, sugars made in the leaf are transported back to the corm, which continues to grow larger. Finally, 7-10 years later, the plant has stored enough energy to bloom. The bloom takes about a month to mature and is only open and pungent for two days before the spadix withers and collapses.

Another bloom might occur in 3 or more years, until then the leaf/dormancy cycle continues. Usually, only one structure – either a leaf or a flower – emerges from a corm during each cycle.



Does the Conservatory pollinate the bloom?

Historically, the Conservatory has chosen to pollinate a few of our Corpse Flower blooms, but this can be a tricky endeavor. First, viable pollen must be sourced from another plant, likely from

another garden or botanical institution. Next, we must catch the bloom at the exact right moment, which is a v*ery* small window of time for this species. Finally, each bloom can produce hundreds of new seeds that will need a home. We have not yet decided if we will pollinate this bloom, but we expect it will create quite a show either way.

I have or want to get an *Amorphophallus.* Any care tips?

Amorphophallus titanum plants only natively grow in open patches of equatorial rainforest slopes on the Indonesian island of Sumatra. Unless you have a (large) greenhouse that is consistently warm and wet, this may not be an easy feat! Instead, you may try your hand at a colder tolerant species of *Amorphophallus* like *Amorphophallus konjac,* which are purported to tolerate temperatures below freezing in the winter. Grown in some parts of the world for food products, this cousin of the Corpse Flower is easier to grow.

Is this the only *Amorphophallus* species*?*

No! *Amorphophallus titanum* is just one of about 200 different species of the genus *Amorphophallus.* We have about 10 different *Amorphophallus* species in the Conservatory of Flowers collection, some of which are typically on display in the Potted Plants gallery.

Some to look out for include the bright pink bloom of *Amorphophallus bulbifer,* or the miniscule bloom of *Amorphophallus ongsakulii.* You will notice that each of these species are morphologically similar to *Amorphophallus titanum* in that they have large compound leaves and inflorescences that consist of a spathe & spadix. Their blooms can be more frequent and longer-lasting, and many produce an array of unpleasant smells!

You also may notice plants in the genus *Dracontium* have great resemblance to the *Amorphophallus,* and indeed these two genera are related and both in the Arum family. While

Amorphophallus species are all found in the old world - Asia, Africa, Australia and the Pacific Islands, *Dracontium* species are found in the new world including Central and South America.

Chanel's first bloom, July 2019

Corpse Flowers generally take 7-10 years to bloom for the first time, and then may bloom again every 3-5 years.

One of the Conservatory's Corpse Flowers, nicknamed 'Chanel' bloomed for the first time in 2019 and again in 2022.


Amorphophallus titanum
Titan arum
Araceae
Sumatra

Amorphophallus titanum **bud at approximately ~2 weeks, ~4 weeks.**

At this stage it can be challenging to discern whether the bud will develop into a bloom or a leaf. Some small indicators like a more rotund bud shape can help us predict future bloom!

(Photos: Conservatory of Flowers)

Amorphophallus titanum **bud at approximately ~5 weeks, ~6 weeks. The spathe and spadix are visible, a definitive sign that this is a bloom that will open 1-2 weeks later!**

(Photos: Conservatory of Flowers)

OF FLOWERS
TERRA THE TITAN
TERRA THE TITAN

OF FLOWERS

Amorphophallus titanum **bud at approximately ~7 weeks, and a bloom opening at ~8 weeks.**

The bloom tends to occur 7-8 weeks after the bud sprouts, but this can vary significantly between individual plants.

(Photos: Conservatory of Flowers)

#CONSERVATORY OF FLOWERS
TERRA THE TITAN
TERRA THE

Terra the Titan, an *Amorphophallus titanum* individual that bloomed at the Conservatory first in 2017 and again in 2020.

(Photo: Conservatory of Flowers)

A view of a blooming *Amorphophallus titanum* from above.

(Photos: Conservatory of Flowers)

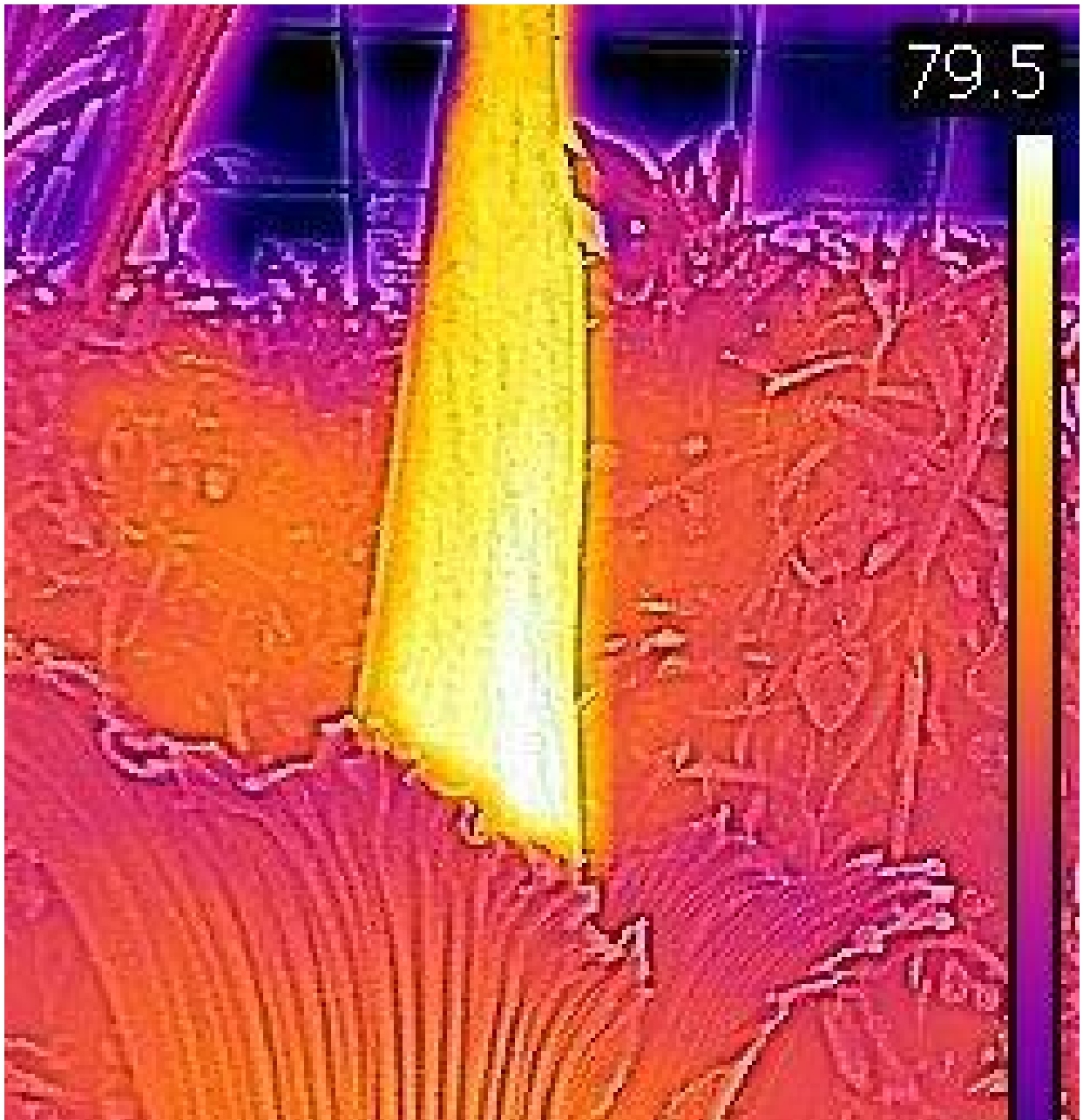
Amorphophallus titanum Leaf

In between blooms, *Amorphophallus titanum* alternates between dormancy and leaf cycles.

During a leaf cycle, the plant grows a single, compound leaf comprised of many leaflets.

The leaf may grow up to 20 feet tall, so massive it's often mistaken for a tree.

The leaf photosynthesizes and stores sugars that will give the plant energy for a future bloom.



Thermal Camera Image of Corpse Flower

The spathe heats up in order to volatilize the scent – to evaporate and

disperse it as a vapor.

In this case parts of the spathe neared 80 degrees Fahrenheit!

Corpse Bloom

Flower Anatomy

Spadix: A type of inflorescence that includes many small flowers on a fleshy stem. The Corpse Flower has many small flowers at the base of the spadix.

Spathe: A type of bract, or modified leaf that surrounds and protects the spadix. When the Corpse Flower blooms, the spathe unwraps to reveal a deep maroon hue.

Anthurium (top), *Monstera* (bottom)

The *Amorphophallus titanum* is an Arum, or member of the family Araceae.

Plants in this family often produce inflorescences with a distinct structure consisting of spathe and spadix.

Other family members that also have this bloom structure include Anthuriums & Monstera, and the Conservatory's own 'Phil' the Imperial Philodendron.

Corpse Flower Inflorescence Anatomy

Male Flowers

(pollen producing)

Female Flowers

(pollen receiving)

Corpse Flower Inflorescence Anatomy

This photo shows the spathe cut away to reveal the flowers at the base of the spadix.

The pollen producing male flowers are clustered higher on the inflorescence while the female flowers are found at its base.

During the bloom, the female flowers open first, and then later the male flowers begin releasing pollen. This helps the plant avoid self-pollinating.

Amorphpophallus titanum Fruit

After the spadix collapses and the spathe falls away, only the base of the bloom structure remains.

If any of the female flowers were successfully pollinated, they will form small orange fruits.


Toby Hudson, CC-BY SA 3.0.

The dung beetle and flesh fly are two of the pollinators attracted by the Corpse Flower’s aroma.

Rhinoceros Hornbill

Rhinoceros Hornbill

The Rhinoceros Hornbill is known as a disperser for *Amorphophallus titanum* seeds.

It will eat the plants' fruits, and in the process carry and excrete its seeds in new locations.

The Rhinoceros Hornbill is designated as Vulnerable to extinction by the IUCN – one step short of endangered.

(Photo: Flickr, David Cook, CC-by-2.0)


Bay of Bengal
Bangkok
กรุงเทพมหานคร
Vietnam
Cambodia
Philippines
Panay
Leyte
Andaman Sea
Ho Chi
Minh City
Gulf of
Thailand
Palawan
Negros
Mindanao
Basilan Island
Malaysia
Kuala Lumpur
Celebes Sea
Singapore
Sumatra
Indonesia
Bismarck Sea
Java Sea
Jakarta
Banda Sea
Papua New
Guinea
Arafura Sea
GREATER SUNDA ISLANDS
Timor Sea
NORTHERN
TERRITORY
QUEENSLAND
Australia
WESTERN
AUSTRALIA
Google

Amorphophallus titanum is endemic to Sumatra, meaning it's found nowhere else on earth. Sumatra is a large island that is part of Indonesia. It is home to the Leuser ecosystem, one of the world's richest but least studied areas of tropical rainforest.

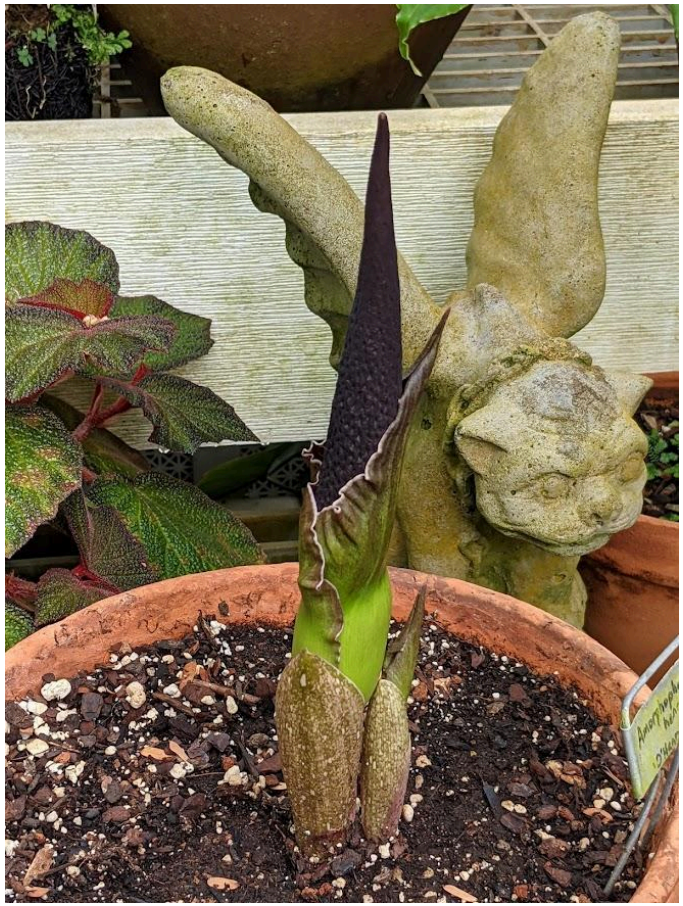
Amorphophallus konjac

Amorphophallus ongsakulii

The genus *Amorphophallus* includes about 200 species. You might notice some of them have smaller but similar bloom and leaf shapes. Many will bloom more frequently than *Amorphophallus titanum.* Most are also somewhat unpleasantly pungent!

(Photos: Conservatory of Flowers)

Amorphophallus bulbifer

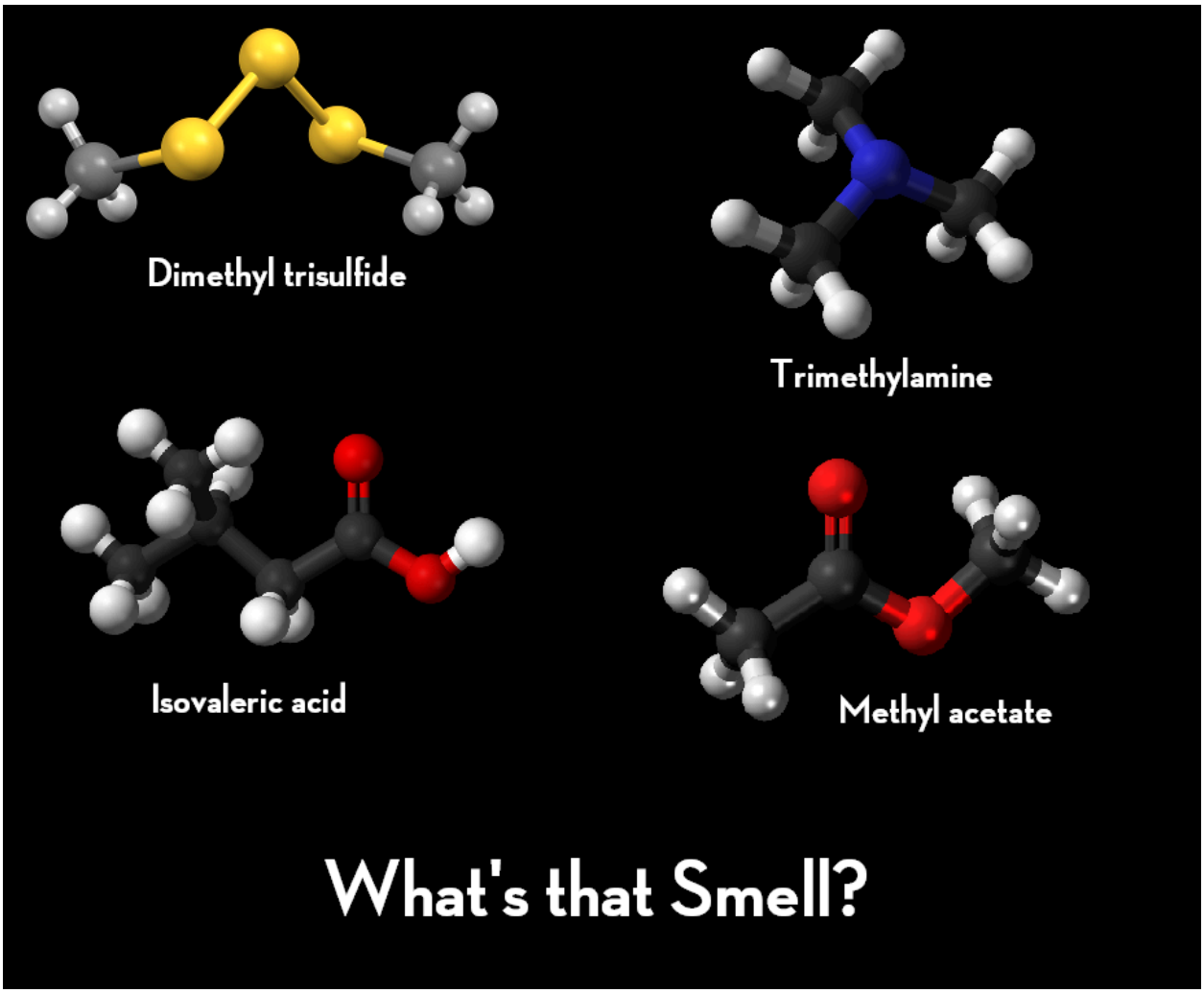


Amorphophallus henryi

The genus *Amorphophallus* includes about 200 species. You might notice some of them have smaller but similar bloom and leaf shapes. Many will bloom more frequently than *Amorphophallus titanum.* Most are also somewhat unpleasantly pungent!

The *Amorphophallus titanum* has the largest unbranched inflorescence in the world, but it's not the largest flower (its flowers are actually quite small!)

The largest flower on earth is *Rafflesia arnoldii*, which produces a bloom that measures ~3 feet (1 meter) across. It is a parasitic species native to Sumatra and Borneo, and not closely related to *Amorphophallus titanum.*


Dimethyl trisulfide
Trimethylamine
Isovaleric acid
Methyl acetate
What's that Smell?

- The Corpse Flower creates many compounds that contribute to its infamous smell including:
  - **Dimethyl trisulfide** – a flammable liquid detectable at 1 part per trillion with a rotting, animal-like sulfur-y odor.
    - Emitted from cooked onion, leek, broccoli, or cabbage, Limburger cheese, aged beer, or stale sake.
    - It is a decomposition product from bacterial decomposition (including humans) and is a major attractant for blowflies.
    - Contributes to the smell of human waste
  - **Dimethyl disulfide** – a colorless oily liquid with a garlic-like odor
    - Found in normal human breath and biofluids.
  - **Methyl acetate** – an unsavory, cheesy, garlicky odor
  - **Trimethylamine** – a colorless gas with a dead fish-like or ammonia-like odor, depending on concentration.
  - **Isovaleric acid** – smells of sweaty feet; slightly cheesy
    - Bacteria of the group, *Staphylococci* live on human feet and metabolize our sweat into compounds including this acid!