

## Chapter 1 : A previously unknown ancient civilization discovered in the amazon

*Rainforest Researchers (Deep in the Amazon) [James L Castner] on blog.quintoapp.com \*FREE\* shipping on qualifying offers. Tropical biologist and entomologist James L. Castner has made more than 50 trips to South America, most of them to live and work in the Amazon Basin.*

Researchers at the camp dedicate their lives to the forest every day in order to understand its inner workings. But as our planet reaches its own biological limits, a new kind of science is emerging, one that seeks to understand how human systems can co-exist with natural ecosystems and preserve life on earth as we know it. I traveled to the city of Manaus, Brazil, in the heart of the Amazon rainforest on a trip with Planet Forward to learn from a unique community of scientists who have been on the frontlines of this ecological research. Working out of small research camps deep in the jungle, out of cell and internet range, for sometimes weeks and months on end, these researchers have not only generated crucial data that is safeguarding the rainforest ecosystem, but also developed a training system for an entire new generation of conservation scientists who are reshaping the Brazilian scientific and political community. As global climate change accelerates and deforestation rates in the Amazon rainforest reach a five-year high, their work may hold the key to the survival of both the rainforest and the global human community that depends on it. The rainforest fragments project: A grand experiment The strident shrieks of a macaw rang out over my head as I walked down the tiny, muddy footpath that wound around giant ferns and towering banyan-like trees. Around our single-file group, the rainforest sung with a thousand voices of cicadas, insects, and birdsong, interrupted suddenly by a scattershot of crashes signaling the arrival of a troop of capuchin monkeys. Walking through this experience like a child in wonderland, I almost forgot that I was in the middle of a giant science experiment: He studies the effects of habitat fragmentation on ecosystems due to deforestation in the Amazon. Jose Luis Camargo, an expert plant ecologist and the director of field research at BDFFP, was our guide to the mysteries of the forest. With twinkling eyes and a knack for talking perfectly normally about waking up in his hammock next to a tarantula, Camargo has over 30 years of experience in the rainforest and trains the graduate students who form the heart and soul of BDFFP. He shared his knowledge with us with the warm voice of a lifelong teacher, tinged with deep reverence for the ecosystem he studies. Forest fragments are drier, Camargo told us, and the trees are more vulnerable to being felled by wind storms. Some species of birds that thrive in deep shade vanish from edges of the fragments. That was about, trees. But despite its grandeur, the foundations of BDFFP originated from a single innovative idea by one scientist trying to understand the richness and interconnectedness of natural life and find out how society could best preserve it. Lovejoy was working as employee No. Despite facing skepticism, Lovejoy got a plane ticket back to the Amazon. Within hours of meeting with the Brazilian officials, he had secured the permission of every major agency to supervise the land clearing and arrange to leave giant squares of forest intact. The effect the new research project had on rainforest policy in Brazil was nearly immediate and very far-reaching, Lovejoy said, even though it took more than a decade to get solid data on exactly how much biodiversity was being affected by fragmentation. They knew we were asking the question, and they concluded that large was probably important. As it turned out, large was indeed important when it came to the health of an ecosystem. For example, the team found that even their largest hectare fragment would lose half of all its interior forest bird species in less than 15 years if it was isolated from the main forest. They are housed in seven field research camps scattered around the forest plots, equipped with hammocks, running water, and cooking facilities. Most of the students have their first experience of the Amazon ecosystem here, Camargo said. This place needs more trained people to deal with the complexity of the forest and the public politics for this forest," he said. Cassiano Gatto is one of those students who decided to dedicate himself to the Amazonian region. Empowering local and native communities to preserve that natural heritage is of particular importance to Gatto. Rita Mesquita, a BDFFP graduate, joined government environmental agencies and at one point became the lead person organizing conservation for the entire state of Amazonas. By showing that cutting down the rainforest also would disrupt the hydrological cycle of the entire South American continent, Salati laid the groundwork for decades of political conservation

action. Every year, Lovejoy brings celebrities, politicians, and students from Brazil and around the globe to the little camps to experience the magnificence of the Amazon, and Camargo leads Brazilian graduate students on a monthlong field course to understand the ecology of the Amazon basin. The Watchtower The best education also includes moments of deep realization, mingling insight, and awe. Mine came on our second day in Brazil, when Camargo and Lovejoy took our group to watch the sunrise over the forest canopy. We woke at 4 a. Standing suspended some feet in the air and looking out over the canopy, I was immediately transported to a primeval age. Toucans hooted and monkeys barked below me, greeting the new day. Monkeys hide out in the canopy of virgin rainforest, stretching for miles. After nearly half an hour of enrapturement, we looked to the other side of the watchtower. There, glimmering through pre-dawn smog, the thousand lights of Manaus with its 2 million inhabitants and counting stretched to another horizon dotted by smokestacks and skyscrapers. The dim sound of motorcycles, cars, and machines came floating on the breeze, mixing with the birdsong. It is at the confluence of these two worlds: Scientists like Gatto and Camargo stand at this frontline, a bridge between both worlds. The crises of climate change, species extinction, and environmental destruction are no different.

**Chapter 2 : Project uses drones to monitor the health of the Amazon**

*The Tambopata Research Center is a spartan yet comfortable 13 bedroom lodge built to accommodate Peru travelers and researchers alike while protecting the adjacent macaw clay lick.*

Messenger Brazil is experiencing corruption scandals, political turmoil, and its worst recession in decades. In the 21st century, it is generally taken for granted that towns and cities are connected by roads. However, in the Brazilian state of Amazonas almost a million people live in dozens of roadless cities of 3, to 70, residents. These settlements are wholly reliant on rivers. As an extreme example, take Ipixuna, one of the most remote towns in Brazil. Located on a major Amazonian tributary, Ipixuna is an incredible 2,km by boat from the state capital, Manaus. During the dry season barges transporting fuels and non-perishable foods from Manaus can take more than a month to arrive. Like most Amazonian cities without roads, Ipixuna is extremely poor, socially unequal and has a very limited urban infrastructure. In Amazonia, people are being hit by increasingly frequent and severe floods and droughts. For instance, residents of Caapiranga, a roadless town much closer to Manaus, told us that river levels reached both record highs and lows in Much of the town was flooded in May yet by October Caapiranga was cut-off by low water levels. Ipixuna is one of the most remote cities in Brazil. Google Maps Remote Amazonas cities are guardians of almost one million square kilometers of rainforest. Healthcare crisis deep in the Amazon All Brazilians are guaranteed healthcare as a constitutional right, delivered through a universal and free health system. Chronic staff shortages are exacerbated in roadless areas as health teams often travel days by boat to reach rural communities. The main road in and out of Ipixuna. Luke Parry, Author provided Tackling these problems requires investment in basic sanitation. Access to clean water is essential for preventing waterborne diseases, yet in the majority of municipalities in Amazonas, household water is untreated. Environmental health is often not taken seriously by local government: My small children play outside so I have complained many times to the council, but nothing was done. After all the Amazonas state government in Manaus can be days away, never mind the national capital in Brasilia. The local political elite are often the descendants of former rubber barons or similar. Many health bureaucrats are nepotistic or political appointments, and rarely have any specialist healthcare background. Most roadless municipalities lack a team of permanent doctors and instead rely on short-term hires that may spread their time between multiple places. What to do when the only road out of town runs dry? Luke Parry, Author provided As the remoteness of these cities makes public auditing and financial scrutiny more complicated, the region breeds a sense of impunity. Three mayors were recently arrested on corruption charges, while 30 municipalities are being investigated for embezzlement. This can prevent more serious conditions requiring costly air-evacuation for hospital treatment, which is already under threat. Until now, interest in Amazonian governance nationally or internationally has been dominated by environmental debates. There have been rural investments in sustainable development reserves but a shortage of new ideas to solve urban problems. Each new mayor has the opportunity to create a political and institutional environment conducive to improving the living conditions of citizens, ensuring the basic right to health. These long-neglected cities in the Amazon rainforest, however charming, deserve better.

**Chapter 3 : Deep in the Amazon jungle, Brazil's 'hidden cities' are in crisis**

*Surviving in the Rain Forest (Deep in the Amazon) [James L. Castner] on blog.quintoapp.com \*FREE\* shipping on qualifying offers. Tropical biologist and entomologist James L. Castner has made more than 50 trips to South America, most of them to live and work in the Amazon Basin.*

The women of the tribe fought alongside the men, as was their custom. It appeared following a global reduction of tropical temperatures when the Atlantic Ocean had widened sufficiently to provide a warm, moist climate to the Amazon basin. The rainforest has been in existence for at least 55 million years, and most of the region remained free of savanna-type biomes at least until the current ice age, when the climate was drier and savanna more widespread. Climate fluctuations during the last 34 million years have allowed savanna regions to expand into the tropics. During the Oligocene, for example, the rainforest spanned a relatively narrow band. It expanded again during the Middle Miocene, then retracted to a mostly inland formation at the last glacial maximum. During the mid-Eocene, it is believed that the drainage basin of the Amazon was split along the middle of the continent by the Purus Arch. Water on the eastern side flowed toward the Atlantic, while to the west water flowed toward the Pacific across the Amazonas Basin. Analyses of sediment deposits from Amazon basin paleolakes and from the Amazon Fan indicate that rainfall in the basin during the LGM was lower than for the present, and this was almost certainly associated with reduced moist tropical vegetation cover in the basin. Some scientists argue that the rainforest was reduced to small, isolated refugia separated by open forest and grassland; [11] other scientists argue that the rainforest remained largely intact but extended less far to the north, south, and east than is seen today. The dust contains phosphorus, important for plant growth. The yearly Sahara dust replaces the equivalent amount of phosphorus washed away yearly in Amazon soil from rains and floods. CALIPSO has measured variations in the dust amounts transported— an 86 percent drop between the highest amount of dust transported in and the lowest in. A possibility causing the variation is the Sahel, a strip of semi-arid land on the southern border of the Sahara. When rain amounts in the Sahel are higher, the volume of dust is lower. The higher rainfall could make more vegetation grow in the Sahel, leaving less sand exposed to winds to blow away. Based on archaeological evidence from an excavation at Caverna da Pedra Pintada, human inhabitants first settled in the Amazon region at least 11,000 years ago. For a long time, it was thought that the Amazon rainforest was only ever sparsely populated, as it was impossible to sustain a large population through agriculture given the poor soil. Archeologist Betty Meggers was a prominent proponent of this idea, as described in her book *Amazonia: Man and Culture in a Counterfeit Paradise*. She claimed that a population density of 0.1. It is believed that the civilization was later devastated by the spread of diseases from Europe, such as smallpox. The development of this fertile soil allowed agriculture and silviculture in the previously hostile environment; meaning that large portions of the Amazon rainforest are probably the result of centuries of human management, rather than naturally occurring as has previously been supposed. Among those were evidence of roads, bridges and large plazas. Wet tropical forests are the most species-rich biome, and tropical forests in the Americas are consistently more species rich than the wet forests in Africa and Asia. One in ten known species in the world lives in the Amazon rainforest. The region is home to about 2.5 million species. To date, at least 40,000 plant species, 2,000 fishes, [32] 1,000 birds, mammals, amphibians, and reptiles have been scientifically classified in the region. Scientists have described between 96,000 and 100,000 invertebrate species in Brazil alone. Leaves expand during the dry season when sunlight is at a maximum, then undergo abscission in the cloudy wet season. These changes provide a balance of carbon between photosynthesis and respiration. Among the largest predatory creatures are the black caiman, jaguar, cougar, and anaconda. In the river, electric eels can produce an electric shock that can stun or kill, while piranha are known to bite and injure humans. There are also numerous parasites and disease vectors. Vampire bats dwell in the rainforest and can spread the rabies virus.

**Chapter 4 : Amazon Conservation Association, Our Work, Research, Los Amigos Research and Training C**

*For nearly four decades, the researchers here have been studying a collection of "forest fragments" – large squares of untouched rainforest standing in former farmland that mimic the isolated patchwork increasingly being created throughout the Amazon by human clearing and burning activities.*

From the Andes to the Amazon, you can find incredible bird life. Gastronomy Peru is a hit with food lovers worldwide for its traditional and unique cuisine. Lock up your pets for the next dish, as you may not have realised that Guinea Pigs were originally bred for food and as Europeans farmed Sheep, Goats and Cows, Peruvians living in the Andes farmed Guinea Pigs known locally as cuy. There are many other main meals to try like various beef, chicken and even alpaca dishes as well as meals centered around the potato. Potatoes originated in Peru and only a few varieties from the thousands available were exported to the rest of the world. Another traditional dessert from the colonial era is Frejol Colado, which is made using black or red beans, honey molasses, clove and toasted sesame seeds. The preparation varies, but usually includes cinnamon, nutmeg, anise, red wine, molasses, and brown sugar. Of an evening, the cocktail of choice is the Pisco Sour, which has a heavy citrus, sour flavor and had its origins in Lima, Peru. Cities The main cities in Peru to base yourself for a Peruvian adventure are: Gastronomy, culture, base for tours to other areas Cusco: Most developed Amazon tourism industry Iquitos: Spanning nine nations, you can take a tour in the Amazon Rainforest from a variety of places, some well known and others for the more adventurous. The main countries to access the Amazon are Peru and Brazil, which contain the highest amounts of the forest, but there are another 7 to choose from. How impressive is the Amazon Rainforest? The largest intact tropical wildernesses are the Amazon, the Congo in west Africa, and the rainforested landmass of New Guinea. If you combined New Guinea and the Congo rainforest, the resulting land area could fit snugly inside the Amazon Rainforest. The Amazon Rainforest is fed by the Amazon River, which is a remarkable natural feature in its own right. This is creating a bit of tension between our fellow humans who live inside the national park and oil prospectors constantly trying to penetrate the forest. Size of the Amazon Rainforest To get geographical, the Amazon Rainforest spans 2, , square miles 6,, square km and is contained by the mountain ranges of the Guiana Highlands in the north, the Andes in the west and then the Brazilian plateau in the south. Amazon Habitats Although dominated by rainforest, the Amazon also contains many other vegetation types, such as seasonal, flooded and deciduous forests, as well as savannahs. However, there is an incredible diversity of other animals to amaze you as you wander or canoe Amazonia with your professional Amazon guide. They will spot Sloths clinging to the branches high the trees and draw your attention to the Monkeys following you through the forest. The river and its or more tributaries contain an incredible diversity of fish as well as aquatic mammals like Manatees and River Dolphins. Amazon Rainforest Tourism Tourism in the southern Amazon Rainforest of southern Peru and Bolivia is at its most developed whereas in the north it is still in its infancy. These areas are fantastic for clay lick to see Macaws, Toucans, Tapir, as well as Jaguar, which prey on the mammals. These areas are also a good choice to see the endangered Giant River Otters. If, however, you would like a cruise or to see the rainforest near the Amazon River itself, you can choose the forests of Ecuador, Peru and Brazil. Here you can see the abundant Monkeys and many different Amazon Birds. So what are you waiting for? Jump in and TourTheTropics! Iquitos is also the largest city in the world unreachable by road, which means to access Iquitos you are likely to enter the region by air. To see the breathtaking carpet of green spanning the horizon as you fly over the rainforest is a spectacle in itself. We have selected the best tours in the region to make sure you make the most of your visit to this fun and welcoming Amazon Rainforest gateway. Hundreds of thousands of tourists travel to Cusco each year to visit the very well marketed Machu Picchu and other archaeological sites in the region. Natural wonders are also on the list of activities, however, as Cusco provides a base to visit the Amazon Rainforest Cloud Forest in the Andean Mountain Range. Manu National Park is regarded as the most pristine protected in Peru and contains both lowland and Cloud Forest habitats containing an incredible diversity of Amazon plants and animals. You can combine both the lowland and Andean rainforest from an Amazon tour from cusco and take advantage of

three excellent lodges in the region. As well as Cusco, the Puerto Maldonado region has access to one of the most developed tourism industries in the Amazon Rainforest. We have collected the best tours for visits to the Amazon, the majority of which have environmental certification. The closest of these protected areas to Manaus is the Anavilhanas. From Manaus you can organise cruises on the Amazon River or Rio Negro, the meeting of these rivers creates one of the main short tours near the city. Manaus is a bustling industrial port boasting incredible architecture from the rubber boom period of Amazon history. The Yasuni region contains the highest amount of life anywhere on Earth, but sits on one of the largest remaining untapped oil reserves. Some communities have adopted ecotourism as a way of showing visitors the extraordinary diversity of this region and why it should be protected, as well as communicating their ongoing struggle against oil companies. Leticia will be a stopping point on cruises and ferries between Iquitos Peru and Manaus Brazil. Amazon Tours from Venezuela The Amazon Rainforest in Venezuela is mostly known for the Yanomami indigenous group, who occupy the largest tract of land of any native community. The Yanomami occur on the border between Venezuela and Brazil and have accepted tourism as a means to communicate their struggle for forest protection. Your entry point for the Bolivian Amazon Rainforest is the town of Rurrenabaque and here you can take tours to the surrounding rainforest. Madidi had a history of misusing the power of tourism as too many tourists resulted in park degradation, a big no no when it comes to eco tourism. With much improved park management and regulations, tourism is now being used to protect the forests. Amazon Tours from Guyana These last three countries and parts of countriesâ€™ French Guiana is actually in France are the smallest and most neglected areas to visit the Amazon Rainforest. They are included in an area of South America known as the the Guianan Shield geological section of the South American plate that encompasses all three nations as well as parts of Brazil, Venezuela and Colombia. Guyana is the largest of the three nations and probably the most well known. Guyana is growing in popularity with nature lovers and is especially hailed by birdwatchers worldwide. Amazon Tours from Suriname Tourism in Suriname remains important for the economy and is centered around the Amazon Rainforest. The largest protected area in the country is the Central Suriname Nature Reserve and is also its most popular. Amazon Tours from French Guiana French Guiana is the wealthiest of these three regions and contains 31, square miles 8 million hectares of tropical forest with a large fraction protected in ecological reserves. Read more South America A continent of contrasts, South America split from the African landmass and joined with North America to merge a distinct set of flora, fauna and geographical features. The South American continent is bound by the Atlantic Ocean to the east, the Pacific Ocean to the west and is the jumping off point for Antarctica to the south. After the merger with North America, the Isthmus of Panama in the north would be the land bridge by which many different animals, including humans, migrated south into this diverse continent. Welcome to South America. This incredible forest has filled the hearts and minds of naturalists and explorers for hundreds of years and can be accessed from any one of the nine nations it crosses. The Cerrado is a tropical savanna habitat that experiences a humid climate. The habitat is home to many endemic species found nowhere else on Earth. The open and often treeless habitat means Capybara can roam the grasslands in huge numbers and animals cannot easily hide from view. Although lesser known than the Amazon, the Pantanal houses an equal concentration of wildlife to the densest areas in Africa. One of the most threatened tropical forests, the Atlantic forest in southern Brazil is home to many highly threatened animals and plants. Eco Regions in South America Tourists can explore the different eco-regions in South America, which offer a chance to view breathtaking scenery, amazing wildlife and contrasting environments. South America History Like the pyramids of Egypt, South America is home to its own archeological sites of now vanished societies. Machu Picchu in Peru alone draws hundreds of thousands of tourists each year to visit this mystical Incan ruin. As well as Machu Picchu, Peru is home to other archaeological sites like the Cradle of Gold and the latest tourist destination, the Northern Kingdoms. There have been many different civilizations in South America, such as the Chavin, which spanned BC to AD, the Moche, from BC to AD, the Chachopayas, from â€™, but none that have caught the public attention as much as the Inkas, which dominated the Andean region from to and were invaded by the Spanish in one of the most significant periods in South American history. We are sorry, there are no reviews yet for this tour. This openness means that monkeys and other Amazon Rainforest wildlife are often visible from the

comfort of the lodge itself. Mosquitoes are not really a problem around this section of the Tambopata and so we can make the most of this fact, which is special to the Tambopata Research Center. There is also a common area including dining room. Bedrooms are separated from one another by light cane fencing. Rooms are private but not soundproof. All rooms are connected by raised boardwalk. I stayed at TRC for three nights, and had an absolutely amazing experience. My guide, Cesar, was phenomenal. His excitement for bird-watching was contagious, and I was amazed at what he was able to spot in the midst of the jungle. They include a dining room and bar, a reception lounge with souvenir shop, and an interpretation center. Macaws - The largest known macaw clay-lick in the Amazon is yards from the lodge. Researchers - The research quarters is a two story building usually full of scientists and their assistants from the macaw project. Mosquito Nets - All have rooms mosquito nets on beds, bedside tables and a rack of clothes hangers. Jungle Views - Bedrooms open out onto the surrounding rainforest, allowing guests to enjoy this unique ecosystem even on their downtime, with wild animals, including monkeys, often visible from the lodge. Natural Construction - A simple, airy lodge built from traditional materials such as wood, palm fronds and clay. Hot Water The Amazon was at the top of my bucket list, and after being there, I want to go back again! Electricity A generator is turned on once a day to recharge batteries for guests or lodge facilities. At night it is very dark, so we recommend good flashlights. Light is provided by numerous kerosene lamps and candles. Food Meals are provided as self-serve three course meals at the Tambopata Research Center consisting of soup or appetizers, salad, main course, and desserts combining Peruvian and international cuisine. All fresh fruits and salads are thoroughly disinfected before serving. We also provide at all times unlimited amounts of boiled, filtered, cooled drinking water, coffee or tea and we provide fruit juices during the meals. If any visitor has special dietary requirements, we are happy to make individual arrangements, but please notify us using the contact form. Over 20 years, research has been carried out at the lodge on the nearby large Macaw clay lick, one of the largest in the Amazon Rainforest. One of the rules in Amazonia is that the further away from urban areas you are, the more wildlife you will find living in the area, and this is certainly true at this lodge. Activities Claylick - Visit this large river bank while Macaws and parrots make a raucous and colorful spectacle which inspired a National Geographic cover story. Macaw Project - Interact with researchers studying Macaw feeding habits, genetics, radio tracking and macaw parasites.

## Chapter 5 : Tambopata Research Center Amazon Tour

*The "deep" Amazon is now surprisingly urbanised yet its cities are largely invisible in academic and political debates. In the 21st century, it is generally taken for granted that towns and*

But a tipping point looms on the horizon—one that may turn one this vital carbon sink into one of the largest sources of carbon dioxide on the planet. By "smelling the forest," a Harvard-led team of researchers is attempting to measure how and when that could happen. As the planet warms, drought, wildfire and changing weather patterns threaten some billion trees in the Amazon, some of which are already at risk from logging and mining. As trees are damaged—or killed—they decompose and release carbon into the atmosphere. Like human pheromones, VOCs help plants interact with organisms around them. They attract insects for pollination and seed dispersal, respond to stresses, and even send warning signs to neighboring plants that predators are attacking. Every species of plant emits a different VOC signature—like a fingerprint—which can change based on the season or if the plant is under duress from, for example, drought or flood. First, the Amazon rainforest covers a staggering million hectares. Within that massive biome are thousands of smaller ecosystems, each with their own biodiversity and VOC signals. Towers can sense at the right height but only for the local ecosystem. To bridge this canyon of data, Martin and his team are turning to drones. Harvard University "What makes drone-based sensors so exciting is that they offer the possibility of collecting data at unexplored scales," said Martin. The prototype, a small sampling box attached directly to a drone, pulls in air from the surrounding environment and passes it through sampling tubes that trap VOC molecules. The test was a success. The team tested the range and limits of the drone, sending it to specific GPS points up to a kilometer away from the tower. The drone collected samples at various altitudes and specific points along the way, and returned home every time. The team is currently flying drones over different types of forests, including low-lying waterlogged regions and higher terra firma forests, to develop a database of VOC fingerprints under normal conditions. After that, the same forests will be monitored during times of stress in the wet and dry season to learn how the VOC fingerprints change. Martin and the Harvard team visit the Amazon half a dozen times a year. So, within half a year, you have the best team on the planet doing these flights. Without that collaboration, it would take the Harvard team a decade to build that expertise.

## Chapter 6 : Growing scientists in the rainforest | Planet Forward

*Deep in the Amazon rainforest, archaeologists found something astonishing: 81 never-before-seen earthworks, which may have supported a complex civilization containing a population of up to a*

## Chapter 7 : Uncontacted Amazon Tribe Revealed In Astounding Drone Video

*The Amazon has a long history of human settlement. Contrary to popular belief, sizable and sedentary societies of great complexity existed in the Amazon rainforest [Amazon Civilization Before Columbus].*

## Chapter 8 : Deep Amazon Adventure - Untamed Path Adventures

*Astounding drone images have revealed an illuminating discovery deep in the Brazilian Amazon. The footage released on Aug. 21 shows members of an uncontacted Amazon tribe walking through a deforested area amid the jungle in the Vale do Javari region of the rainforest.*

## Chapter 9 : Research in the Rainforest - The Virtual Rainforest by Gerald Urquhart

*Researchers found neat trenches or pits, that are between 1 and 4 meters deep, and upturned meters wide. These are found in different sizes and designs: circles, squares, rectangles, compound shapes, straight and parallel lines.*