

CHAPTER III

RESEARCH AND DESIGN METHODOLOGY

3.1 Research Methodology

According to (Creswell & Creswell, 2018), there are three research methods: qualitative, quantitative, and mixed method.

Qualitative research is an approach to understand the meaning of an individual or a group that has a relationship with social or human problems. The research process in qualitative methods includes collecting questions, data, and procedures obtained from targeted people. From the data obtained, then analyzed from common themes and from research, then interpreted.

On the other hand, Quantitative research has a slightly different process and purpose from qualitative research, which is to examine objective theories by examining the relationship between variables. The variables obtained are then measured with a tool so that data in the form of numbers can be managed using statistical procedures up to the final report including from introductions, methods, results, literature, theories, and discussions.

It is possible that the research requires both quantitative and qualitative methods. By having two forms of information data obtained, so that it will be more detailed and additional insights, research from the problem and research from the questions asked.

3.1.1 Qualitative Methods

The author uses qualitative methods to increase insights about Leopard Gecko.

3.1.1.1 Interview

The interviews conducted by the authors are unstructured interviews. Because the main goal is to get insight from the interviewee regarding experiences in caring for Leopard Gecko such

as problems that have been faced by the owner and misconceptions about Leopard Gecko. For Leopard Gecko sellers or breeders, the author will add questions such as the price range of Leopard Gecko, the solution of some existing problems, and what information to convey for beginners. Questions from the author will add up depending on the answers of the interviewee. From the results of interviews and FGDs (focus group discussions) if any of the questions asked are not relevant to the research process, the authors decided that the answers to these questions were not entered into the report.

The author will also conduct an interview with an interactive media expert to gain more insight with the goal of providing education, information, or guidance for the targeted person.

1) Interview with Tedy Saputra



Figure 3. 1 Photo Interview with Tedy Saputra

The interview was conducted by the author with Tedy Saputra as the shopkeeper of @reptiles.inc which sells a wide variety of reptiles including leopard gecko. As of September 6, 2022, he has basic information about all products and animals sold. The interview

aims to gather basic information that can be used as support information for data in the background of the situation.

Tedy Saputra said that the reason for the beginning of his interest in Leopard Gecko was because the reptile has an exotic attraction and it's easy to care for. Leopard Gecko has a docile characteristic, so even a beginner can maintain it. From the sales data of "Reptiles.inc" it is estimated that as many as 10 to 15 Leopard Gecko can be sold within 1 month and are liked by children on average because of the calm behavior of Leopard Gecko. But there are also many enthusiasts from teenagers and adults. Tedy said even a 7-year-old can keep the leopard gecko as a pet but he advised to have an adult supervision and give directions on how to treat the reptile gently. Usually, the education delivered for beginners who adopt Leopard Gecko in "Reptiles.inc" is about the cleanliness of the cage and the duration of feeding once every 2-3 days, with the number of 4-5 crickets.

Before the Pandemic happened, there were not a few Leopard Gecko enthusiasts, but Tedy realized that Leopard Gecko enthusiasts increased rapidly when the pandemic was followed by other reptile enthusiasts, because basically Leopard Gecko is classified as a docile pet. A common health problem suffered by Leopard Gecko according to Tedy is indigestion that can cause Leopard Gecko's body to become thin due to the influence of low room temperature. Tedy realized information regarding the presence of salmonella bacteria in the feces of Leopard Gecko, it was caused by an unclean cage. Therefore, any Leopard Gecko throws out large amounts of water, it must be cleaned immediately by changing the base. The advice given to beginners is quite simple, which is to prepare enough containers for drinking places and shelters.

Along with interviews conducted in person at the "Reptiles.inc" store, the author also made small observations of supporting products, one of which is calcium sand which is usually used for reptile cage mats. According to sources reported from (Reptile Craze, 2022), calcium sand is not good for leopard gecko because it is dust that cannot dissolve in water so that it has a bad impact on digestion and causes irritation, so the author decided to add one last question about it. However, according to Tedy, the use of calcium sand is safe to use if the feed is given regularly by the owner, otherwise leopard gecko will consume calcium sand which he mistaken for food.

2) Interview with Hartono Tan



Figure 3.2 Photos of Interview with Hartono

Hartono as the owner of a reptile shop called "Kuma reptiles" also sells a variety of reptiles including Leopard Gecko. He was intrigued by the Leopard Gecko because it acted as a first step or "gateway" for reptile enthusiasts. That is, if a person wants to raise reptiles that are not more difficult to keep like snakes, Leopard Gecko is the first step. Hartono also has an opinion similar to Tedy, namely that Leopard Gecko is not scary and safe to treat. Since the enthusiasts of Leopard Gecko are not few and the types are various, the animal is

suitable for cultivation. In one exhibition, "Kuma reptiles" were able to sell about 100 leopard geckos, stated that other exhibitions also get the same profit.

According to Hartono, the average buyer of Leopard Gecko is an elementary, middle, and high school student. As said before, some people are not allowed to keep other reptiles except leopard gecko. Hartono provides simple education for leopard gecko buyers, namely about where to live and food, as well as additional information in the form of what should not be done, for example, leopard gecko should not be dried in the sun at all. In general, many people have a perception that living things need the sun, but according to Hartono's experience, sun-dried leopard gecko can cause death.

Hartono said that reptile enthusiasts must continue to increase because of the simple way of caring for them. Especially during a pandemic, people want pets to prevent boredom while at home, or want to have hobbies that are not mainstream.

According to Hartono, there is no exact science about how to treat leopard gecko, all of which is in the form of experimentation and experience. For example, the use of UVB lamps on leopard gecko. There is one perception that UVB lamps are not good to use for nocturnal leopard gecko, but from different sources, the use of UVB is good for the addition of vitamin A to Leopard Gecko. He went on to use sand that is good for use unless consumed by Leopard Gecko. All things must have their pros and cons, even veterinarians get information about reptiles directly from the people who keep them. Many suggest giving calcium powder to mix with Leopard gecko food, but there is no exact information regarding how much calcium content leopard gecko should consume. However, one thing is for sure Leopard Gecko should not be dried in the sun and should be given attention in totality.

3) Interview with Fathul Hadi



Figure 3.3 Photos of Interview with Fathul Hadi

Fathul Hadi, the keeper of the "Reptile Jakarta" exhibition or referred to as Repjak, first raised leopard gecko from 2018. He was attracted by the unique, beautiful, and varied color of leopard gecko. He said leopard gecko is not like a lizard or gecko that tends to be aggressive and laughable. Just like "Kuma reptiles", "Repjak" can sell about 50 to 100 Leopard Gecko at each exhibition and is sold to all circles, because leopard gecko has a docile behavior, it is suitable for keeping by children. Just like the results of previous interviews, beginners are given education on how to take care of them, especially about feeding.

According to Fathul Hadi's experience, the increase in interest in Leopard Gecko was precisely when the pandemic began to gradually improve. Like when the mall started operating again, it added opportunity for re-sellers and provided an opportunity for Leopard Gecko enthusiasts to visit the exhibition. Unlike during the

pandemic, where PPKM is still valid. However, it does not rule out the possibility of purchases occurring through online.

Fathul Hadi's problems are not limited to health problems, including Leopard Gecko who often escapes from the cage or is attacked by ants. Many people think that Leopard Gecko needs to be dried in the sun and bathed like other reptiles, even though this should not be done. Fathul Hadi added that not a few people think Leopard Gecko is the same as Tokay Gecko, even though the two animals have different behaviors and habitats.

According to (Adrienne Kruzer, 2021), as a domestic and exotic veterinary technician with more than 15 years of experience, the use of UVB lamps can provide good benefits in increasing vitamin D3. However, according to Fathul Hadi, the use of UVB lamps is not recommended because Leopard Gecko is sensitive to light. The use of lamps can be added if the Leopard Gecko cage is located in a cold room, with special lamps, namely ceramic lamps.

Regarding the use of cage mats, according to Fathul Hadi, cocopeat and silica sand should obviously not be used because it will affect the digestive problems of leopard gecko. Bases that are safe enough to wear include dolomite, calcium sand, paper, and tissues.

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N U S A N T A R A

4) Interview with Yohanes Chandra Wijaya



Figure 3.4 Photos of Interview with Yohanes Chandra Wijaya

According to Chandra's experience in creating interactive media such as websites, social media, or applications, the most effective method is to conduct competitor analysis. In conducting competitor analysis, you must know what can be improved from the information found, then re-managed into interactive media design that has its own uniqueness, such as in terms of visuals, design, animation, video production, social media, advertising and so on.

He also said do not follow trends to design effective designs. The example given is NFT, where NFTs themselves use web trees technology that has been implemented when NFTs started to trend. This trend has made various agencies compete to design animations, designs, or campaigns that refer to NFTs, even though NFTs themselves have existed since 5 to 10 years ago. Design based on trends with many competitors is not necessarily able to hit the target, only 1 in 100 designs will fall into the trend category. Therefore, such methods are not effective unless the design has its own uniqueness.

Chandra uses 3 main keys in conducting competitor analysis, namely; observe, adapt, and modify. The modification stage is important in making interactive design that is not boring. Boring interactive media design will automatically not benefit anything for

designers as well as for clients. According to him, the most important thing is creativity, not just information that is repeated on Twitter, TikTok and Instagram.

Chandra added that for target targets for young people who are still under the supervision of parents, they must look for specific interactive media because the use of websites is not recommended even though they can be supervised by parents, because website has a wide scope, some information will have a bad impact on young targets. App designing is the most recommended.

3.1.1.2 Focus Group Discussion

The author gathered 6 leopard gecko owners for this FGD, including Andreas Lie, Tan Jonathan Ananda Wijaya, Jap Kim Hon, Regina Audrey Allyne Chandra, Ivan Adi Nugroho, and Yemima Okatvia. The goal is to get data on the experience of caring for Leopard Gecko. The interview was conducted through a virtual meet with Zoom, on September 16, 2022, for approximately 40 minutes. Here is how long each person experiences in caring for Leopard Gecko.

1. Andreas Lie has the longest experience in caring for leopard gecko, since 2005, and has a leopard gecko shop called MyRepz Pet shop.
2. Ivan already kept reptiles including leopard gecko 7 years ago.
3. Jonathan has been raising Leopard Gecko 1 year ago.
4. Yemima has been raising Leopard Gecko 3 – 4 months ago.
5. Regina has been keeping Leopard Gecko 2 weeks ago.
6. Jap has been keeping Leopard Gecko 2 weeks ago.



Figure 3.5 Photo of FGD with the Owners of the Leopard Gecko

All of them basically like reptiles, but specifically for Regina who likes snakes but is not yet allowed, so has a Leopard Gecko instead. Unlike Ivan, various morphs on Leopard Geckos are interesting. In addition, easy ways of keeping, feeding food, interacting with pets made Ivan even more interested in raising Leopard Gecko. In addition to Jap, he also likes the lazy nature of a Leopard Gecko.

For Jonathan's experience, the beginning was because his first pet reptile was an active crocodile skink and was always difficult to hold. Jonathan worries that if it is held too often, it will make the reptile stressed. Like Ivan, Jonathan began to be interested in various kinds of morphs from Leopard Gecko as well as its calm nature, finally began to try to cultivate Leopard Gecko. His interest in Leopard Gecko led Jonathan to spread the hobby of raising animals to his own cousin, Yemima.

Andreas's first reptilian pet was not a Leopard Gecko but a python. But because of his busy life as a student before, there is no time to maintain it well. Andreas ended up raising reptiles that were easy to care for at a price that tended to be cheaper.

Although many say that raising a Leopard Gecko is easy and even beginners can maintain it, there are many problems that are often experienced by people who have been raising Leopard Gecko for a long time, such as Ivan, Jonathan, and Andreas. Ivan has a unique case and the author never knew this kind of incident anywhere, Ivan has a hobby to design a terrarium with a fairly large size, decorated with cork bark and several other elements, so that it resembles its natural habitat. However, Ivan's Leopard Gecko became more aggressive, as if the natural instincts came out and made a high-pitched sound.

Although paper is a safe substrate or base of the Leopard Gecko cage, according to Ivan's experience, using paper that has sharp sides makes the Leopard Gecko skin on its limbs scratched, it causes infection, rot, harden, shrink, and then cut off on its own. According to Ivan, the limbs did not grow back like how tail works. Ivan added calcium deficiency to Leopard Gecko, it can be seen from the comparison of the parameters (standard size) of Leopard Gecko.

For Jonathan's experience, two months ago Jonathan's Leopard Gecko refused to eat for one week. Information obtained from a Leopard Gecko cultivator advised not to feed temporarily, but a few days later, there are no improvements. Finally, the use of the drug named "Rebio Vigo" could solve the problem.

Jonathan added that the problem of refusing to eat is likely due to a lack of hygiene. Previously, when using dolomite (cage bottom sand), he tended not to clean his Gecko feces too often. By using the same clasp to clean the feces as the clasp for feeding, Indirectly, the bacteria from the Gecko manure were also accidentally consumed.

Andreas said he had a lot of problems in caring for Leopard Gecko. He argued that there are still many factors that cause problems faced by Jonathan, namely: factors of choosing a place / cage and unstable temperature, can affect the metabolism of Leopard Gecko.

With unstable temperatures or an inappropriate environment, the reptile will be stressed. Andreas also helped answer the problems Ivan experienced regarding aggressive Gecko and making high sounds, often due to age factors. Leopard gecko that is still small or juvenile tends not to be used to being held, so it becomes more aggressive. Andreas also agrees with Ivan's statement regarding the nature of the Leopard Gecko that appeared when the place is similar to the original environment.

The Leopard Gecko health problem that is often suffered based on the experience of Andreas is a disease called crypto which is indigestion. The gecko may not be able to consume crickets so they are regurgitated, or the food can be consumed, but the digestion is disturbed so that they have diarrhea. Andreas also responded to the problem experienced by Jonathan, he always cleaned the clasp for feeding purpose to maintain cleanliness and so that no bacteria would enter the Leopard Gecko.

According to the experience of Jap and Regina, Leopard Gecko does not want to eat at the time of shedding.

As a beginner, Yemima has not faced any problems that are particular in raising leopard gecko. However, there is one thing that makes Yemima confused, namely her Leopard Gecko which often enters the drinking water container. Noticed how different it is from a bearded dragons that Yemima also maintains, such as hot temperatures and lighting are needed by bearded dragons are not the same as those needed by Leopard Gecko.

Ivan once used a desert sand cage mat which is not recommended, because Leopard Gecko is a nocturnal reptile whose habitat is in damp rocks. Back when he was in junior high school, Ivan once gave Leopard Gecko pinkies (a type of small mouse), but because Leopard Gecko can only consume insects or can be said to be insectivorous, pinkies are forbidden to be given to Leopard Gecko.

When he first raised the Leopard Gecko, Jonathan assumed that all reptiles needed to be dried in the sun, he tried to dry his Leopard Gecko, but 15 seconds of sunbathing time caused his Leopard Gecko to die. Because of this incident Jonathan did research through the internet, it turned out that Leopard Gecko is crepuscular, which is active in the afternoon and early morning when there is not too much light. He added that Leopard Gecko can be categorized as a nocturnal animal but is more inclined to crepuscular.

As a beginner, Regina is still confused about the use of substrates or cage mats. For a while, Regina used paper for her base. When telling about the misconceptions experienced by Andreas, he also emphasized that the use of dolomite for the base of the cage makes the owner tend to be lazy to clean the dirt of leopard gecko.

Andreas's experience, the use of wipes as a base is best, because once every two days the wipes can be replaced easily, and to maintain the humidity of the cage, after the wipes are installed, can be sprayed with water moderately. Andreas explained the process of replacing the base through demonstrations during zoom calls.

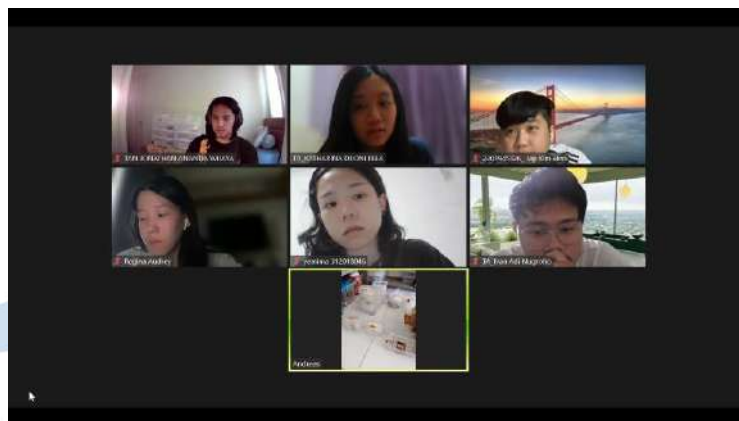


Figure 3.6 Demonstration of Base Replacement from Andreas

The process of spraying water on the base (tissue) of the cage can be a substitute process for giving drinking water in a container, because Leopard Gecko will get drinking water from moistened

tissues. Andreas also said that many people underestimate and think that it is easy to maintain a Leopard Gecko, so many let their Leopard Gecko not be properly maintained. Therefore, it is very important to know how to take care of one.

Andreas also added that the determinant of the low price of Leopard Gecko is not from its size but from the Morph variety. The more unique the Morph, the more expensive it will be.

Jonathan gives advice to beginners, to do lots of experiment. While maintaining, while learning and discovering new things about Leopard Gecko. It is advisable to do some deeper research instead of finally throwing money away due to simple mistakes.

Jap and Regina advise not to panic if the Leopard Gecko does not want to eat. Regina had interviewed a leopard gecko seller, where many people ended up returning their leopard gecko to the seller because of problems with not wanting to eat, and other concerns, although the seller had explained to still try to feed.

Ivan advises for beginners to keep an adult Leopard Gecko, since small ones tend to be more sloppy and more difficult to hold.

Andreas added that the leopard gecko breed is likely to carry congenital diseases. For example, morph lemon frost tends to suffer from tumors as an adult. Therefore, you must find complete information about the type of morph and congenital diseases of a certain type of morph. He also said not to be afraid to ask experienced leopard gecko breeders or keepers.

Yemima added that no matter what animals are kept, they must do good research and have a strong commitment.

In the middle of the FGD process, Ivan wanted to ask Andreas about the condition of the leopard gecko whose head was tilted. Andreas said that this was said to be a "wobbly" disease. Jonathan helps answer that the one with wobbly disease is a type of engima. Jonathan had heard of Engima syndrome, where the Head of the type

often rotates. Andreas, as a leopard gecko cultivator too, has avoided cultivating types of leopard gecko that have the potential to carry congenital diseases, such as lemon frost and engima.

Many suggested having a close relationship with leopard gecko cultivators, especially from the same cultivators of leopard gecko that have been purchased. Because it has been maintained by cultivators before. To get information about Leopard Gecko, many advise from YouTube and google, for Yemima prefers forums. For little-known issues, Ivan often asks in the Facebook community. Andreas suggested that communicating with breeders would be better than data from the internet, and for gecko purposes, it is advisable not to get information from Europe, because the air is different, the handling will be different. If you want to find references from the internet, make sure the references are from Indonesians, where the temperature is the same.

3.1.1.3 Conclusion

The conclusion of the insights regarding leopard gecko found by the author from the results of interviews and FGDs, the maintenance of Leopard Gecko should not be taken lightly. In terms of how to care for it, the price, and the consideration of choosing the type of Leopard Gecko before deciding to maintain.

The conclusion of the interview with Chandra is to must do a competitor analysis first, through observing, adapting, and modifying, thus creating an interaction design that has its own uniqueness, and does not follow trends.

3.2 Target Audience

From the many interviews with leopard gecko sellers, Leopard Gecko is the gateway to enter the reptilian world. Then it is suitable to be advised in young children especially those who like reptiles. Next is the data obtained by the author regarding the target.

3.2.1 Source from Jagad Tani

From the experience of Brandon, the owner of Hype.gecko (Rizky Annissa Farhani, 2021), he first liked to raise Leopard Gecko because he was advised by elementary school friends. According to detik.com (Fahri Zulfikar, 2022), in general, children start elementary school at the age of 6 to 7 years. Because the elementary school period is from grade 1 to grade 6 (5 years of elementary education) Then, the target audience based on this information is 6 to 12 years.

3.2.2 Source from Tedy Saputra

Based on an interview with Tedy Saputra, a child of at least 7 years old has been obtained to raise leopard gecko.

Of the information that has been described, the age range that raises leopard gecko is mostly young children from 7 years old to 12 years old. According to (Caroline Knorr, 2021) as a parenting expert and experienced in motherhood, for children under 13 years old, the use of the internet or digital technology must still be supervised by parents.

According to data reported from Beritagar.id (Islahuddin, 2017), the statistics on the age of birth of the first child in 2011 to 2015 were 23 years. Therefore, if targeting young children aged 7 to 12 years who still need to be supervised by parents for the use of digital technology.

In conclusion, the main target will be 7 – 12 years old children who are interested in Leopard Geckos. While the secondary target will be the guardian/parents which ranged from 30-35 years old which acts as a supervisor for the access of the educational content.

3.2.3 Media Behavior

First, the author did a few research involves in media behavior of Generation Alpha. According to the data from (Wunderman Thompson, 2019), most children in Generation Alpha accesses online videos for most purposes such as YouTube and Instagram. However, since most social media

platforms were aimed for teenagers at the age of 13 and above, YouTube will be the primary media consumptions for Generation Alpha, without being too supervised by parents.

The author also conducts research on what media is often used by millennials in order to determine what kind of interactive media is suitable for information delivery purposes. According to data reported by the Indonesia Millennial Report 2020, the most frequently used tool is the use of mobile phones for news and information purposes.

Usually, millennials in Indonesia will use 2-4 hours per day for internet use. Of the data about activities that are often carried out in the use of the internet, 77.5% of people often do social networking and 81.7% often do general surfing, such as the use of WhatsApp, Instagram, Facebook, and YouTube. Especially for topics that are trending or interesting, millennials also often use Google as a medium for finding information.

3.2.4 Segmentation, Targeting, Differentiation and Positioning

Based on the data above, the author conducted a target market analysis using the Segmentation, Targeting, Differentiation, and Positioning methods by Kotler and Armstrong (2018).

Table 3.1 Segmentation

Segmentation		Target
Demographic	Age	Main: 7 – 12 Years. Secondary: 30 – 35 Years.
	Gender	Male and female
	Education	Main: Elementary school Secondary: At least junior high school.
	SES	A-C. According to data reported from harga.web.id (2022) and exhibition observations from the author, although

		leopard gecko as a whole has a price period of 175 thousand to millions of rupiah, based on the author's observations from the exhibition, the average price of leopard gecko is around 200 – 400 thousand Rupiah, so the price is still affordable for the SES.
	Nationality	Indonesia
Geographic	City	Tangerang. Due to the number of reptile exhibitions including leopard gecko which again is often held in malls and other places.
Psychographic	Life style	Main: Children who are interested in having pets that are easy to take care of, specifically Leopard Geckos. Secondary: People who have a desire for children to be educated well and have good socialization skills.

3.3 Design Methodology

The design methodology that will be used by the author is Human centered design from (IDEO.org, 2015). There are 3 main stages in the design methodology, namely Inspiration, Ideation, and Implementation. The author will add methods from Universal Methods of Design by (Martin & Hannington, 2012).

3.3.1 Human Centered Design Method

Human-centered design is not a perfect linear process, and each project has its own characteristics and features. No matter what type of design is done, it will still use three main phases: Inspiration, Ideation, and implementation. By using the three phases sequentially, the author will awaken a sense of empathy for the community or individual targeted for the

design; transforming what is learned into an opportunity to create a design solution; and testing ideas that are already implemented before they are implemented into the real world.

1. Inspiration

In the first phase, the author analyzes the existing problems by studying society, by observing its life, listening to desires, and being more intelligent on one's own challenges.

2. Ideation

In the second phase, the author will manage all the data or information obtained in the first phase, to get various ideas, identify opportunities for design, and evaluate the solutions obtained.

3. Implementation

In the third phase, the author can bring the solutions that have been obtained to real life. This can help the author to find ways to implement his design ideas to the target market, and maximize the impact of the design on society at large.

3.4 Leopard Gecko

The content that will be explained below is the result of an interview with Fakhri Auzan, CEO of Reptile Jakarta (Repjak) as a leopard gecko expert. Some of the information listed below is taken from Repjak's YouTube account, as suggested by Fakhri.



Figure 3.7 Interview with Fakhri Auzan

3.4.1 Leopard Gecko Care

The description does not cover all things about the care of Leopard Gecko, but rather about what kind of recommendations are suitable for a beginner.

3.4.1.1 Environmental Factors

Next are some common factors required to place the gecko leopard environment.

a. Place Container

Fakhri explained that there are two cages suitable for leopard gecko, namely an aquarium and a plastic container, depending on the owner, for beginners can use ordinary plastic containers. But if you want the cage to have a good aesthetic, then an aquarium can also be used. Leopard gecko does not require a very spacious place, at least it has a size Length and width of 40 x 30 cm. Because leopard gecko prefers a spacious cage, the height of the cage is not minimal, but it is enough so that the Gecko does not easily get out of the cage.

b. Water Container

It is advisable to provide plenty of water for moisture purposes and for drinking.

c. Hiding Cave

Providing a place to hide is important because leopard gecko does not like excessive light, especially the use of aquarium cages that make light easy to enter. If you want to have an aesthetic element for the Leopard Gecko cage, people can use the "Hiding cave" because the shape and color vary. But if it is only for ordinary maintenance, you can use used boxes.

d. Cage Mat

The use of pedestal is important for the leopard gecko cage so that the reptile does not get cold in the abdomen attached to the bottom of the cage, because this will interfere with the digestion of leopard gecko so that it loses appetite. There are many types of bases for leopard gecko cages, but according to Fakhri, he suggests two kinds of bases recommended for beginners, namely paper and dolomite. Next is the explanation of each pedestal.

Paper:

The use of papers such as HVS paper is most advisable for beginners of Leopard Gecko keepers, since the replacement of the base is not difficult. But the use of paper will be easier to get dirty and smelly.

Dolomite:

Dolomite has a function to absorb odors and moisture from Leopard Gecko feces, so that dry dirt is easily picked up by scraping. Plus, because dolomite contains calcium, it is safe to consume if it eats the same as Leopard Gecko.

Other Pedestals

Many other breeders recommend pedestals such as coco peat and sand, which likely affect the digestion of a Leopard Gecko.

The use of tissues and kitchen wipes can be used but is not suitable for active Leopard Gecko because it is easy to tear.

3.4.1.2 Equipment and Food

a. Food

Leopard Gecko is an insectivorous animal, which can only consume insects. Some of the options are crickets, cockroaches, caterpillars and so on. For beginners who are confused about what to feed, crickets are the most common that are often sold in bird stores at a price of IDR 5,000, enough for 2 weeks of feeding.

b. Pincers

Feeding Leopard Gecko should use special Pincers.

c. Supplements

Because Leopard Gecko requires additional calcium to avoid metabolic bone diseases (MBD) (P.86), calcium supplements are important to add. To give Leopard Gecko calcium powder, the food can be wrapped with calcium powder and then just fed to the Leopard Gecko.



Figure 3. 8 Caterpillars Bandaged with Calcium Powder

Not only calcium supplements, the use of gut load is also important to meet the needs nutrition of Leopard Gecko. For example, if the food given is always cicada, then there are some nutrients that are reduced in the content, using the gut load given to the cicada feed, will help add nutrients.

3.4.1.3 Restrictions

There are all kinds of things that are prohibited when keeping Leopard Gecko. Next are some examples from the results of the interview with Fakhri.

a. Light

Leopard Gecko cannot be dried in the sun, because from sunlight that accelerates the metabolism of Leopard Gecko irregularly will result in stress and death. Even the use of UVB lamps is also not recommended.

b. Bathed

Leopard Gecko does not need to be bathed, because the gecko's ears do not have a cover, it will be a problem if the ears are watered.

c. Feeding Other than Insects

Leopard Gecko is forbidden to eat anything other than insects. Many beginners give pinkies or baby rats feed that is dangerous for Leopard Gecko.

d. Two Geckos in One Cage

Unless it is intended for cultivation, two Leopard Geckos should not be placed in the same cage, as it will cause conflicts, or unbalanced feeding.

3.4.1.4 Leopard Gecko Morph

According to (adrienne kruzer, 2021), Leopard Gecko has as many as 100 more morphs. Each morph has its own price and does not depend on the size of the leopard gecko (FGD Andreas, 2022 p. 78). However, the thing that must be considered is morphs that have congenital diseases or certain problems such as lemon frost and

Enigma. And some factors to know such as the type of White and yellow and albino.

a. Lemon Frost

This type of morph lemon frost there is a high probability that it can grow tumors on its body Gecko. For some breeders including Repjak, they do not cultivate lemon frost anymore.

b. Enigma

Enigma has a unique syndrome, where the head of the gecko often goes around in circles making it difficult to take feed, so every time the feeding time must be fed by the owner.

c. White and Yellow

Slightly different from Enigma, the white and yellow type tends to sway back and forth when walking. However, the problem rarely arises, not even up to 10% who have the syndrome. Therefore, it is still safe if there are enthusiasts who want to take care of the white and yellow type.

d. Albino

To avoid confusion, beginners need to know about the characteristics of Albinos which tend to limp easily if they are often exposed to light rays. Therefore, the laying of cages for the Albino breed should be darker ones.

3.4.1.5 Overall Information

After getting various information from Fakhri, here are the overall explanation and instructions for beginners.

a. Selection of Places to Sell Leopard Gecko

Fakhri suggests buying Leopard Gecko from a clear and educated breeder, so that the Leopard Gecko sold is a clear morph and has no previous health problems.

b. Leopard Gecko Selection

For beginners, it is recommended to choose a female and adult leopard gecko because it tends to be calmer. Young Leopard Gecko is usually more active and energetic so it is difficult to play. Leopard Gecko, which is male during lust, is more likely to be more aggressive than female.

c. After the Leopard Gecko is Purchased

If you have bought leopard gecko mainly online, it is recommended not to be directly invited to play or feed. After being placed in a cage that already has a hiding cave and several other materials, it is recommended to wait for 3 days and then you can be invited to play. For feeding, just wait 2 days after the leopard gecko until only 1-2 crickets can be given.

d. Leopard Gecko Cage

Basically, leopard gecko cages need components such as hiding caves, drinking places, feed bins, and cage mats. Every 2 days, the Leopard gecko cage must be cleaned as a whole, such as replacing paper or dolomite mats, cleaning the Gecko water and dirt bins, and replacing drinking water with a new one.

e. Gut load for Gecko Feed

After buying leopard gecko food, for example crickets, should not be immediately fed to the Leopard Gecko after the crickets have received Gut Load. According to Fakhri, the crickets

purchased are not necessarily well cared for by the seller so there is the potential to have congenital bacteria. This will cause digestive problems in Gecko from the crickets given. The solution of that is the use of Gut load, enough given to be consumed by the Cricket. After 6 hours from giving the gut load for the cicadas, it can only be fed to Leopard gecko.

f. Feeding

Before the feed is given, it must be wrapped with calcium powder to prevent the presence of MBD (metabolic bone disorder). There are two ways of feeding Leopard Gecko, namely by bribing or leaving in a cage. However, if Leopard Gecko does not eat crickets that have been placed in the cage for 2 hours, it must be taken back so as not to add bacteria.

3.4.2 Leopard Gecko Health Problems

For Leopard Gecko health problems, reported from a journal written by (Marie Kubiak, 2011) of Vet times. Common health problems for leopard gecko include parasites, dysecdysis, metabolic bone disease/secondary hyperparathyroidism nutrition, hemipene infections, autotomy, and egg binding.

3.4.2.1 Parasite

Parasites are known to be common in Leopard Gecko especially if it is not treated well enough. The listed parasites below is known to be some of the most common one.

1. Helminth

Oxyurids are often found in small amounts in Leopard Gecko feces and are rarely pathogenic. This problem should be treated immediately if the animal shows clinical symptoms and has a large quantity of pinworms in Leopard Gecko feces. Indications of Helminth are diarrhea, weight loss, anorexia, and reduced growth.

It should be noted that an increase in the amount of oxyurid may be indicative of concomitant health problems.

For such treatment, it is enough to give fenbendazole 25mg/kg per day for three days. Oral treatment is often not difficult because most Leopard Gecko will open their mouths if forced.

2. Cryptosporidium

Cryptosporidium saurophilum has been linked to epithelial hypertrophy of the small intestine in Leopard Gecko. Clinical indications include in a failure in growing and, diarrhea and usually rapid weight loss. The diagnosis is established by showing the organism on acid-resistant staining of feces or gastric rinses, or from intestinal histopathology.



Figure 3.9 Leopard Gecko with Cryptosporidia Disease
Source: https://en.wikipedia.org/wiki/File:Eublepharis_macularius1.jpg

Paromomycin can make a powerful remedy for such parasites, but unfortunately it is not available for general medicine and does not necessarily eliminate the disease.

3.4.2.2 Metabolic Bone Disease

Metabolic bone diseases (MBD) often appear in problems that exist in captive reptiles. If leopard gecko does not get enough calcium and vitamin D3, it will affect bone growth.



Figure 3.10 Leopard Gecko with MBD
Source: <https://youtu.be/T7X0yOpH57A>

MBD is a common pathology for leopard gecko where it is often treated in the absence of sufficient UVB lamps, vitamins, and calcium supplementation, or warm temperature administration. Leopard Gecko, which has health problems, can be seen in the growth of fragile bones and with a strange shape of the tail, back, and legs, looks weak, stiff, and has no appetite.

3.4.2.3 Dysecdysis

Dysecdysis is a common health problem, where leopard gecko cannot molt naturally. The young leopard gecko molts for 10 days in the rapid growth phase, and the mature ones molt every 6 to 8 weeks. Fluid from the body is also removed to change the skin from the old to the new. The skin that has been replaced will usually be eaten by his own leopard gecko.

If the disease appears, the replaced skin will usually be stuck on the legs of the leopard gecko so that it dries. Shrinkage and

constriction, causing avascular necrosis and loss of toes if left untreated. The treatment is to soak the part of the skin that is not detached and release the skin slowly.

3.4.2.4 Hemipene Infections

Hemipene infections can occur if hygiene in leopard gecko is not well maintained, and can also occur if you do not get enough vitamin A. This can create a swollen tail, lethargy, anorexia, and straining.



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