# Husbandry Manual
# For the
# Green iguana

## Iguana iguana

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Date of Preparation: 10/06/2008
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Course Name and Number: Captive Animals , 1068
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# TABLE OF CONTENTS

# OH&S Warnings

The green iguana can be classed as hazardous, a medium risk animal likely to seriously injure a person. The iguanas sharp claws and teeth could inflict a serious wound and its tail can be used as a whip that could damage a persons eye, the zoonotic disease salmonella is also carried by green iguanas .

There a number of things that could reduce the risks associated with the captive management of the green iguana these include:

- Getting the iguana use to human contact ( conditioning ) so it doesn't try to bite or scratch the keeper when being moved to examined
- The use of eye protection such as goggles or glasses so the iguanas tail cant do damage to the eyes.
- Washing your hands and anything that the iguana may have come into contact with. A weekly clean of the food and water bowls with bleach will stop the spread of the bacterium.

OH&S

Biological- the green iguana can carry zoonotic diseases such as salmonella which can be harmful to humans.

Chemical- the cleaning products that can be used to clean the iguana enclosure such bleach.

Ergonomical- design of the cage weather it be the door, bending down to enter

Physical- lifting up tools or other heaver equipment can put strain on your back which can lead to permanent damage.

Psychological- euthaniasing an animal an put some people under great amounts of stress

Radiation- If the iguana cage is situated outside then you are at risk from the suns UV rays

# 1 Introduction

Green iguanas are usually found over a water source and when disturbed can actually fall up to 40-50 ft t and crash into the water below and submerge themselves for several minutes while the threat passes. On the dorsal midline of the skull behind the eyes is a parietal eye. This sense organ, although not a true ‘eye,’ serves as a meter for solar energy, and aids in the maturation of sex organs, thyroid gland and endocrine glands ( Frye, 1995 ). The visual effect of this ’eye’ is mostly limited to the detection of predatory shadows from above.
The green iguanas tail can break if caught by a predator, but grows back without permanent damage. Though the adult green iguana has few natural predators apart from large cats and crocodiles.

Feral populations can be found in California, Florida and Hawaii. these populations consist of individuals that either escaped from captivity or were purposely released by their owners.these populations are actually harmful to the native species as they compete for food sources. It is illegal to own iguanas in the state of Hawaii, despite this feral populations do exist there.
Although some populations have suffered from poaching and collection for the pet trade, green iguanas are not considered a conservation risk at this time.

Annual Cycle of Maintenance

| | Jan | feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Breeding season | | | | | •••• | •••• | ••• | | | | | |
| Full clean of enclosure | ••• | | | | | | | ••• | ••• | | | |
| Add new hardware | ••• | | | | | | | ••• | | | | |
| Remove eggs to incubate | | | | | | | | ••• | ••• | | | |
| Add new plants | ••• | | | | | | | ••• | | | | |
| Routine health checks | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| Vet check-up | ••• | | | | | | | | | | | |
| Add egg lay substrate - section 10.10 | | | | ••• | ••• | | | | | | | |
| Breeding diet for females - 10.11 | | | | ••• | ••• | ••• | ••• | ••• | | | | |
| Sexing of hatchlings | | | | | | ••• | ••• | ••• | | | | |
| Eggs hatched | ••• | | | | | | | | | | ••• | ••• |

## 1.1 ASMP category

Cites II- the species is not necessarily threatened with extinction, but trade must be controlled in order to avoid utilization incompatible with their survival. In Latin America green iguanas are eaten as a food source
The green iguana is listed as VPC 3a
ASMP Reptile & Amphibian TAG the green iguana has no regional program and is at management level 3 ( which is the lowest level of management )

**1.2 IUCN category-** The green iguana is not listed on the IUCN list as it is not an endangered species

**1.3 EA category-** As the green iguana is a foreign species it is not on the EA category.

**1.4 Species co-ordinator-** species contact vacant. ARAZAPA

**1.5 Studbook holder-** EAZA studbook keeper- Rudolf wicker - Frankfurt

# 2 Taxonomy

## *2.1 Nomenclature*

**Class: Reptilia**
**Order: Squamata**
**Family: Iguanidae**
**Genus: Iguana**
**Species: Iguana iguana**

## *2.2 Subspecies*

*Iguana iguana rhinolopha*

## *2.3 Recent Synonyms*

No recent synonyms have yet been found for the green iguana.

## *2.4 Other Cmmon Names*

Common Green iguana or the Giant iguana

# 3 Natural History

## *3.1 Morphometrics*

### *3.1.1 Mass And Basic Body Measurements*

Weight: Green Iguanas usually weigh anywhere between 4.5 to 8 kg, averaging 7 kg but have been known to weigh as much as 18 kilograms.

Length: Green Iguanas Grow to around 1.6-2m in length with their tail taking up almost two thirds of their body length.
Hatchlings range in size from 17-25 cm.

### *3.1.2 Sexual Dimorphism*

(in size and/or mass, if species has a wide latitudinal distribution include measurements of body mass at different locations)

### *3.1.3 Distinguishing Features*

- Juveniles are a bright green colour, but as they grow, can range in colour form a dull green to brown or even orange with striped tails.

- Flap of fleshy skin under the chin called a Dewlap, being more prominent in adult males.

- A dorsal crest made up of spines that run from the mid neck to the base of the tail.

- Black bands from the base to the tip of the tail

## 3.2 Distribution and Habitat

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Green Iguanas occur throughout central and south America, from Sinaloa and Vera Cruz, Mexico south to the tropics of Capricorn in Paraguay and south east Brazil. This large lizard also inhabits many islands throughout the Caribbean region and the coastal eastern Pacific, and has been introduced into southern Florida and Hawaii. Green iguanas live in tropical rainforest, generally in lower altitudes in areas near water sources such as rivers or streams. They spend most of their time high in the forest canopy basking in the sun.

Fig 3. Distribution Map of the Green igunana


- Females migrate to clearings in the forest to the same nesting site for several years in a row then travel back to their home range once they have laid their eggs. Hatchlings may disperse over a large distance as well (Alberts et. al., 2004).

## 3.3 Conservation Status

The green iguana is a popular pet on the American pet trade and a food source in Latin America, for these reasons the green iguana is listed on the CITES appendix II, meaning that they are not endangered but their trade must be controlled as to not harm the species in the future. (6 )

## 3.4 Diet in the Wild

Green iguanas are strictly herbivorous, though they may occasionally ingest bits of carrion or an insect perched on a leaf, this animal consumption is accidental it is not a conscious choice (John Iverson (Adaptations to Herbivory in Iguanine Lizards),

. They occasionally eat small amounts of carrion or invertebrates. Green leafy plants or ripe fruit are their preferred diet.

Most digestion occurs in the sacculated colon, where microflora breakdown the cellulose ( Frye, 1995 ). Microflora are essential for hind-gut digestion of the hard to digest diet of this species. Hatchling iguanas are inclined to eat faeces from adults, which may be an adaptation for acquiring this much needed microflora, this microflora breaks the food down and makes it available for absorption this process usually lasts for only 1-3 weeks . Hatchling green iguanas are known to also eat soil from inside their nest chamber, the microbes present in the soil may assist in the breakdown of the tough plant matter that will become their staple diet ( 7 ).

iguanas require a high amount of dietary protein in their first two to three years for adequately fast growth. During this time period, young iguanas may consume insects and spiders. Older iguanas that have reached close to maximum growth may consume a low phosphorous, high calcium, leafy diet for their maintenance requirements.

Low environmental temperatures inhibit an iguana's appetite and digestive enzymes. Iguanas may cease eating prior to or during skin shedding. Females may also refuse to eat during later stages of egg development. Individuals who are stressed or in a new environment may also refuse to eat.

## 3.5 Longevity

### 3.5.1 In the Wild

Green iguanas in the wild are thought to live for only around 8 years

### 3.5.2 In Captivity

In captivity Green iguanas can live for more than 20 years if properly cared for and given the rite diet.

### *3.5.3 Techniques Used to Determine Age in Adults*

It is difficult to determine the age, as different food intake ie: insects rich in fat and calcium, judges how fast the iguana grows.

The table below shows the size and weights that a properly fed green iguana should be.

| End of Year: | SVL (Centimetres): | STL (centimetres): | Wgt/Kg: |
|---|---|---|---|
| Hatchling | 6.3 - 8.9 | 15.25 - 22.9 | .090 |
| 1 | 20 - 22.8 | 50.8 - 68.6 | .45 - .68 |
| 2 | 28 - 30.4 | 71.12 - 91.44 | .90 - 1.8 |
| 3 | 30.4 - 35.5 | 76.2 - 106.7 | 1.8 - 2.7 |
| 4 | 35.5 - 40.6 | 89 - 121.9 | 2.3 - 3.6 |
| 5 | 45.7 - 50.8 | 114.3 - 152.4 | 4.5 - 6.8 |
| 6 | 50.8 - 55.9 | 127 - 167.65 | 6.35 - 8.16 |
| 7 | 50.8 - 61 | 127 - 182.9 | 6.8 - 9.1 |

SVL- snout to vent length
STL- Snout to tail length

# 4 Housing Requirements

## *4.1 Exhibit/Enclosure Design*

Green iguanas prefer to be up high resting on a horizontal branch rather that clinging to a vertical cage wall. Green iguanas should be offered plenty of horizontal branches of differing widths to allow them to bask on a branch that best suits at that moment. Chicken wire is not suitable for housing larger green iguanas as it can cause injury to the iguana as it rubs its nose and toes, being very persistent they will look for a weak spot in the side and try to escape they can spend a long time in one spot eventually breaking the wire, and that's when they can injure themselves.
As green iguanas are arboreal creatures they prefer to be high of the ground, ensure that in the enclosure there are plenty of branches above head height so the iguanas can look down on passers by. From personal observations juveniles do spend a proportion of their time on the ground.

juvenile iguanas may be housed in groups but as they mature the males may become more aggressive and territorial and may need to be separated, females can also become territorial as they mature, for juveniles be sure to provide plenty of places that they can get away from each other such as logs and thick shrubs as iguanas use visual displays to intimidate each other, if they cant get out of sight it can cause stress to the iguanas.
If the iguanas are to housed indoors ensure that the enclosure in large enough to ensure that the iguana can display a range of natural behaviours. Iguanas will become distressed if their enclosure is too small.

Ensure that there are no small spaces that the young iguanas can lodge them selves in as they can be difficult to get out, also ensure that when extracting iguanas from small places that you don't pull on their tail to get them out as their tail can break off.

If natural plants are to be added ensure that they are not toxic to the iguana. If they are plants from the iguanas natural habitat make sure that the iguana doesn't kill the plant off by eating too much of the leaves.

## *4.2 Holding Area Design*

The temporary holding enclosure should have a minimum floor space for two iguanas at 1.5 times the length by 1.5 times the length, the length comes from the longest specimen that is to be held .they can be provided with a platform such as the one below to rest on. Water and food should be provided.

## 4.3 Spatial Requirements

Minimum floor area for two specimens should be 2.5 times the length by 2.5 times the length of the largest specimen. For each additional specimen over one or two specimens added the floor space must be increased by 20%.
The enclosure must have a minimum height of 4 times the snout-vent length or 60 cm
The enclosure must be large enough to provide a temperature gradient that allows the iguana thermo regulate. The enclosure must be large enough to allow the iguana to exhibit a range of natural behaviours.


## 4.4 Position of Enclosures

When housing iguanas in an outdoor enclosure make sure that the enclosure is facing the north as this ensures that the iguana will be able to bask in the sun and gather essential UV.

## 4.5 Weather Protection

Green iguanas that are being kept outside should have a semi open enclosure so that it can escape from the wind and rain but also have access to the sun light to bask.
If the iguana is being housed in an area that has a cold winter then a heat box or light can be added to the exhibit to ensure that the iguana is getting enough heat.

## 4.6 Temperature Requirements

For housing iguanas indoors the enclosure the temperatures requirements are similar, and can be kept at temperatures of around 25-30 degrees Celsius, the heating should be at one of the enclosure so there is temperature gradient and allows the iguanas to be in a spot that suits them. If they are to be housed outdoors then they can have a hollow log with a heat lamp inside so when they are cold they can move inside the log and warm up. Green iguanas can withstand the outside temperatures of Australia even though they may come close to 40 degrees as if is a similar temperature to where they naturally come from. From my own work place experience green iguanas can be kept out side without heating, as long as they can access the sun to bask and warm as it rises . During winter they may have to be brought indoors. As winter might get too cold depending on the area they are housed in.

## *4.7 Substrate*

Iguanas will tongue lick their surroundings. This behaviour allows them to gather and analyse information about their environment. Because of this behaviour substrate such as wood shavings, mulch, sand, or powder type substrates are not appropriate. Anything that sticks to the tongue will be ingested, including indigestible substances that can cause impaction on their digestive tract. It is recommended that materials such as; newspaper with non-toxic ink, plain butchers paper, paper towels and pieces of indoor/outdoor carpet artificial carpet, peat moss or moss.

## *4.8 Nest boxes and/or Bedding Material*

A thick branch high in the enclosure surrounded by leaves or other branches for the iguana to rest on during the night is sufficient for its bedding material. You can make a nest box out of a bin turned on its side and filled with soil or sand fo the females to lay their eggs in.

## *4.9 Enclosure Furnishings*

- As green iguanas are arboreal creatures they need plenty of sturdy vertical or horizontal branches of various sizes to climb and bask on .The branches should be as wide as the width of the iguana, and must be properly securely

- Flat bottomed rocks are a good addition as they wear down the toenails, which in captivity need to be clipped.

- Water is one of the most secure refuge for iguanas so a pond should be added to the enclosure to allow it to submerge itself if felt threatened.

- During breeding season ensure that there is plenty of sand or soil for the females to lay their eggs in.

- If the iguanas are to be housed indoors and space is limited then you can add a large box or garbage bin laid on its side and filled with the desired nesting material

- Plenty of green vegetation and vines for young iguanas to hide amongst

- Plants endemic to the iguanas habitat such as hibiscus which the iguana will eat can be planted in the enclosure.

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# 5 General Husbandry

### *5.1 Hygiene and Cleaning*

Green iguanas enclosures need to be spot cleaned on a daily basis, which is done by water bowls are removed and given a clean with detergent and warm water and once a week the food bowls disinfected and sterilised to stop the spread of disease. The cage is given a full clean at least once a week by wiping down all the walls furniture and removing any damaged or foul substrate. very important to properly dilute the solutions before use.

## *5.2 Record Keeping*

- The common health problems that are found in Green Iguanas include :
  1. Nutritional bone disease.
  2. Salmonella.
  3. Gout.
  4. Hypothyroidism/Goiter.
  5. Kidney disease/Failure.
  6. Stomatitis (mouth rot ).

- Vet examinations might include nail clipping, if the animals is suffering form a known disease and needs treatment, recently hatched young get a check up, pregnant females.

- Some Iguanas that are housed in enclosures that are too small might try and fight the cage, that is find a weak spot to escape, which might result in nose wounds and broken claws, which indicate the iguana has been scratching at the walls of the enclosure or rubbing its nose along the glass.

- Most Green Iguanas reach sexual maturity between three and four years of age, and breed annually. Iguanas tend to breed in the dry season. Gestation period ranges from 59 to 84 days averaging around 65 days, with an average number of offspring averaging 10-30 but can reach as high as 65.
  The courtship behaviour of male Green Iguanas include head bobbing, extending and retraction of the dewlap, and nuzzling or bitting of the females neck (Frye, 1995). Dominant males may also mark rocks, branches and females with a waxy pheromone-containing substance from their femoral pores. Incubation of the eggs lasts from 90-120 days.

- Diet is related to age. The young, with higher need for protein, are more likely to consume insects and eggs than mature Green Iguanas. Young and adults get a mix of finely chopped green vegetables such as mushrooms, fig, carrot and squash.

- Cage cards display the animals name and where they have been moved to and at what time and date were they moved.

- Weighing once a week to see if the animal has been gaining or loosing weight over a period of time, which van help tell weather the correct diet is being given.

## *5.3 Methods of Identification*

The Method of identification for the green iguana is the injectable microchip as it is permanent and can't be lost. . Temporary ID methods include a dab of nail polish on the back or liquid paper.
A simple method of identifying green iguanas is by their size, colour body markings and the shape of their body.

## *5.4 Routine Data Collection*

The green iguanas should be weighed and have its snout to vent length (SVL) measured once a week, a graph can be drawn up to get an easier look at how the iguana is growing in size and can be compared to other captive Green iguanas.
How much food was eaten and what the diet consisted of. Quantity of stools found, if fewer than normal stools are found that could indicate a problem with bowl or digestive movements, or could indicate a blockage which should be treated seriously.

# 6 Feeding Requirements

The amount of food to be fed depends on the amount of iguanas that are present in the enclosure, a good way to find how much to feed is to make up a big amount for the newly arrived iguanas and see how much gets eaten, then base all future feeds on how much the iguanas ate ‘taking note of how much food there was to start with’ if none was left then add more to the next feed until the desired quantity is found .

## *6.1 Captive Diet*

A captive diet comprises of a basic salad containing vegetables, alfalfa and fruit mix. It is made from fresh, raw vegetables including at least one green and one orange vegetable, parsnip and alfalfa ( for protein and colour ), and a fruit ( for moisture and colour ) the basic salad provides a significant amount of protein, calcium and fibre iguanas require.

- Green Vegetables

  For the green vegetables, use whole fresh green beans, snap or snow peas remember to chop the pieces small enough for a lizard to swallow whole. To vary the flavour and smell, you can occasionally throw in a small amount of broccoli, bok Choy and Brussels sprouts.
- Orange vegetables.

  For the orange vegetables, concentrate on the winter squashes, these are the squashes that, when cut open, reveal their deep-to-pale orange flesh, which include acorn banana, pumpkin, and turban. Two squashes that are not suitable for anything else other than an occasional treat are cucumbers and zucchini. Both lack good nutrition. Carrots and sweet potato can also be fed, but that contain oxalates, so use them occasionally

  Other vegetables that can be fed to an iguana are mushrooms, capsicum , onions, other root vegetables, star fruit and asparagus.
- Fruit.

  Fruit is used more for its colour and moisture than it is for is contribution to the overall salad. Many types of fruits are available for the salad: raspberries, blueberries, mulberries, strawberries, pears, plums, mangoes, papayas, cherries, apricots, prickly pear cactus and kiwi fruits are all good fruits.

  Fruits should be finely chopped and mixed in with the vegetables. Fruits suitable for occasional treats include banana (high in phosphorous), star fruits (high in oxalates), melons, berries and grapes. If the grapes have large seeds remove them before serving. Do not feed banana skin and melon skin, as the skin is sprayed with a fungicide to retard mould growth on the skin. Do not feed papaya, apple, plum, peach, nectarine or other seeds. The tiny seeds in berries and bananas are fine.

Below are two commercial diets that are available to feed green iguanas.

**Rep-Cal Iguana Food -**
**Ingredients Information:**
Main ingredients include corn, soybean, and wheat. Apple, dried fruit and artificial colour are also listed.
**Nutritional information:**
Adult: 16% protein (min), 18% fibber (max), 1% fat (min), 12% moisture (max)
Juvenile: 24% protein (min), 16% fibber (max), 1% fat (min), 12% moisture (max)
**Comments:**
Although this food has corn for a main ingredient, and also contains artificial colours, the protein and fibber contents are good, and the inclusion of apple and other dried fruits make this an acceptable choice for occasional use. This food comes highly recommended by many iguana owners. Iguanas that are hesitant to eat due to illness will often readily accept Rep-Cal.

**ZooMed Soft-moist -**
**Ingredients Information:**
These formulas have alfalfa as the #1 ingredient, and also contain lima beans, collard and mustard greens, and kale. In addition, they contain no artificial colours or flavours.
**Nutritional information:**
Adult formula: 14% protein (min), 18% fibber (min), 4% fat (min), 14% moisture (max)
Juvenile Formula: 24% protein (min), 14% fibber (max), 6% fat (min), 14% moisture (max)
**Comments:**
The lack of artificial colours and flavours is a plus, the use of alfalfa and dried greens is desirable, and the fibber content is good.

## Basic salad Recipe

While the proportions of food types remain the same, the actual amount of food you make will increase as your iguana grows bigger and consumes a greater quantity of food. The following recipe makes approx 3.5 cups of basic salad.

- ½ cup shredded green beans
- ½ cup shredded squash
- 1 medium parsnip, shredded*
- ¼ cup minced fruit
- Alfalfa**
- Multivitamin and calcium supplements

**Fig.**5 Below is a chart explaining what types of food to feed the green iguanas and a percentage of how much . ( Eg.: 40% of the diet should consist of green vegetables.

| Category of good food types | Food |
|---|---|
| **Greens** (40-45%) | **Endives, chicory Collard greens, turnip greens, mustard greens, dandelion greens (with flowers), escarole, water cress.** |
| **Other vegetables** (40-45%) | **Green beans, orange-fleshed squashes (butternut, Kabocha), snap or snow peas, parsnip, asparagus, okra, alfalfa (mature, *not* sprouts), onions, mushrooms, bell peppers, sweet potato, zucchini, yellow squash, carrots.** |
| **Fruits** (10% or less) | **Figs (raw or dried), blackberries, strawberries, raspberries, grapes, mango, melon (cantelope, honeydew, watermelon), papaya, banana, apple.** |
| **Grain-based foods** (less than 5%) | **Cooked rice or pasta, whole wheat bread (makes for a great treat)** |
| **Supplemental protein** (less than 5%) | **Alfalfa pellets (rabbit food) or recommended commercial diets** |
| **Foods that should never be fed** | **Eggs, dog or cat food, meat, dairy products, insects**, |

Below is a selection of food that can be fed to Green Iguanas and the nutritional value of each. As shown on the Green Iguana Society website.

| Food | Photo* | Information<br>Ca:P - Calcium: Phosphorus, Pro - Protein |
|---|---|---|
| **Acorn squash** |  | Good source of fiber. Rind should be discarded. Core and finely chop or shred.<br>**Ca:P** 0.9:1 , **Pro:** 0.8%, **Fat:** 0.1%, **Water:** 88%, **Fiber:** 1.5%<br>**STAPLE VEGGIE** |
| **Alfalfa** |  | **STAPLE** |
| **Apples** |  | Should be peeled, cored and finely chopped or shredded.<br>**Ca:P** 0.6:1 , **Pro:** 0.15%, **Fat:** 0.3%, **Water:** 84.5%, **Fiber:** 1.9%<br>**OCCASIONAL** |
| **Asparagus** |  | Very good source of protein. Should be finely chopped or shredded.<br>**Ca:P** 0.38:1 , **Pro:** 2.3%, **Fat:** 0.2%, **Water:** 92%, **Fiber:** 2.1%<br>**OCCASIONAL** |
| **Bananas** |  | *Only* on occasion. Peels may also be fed, but only if they were organically grown.<br>**Ca:P 0.3:1** , **Pro:** 1%, **Fat:** 0.5%, **Water:** 75%, **Fiber:** 2.4%<br>**OCCASIONAL** |
| **Beets & beet greens** |  | High in oxalates, so it should *only* be fed occasionally. Beets should be finely chopped. Greens are best when cut into larger pieces or strips. Stems should be finely chopped or discarded.<br>Beets: **Ca:P** 0.4:1 , **Pro:** 1.6%, **Fat:** 0.17%, **Water:** 87%, **Fiber:** 2.8%<br>Beet greens: **Ca:P** 3:1 , **Pro:** 1.8%, **Fat:** 0.06%, **Water:** 92%, **Fiber:** 3.7%<br>**OCCASIONAL** |

**Bell peppers**

Great for adding color and variety. This catagory includes red peppers, green peppers and other bell peppers. Should be cored and then finely chopped or shredded. (Nutritional information based on red peppers, but most other bell peppers are reasonably close to the same.)
**Ca:P** 0.5:1 , **Pro:** 0.9%, **Fat:** 0.2%, **Water:** 92%, **Fiber:** 2%
**GREAT TASTE/COLOR ENHANCER**

**Blackberries**

Great for treats and regular part of fruit content.
**Ca:P** 1.5:1, **Pro:** 0.7%, **Fat:** 0.4%, **Water:** 86%, **Fiber:** 5.3%
**OCCASIONAL**

**Bok choy**

Also known as or equivalent to Chinese cabbage, bok choi, pak choi, and various other names. High in goitrogens. Cut green portion into large pieces or strips. White portion may be discarded or finely chopped.
**Ca:P** 2.8:1, **Pro:** 1.5%, **Fat:** 0.2%, **Water:** 95%, **Fiber:** 1%
**OCCASIONAL**

**Broccoli**

High in oxalates and goitrogens and should *only* be fed on occasion. Cut into very small pieces or shred. Leaves can also be offered.
**Ca:P** 0.7:1 , **Pro:** 3%, **Fat:** 0.4%, **Water:** 91%, **Fiber:** 3%
**OCCASIONAL**

**Brussels Sprouts**

High in goitrogens and should *only* be fed on occasion. Should be finely chopped or shredded.
**Ca:P** 0.6:1 , **Pro:** 3.3%, **Fat:** 0.3%, **Water:** 86%, **Fiber:** 3.8%
**OCCASIONAL**

**Butternut squash**

Very good staple vegetable and excellent source of fiber. Should be peeled, cored and finely chopped or shredded.
**Ca:P** 0.6:1, **Pro:** 1.2%, **Fat:** 0.2%, **Water:** 94%
**STAPLE VEGGIE**

## *6.2 Supplements*

According to Melissa Kaplan , the amount of calcium and vitamin supplements will vary depending upon the quantity of food you are serving as well as the iguanas health and age. The rule of thumb, however unscientific it is, is to mix into the basic salad a pinch of the vitamin powder, *refer to table 6*. If you need to at this time, it is recommended that you add the thiamine supplement and mix that into the basic salad as well.

**IGUANA AGE & HEALTH STATUS MULTIVITAMIN/WEEK CALCIUM/WEEK**
**Table. 6**

| Iguana Age & Health Status | Multivitamin / Week | Calcium / week |
|---|---|---|
| Less than 1 year old | 4-5 x | 7 x |
| 1-2 years old | 3-4 x | 5-6 x |
| Over 2 years old | 2-3 x | 4-5 x |
| pre-breeding and gravid | 2-3 x | 5-6 x |

- Another supplement that iguanas need and might not be able to aquire it if enclosed indoors is U.V, in that you can add a U.V light to their enclosure to suppement their needs, or the iguanas can be placed in a sunning cage outdoors for a couple of hours a day to allow the iguanas to bask in the sun.

Figure 7 : Repti-Vite is a concentrated multi vitamin, mineral amino acid supplement for all reptiles and amphibians. Repti-Vite is formulated to provide balanced levels of vitamins, minerals and amino acids to ensure correct utilisation of proteins and other essential nutrients for growth, reproduction and maintenance of health. Simply mix vegetables, fruit or insects before feeding.

Figure7.1: Repti-Cal is a phosphorous free, calcium & vitamin D3 supplement for reptiles and amphibians. Calcium deficiency is a major problem with captive reptiles and amphibians. Maintaining a correct calcium phosphorus ( Ca: P ) ratio in the diet of 1:1 to 1:5:1 is equally important nutritionally as adequate calcium intake. Repti-Cal assists in balancing the Ca:P ratio by providing a natural phosphorus free calcium source together with vitamin D3 to assist in absorption form the intesti tract.


***Fig.7***


***Fig 7.1***

of 1:1 to 1:5:1 is equally important nutritionally as adequate calcium intake. Repti-Cal assists in balancing the Ca:P ratio by providing a natural phosphorus free calcium source together with vitamin D3 to assist in absorption form the intesti tract.

### *6.3 Presentation of Food*

To feed the leafy greens roughly chop them up and put in a dish, place it in the enclosure somewhere that is easily accessible by the iguanas and other keepers .Another good way to feed their leafy greens is to hang them up around their enclosure which provides a more of a natural feeding behaviour. Hibiscus flowers hung around the enclosure allows the iguanas it forage.

# 7 Handling and Transport

## 7.1 Timing of Capture and Handling

If the green iguanas are kept outside without overnight heat then the early morning would be the best time to catch them, as iguanas absorb heat from the sun they become more active lessening your chance of catching them as the day heats up. If the iguanas are kept overnight with a heat source then there isn't really any good time to catch them up as they will have sufficient energy to out maneuver a keepers swift hands.

## 7.2 Catching Bags

If catching bags are to be used they should be made from material that has no loose material and should be placed inside out so the iguana doesn't get its claws, head or tail caught and cause damage.

## 7.3 Capture and Restraint Techniques

Green iguanas instinct is to hang onto whatever they are currently resting on as tightly as possible when they see you reach for them. For this reason, its important that you pick the iguana slowly and gently. Do not quickly yank it off its perch without loosening the grip on each foot. Doing so risks yanking out claws or otherwise hurting your iguana.

To actually pick up the iguana, approach it from the side so that it can see you coming. use one hand to loosen the grip of the front feet while at the same time, use your hand to loosen the back feet. Once your iguanas grip is loosened, slip one hand under the front shoulders and the other under the back legs and lift your iguana off its perch be mindful of its long tail, and be sure you don't bend it or wrap it on something as you manoeuvre your iguana around .

The dangers associated with the capture and restraint of iguanas are the risk of bites and from their peg like teeth, scratches from their sharp claws and getting wiped from their long tail.

## 7.4 Weighing and Examination

From my own experience iguanas can be weighed on a pair of digital kitchen scales. A bucket can be placed on the scales and tared off the iguanas can then be placed in the bucket on at a time with each weight recorded.

## 7.5 Release

To release the iguana from the box place the box in the enclosure that is it is being released into unscrew the end or lid of the box picking up the iguana ensuring that you don't injure the iguana or sustain an injury and place the iguana on a branch.

If the iguana has been transported in a bag, place one hand at the base of its head and hold firmly, with the other hand place it inside the bag and hold the base of the iguanas head, release the outside hand remove the bag, gently placing the iguana in a log or branch.

## *7.6 Transport Requirements*

The container must be adequately ventilated with the openings small enough to prevent the escape of the animal.
Mesh covering of the ventilation holes must be attached to the inside surface of the outer container wall. Care must always be taken that the transport containers are not exposed to either extreme hot or cold conditions as they have a lower tolerance to temperature fluctuations.

The container must be correctly labelled and marked with consignees name address and telephone number. Labels must not block ventilation holes.
The container must be marked with “LIVE ANIMAL” and have “THIS WAY UP” labels placed on all four sides and have reptiles and amphibians noted on “LIVE ANIMAL” label.

Reptiles are highly dependant on the ambient temperature, they mush be immediately removed from areas of very high and low temperatures to a location of nothing below 7 degrees C. and nothing above 29 degrees C. The location should be free of drafts, out of direct sunlight and be sheltered from physical vibrations and noise.

### *7.6.1 Box Design*

When constructing containers for shipment of reptiles or amphibians, the normal habits must be considered.

For general transport purposes, these species will be carried only in closed and adequately ventilated containers, the container must be well constructed and be able withstand other freight damaging it or causing the structure to buckle or collapse. It must be constructed of non-toxic materials. Chemically impregnated wood may be poisonous and must not be used.

Fig 8.  Below in a example of a container that can be used to house a single green iguana during transport.

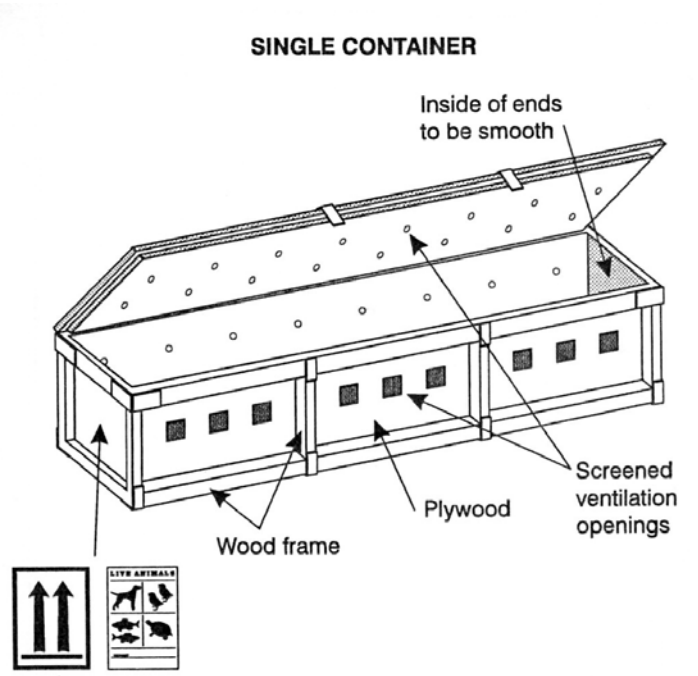



Fig 8.1 show how to transport a green iguana in a bag. The piece of wood helps keep it off the ground so it doesn't knock about too much.

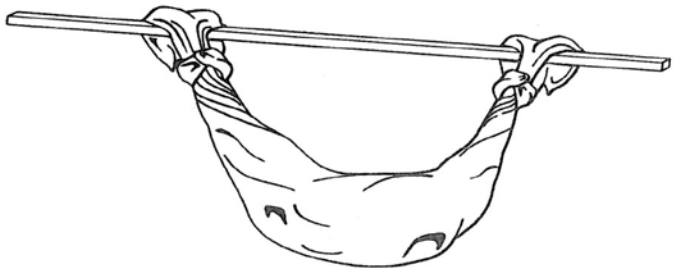
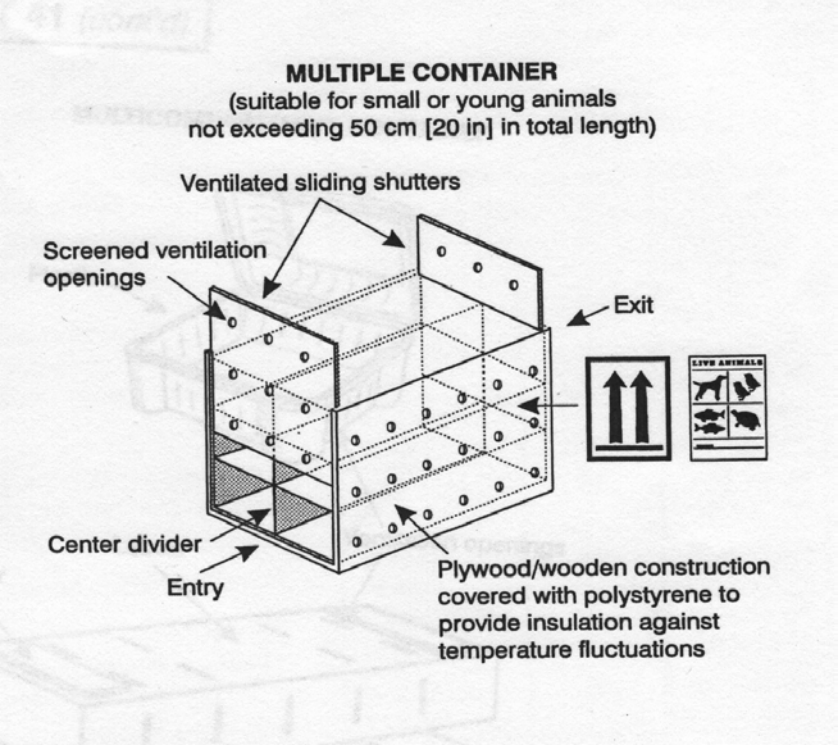


Fig 8.2 is an example of a container that can house multiple iguanas during transport.




The container must be suitable to keep the species inside at all times and protect it from unauthorised access. The door or lid must be constructed so that accidental opening cannot occur, either from the inside or outside.

The container must not cause injury to the animal. All inside edges must be smooth or rounded. There must be no sharp projections such as nails upon which the animal can injure itself.

The container must be clean and leak-proof. If it is to be reused, the container must be thoroughly cleaned and then either disinfected or sterilised prior to reuse. Absorbent bedding that is suitable for the species must be provided.

### 7.6.2 Furnishings

As recommended by IATA all containers and bags should have some kind of packaging material such as crumpled paper inside to stop the movement of the animal during transportation

### 7.6.3 Water and Food

The need to feed or water these species during the normal transport time must not arise. Under severe delay and under certain circumstances watering may be recommended if advised by a specialist. Which can be given to the iguanas via a damp sponge to allow the iguanas to lap the moisture from the sponge or ground.

### 7.6.4 Animals per Box

Since Green iguanas are usually in good condition, free of diseases and used to handling the use of following special packing density is allowed. refer to figure to figure.8.

| Snout-vent-length (SVL) | Maximum no. of animals per bag/box | Minimum bag size | Minimum box size |
|---|---|---|---|
| > 25 cm (10 in) | 1 | Depending on the size of the animal | — |
| > 20 cm (8 in) | 6 | 45 × 85 cm (18 × 34 in) | — |
| > 17.5 cm (7 in) | 6 | 30 × 60 cm (12 × 24 in) | 20 × 40 × 9 cm (8 × 16 × 3⅜ in |
| > 12.5 cm (5 in) | 20 | 30 × 45 cm (12 × 18 in) | 20 × 40 × 6.5 cm (8 × 16 × 2⅜ in |
| > 10 cm (4 in) | 30 | 30 × 45 cm (12 × 18 in) | 20 × 40 × 4.5 cm (8 × 16 × 1¾ in |
| > 8.75 (3.5 in) | 40 | 30 × 45 cm (12 × 18 in) | 20 × 40 × 4.5 cm (8 × 16 × 1¾ in |
| 0–8.75 cm (3.5 in) | 50 | 30 × 45 cm (12 × 18 in) | 20 × 40 × 4.5 cm (8 × 16 × 1¾ in |

### 7.6.5 Timing of Transportation

the best time to transport green iguanas would be in the early morning or in the afternoon, the reason for this is to avoid the heat of the sun on the transport bag or box, as the iguanas are reptiles and can’t sweat to cool down prolonged exposure to the heat of the sun can severely injure the iguana by over heating it, transporting them in the morning or afternoon minimises the iguana heat exposure.

### *7.6.6 Release from Box*

When releasing the iguana from the box place the box in the enclosure and unscrew the end of the box and let the iguana leave the by itself. If the iguana has been transported by a bag grab it from the outside around the head place your hand inside the bag place your hand around its hear remove the outside hand and pull put the iguana then place it on a log or vine.

# 8 Health Requirements

In order for green iguanas to display normal healthy behaviour they need sufficient sun light to bask in to absorb the suns UV rays and to properly digest food.

## *8.1 Daily Health Checks*

- All limbs are moving freely and are free from injury
- The eyes and nose are clear and free from any discharge
- Is all the food eaten from the last feed
- The colour of the faeces, is it normal, does it smell
- Is there any discharge coming from the cloaca
- Is its demeanour normal or different from the usual
- Is it breathing properly, not labouring
- Is it having trouble urinating or defecating.

## *8.2 Detailed Physical Examination*

When picking up the iguana you should give it a thorough inspection.

- Starting at the head check the jaw can open and that there are no cuts or sign of blood
- Check the eyes see if they are open and not injured
- Down to its front legs. feel for any abnormal bumps check its toes
- Check its abdominal region for and cuts or bumps
- Check the back legs for any breaks or bumps
- Check the cloacal vent
- Check the tail for any signs of breaks

### 8.2.1 Chemical Restraint

Chemical restraints are not regularly used in reptiles the more popular restraint used is physical restraint as described in the capture and restraint techniques 7.3 of handling and transport section earlier.

### 8.2.2 Physical Examination

The joints are palpated to see if there is any inflammation of the joints resulting in gout, checking the condition of the teeth eyes and cloacal vent, checking the tail for lumps or breaks.

## *8.3 Routine Treatments*

Routine treatments that are carried out include regular faecal inspection test for the presence of parasites in the body such as tapeworm. Regular inspections for reptile mites on the iguana and in and around its enclosure, and regular checks for ticks.

## *8.4 Known Health Problems*

## ***Parasites***

***Ectoparasites***:

- Ticks:

Member of the arachnid family. They attach themselves to a host, pierce the skin with their mouth parts and feed off the hosts blood. Ticks may also transmit other diseases.

Symptoms:

Symptoms include excessive scratching at particular areas, shedding problems, strange or damaged looking scales and visible ticks most often seen around the eyes, arm pit in the soft skin and around the vent.

Treatment;

Pulling the tick out is the easiest and safest way of eradicating ticks from green iguanas.

- Mites

As with ticks they attach themselves to the host and suck their blood

Symptoms:

Excessive scratching, shedding problems, damaged looking scales. The droppings may be visible as black dots around the eye, armpits , vent and soft skin folds.

Treatment:

Repti-guard Mite spray in figure 8.0 is a water based mite spray used to safely control mites on the lizard and in the enclosure.


**Fig 8.0**

***Endoparasites***:

- Protozoans
  Unicellular organisms that are larger and more complex than bacteria this group includes:
  - flagellates,
  - ciliates,
  - amoebae
  - non-motile forms

- Nematodes
  Unsegmented worms with bodies that are more circular in cross-section. This group includes pinworms.

- Cestodes
  Included in this group is the tapeworms, they are not as common in green iguanas as they are in other animals, but can be found.

## Symptoms:

Symptoms of internal parasites in Green Iguanas include:

- Loss of appetite
- Lethargy
- Mucus in the faeces
- Worms visible in the faeces
- Weight loss or no weight gain, despite having a good appetite
- Frequent, loose and/or smelly faeces.

## Treatment:

Take a sample of the iguanas faeces to the vet the be examined under a microscope for possible worms. Thoroughly clean and disinfect the entire enclosure, making sure that you remove any faeces from its exhibit as soon as they are spotted.
Some of commonly used worming products on the market to worm reptiles include Panacur, Piperazine and Ivermectin.

## ***Bacteria***

- Salmonella

  Of the 2000 species of the salmonella bacteria *S. choleraesuis* and *S. enteritidis* are the most frequent causes of salmonellosis, or salmonella gastroenteritis.

Symptoms:

There are no specific signs that an iguana has salmonellosis, so detecting it is difficult. The best way to deal with salmonella in Green iguanas is to assume that it is there, and act accordingly. A vet can culture the bacteria from the iguanas faeces, but the results may not be conclusive, as salmonella can be shed off periodically , meaning that if the iguana tests negative it may prove to be a carrier periods later

Prevention:

The simplest and beat way to stop the spread of salmonella from iguana to person is to wash your hands after you touch the iguana or anything that it may have come in contact with such as its food and water bowls and logs it may have sat on or rubbed against. The salmonella bacteria live in the intestine of the green iguana, when the animal defecates another iguana will walk through the faeces eventually liking the limb and swallowing the bacteria, infecting a otherwise healthy animal. To prevent that from occurring, a green iguana suspected of harbouring the salmonella bacteria should be isolated for a minimum of 40 days to assess weather the iguana is infected.

- Stomatitis: ( mouth rot )

  a secondary bacterial infection of the mouth tissue.

Symptoms:

- Early onset: Reluctance to feed and increased, thickened saliva
- Advanced stages: Yellowish-white, cheesy looking pus on or in the mouth, disintegration of mouth tissue, loose teeth

Treatment:

*Veterinary care is needed.* Some of the treatments the vet will give are:

- Flushing the mouth with Betadine
- Removing pockets of pus and/or dead tissue with a cotton swab or tweezers
- Treatment with systemic antibiotics, depending on what other infections are present, as the mouth rot will return if the infections aren't treated.

***Health***

- **Kidney Disease/ failure**-

  The kidneys might be damaged or are not functioning properly, resulting in a build up of toxins in the blood. And an imbalance of substances such as calcium and phosphorous.

Causes:

- Poor diet
- Chronic dehydration
- Long term antibiotic use

Or sometimes the cause is not known

Symptoms:

- Lethargy
- Weakness or difficulty moving
- Unable to use limbs
- Loss of appetite and weight
- Increased thirst ( due to dehydration )
- Thickened, yellow urates
- Constipation
- Swelling of the throat or abdomen

Treatment:

*Seek immediate veterinary treatment*. The iguanas can die in as little as one to two days after the first onset of symptoms. The vet may:

- Administer fluids ( orally or via injections such as sub-cutaneous )
- Reduce blood phosphate levels with phosphate binders
- Increase blood calcium level with calcium therapy
-

Prevention:

Proper vegetation- only diet, access to plenty of fresh drinking water, frequent misting of the enclosure, if the iguana is being kept in an enclosure in doors then proper humidity levels are required.

- **Gout**

inflammation and stiffening of the joints

Symptoms

include swollen and painful joints, swollen tissue such as around the eye, lethargy or inactivity, unhealthy looking skin or scales

Causes:

Too much protein in the diet, which leads to a build up of uric acid. Uric acid crystals lodge in the tissue of the joints, lungs, kidney and liver

Treatment:

*Veterinary treatment is necessary*. Changes to husbandry resumes, the use of medication or surgery may be needed, as gout is not curable. Gout causes permanent pain and disability to the iguana and in severe cases may even lead to death.

Prevention:

to prevent gout in Green iguanas the rite diet should be researched thoroughly to find what is the correct diet and quantity for the iguana.

## Hypothyroidism/ Goitre-

a condition that occurs when inadequate amounts of iodine are found in the body. Resulting in a swollen neck, known as goitre.

Symptoms:

- Lethargy, inactivity
- Chubby look to body
- Slow growth
- Easy-going temperament, even without a lot of handling or taming

Causes:

Too many goitrogens in the diet. Goitrogens are chemicals that interfere with the body's ability to utilize iodine. These chemicals are found in food like broccoli, cauliflower, cabbage, bok chow and Brussels sprouts.

Treatment:

if hyperthyroid occurs or is already present, reduce or eliminate the foods containing goitrogens. Iodine supplements are nor necessary.

Prevention;

Feed the foods that contain goitrogens in small amounts or give the them out as an occasional treat.

- Metabolic bone disease- Calcium deficiency

Metabolic bone disease also known fibrous osteodystrophy, and secondary nutritional hyperparathyroidism.

## Symptoms:

The first symptom of MBD to appear is frail easily broken bones. As the bones weaken, the body attempts to strengthen them by laying down fibrous connective tissue at the points of strain. This will often result in 'popeye' legs. The legs may feel bumpy to the touch. Breaks may result in twisted and crooked backs, toes and limbs, as shown in figure 8.1.

( 2 )

The iguana in this photo has a visibly bent spine, which is the result of a past case of MBD.

- Abscesses- puss filled cavity under the skins surface, caused by a bite or puncture. Abscesses should be treated by a vet. The wound is drained cleaned of puss, dead tissue fluid and any other substances. Then the iguana is treated with a course of antibiotics.

- Constipation- when the iguana has trouble defecating, straining during defecating or producing hard small faeces. Constipation is usually caused by a number of problems:
    - Not enough water in the diet
    - Not enough fibre in the diet
    - Temperatures are too low
    - Parasites
    - Infection
    - Blockage by a foreign object

  It can be treated by increasing the water and fibre in the diet raising the temperature in the enclosure, if the iguana doesn't improve in a day or two veterinary inspection of the iguana is needed. A build up of waste in the body can be deadly. The vet can check to see if there is an impaction or parasites.

The following are some other health problems that green iguanas are prone to:

- Dehydration
- Diarrhoea
- Dystocia ( Egg-bound )
- Impaction
- Nose rubs
- Overheating
- Prolapse
- Shedding problems
- Tail loss

## *8.5 Quarantine Requirements*

As the green iguana is a foreign species and is not endemic to Australia and could pose a risk to the native wildlife special permits are required to hold a green iguana.

Under the VPC listings the green iguana is categorised as 3a- *kept under permit for exhibit, education, entertainment or conservation* and is in the serious threat category.

New Green iguanas to a collection should be quarantined for a minimum of 40 days, during this period the iguana should be checked daily for any noticeable defects, regular checks for external parasites and faecal samples can be taken to check for any internal parasites that the iguana may be harbouring, during the quarantine period the new green iguana should not come into contact with any other reptiles as it may transfer on any parasites it may have.

# 9 Behaviour

## *9.1 Activity*

Iguana's like all reptiles are cold blooded. They are less active during the colder periods of the night, and become more active as the sun rises each morning. Iguana's will find a good branch to sit on to catch the available sun rays to warm their bodies up so they can then find some juicy leaves to eat. They will also sit in the sun to warm up to aid in the digestion of their food. ( 5 )

## *9.2 Social Behaviour*

Green iguanas in the wild will dispute mainly over basking sites, as there is a limited number of good perches that are fully exposed to the sun, which aids in the digestion of food. Behaviours that iguanas display include dewlap extension, head bobbing and colour changing. ( 5 )

## *9.3 Reproductive Behaviour*

Fighting between males in the wild is common, with males biting each other, injuries are quite rare as there is ample space for the Male Green iguanas to run and hide from more aggressive males.

During breeding males will begin to show behavioural changes such as an increase in head bobbing, an increase in territory patrolling and an increase in defending their territory. Mature male green iguanas male also attack people within their territory during breeding season, which can be quite dangerous, the attack can range from tail whipping to serious bitting, inflicting nasty injuries. As well as territorial behaviours, green iguanas also experience a loss of appetite, wild iguanas spend too much time breeding and defending their territory that they have little time to eat resulting in loss of body condition. ( 5 )

## *9.4 Bathing*

Iguanas live naturally near the water, and regularly use streams and rivers to move to different areas. Green iguanas will either dive in to the water from overhanging branches, or walk down to the edge of a stream and walk in.

Captive iguana's can be bathed daily, this not only helps improve the iguana's hydration status, but also helps during shedding, keeping the shedding skin soft and pliable, ensuring it detaches easily from the iguana. ( 5 )

## *9.5 Behavioural Problems*

One behavioural problem that green iguanas have is that they dig. Digging is normal for female iguanas, as they prepare to lay their eggs. It may be that the iguana is not comfortable with its environment, the enclosure may have to be re-built to suit the iguanas needs. Pacing is another problem that iguana's will do walking up and down the side of the exhibit, sometimes rubbing their noses so much that they cause their snout to bleed

## *9.6 Signs of Stress*

There are essentially three types of stress:

- Environmental stress relates to problems with lighting, heating, photoperiods, and exhibit furnishings

- Behavioural stress relates to changes in the iguana's daily routine

- Social stress relates to stresses in the social structure, which includes the human as well as any other iguanas with whom the iguana interacts.

Signs of stress in iguanas can include:

- Running away from familiar keepers
- Hiding
- Loss of appetite
- Sudden darkening of the skin ( not related to normal shedding )
- Erratic defecation
- Changes in sleeping patterns.
- An increase in internal parasites due to a lack of immune responses
- Pale mouth tissues.
- Visible weight loss

( 1. )

## 9.7 Behavioural Enrichment

Green iguanas spend the majority of their time basking in the sun high up in the trees. Green iguanas in captivity should be provided with plenty of branches ranging in sizes and ranging in height in the exhibit to allow the iguanas to bask in the sun and feel secure as they are further away from predators. ( 5 ), ( 1 )

## 9.8 Introductions and Removals

When keeping more than one iguana together, introduce the new iguana to the established one in a neutral territory. Do not put the new iguana directly into the established iguana's enclosure. This is seen as a direct threat to the established iguana's territory and that iguana especially if both are males, will attack the newcomer.
Do not introduce a new male iguana during breeding. Even if they cant physically see each other chances are that the established iguana will know that there is an intruder in his territory. They can pick up senses such as the smell of the other iguana. ( 5 )

## 9.9 Intraspecific Compatibility

Wild green iguanas by nature live in large populations with one or sometimes many dominant or subordinate males controlling parts of the group and challenging each other for hierarchy. Green iguanas will live together in captivity if they have a large enough enclosure to provide enough hiding space for less dominant iguanas mature green iguanas especially males may become aggressive and territorial so they may have to be separated. The size of the iguana is another concern, housing larger iguanas with smaller ones may intimidate the smaller one, which may not be able to eat, drink sun on a good log or move anywhere. Or the same as keeping two males together. ( 5 )

## 9.10 Interspecific Compatibility

Green iguanas are suitable to be kept with other lizards, as long as the two species are the same size, or the green iguana may be preyed upon if it is smaller than the house mate. Again if the enclosure is large enough and there is an abundance of hiding places keeping interspecific species shouldn't be a problem. ( 5 )

## 9.11 Suitability to Captivity

Green iguanas can grow to over 1 meter in length, which restricts them to bigger enclosures if they are planed to be kept for a long time. Smaller one can be kept in smaller enclosures with no trouble. They are suitable to captivity as they don't move around much and don't generally need a large area to be housed in. they can be trained or conditioned to where the keeper wants them, making them easy to handle or move. They can be quite dangerous is confined to a small area and use their tail to whip, and they can bite and can cause nasty lacerations.

# 10 Breeding

During breeding males can be seen head bobbing, extending and retracting the dew lap and nuzzling or biting a females neck ( Frye, 1995 ). Dominant males will also scent mark rocks, perches and other females with a waxy substance containing pheromones secreted from their femoral pores. ( 1 ), ( 2 )

## *10.1 Mating System*

Mating appears to be polygynandrous (promiscuous) . During mating, the male approaches the female and climbs on her back, straddling her as shown in figure 10.0 . To restrain his mate, he grips her shoulder skin with his teeth, sometimes wounding her. The male then pairs his cloacal vent up with the female's and inserts one of his hemi penes into her cloaca. Copulation can last for several minutes. Female iguanas can save sperm for several years ( Frye, 1995 ), allowing them to fertilize eggs at a much later date. (1)

( 2 )

Fig 10.0

## *10.2 Ease of Breeding*

When females are in season males will fight to have the rite to breed to with as many females as they can to pass on their genetics. So breeding green iguanas can be quite easy as you have to pair appropriate males to females and let them do the rest.

## *10.3 Reproductive Condition*

Females require some form so substrate to lay her eggs in

### *10.3.1 Females*

Figures 10.1 and 10.2 show two x-rays of a female green iguana the x-ray on the left ( 10.1) shows the clutch of eggs in her abdomen and the x-ray on the right ( 10.2 ) shows the same female after the eggs were laid.

**Fig 10.1**


**Fig 10.2**


( 2 )

### *10.3.2 Males*

To breed males have to be in peak condition, able to defend their patch of land against other males, they spend a great deal displaying to other males and to females

## *10.4 Techniques Used to Control Breeding*

Females are spayed, to reduce the chance of breeding. The eggs can be removed from the nest as soon as the female has finished laying the, enclosures can be separated so that there may be one male and one female, males cant be housed together during breeding season as they can become extremely aggressive towards each other, or spend more time displaying and forget about eating. ( 2 )

## *10.5 Occurrence of Hybrids*

Where the green iguana occurs in the wild forests of south and central America it doesn't coincide with any other species of iguana so the occurrence of hybrids is unlikely.

## *10.6 Timing of Breeding*

Green iguanas tend to breed in the dry season, ensuring that their hatchlings have sufficient food when they hatch in the wet season. (1). The further north and south of the equator the iguanas live determines the length of the breeding season, males are usually only in season for around 30 days. Further from the equator lengthens the breeding season.

## *10.7 Age at First Breeding and Last Breeding*

Green iguanas sexual maturity varies. They may be able to breed as early as their second year, but may not breed until as late bas their fifth year. (1)

## *10.8 Ability to Breed Every Year*

Once Green iguanas reach sexual maturity they are able to breed every year until they are too weak or old to breed. Providing that there is sufficient rain at the

## *10.9 Ability to Breed More than Once Per Year*

Their breeding is limited to the dry season once per year as to let the eggs hatch in the food abundant wet season.(1). But some can go into season twice a year, this is due to there being two wet seasons followed by two dry seasons in one year. As in the wild they only breed once a year, breeding twice in one year can be linked to the iguanas experiencing more stress then there should be.

## 10.10 Nesting, Hollow or Other Requirements

In the wild female green iguanas dig tunnels and chambers in the sand and soil to lay their eggs. in captivity females should be provides with some soil or sand with a garbage bin or box laid on its side to represent a tunnel for the female to dig into and lay her eggs. If the female cannot find a suitable nesting site it may cause her to withhold her egg laying, with dangerous consequences. (1)

## 10.11 Breeding Diet

Many females will show a decrease in their appetite as their abdomen swells with eggs. As with males, dehydration is always a potential problem during this time. Gravid females may also need more calcium in their diet, which is used to build the shell of the eggs. Metabolic Bone Disease may develop in the gravid females, so extra calcium in their diet is required during this time. The gravid females should be fed small amounts of salad with extra calcium and water-rich foods. (1)

## 10.12 Incubation Period

Incubation lasts from 90 to 120 days ( 1 )

## 10.13 Clutch Size

The size and number of eggs laid varies depending upon the females size, her nutritional status and her maturity. Females may lay up to 65 leathery white or pale-cream coloured eggs into the nest, but the average clutch size averages from 10 to 30. nests can also be shared with multiple females if nesting space is limited. (1)

## 10.14 Age at Weaning

As green iguanas lay their eggs in a nest and take no part in the rearing of the young, weaning is not necessary.

## 10.15 Age of Removal from Parents

After covering the eggs with soil, the mother takes no part in the parental up bringing of the young. They hatch with the help of a special tooth on the tip of their nose called the ‘caruncle’, which falls off shortly after hatching.(1)

## 10.16 Growth and Development

No morphological changes take place in a green iguanas life , except that they grow with age. Once the iguanas have hatched they rely on their yolk sacks for nourishment, which will last them for their first week or two.(1)

# 11 Artificial Rearing

Green iguanas are not a type of animal that is artificially reared. In the wild as soon as the eggs hatch the young are self dependant and there fore don't need keeper assistance to grow except for the basics like feeding and hygiene.

## *11.1 Incubator Type*

Once the eggs have been laid they can be taken and placed in an artificial incubator such as a Brinsea incubator, the incubator should not have a turning device as reptile eggs should not be turned at all.

## *11.2 Incubation Temperature and Humidity*

As quoted by Nick Schilko (8) the eggs can be incubated at a temperature of 28 - 32 degrees Celsius. As stated by the iguana hand book (9) the optimum incubation temperature is from 28.8- 30.5 degrees Celsius.

## *11.3 Desired % Egg Mass Loss*

Does not apply

## *11.4 Hatching Temperature and Humidity*

Hatchlings can be kept at a humidity of about 70-80% significantly higher than the surrounding room humidity. The hatchlings can be kept at a temperature of around 34-37.8 degrees Celsius

## *11.5 Normal Pip to Hatch Interval*

## *11.6 Diet and Feeding Routine*

Once the green iguanas have hatched ensure that there is soil available, as their natural instinct is to consume soil to obtain the microbes that are essential to assist the breakdown of hard to digest plant matter.
Another diet that recently hatched iguanas can receive is a small dab of yoghurt, in place of the soil, to obtain their bacterial microbes ( Melissa Kaplan 1991, 2006 ) they should also be given a finely diced adult diet of vegetables and fruit. Water should be readily available in a small dish.

## *11.7 Specific Requirements*

As with all reptile eggs the position of the egg when it is laid it where it must be when incubating, if the egg is moved too much or is rolled over then the embryo inside will suffocate.

## 11.8 Data Recording

The length of the hatchlings, number of hatchlings, the temperature and humidity that the eggs were incubated at. Time (duration) of incubation.

## 11.9 Identification Methods

Colour and body markings are a good method of identifying young iguanas. The method that I use is the colour and body markings as it is easy to see at a quick glance. A temporary method can also to be dab a bit of paint on the backs of the iguanas which is easy to see if there is a lot of iguanas in one area.

## 11.10 Hygiene

As green iguanas are carriers of the bacterium salmonella then washing of hands each time that the young are handled, thoroughly wash any utensils that are to be used with the iguanas. Keeping the young in a clean environment can reduce the risk of contracting the disease

## 11.11 Behavioural Considerations

When newly hatched wild green iguanas emerge from their nesting chamber they instinctively head for cover in thick shrubbery, to simulate this in the captive situation you can add plenty of fresh green browse for them to hide in and feel secure.

# 13 References

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( 2 ) http://www.greenigsociety.org/inthewild.htm

( 3 ) http://www.aristopet.com.au/Library/Downloads/Downloadable%20pdf%20files/PDF%20Downloadable%20brochures/Reptile_Brochure_A4.pdf

( 4 ) http://www.greenigsociety.org/home.html

( 5 ) http://www.anapsid.org/iguana/multipleigs.html

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( 7 ) Behavioural acquisition of the hindgut fermentation system by hatchling *Iguana iguana*- Katherine Troyer* (1983)

( 8 ) Nicolas Schilko owner Nowra Wildlife Park

( 9 ) The iguana hand book by Patricia Bartlett and R,

( 10 ) www.baskingspot.com/iguanas/igbook/ - Jen Swofford's iguana pages

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