



Animals: Ecosystems, Interdependence and the Environment handling resource

GROUP LEADER INFORMATION

(SECONDARY CLASSES)

ANIMALS: ECOSYSTEMS, INTERDEPENDENCE AND THE ENVIRONMENT

This pack outlines the **contents of the self-led handling box** and how the box will be laid out during your session. It contains additional information on the **objects, suggested discussion points, and the Curriculum for Excellence's Experience and Outcomes**. Notes for pupils can also be found in this pack.

CONTENTS OF THE BOX

The objects in this box are split into four categories. **Each category represents a different ecosystem from around the world**. The objects represent different animals who live within that ecosystem and who link up to each other within a food web. We have provided suggested **activities and discussion points**, but you may want to develop your own activities based on the work you are doing in class around this topic.

PRACTICALITIES

On the day, you should ensure pupils are in up to four groups, with an adult helping each group or moving between them. The room you are using will be set out with the objects at four sets of tables.

Seat each group at a table, it is up to you whether you wish them to stay at the one table throughout the session or rotate to all of the tables. **On each table, you will find the objects, plus notes for pupils.**

THE OBJECTS ON THE TABLE ARE REAL

Please ensure pupils and adults are sensible and **handle these objects with care** keeping them over the tables with protective plastazote foam. If pupils or adults think they might be allergic to an object there are sinks at the back of the room to wash hands and gloves which can be used. **Contact information for a first aider is also written on the wall above the phone.**

Distribution maps are an approximation as animal populations can move and fluctuate.

The vulnerability status on the specimen notes is based on the **IUCN Red List**. The IUCN Red List of Threatened Species TM is widely accepted as the most comprehensive and objective approach to monitoring the conservation status of animals and plants across the world. **The status reflects world populations, not those of individual ecosystems.**

ACTIVITIES AND DISCUSSION

We suggest you work through these activities together as a class. There is additional information that you may wish to share with your group in the coloured boxes.

FOOD WEBS

SCOTTISH WOODLAND ECOSYSTEM

Wolves were hunted to extinction in Scotland over **300 years ago**. How has this changed our ecosystem and what benefits or problems might there be if they were to be reintroduced? (Reduction in deer populations leading to an increasing in plant life which would in turn benefit birdlife and insects/ threat to livestock).

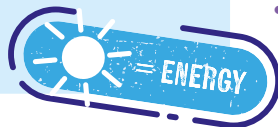


Each table has a food web for that particular ecosystem with some species missing. Arrows point in the direction of energy travel (prey → predator).

- Ask pupils to study the food webs and decide where the species represented on their table would fit.
- How would the food web be affected if a species was missing?
- How would the food web be affected if a new species was introduced or an old, missing one introduced? For this question, you can show **Scottish Woodland Ecosystem table the wolf skull and talk to Tropical Coral Reef Ecosystem table about plankton.**
- Can the pupils think of any ways in which the **stability of their food webs could be jeopardised in future?** What **possible solutions** are there to this? (Climate change, pollution, tourism, deforestation etc.)
- Ecosystems are extremely complex and these food webs show only a select few species for the area. As a result some primary or secondary consumers may appear to have no predators. You can ask pupils what they think these predators may be, as an extension activity.
- Even apex predators can find themselves as prey if injured or very young.

TROPICAL CORAL REEF ECOSYSTEM

Plankton: There are two types of plankton: zooplankton and phytoplankton. Zooplankton are microscopic animals that feed on phytoplankton. Phytoplankton are microscopic plants that get their energy from the sun.



CONSERVATION

AFRICAN SAVANNAH ECOSYSTEM

Bush meat – meat from wild hunted animals (especially refers to Africa and Asia). This meat is illegal in many countries due to conservation and it is linked to the spread of diseases.

Ecosystems are, as exemplified in the above activity, in perfect balance. Some of the species exemplified on the tables are listed as vulnerable or endangered.

- Ask pupils **why** they think **certain species may be at risk** (some reasons are listed on the notes).
- Can they think of any ways in which **conservation projects** could **help these species?**

EVOLUTION AND ADAPTATION

AFRICAN SAVANNAH ECOSYSTEM

Broad-banded Green Swallowtail Butterfly
Ask pupils why this butterfly is so colourful. Would its bright colours help it to camouflage or are they more likely to be a warning or to attract a mate? Red and orange are usually warning markers.



- What **adaptations** does each species have to help it survive and thrive in its ecosystem?
- In what way might species **evolve or adapt** in the future if the ecosystems change? To stretch pupils, ask about slow change such as climate change and more rapid change such as deforestation.

CONTENTS



- Red Squirrel pelt
- Red Deer antler
- European Badger skull
- European Hedgehog skeleton
- Red Fox skull
- Two Banded Longhorn Beetle
- Grey Wolf skull
- Scots Pine
- Rowan



- Leopard pelt
- Skink skeleton
- Long Tailed Macaque skull (replica)
- Giant Centipede
- Jungle Nymph
- Klugia
- Wild Ginger



- African Elephant tooth
- Lion skull (replica)
- Ostrich feather
- Roan Antelope horn
- Broad-banded Green Swallowtail Butterfly
- Umbrella Thorn Acacia (image only)



- Bull Shark jaw
- Sawfish snout
- Triton shell
- Hawksbill Turtle shell
- Porcupinefish
- Staghorn Coral

CURRICULUM LINKS

Below are the curriculum links for the suggested activities within this box.



LITERACY

THIRD

When I engage with others, I can make a relevant contribution, encourage others to contribute and acknowledge that they have the right to hold a different opinion.

I can respond in ways appropriate to my role and use contributions to reflect on, clarify or adapt thinking. **LIT 3-02a**

FOURTH

When I engage with others I can make a relevant contribution, ensure that everyone has an opportunity to contribute and encourage them to take account of others' points of view or alternative solutions.

I can respond in ways appropriate to my role, exploring and expanding on contributions to reflect on, clarify or adapt thinking. **LIT 4-02a**

Using what I know about the features of different types of texts, I can find, select, sort, summarise, link and use information from different sources. **LIT 3-14a**

Using what I know about the features of different types of texts, I can find, select, sort, summarise, link and use information from different sources. **LIT 4-14a**

To show my understanding across different areas of learning, I can: identify and consider the purpose, main concerns or concepts and use supporting detail make inferences from key statements identify and discuss similarities and differences between different types of text. **LIT 3-16a**

To show my understanding across different areas of learning, I can: clearly state the purpose, main concerns, concepts or arguments and use supporting detail make inferences from key statements and state these accurately in my own words compare and contrast different types of text. **LIT 4-16a**



LANGUAGES

THIRD

By applying my awareness of how classical Greek has linguistic links with English or Latin with English and other modern European languages which are based on Latin, I can enhance the range of my vocabulary and increase my confidence in communicating in English. **CLAN 3-03a**

FOURTH



SCIENCES

THIRD

I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. **SCN 3-01a**

FOURTH

I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. **SCN 4-01a**

TWO-BANDED LONGHORN BEETLE

Rhagium bifasciatum



"Two-banded Longhorn Beetle *Rhagium bifasciatum*" by gailhampshire is licensed under CC BY 2.0.



LOCATION

TWO-BANDED LONGHORN BEETLE

Rhagium bifasciatum



HABITAT:

- Two-banded Longhorn beetles are found throughout Europe. They are widespread in Scotland.
- They are often found in woodland and low vegetation.

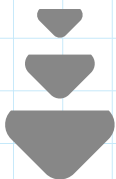
DIET: The adults lay eggs their eggs in dead trees and the young larvae then eat the deadwood making small holes.

FOOD CHAIN: Insects are at risk from predators such as birds and small mammals.

SIZE: They grow up to 2cm long.

FACTS:

- The wood most often chosen is pine.
- Eating the deadwood helps the ecosystem to recycle dead plant matter back into nutrients for other plants and animals.
- The adults are also effective pollinators for many forest flowers.
- They are called 'longhorns' due to their antennae which they use to find other beetles and nests.
- Insects are at risk from predators such as birds and small mammals.
- Whilst they are widespread, beetle numbers are dropping. It is thought this is because of their habitat changing.



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RED SQUIRREL

Sciurus vulgaris



"Red Squirrel in the rain ... - Eekhoorn in de regen (Sciurus vulgaris)" by Martha de Jong-Lantink is licensed under CC BY-NC-ND 2.0.



LOCATION

RED SQUIRREL

Sciurus vulgaris



HABITAT:

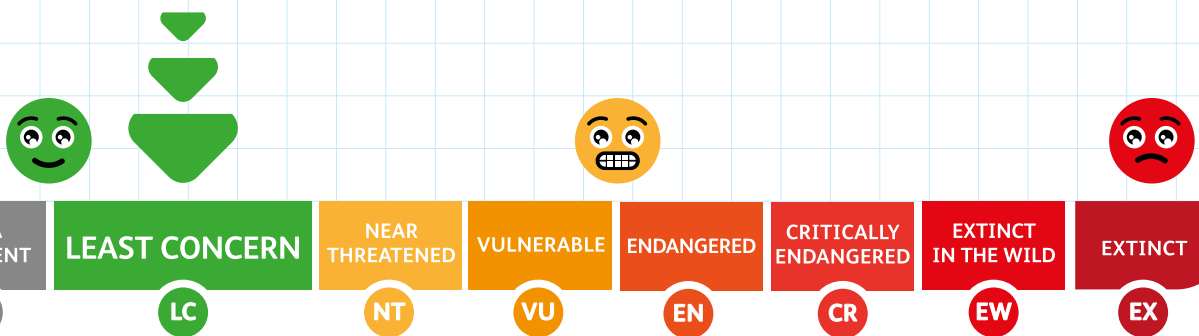
- Red squirrels are found throughout Europe and Asia in woodland areas. They are native to Scotland.
- Red squirrels thrive best in areas of conifer woodland where there is no grey squirrel population.

DIET: Red squirrels do not hibernate. They eat seeds, flowers fruit, insects and birds' eggs. Pine seeds are their main source of winter food.

FOOD CHAIN: Introduced grey squirrels, which compete for food, are the main threat to red squirrels. Predators such as pine martins hunt both species although the small red squirrel can often escape on small branches.

FACTS:

- Red squirrels have brown fur with cream underbelly, they are known for their bushy tails and fluffy ears. Red squirrels moult twice a year although their tail and ears only moult once a year.
- Red squirrels have young twice a year, in March and July. Young squirrels are called kittens. Red squirrels can live to six years old.
- They build nests out of moss and sticks in trees. These nests are called dreys.

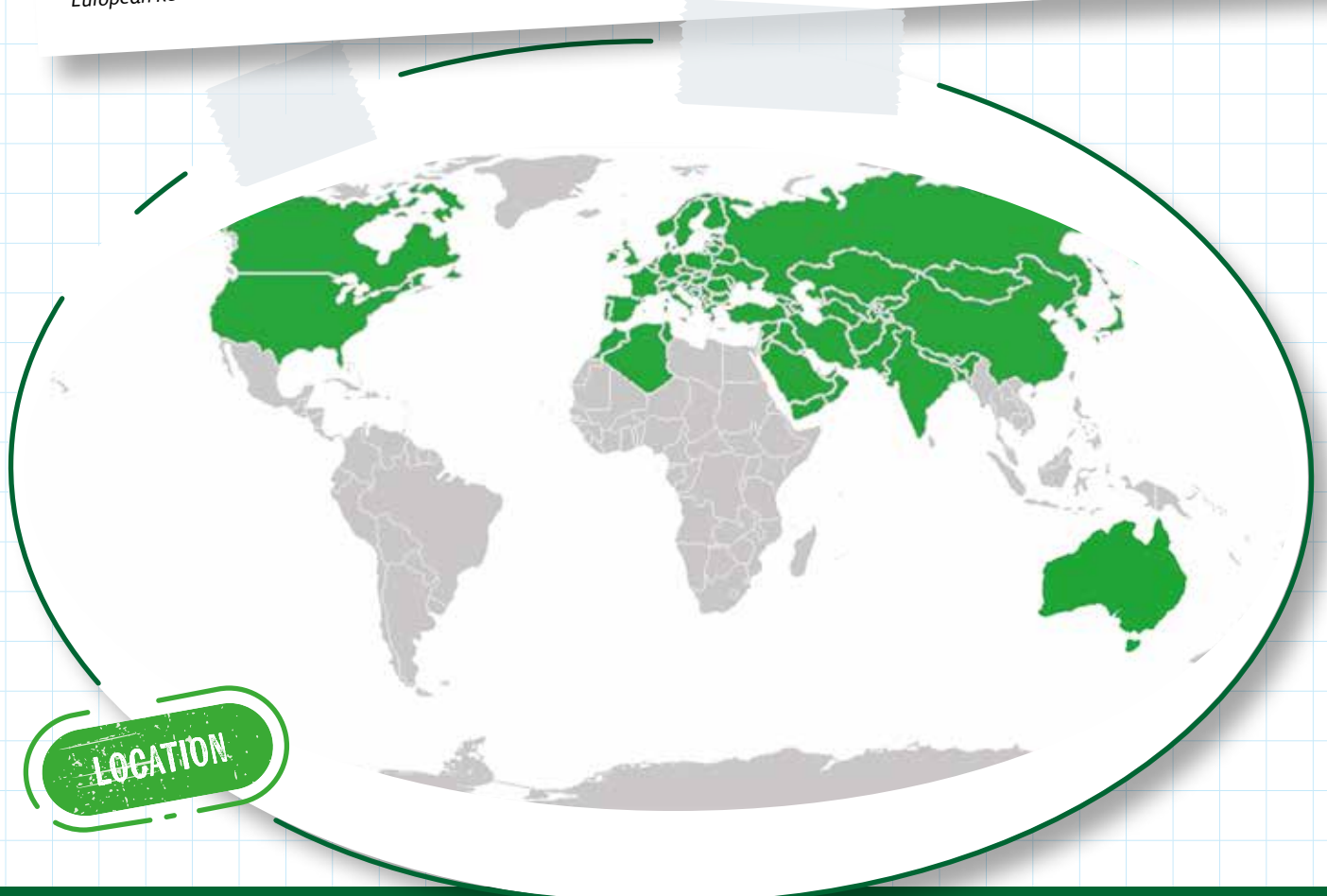


RED FOX

Vulpes vulpes



"European Red Fox (*Vulpes vulpes*)" by Harlz_ is licensed under CC BY 2.0.



LOCATION

RED FOX

Vulpes vulpes



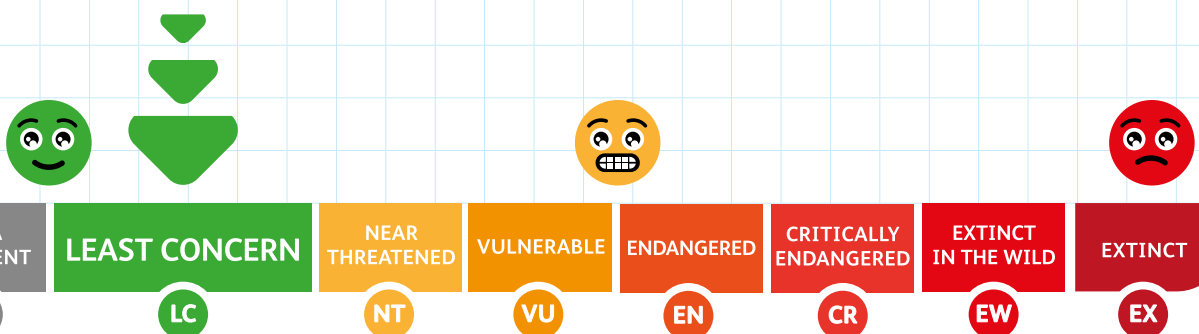
HABITAT: Red foxes can be found across the Northern Hemisphere in both rural and urban areas. They can also be found in Australia where they have been introduced.

DIET: They eat mainly small mammals and birds as well as insects. Urban foxes will also raid rubbish bins for food.

FOOD CHAIN: Large birds of prey or wolves may attack foxes but generally they have few predators.

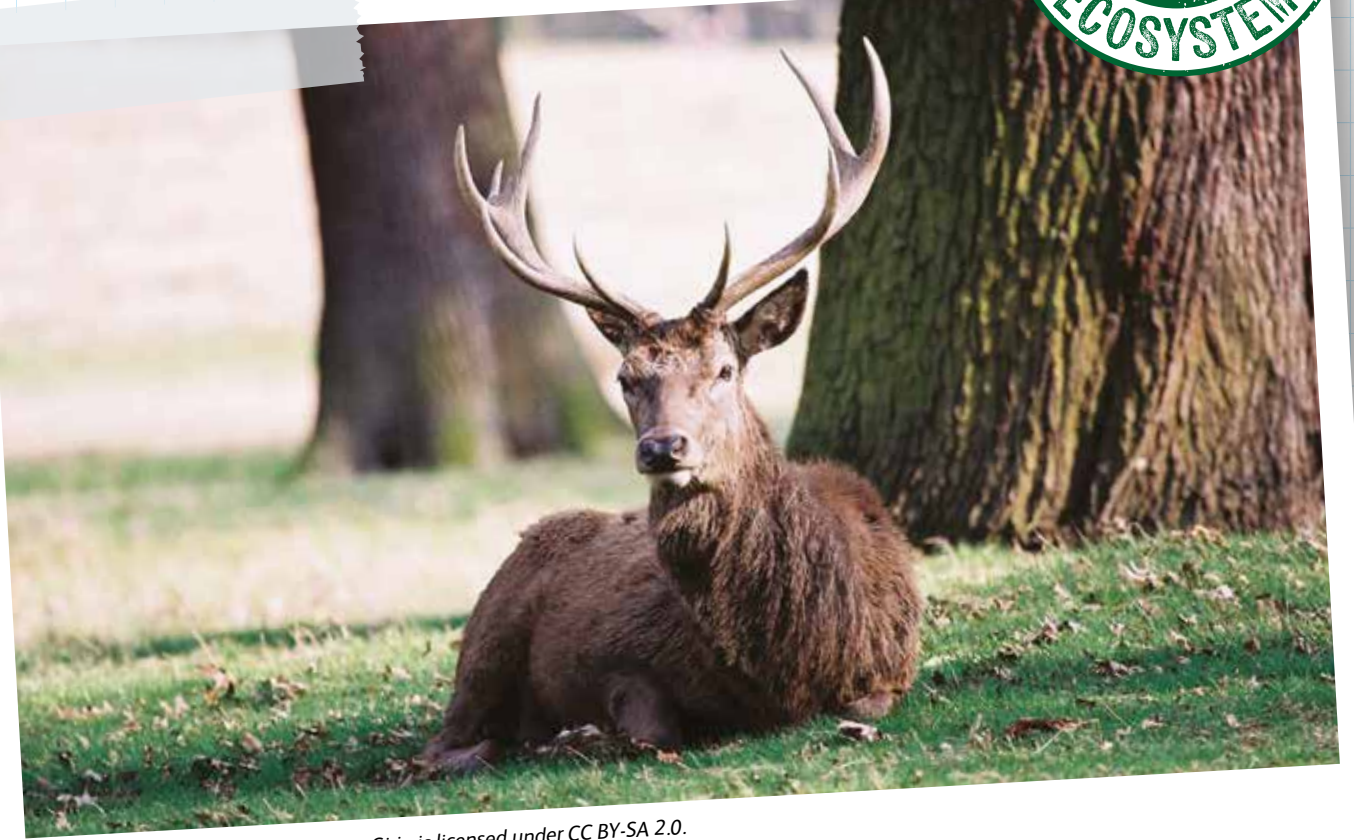
FACTS:

- They can use their bushy tail, known as a brush, as a cover to keep warm in winter.
- Foxes are crepuscular meaning they come out at dusk and dawn.
- Foxes are solitary hunters although both parents will raise the cubs.
- Male foxes are referred to as 'dogs' whilst females are called 'vixens'.
- In some countries, foxes are hunted for sports or by farmers who see them as pests.

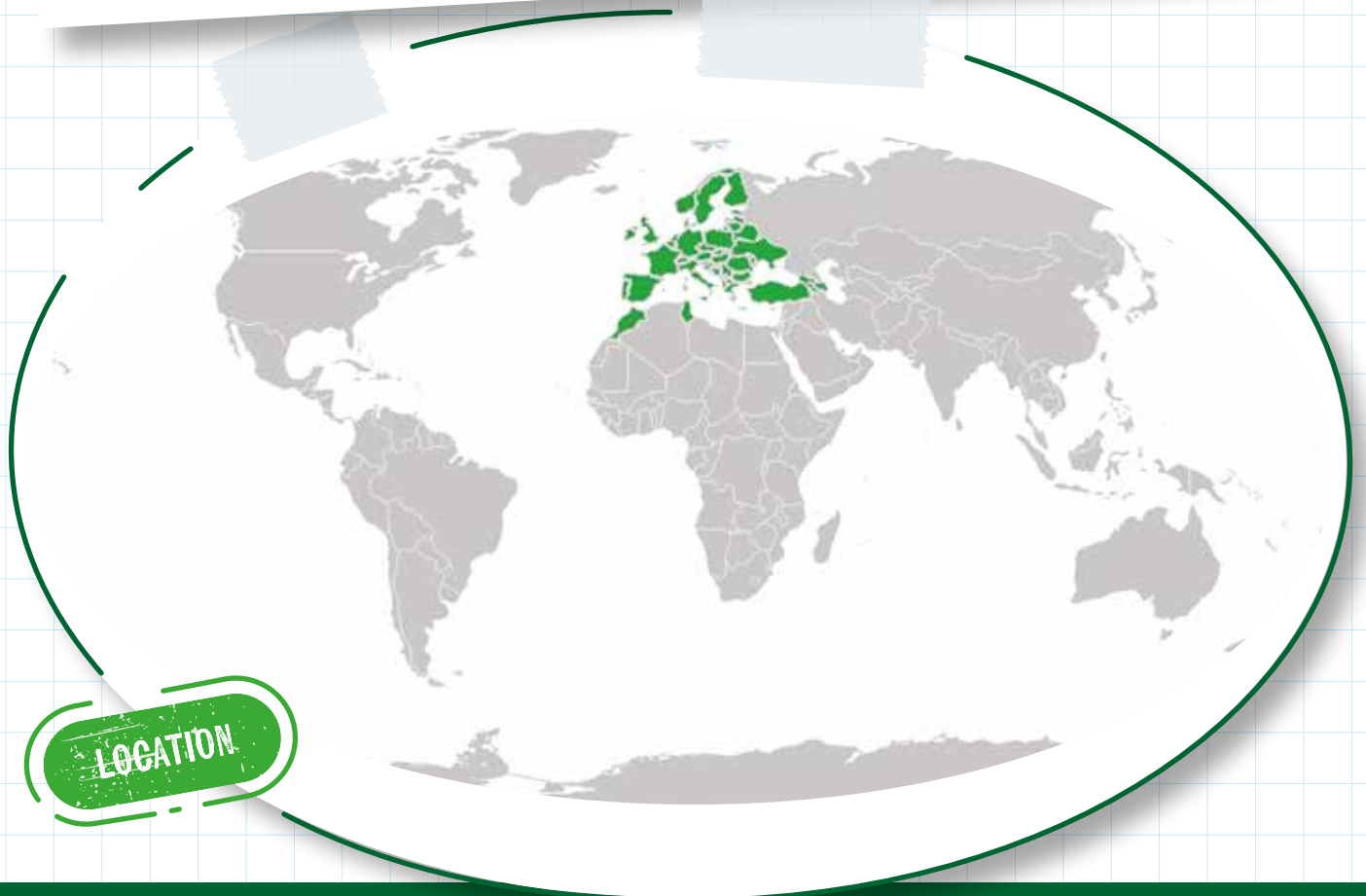


RED DEER

Cervus elaphus



"Red Deer in Richmond Park" by Bruno Girin is licensed under CC BY-SA 2.0.



LOCATION

RED DEER

Cervus elaphus



HABITAT:

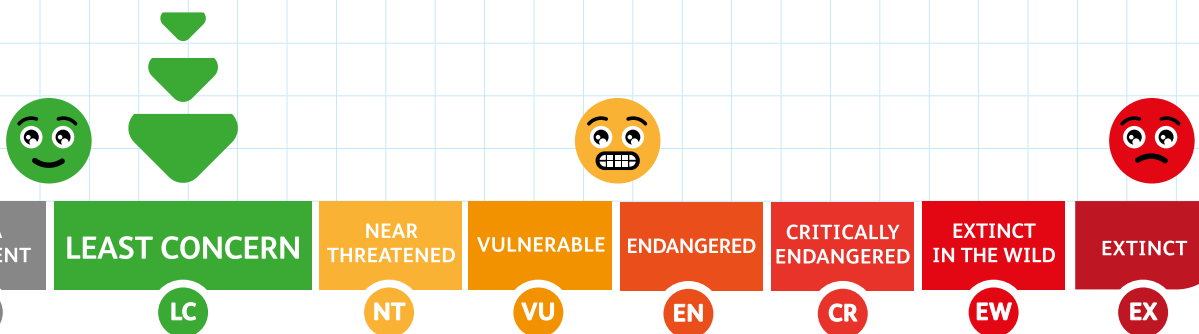
- Red deer can be found across Europe. They are native to, and widespread in, Scotland.
- Their habitat is typically grassland, woodland and hillsides.

DIET: They eat shrubs, trees, grass and heather.

FOOD CHAIN: Young deer are at risk from eagles. Adults are prey for wolves but there are none in Scotland.

FACTS:

- Male red deer have large antlers which they use to compete with other males in the rut. These are shed or 'cast' every year and a new set is grown.
- The number of branches or points on the antlers increases with age.
- Red deer are active throughout the day and the night but particularly in the evening.
- Their colouring changes from reddish brown in summer to a greyish brown in winter.
- Red deer in Scotland are culled to control numbers. With no natural predator, their numbers have greatly increased and the surrounding ecosystems have become unbalanced.

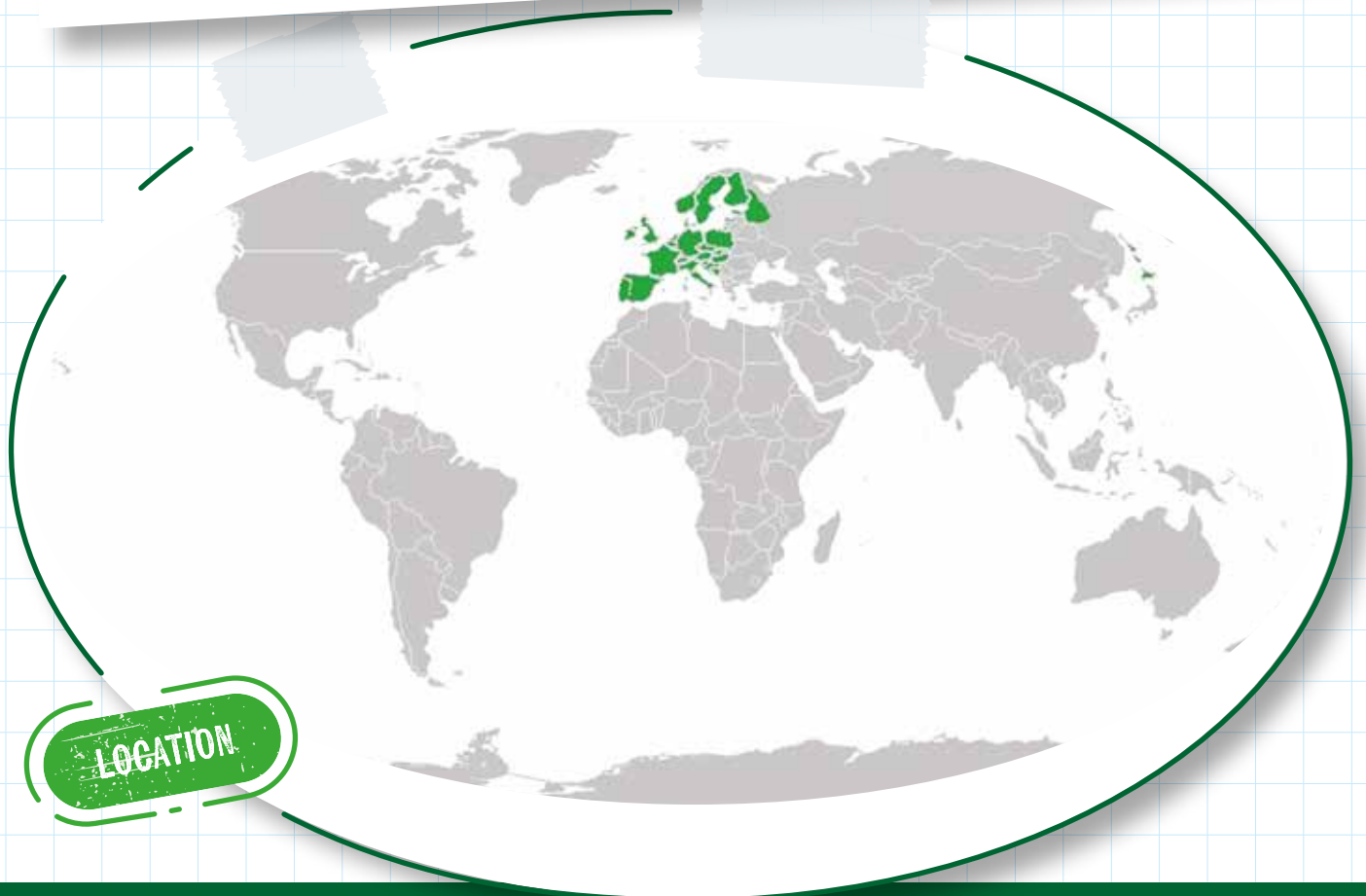


EUROPEAN HEDGEHOG

Erinaceus europaeus



"Hedgehog at Dusk" by Mark Wheadon is licensed under CC BY-SA 2.0.



LOCATION

EUROPEAN HEDGEHOG

Erinaceus europaeus



HABITAT:

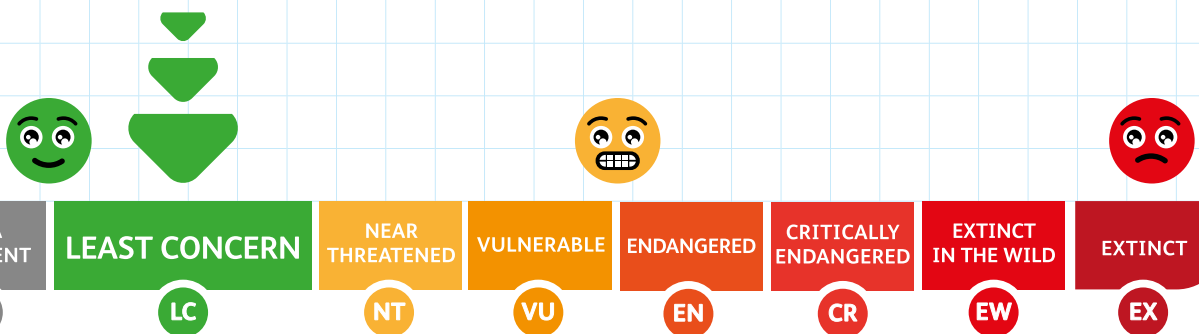
- Hedgehogs live in Western Europe, including the UK.
- They live in lowland areas with cover for nests and can often be found in parks, gardens and farmland.

DIET: Hedgehogs eat insects, berries, frogs and adders as they are immune to adder venom.

FOOD CHAIN: Hedgehogs are prey for badgers.

FACTS:

- Hedgehogs have sharp spines and can curl into a ball to help protect them from predators.
- They can travel up to 2km in search of food and are nocturnal animals.
- Hedgehogs hibernate in winter in nests made of leaves, and re-emerge in the spring.
- Human activities such as use of chemicals in farming and gardening, an increase of cars on the roads and reduction of hedgerows are a threat to hedgehogs.

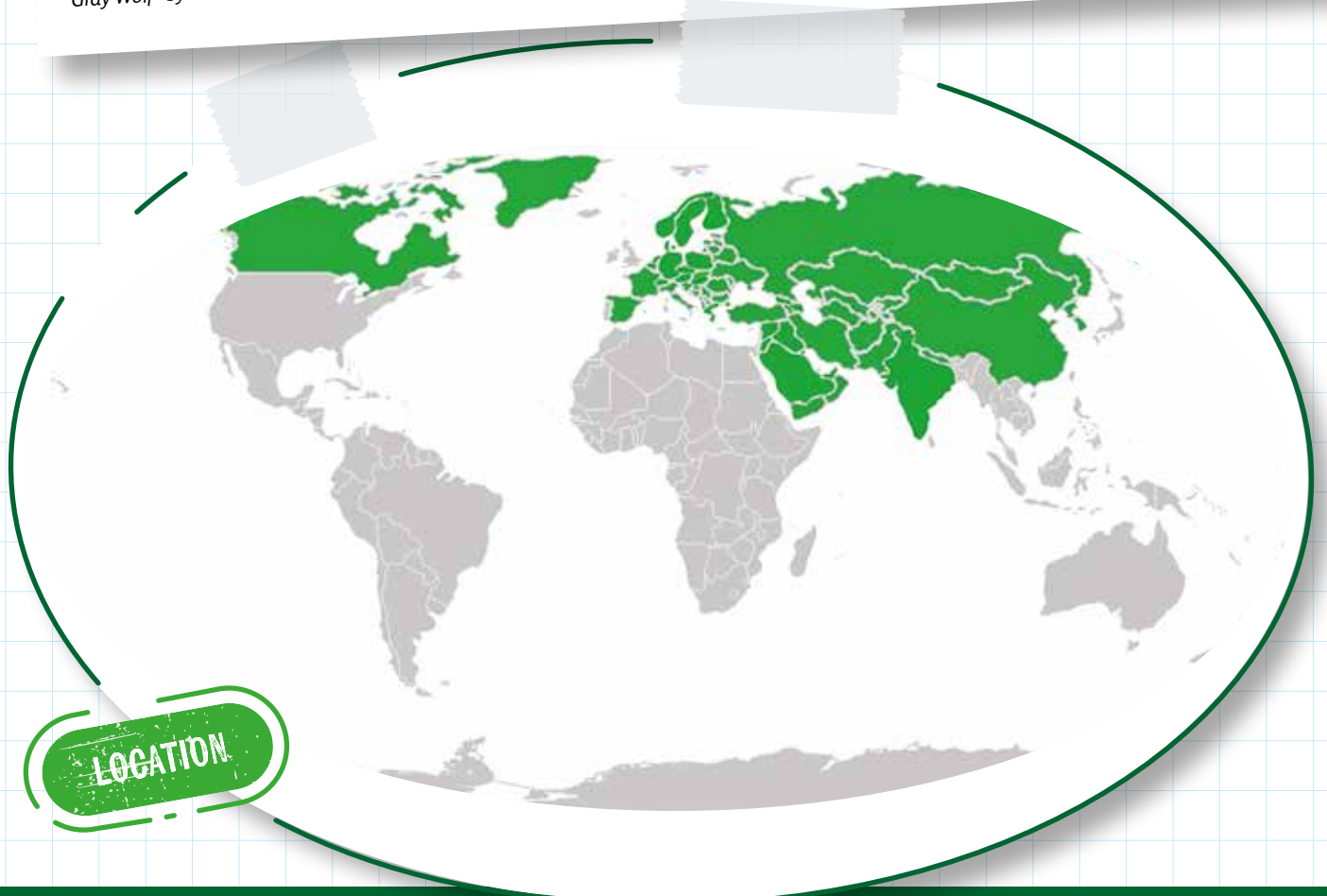


GREY WOLF

Canis lupus



"Gray Wolf" by U.S. Fish and Wildlife Service - Midwest Region is licensed under CC BY 2.0.



LOCATION

GREY WOLF

Canis lupus

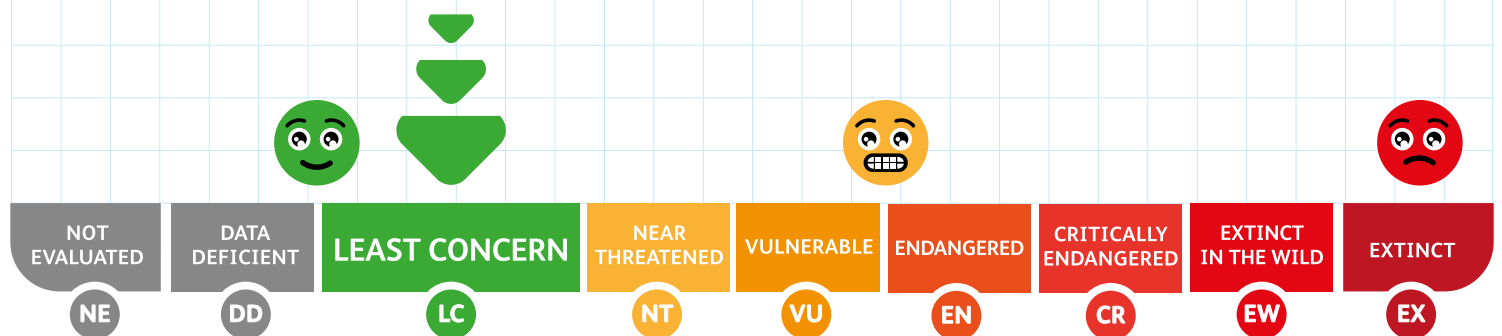


HABITAT: The grey wolf was hunted to extinction in Scotland in 1680, they can still be found across the Northern Hemisphere in other locations.

DIET: Grey wolves mostly hunt large prey such as deer.

FACTS:

- Grey wolf fur can be white, grey, red, brown or black depending on their habitat.
- They have sensitive ears and noses to help them find prey as well as long legs for long pursuits of prey.
- Grey wolves live and hunt in packs of between 5–12 individuals.
- Hunting in a co-ordinated way, a pack can bring down an animal up to ten times the size of the wolf.
- Grey wolves have, in the past, been hunted for their fur and when they were seen as a threat to livestock. Many wolf populations are now legally protected.

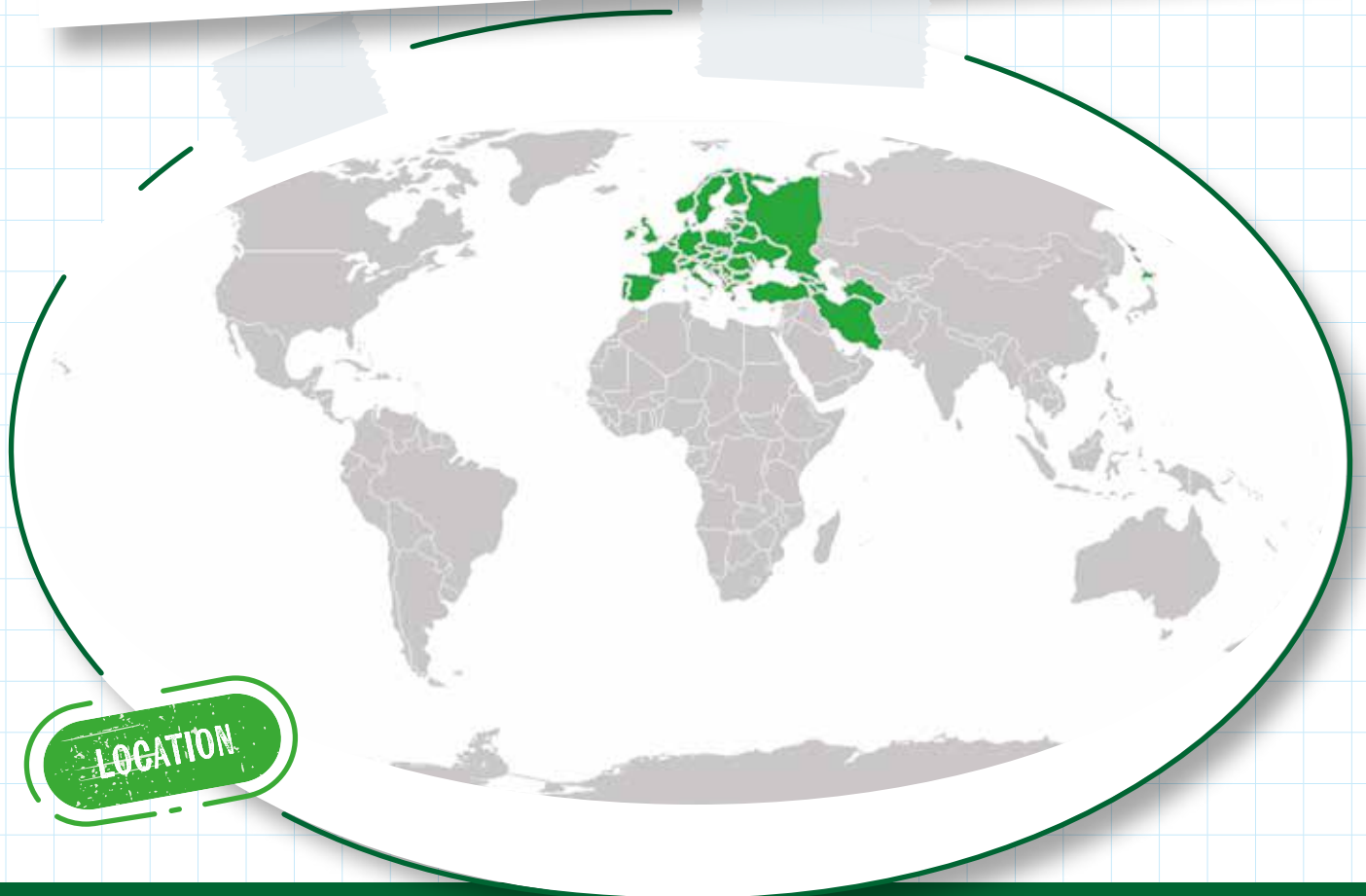


EUROPEAN BADGER

Meles meles



"Badger" by hehaden is licensed under CC BY-NC 2.0.



LOCATION

EUROPEAN BADGER

Meles meles



HABITAT:

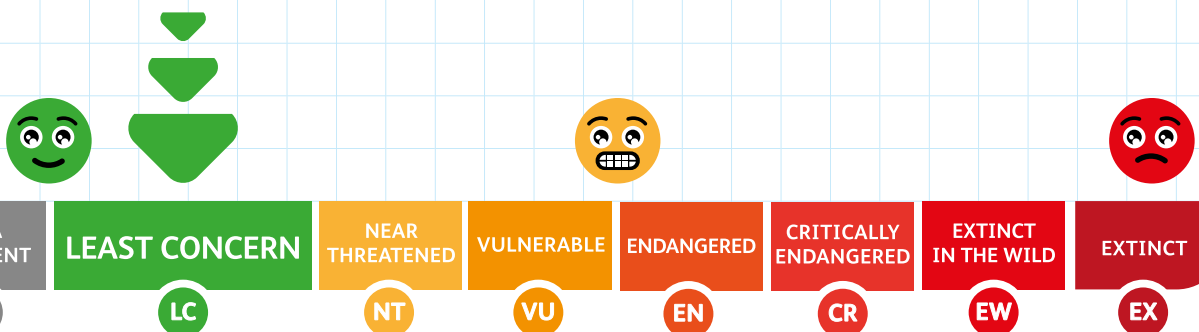
- Badgers are found throughout the UK and Europe although not in the far North of Scotland or the Western Isles.
- Optimal habitat for badgers is woodland however they are also found in cities and coastal areas.

DIET: Badgers mostly eat earthworms, fruit, nuts and insects. They are one of the only animals that can kill and eat hedgehogs; this is due to their long claws and thick skin.

FOOD CHAIN: Badgers have no natural predators in Scotland, although young cubs can be at risk from golden eagles.

FACTS:

- Badgers live in a network of tunnels and nests made of dried grasses and leaves called setts.
- Badgers are nocturnal. They do not hibernate but will spend more time in their setts during the Winter.
- Females will have litters of between 1–5 cubs. Badgers are capable of delayed embryo development, meaning regardless of the time of year mating takes place cubs will almost always be born in the early Spring.
- Humans are a threat to badgers through habitat destruction and hunting. Many badgers in Scotland are culled each year as they are believed to spread diseases.



ROWAN

Sorbus aucuparia



"Sorbus aucuparia" by douneika is licensed under CC BY-NC-SA 2.0.

ROWAN

Sorbus aucuparia



HABITAT: Rowans are native throughout Britain and Ireland.

FOOD CHAIN: It grows bright red berries in the late summer which are eaten by birds such as chaffinches, siskins and blackbirds.

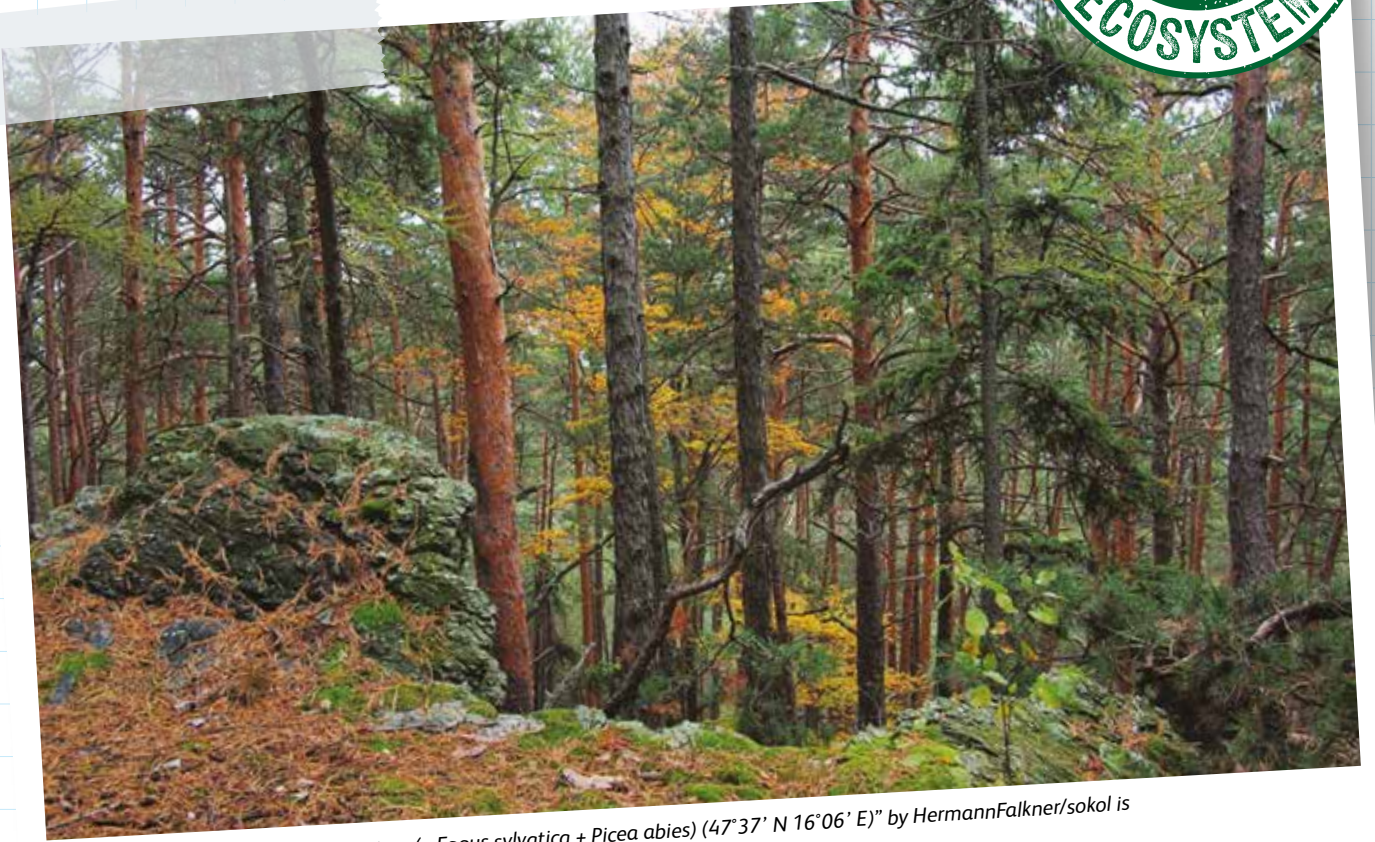
SIZE: It can grow between 10–15m.

FACTS:

- Rowan is a deciduous tree meaning it loses its leaves in the winter and grows new ones in the spring.
- Birds then scatter the Rowan seeds in their droppings.

SCOTS PINE

Pinus sylvestris



"Pine forest: *Pinus sylvestris* + *Pinus nigra* (+ *Fagus sylvatica* + *Picea abies*) (47°37' N 16°06' E)" by HermannFalkner/sokol is licensed under CC BY-NC-SA 2.0.

SCOTS PINE

Pinus sylvestris



HABITAT: Scots Pine used to be found throughout Britain but warmer temperatures in the last few thousand years mean that it is now mostly found in Scotland and not further South.

SIZE: It can grow up to 40m tall.

FACTS:

- Scots Pine is an evergreen conifer meaning it has needles for leaves, the seeds are cones, and it does not lose its leaves in winter.
- The tree seals damage to its trunk, often caused by insects, with a sticky sap.

SCOTTISH WOODLAND FOOD WEB



PRIMARY PRODUCER

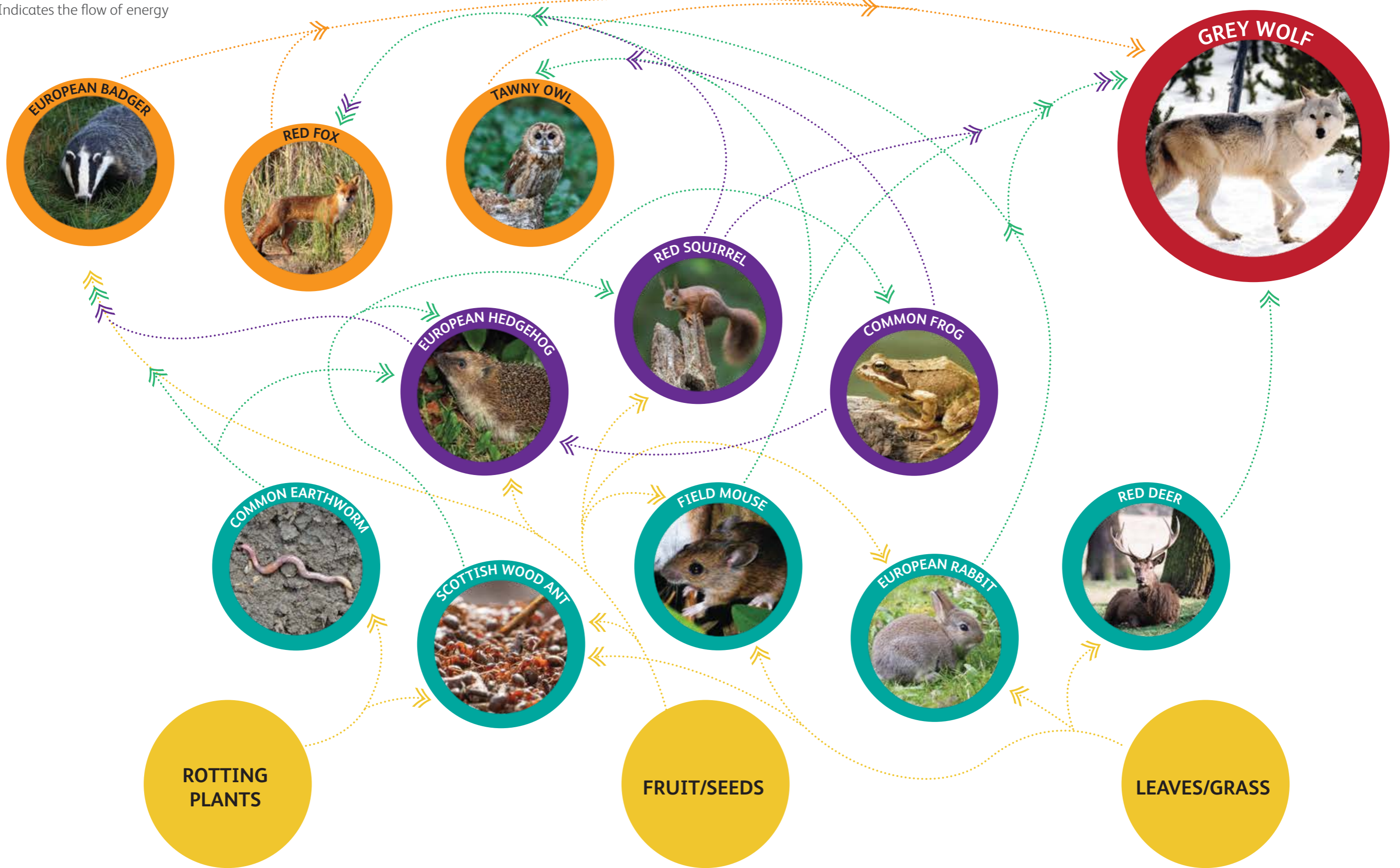
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SECONDARY CONSUMER

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APEX PREDATOR

⇒ Indicates the flow of energy

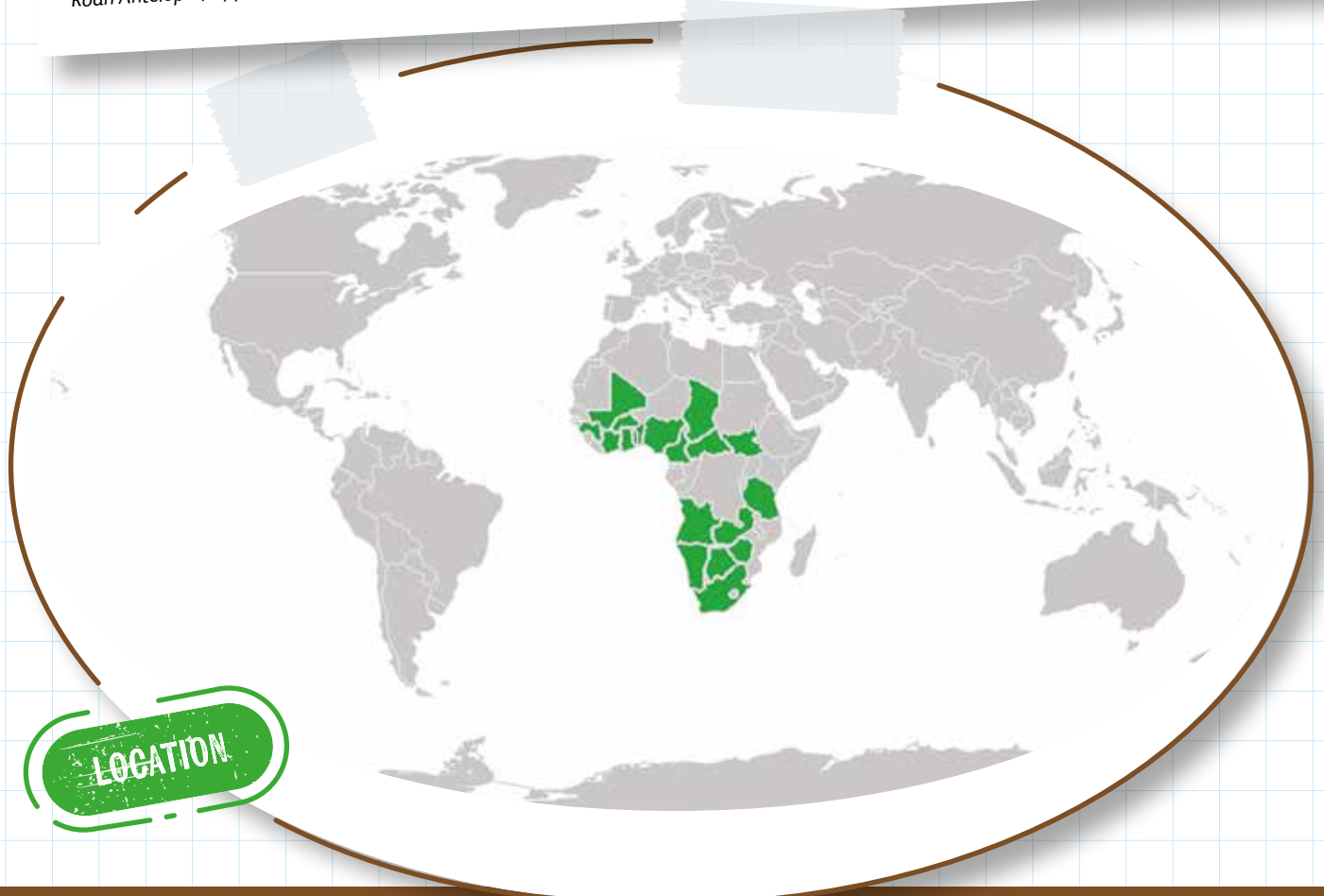


ROAN ANTELOPE

Hippotragus equinus



"Roan Antelope (*Hippotragus equinus*) in Mokala savanna ..." by berniedup is licensed under CC BY-SA 2.0.



LOCATION

ROAN ANTELOPE

Hippotragus equinus



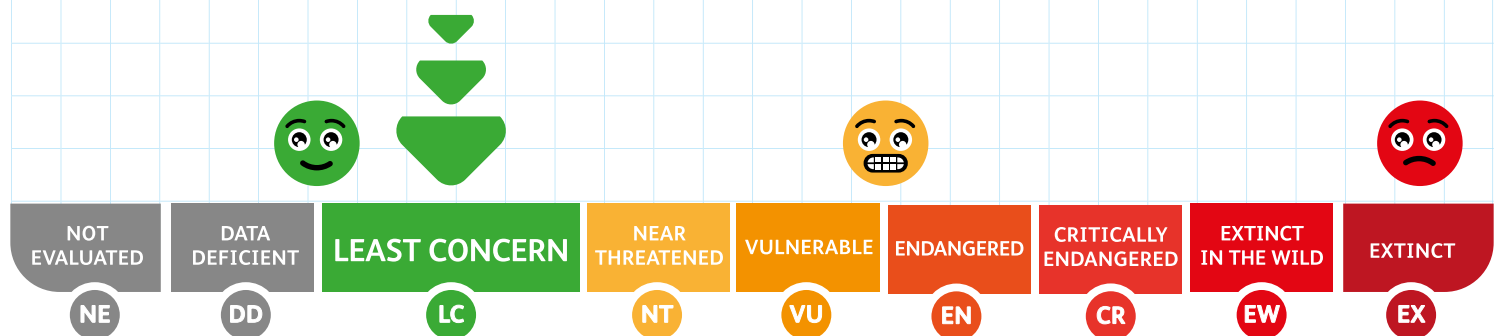
HABITAT: These antelope live across the savannahs of Africa preferring areas of long grass and access to water.

DIET: Antelope eat long grass and occasionally shrubs and pods of acacia trees.

FOOD CHAIN: Roan antelope are prey for lions, leopards, cheetahs and painted wolves.

FACTS:

- Antelope have large curved horns which are powerful enough to kill a lion.
- Roan antelope usually live in herds of between 5–35 animals.
- Herds are made up mostly of females with one male protecting the herd from other males.
- The main threat to these animals is habitat destruction and illegal hunting.
- Roan antelope can run up to 35 miles per hour.

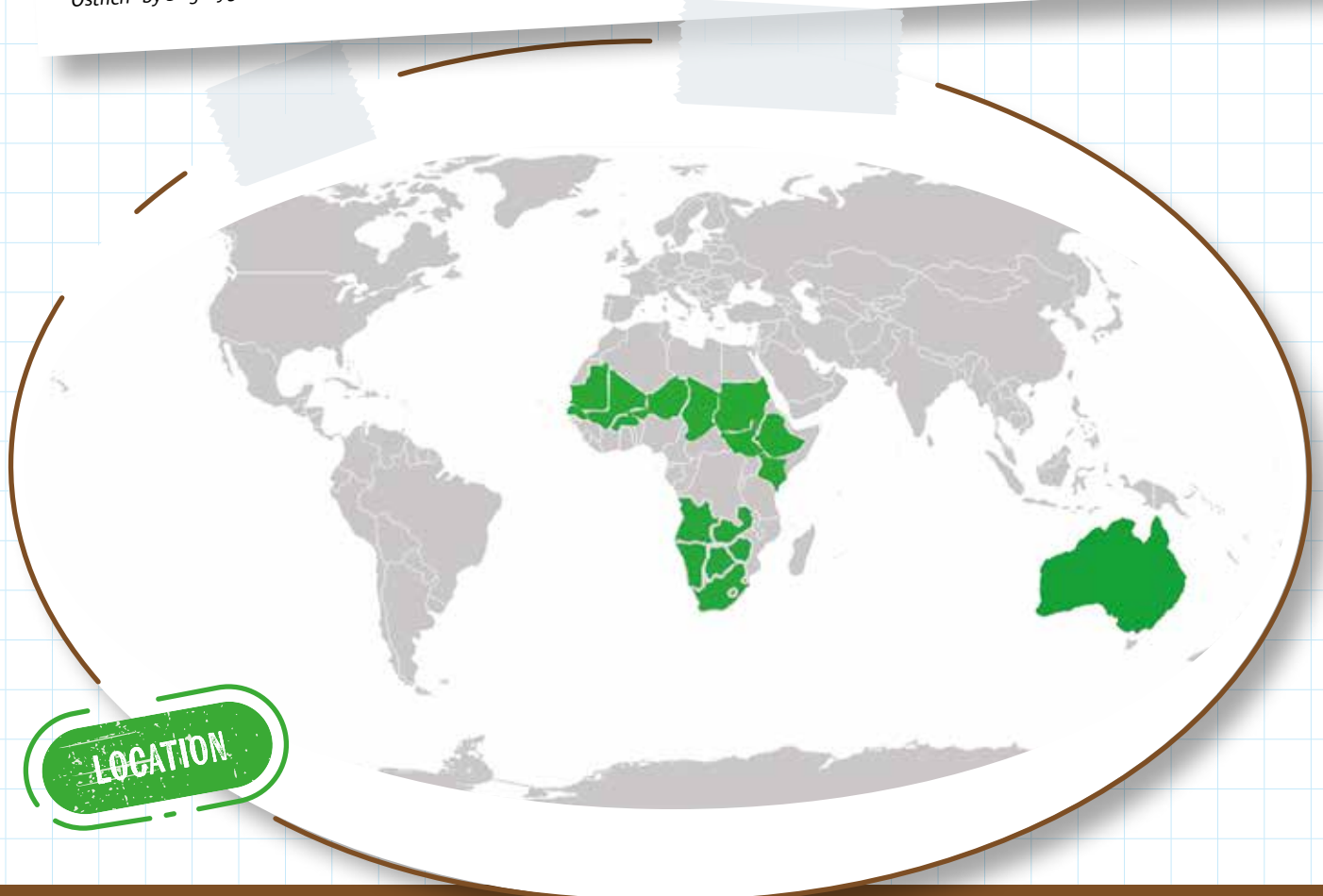


OSTRICH

Struthio camelus



"Ostrich" by Stig Nygaard is licensed under CC BY 2.0.



LOCATION

OSTRICH

Struthio camelus



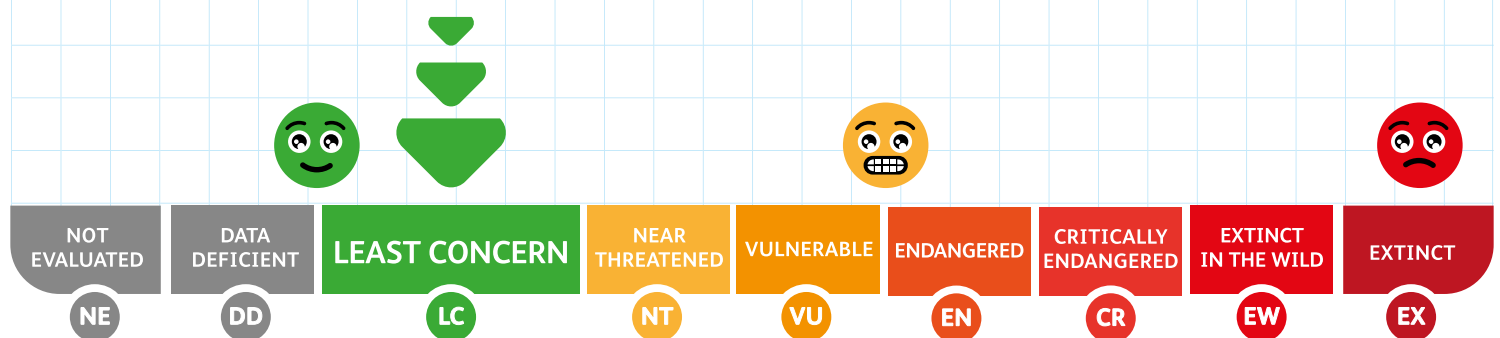
HABITAT: Ostriches are found across Africa and have also been introduced in Southern Australia. Their range is decreasing.

DIET: They eat grass, seeds and leaves as well as some insects and small vertebrates.

FOOD CHAIN: Ostriches can be hunted by lions, leopards, painted wolves, cheetahs, and hyenas.

FACTS:

- Ostriches have long legs with two sharp toes which they use for running and kicking.
- Ostriches are the biggest and heaviest living bird.
- Ostrich feathers are not used for flying but display and so they are much fluffier than flying birds.
- Ostriches sit on nests of up to 20 eggs with both males and females taking turns at incubating.
- They can live between 30–40 years.
- Ostriches have the largest eyes of any land animal, measuring up to 5cm.
- Ostriches were threatened by the feather and meat trade, but ostrich farming is now a growing industry.

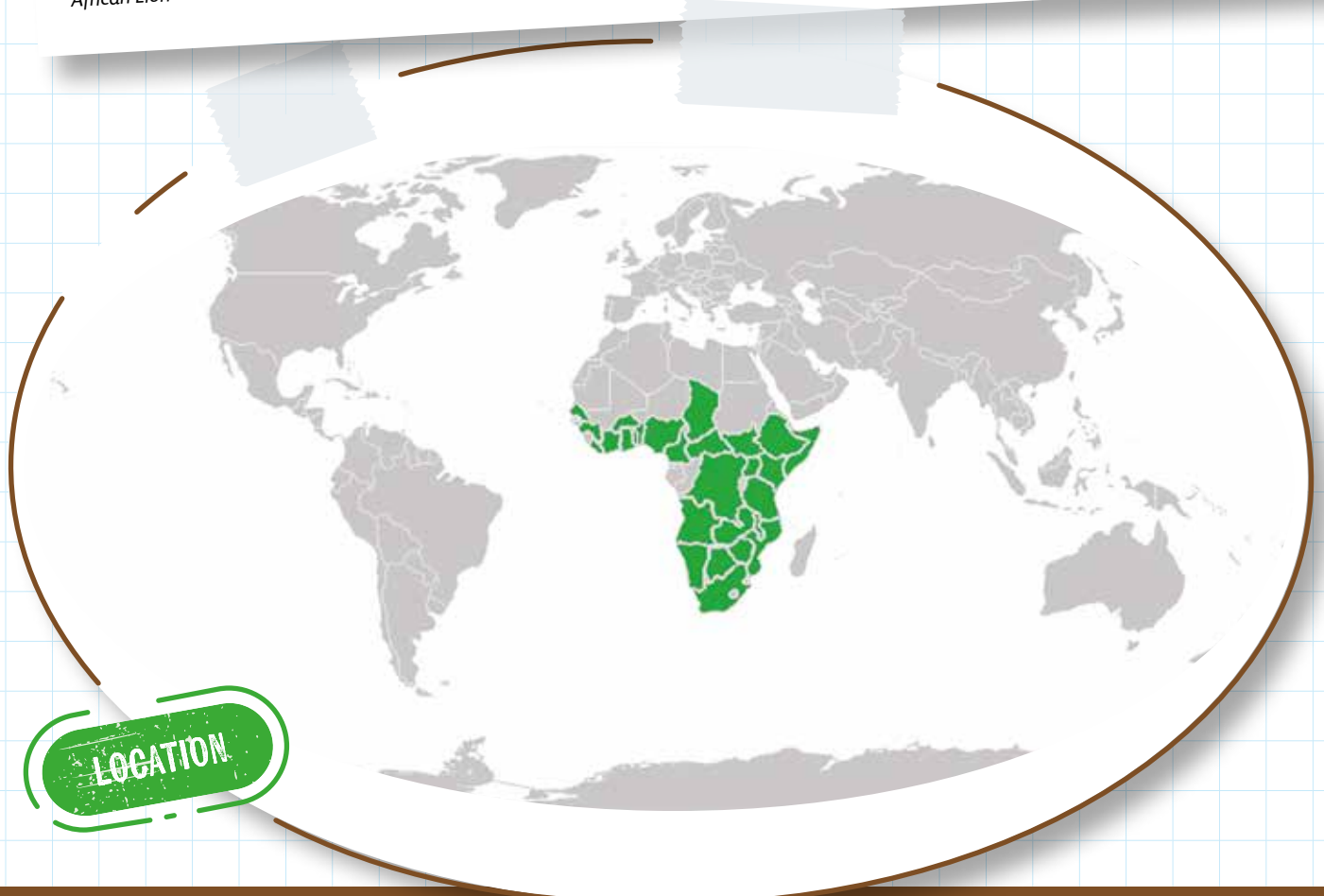


AFRICAN LION

Panthera leo



"African Lion - Western Kruger, South Africa" by whl.travel is licensed under CC BY-NC-SA 2.0.



LOCATION

AFRICAN LION

Panthera leo



HABITAT:

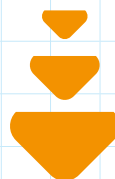
- These lions are now only found in Sub-Saharan Africa, although they used to be found throughout Africa.
- Lions can live in desert, woodland and even mountains but are best suited to grasslands. This is due to their ambush style of hunting and fur colouration.

DIET: They eat large game such as zebra, wildebeest and antelope. They will often hunt these although are known to scavenge as well.

FOOD CHAIN: Lions have no natural predators although can become injured when hunting larger prey such as giraffes or water buffalo. Humans are now their main threat.

FACTS:

- Lions have powerful jaws with sharp teeth.
- Lions usually live in groups of 10–15 individuals, called a pride.
- Male lions are usually responsible for protecting the pride from other lions whilst females are responsible for most of the hunting. They are the only big cat to hunt as a pride.
- Lions are at risk from humans due to trophy hunting and the bush meat trade.



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BROAD-BANDED GREEN SWALLOWTAIL BUTTERFLY

Papilio bromius



LOCATION

BROAD-BANDED GREEN SWALLOWTAIL BUTTERFLY

Papilio bromius



HABITAT:

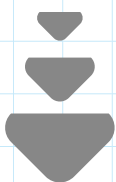
- *Papilio bromius* can be found throughout Sun-Saharan Africa whilst *Papilio chrapkowskoides* are thought to only be found in Uganda, Tanzania, Kenya and Sierra Leon.
- They are most suited to a habitat with some trees as this is the best way for them to absorb moisture.

DIET: The caterpillars eat citrus and other plants.

FOOD CHAIN: Butterflies can be eaten by ants, snakes, birds, monkeys and many other animals.

FACTS:

- Butterflies can be colourful for a variety of reasons including camouflage, warning other animals away and attracting a mate.
- Butterfly colouration can be caused by coloured pigments in the skin or by the way the scales on the skin reflect light. This butterfly is coloured by pigment and so fades over time.



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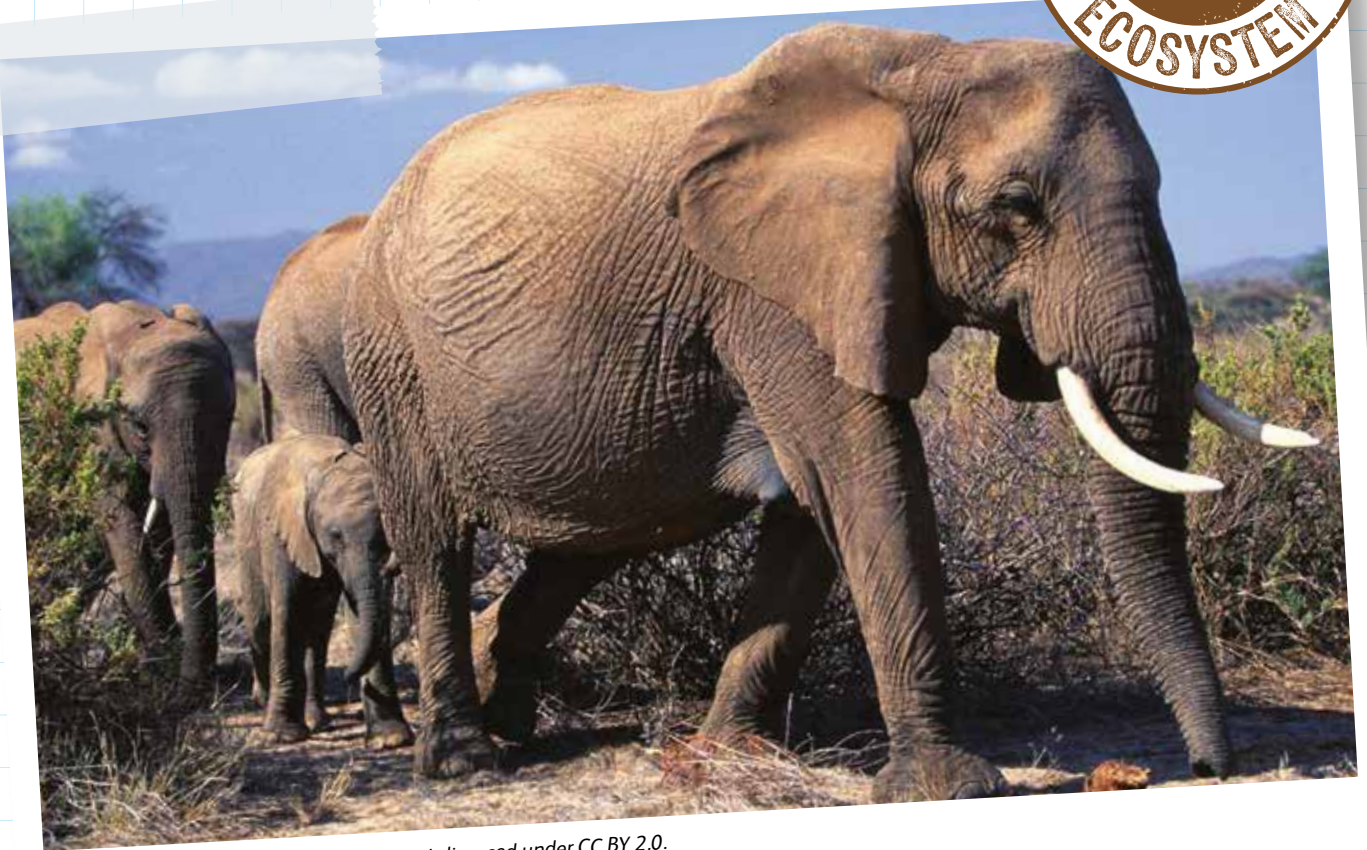


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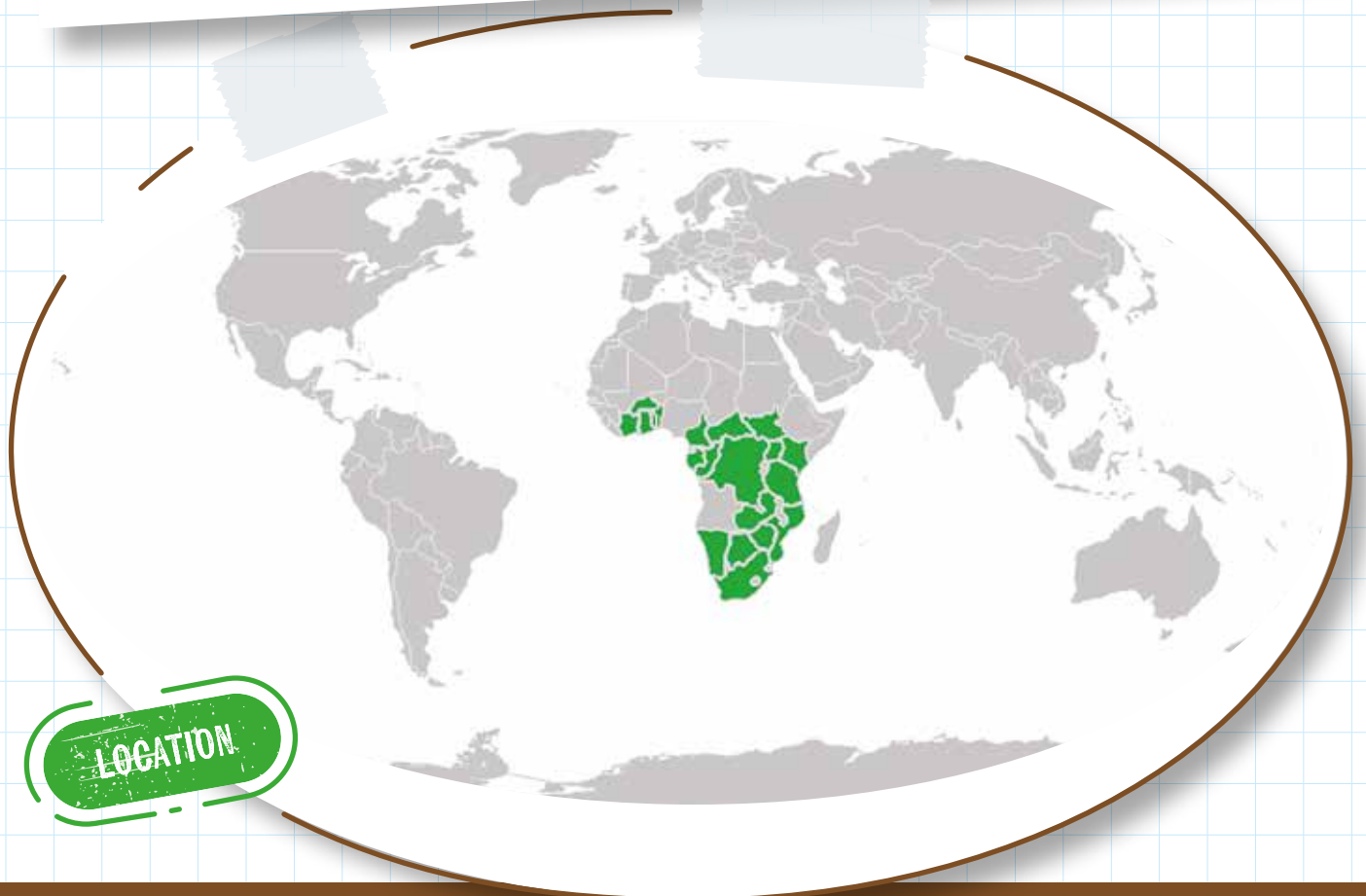
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AFRICAN ELEPHANT

Loxodonta africana



"African Elephants-Africa" by flickrfavorites is licensed under CC BY 2.0.



LOCATION

AFRICAN ELEPHANT

Loxodonta africana



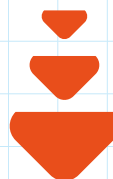
HABITAT: African elephants live in Eastern, Southern and Western Africa. Populations are now more fragmented.

DIET: They eat grass and shrubs as well as leaves from trees. In dry seasons they will chew on tree bark.

FOOD CHAIN: Elephants have no natural predators although lions may attack young calves. Humans are now their main threat.

FACTS:

- Elephants have wrinkles in their skin to help keep them cool in the hot sun. They cover themselves in dust or mud which fills the wrinkles.
- Elephants live in large groups called herds. These are usually led by the eldest female.
- Elephants are at risk from humans due to poaching for their ivory.
- Elephants keep growing throughout their lives and can live up to 70 years.
- Elephants only have four teeth (not including their tusks). They have six sets of teeth throughout their lives. Their tusks are long incisor teeth.



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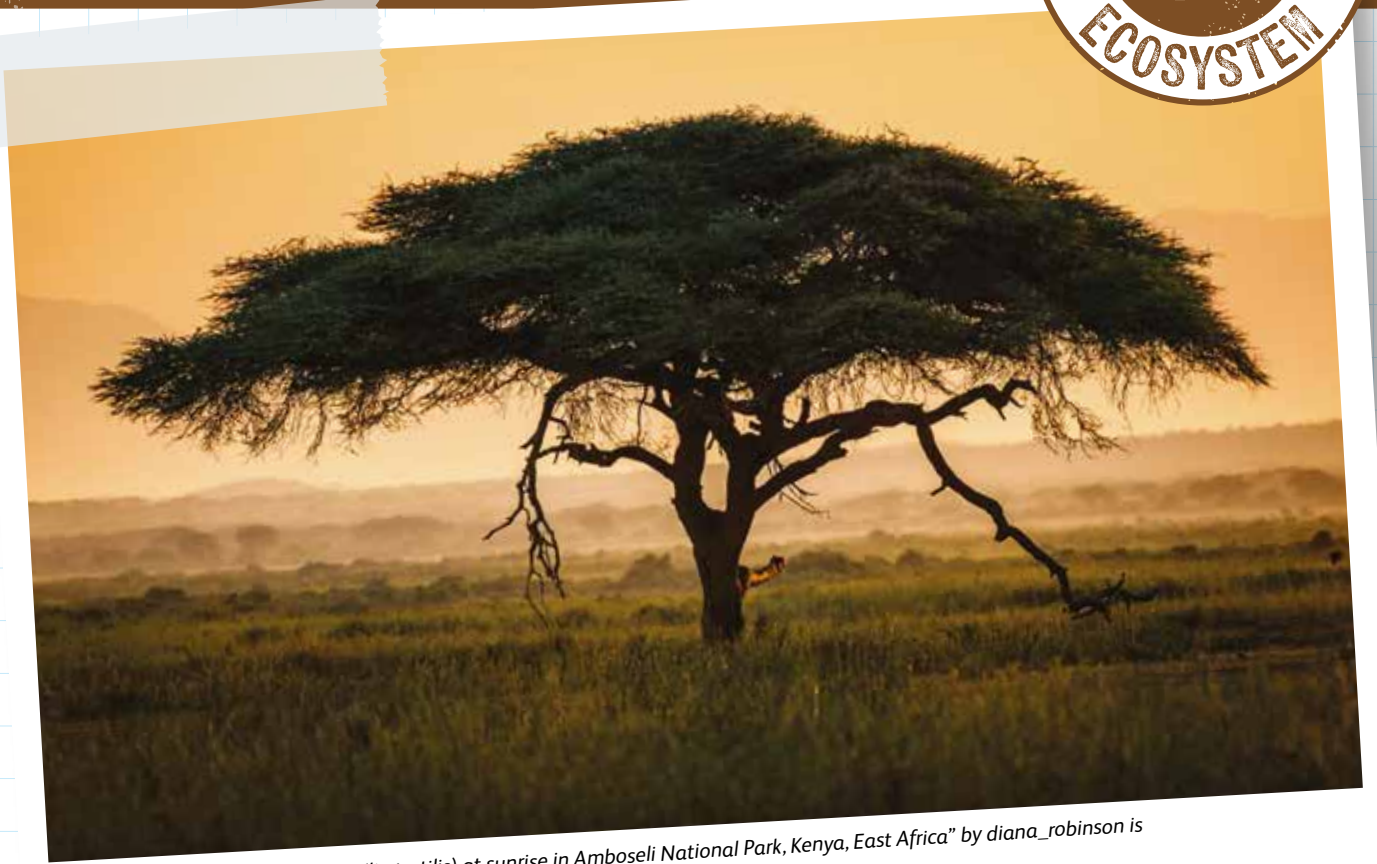
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UMBRELLA THORN ACACIA

Vachellia tortilis



"Umbrella thorn acacia tree (*Vachellia tortilis*) at sunrise in Amboseli National Park, Kenya, East Africa" by diana_robinson is licensed under CC BY-NC-ND 2.0.

UMBRELLA THORN ACACIA

Vachellia tortilis



HABITAT: They grow in the African Savannah where there can be as little as 4cm of rainfall a year.

FOOD CHAIN: Acacia leaves are one of the favourite foods of giraffes. Giraffes have long rubbery tongues which can reach round the thorns and allow them to reach the leaves unharmed.

SIZE: These trees were given their name due to their shape. They can grow up to 20 meters high.

FACTS:

- It has two types of thorn, both straight and hooked, to try and protect its leaves from herbivores. Thorns can be up to 5cm long.
- Some species of acacia have a symbiotic relationship with ants. The ants live in the trees and are protected by the thorns, but if the tree is disturbed the ants swarm out and bite the attacker therefore protecting the tree.

AFRICAN SAVANNAH FOOD WEB



PRIMARY PRODUCER

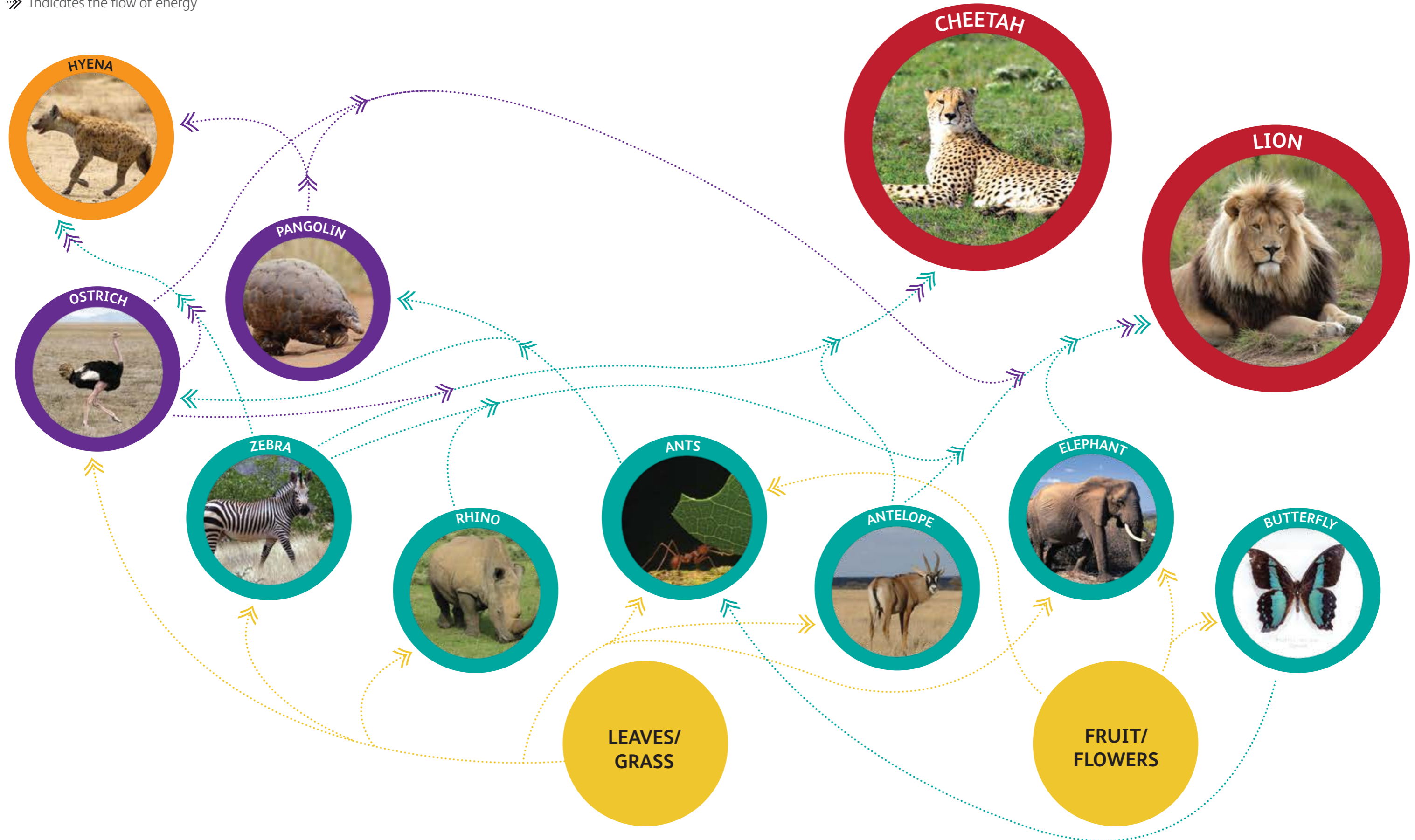
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APEX PREDATOR

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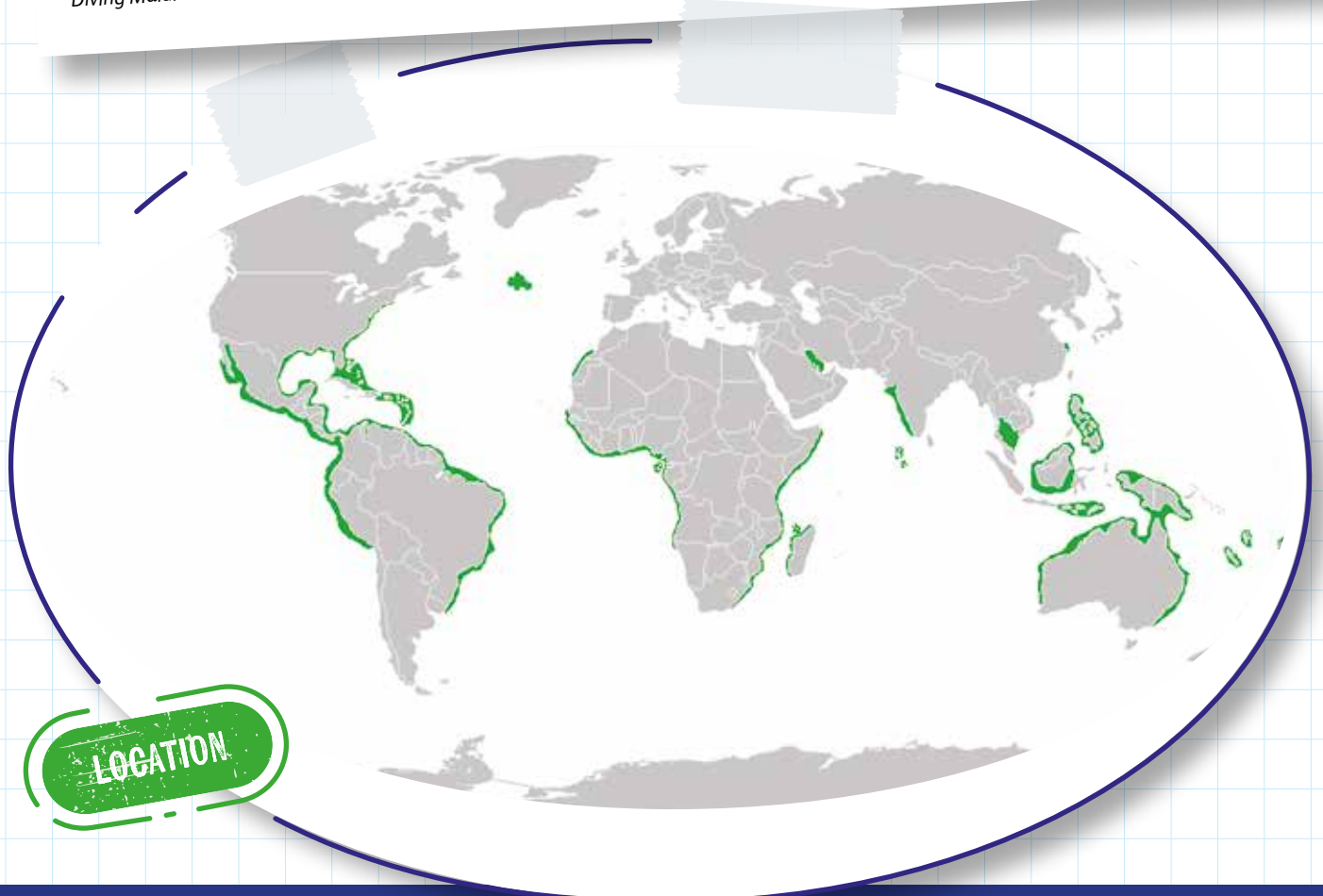


BULL SHARK

Carcharhinus Leucas

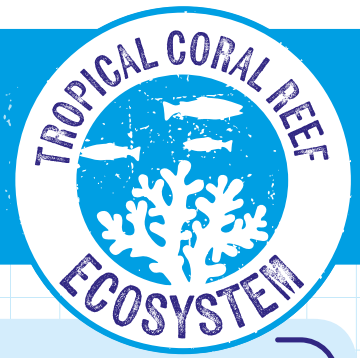


"Diving Maldives: Hawksbill Turtle (*Eretmochelys imbricata*)" by Mal B is licensed under CC BY-ND 2.0.



BULL SHARK

Carcharhinus Leucas



HABITAT: Bull sharks live in the shallow waters around the coast as well as in rivers and estuaries.

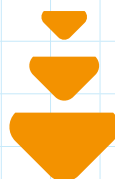
DIET: They eat a huge variety of things including fish, turtles, birds, other sharks and even land animals.

FOOD CHAIN: Nothing eats bull sharks, they are top of the food chain.

SIZE: They are 2–2.5m long which is about as tall as an adult human with their hands in the air.

FACTS:

- Sharks can keep replacing their teeth and can grow up to 20,000 throughout their lives.
- Bull sharks have an amazing sense of smell which they use to hunt.
- They are extensively fished for food and sport and because they frequent shallow water near human habitation.
- Bull sharks are one of the most common sharks to attack humans because they are ambush hunters which take large prey.
- This jawbone is small and from a juvenile shark.



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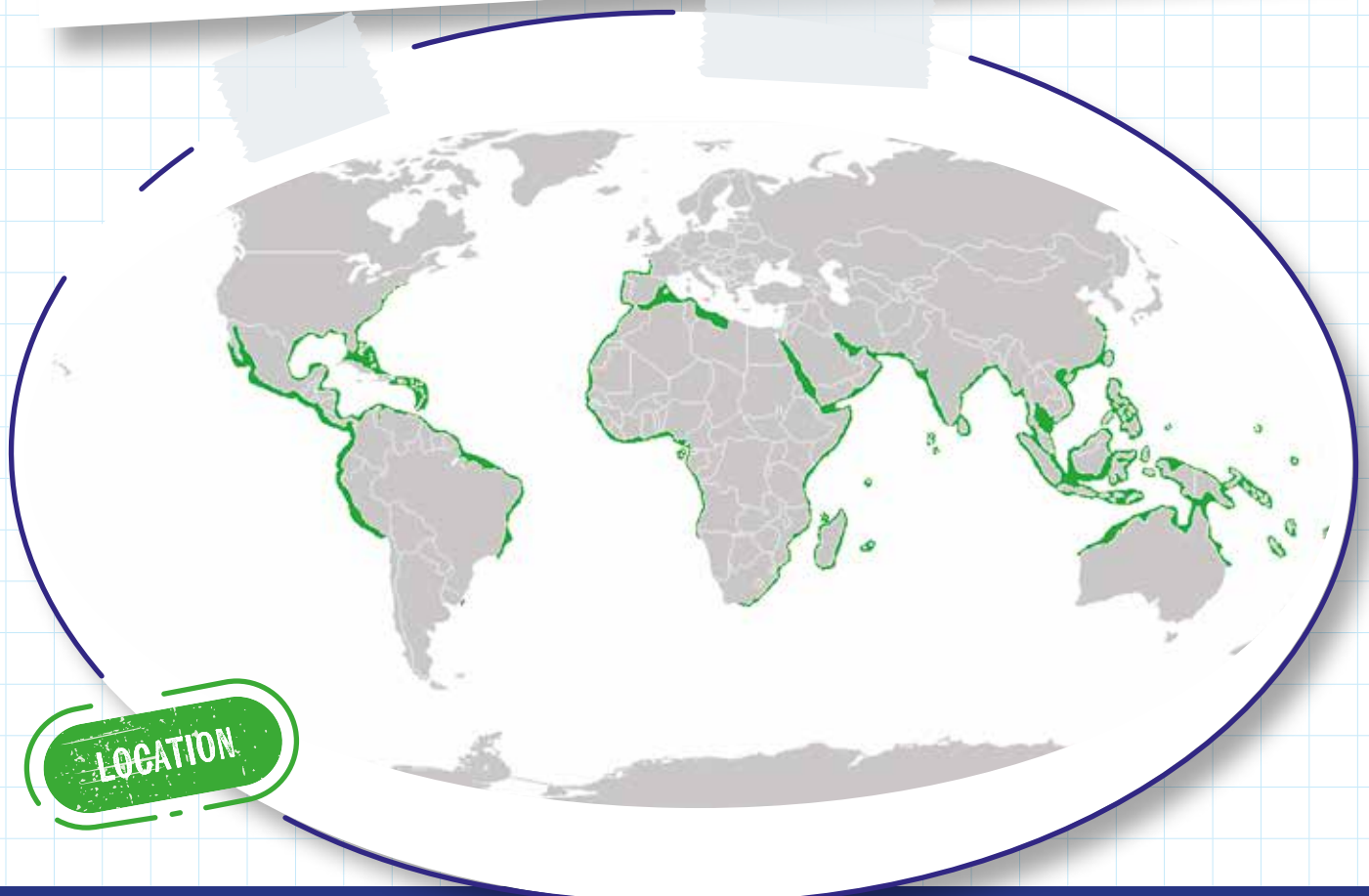
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HAWKSBILL TURTLE

Eretmochelys imbricata

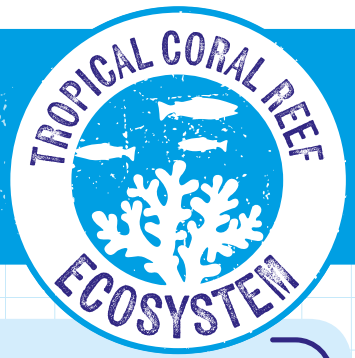


"Diving Maldives: Hawksbill Turtle (*Eretmochelys imbricata*)" by Mal B is licensed under CC BY-ND 2.0.



HAWKSBILL TURTLE

Eretmochelys imbricata



HABITAT: They live near the coasts in warm tropical waters.

DIET: Turtles are carnivores and mostly eat crabs, lobsters and shellfish.

FOOD CHAIN: Several large species of sharks eat turtles.

SIZE: Hawksbill turtles are 1m long, the same distance as from the floor to a door handle.

FACTS:

- They have a hooked beak and narrow head (which gives them their name) which helps them to eat shellfish.
- Turtles cannot hide inside their shells, but it does give them protection from predators.
- They give birth in burrows on the beach and baby turtles have to run to the sea as soon as they hatch.
- Hawksbill turtle numbers have dropped because they are hunted for meat, their decorative shells and as exotic gifts.
- However, this is now illegal and many organisations are trying to protect the species.



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TRITON

Charonia variegata



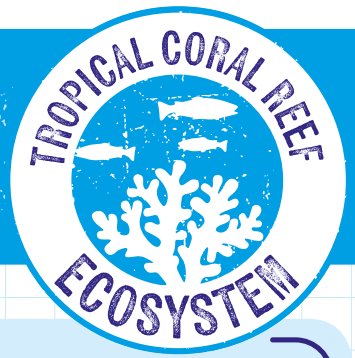
"Charonia tritonis variegata" by Aries Tottle is licensed under CC BY 2.0.



LOCATION

TRITON

Charonia variegata



HABITAT: Triton snails live in ocean habitats all over the world.

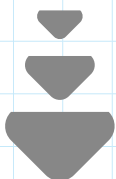
DIET: Tritons are carnivores and eat other marine snails and starfish.

FOOD CHAIN: It is eaten by large fish (such as wrasse), some octopus and squid.

SIZE: Tritons can grow to about 30cm long- as long as a ruler!

FACTS:

- It has paralysing saliva which means it can immobilise prey to eat at its leisure.
- They can eat the dangerous Crown-of-thorns starfish, which is covered in poisonous spikes an inch long.
- In many traditional cultures Triton shells are adapted and used as horns.
- They have an organ called a radula which is a scraping organ found in snails. It uses it to saw through the starfish's tough skin.
- Triton marine snails are not evaluated by the IUCN red list but are considered widespread and not under threat.



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KNIFETOOTH SAWFISH

Anoxypristis cuspidata



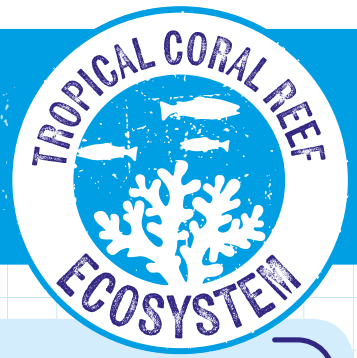
"Happy Mr. Sawfish" by tricky (rick harrison) is licensed under CC BY-NC-SA 2.0.



LOCATION

KNIFETOOTH SAWFISH

Anoxypristis cuspidata



HABITAT: Sawfish live in the west Pacific and Indian Oceans up to 40 meters deep.

DIET: Sawfish are believed to eat small fish, crabs, squid and shrimp.

FOOD CHAIN: They are eaten by sharks.

SIZE: Knifetooth sawfish can grow up to 4.7m which is as long as two cars!

FACTS:

- They hunt by slashing or stunning prey with their 'saw' or by digging into the ocean floor with it.
- The saw is the fish's extended nose (rostrum) with teeth on it!
- Because of their saw, sawfish are often accidentally caught in fishing nets and usually kept for sale. The meat and fins are eaten and the saw used in traditional medicines.
- They are also threatened by global temperature rising and damaging costal habitats.
- Sawfish are now a protected species and it is illegal to trade or sell them.
- Very little is known about sawfish and things such as what they eat and how they reproduce are mysteries still to be uncovered.



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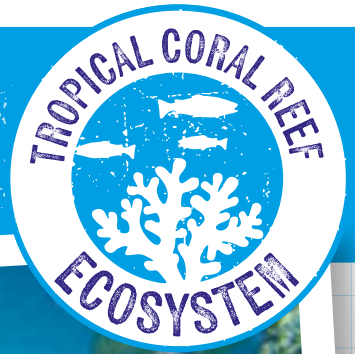
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SPOT-FIN PORCUPINEFISH

Diodon hystrix



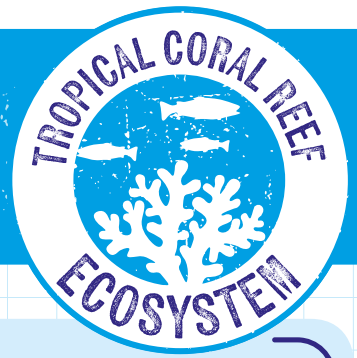
"Albuquerque Aquarium Porcupine Fish" by Frank Carey is licensed under CC BY-NC-SA 2.0.



LOCATION

SPOT-FIN PORCUPINEFISH

Diodon hystrix



HABITAT: This fish is found globally in tropical and subtropical seas.

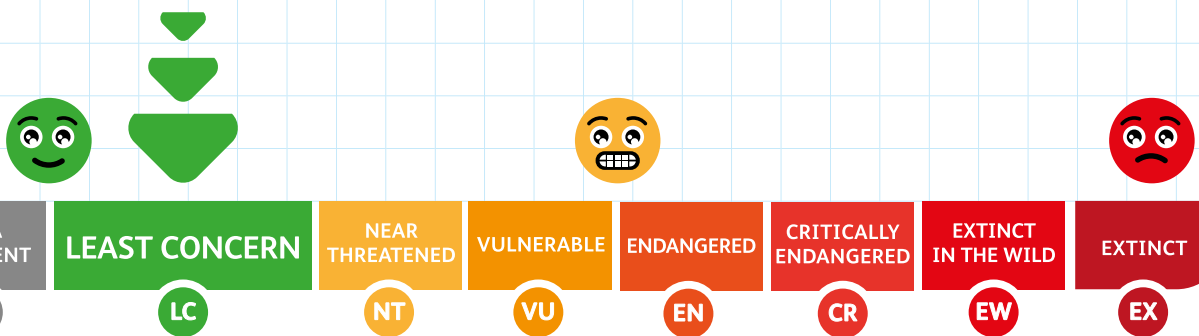
DIET: They eat mainly sea urchins, small shellfish and hermit crabs.

FOOD CHAIN: They are eaten by sharks but not often because they are difficult to bite.

SIZE: Porcupinefish average around 40 cm, but they can grow as large as 91 cm.

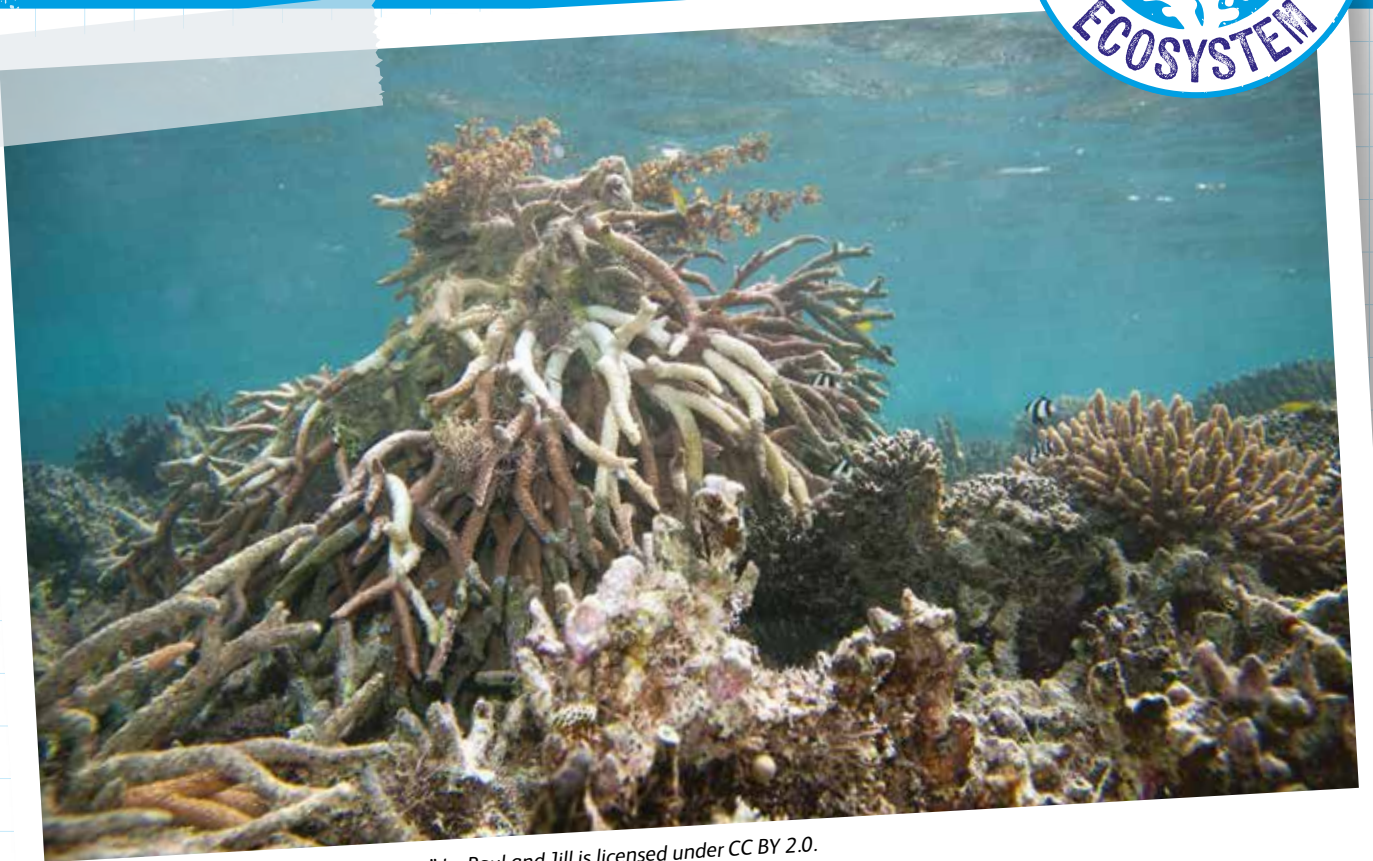
FACTS:

- To defend themselves from predators they puff up by swallowing water or air.
- They can almost double in height by doing this.
- This fish is sometimes eaten by people in parts of South East Asia and Hawaii but parts of it can be poisonous.
- There are no big threats to this species except for rising sea temperature due to climate change.

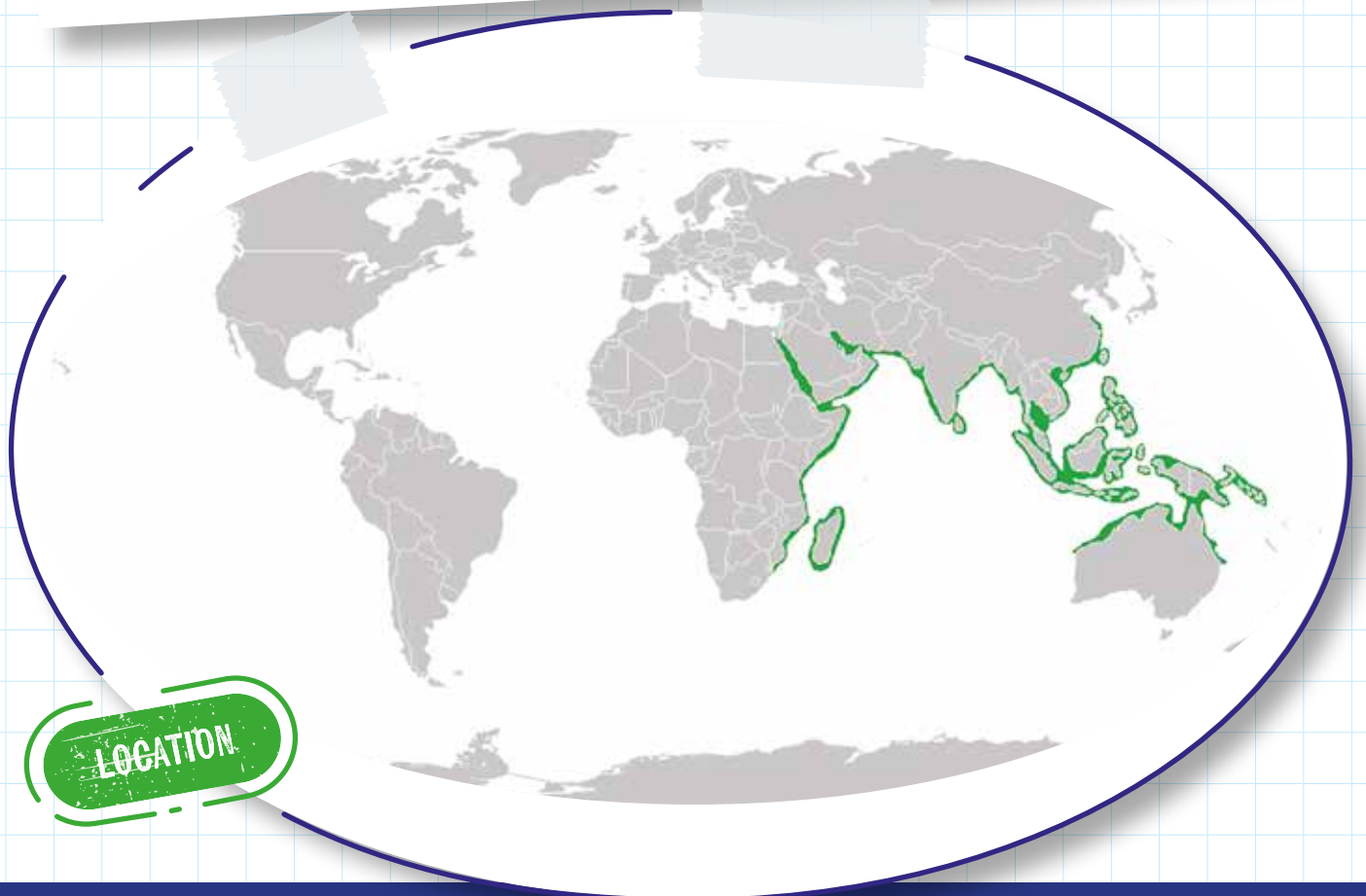


STAGHORN CORAL

Acropora formosa

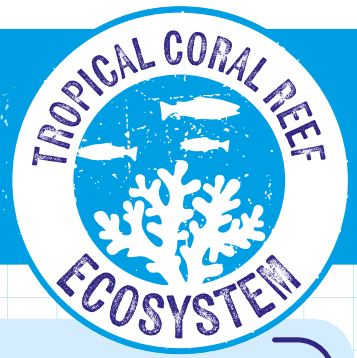


"plausibly staghorn coral *Acropora formosa*" by Paul and Jill is licensed under CC BY 2.0.



STAGHORN CORAL

Acropora formosa



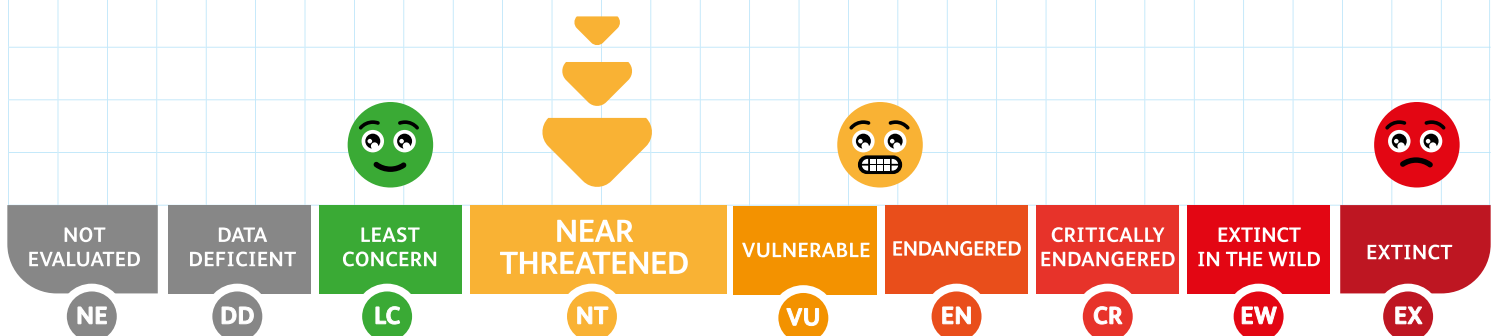
HABITAT: This coral lives in warm shallow water less than 30m deep.

DIET: Corals are filter feeders and eat mostly plankton and small bits of dead plants that float in the water.

SIZE: These animals are very small, measuring 1–3mm.

FACTS:

- Corals are colonies of animals all living together.
- Staghorn corals are good reef building corals and colonies can grow up to 30cm a year.
- The colour of coral is from algae that live in the colony and give the coral food.
- Staghorn coral can either grow into tall branches or in big flat plates.
- The biggest threat to staghorn coral is rising sea temperatures which cause the algae to die (also called coral bleaching) which in turn causes the coral to die.



TROPICAL REEF FOOD WEB



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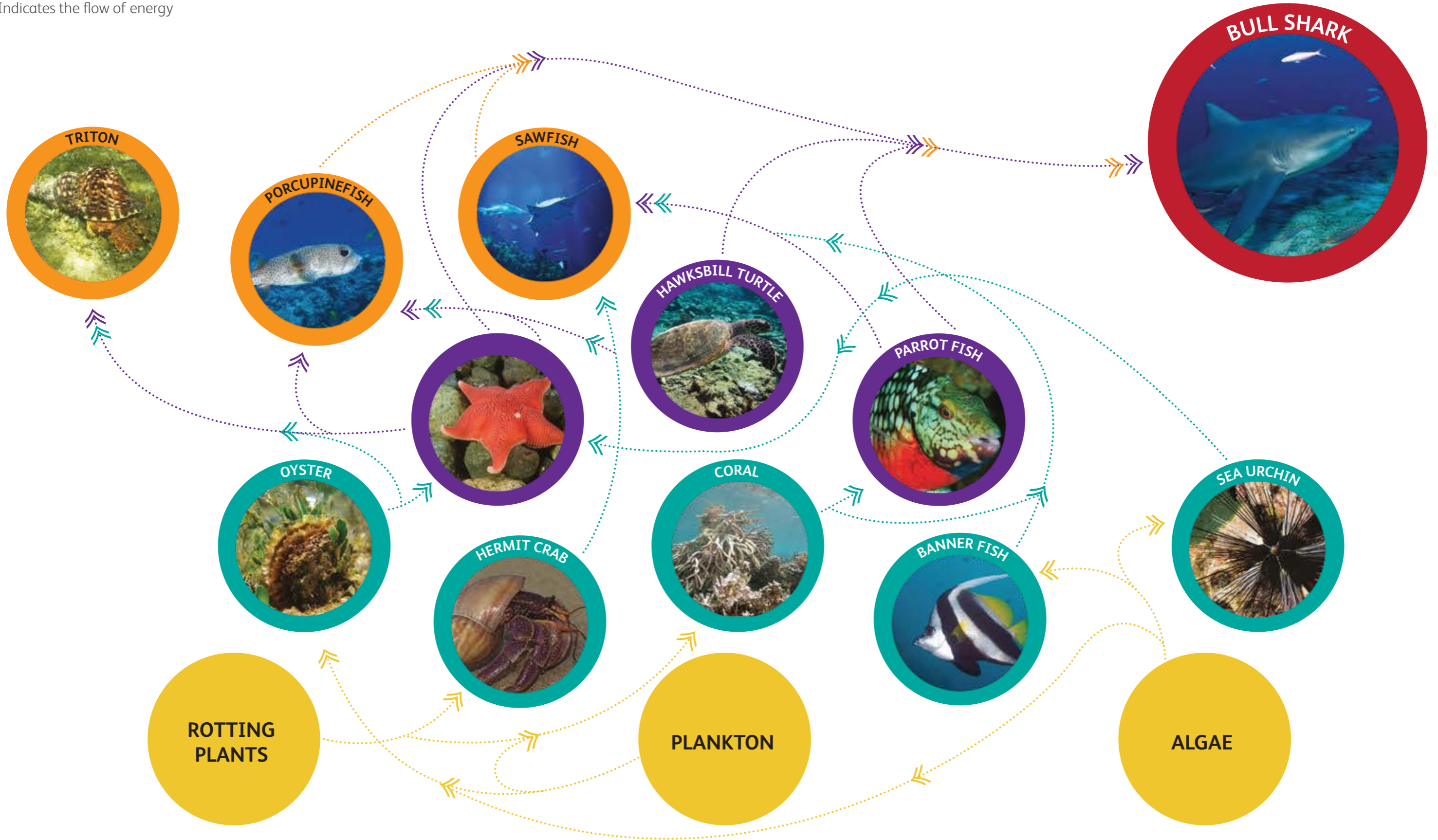
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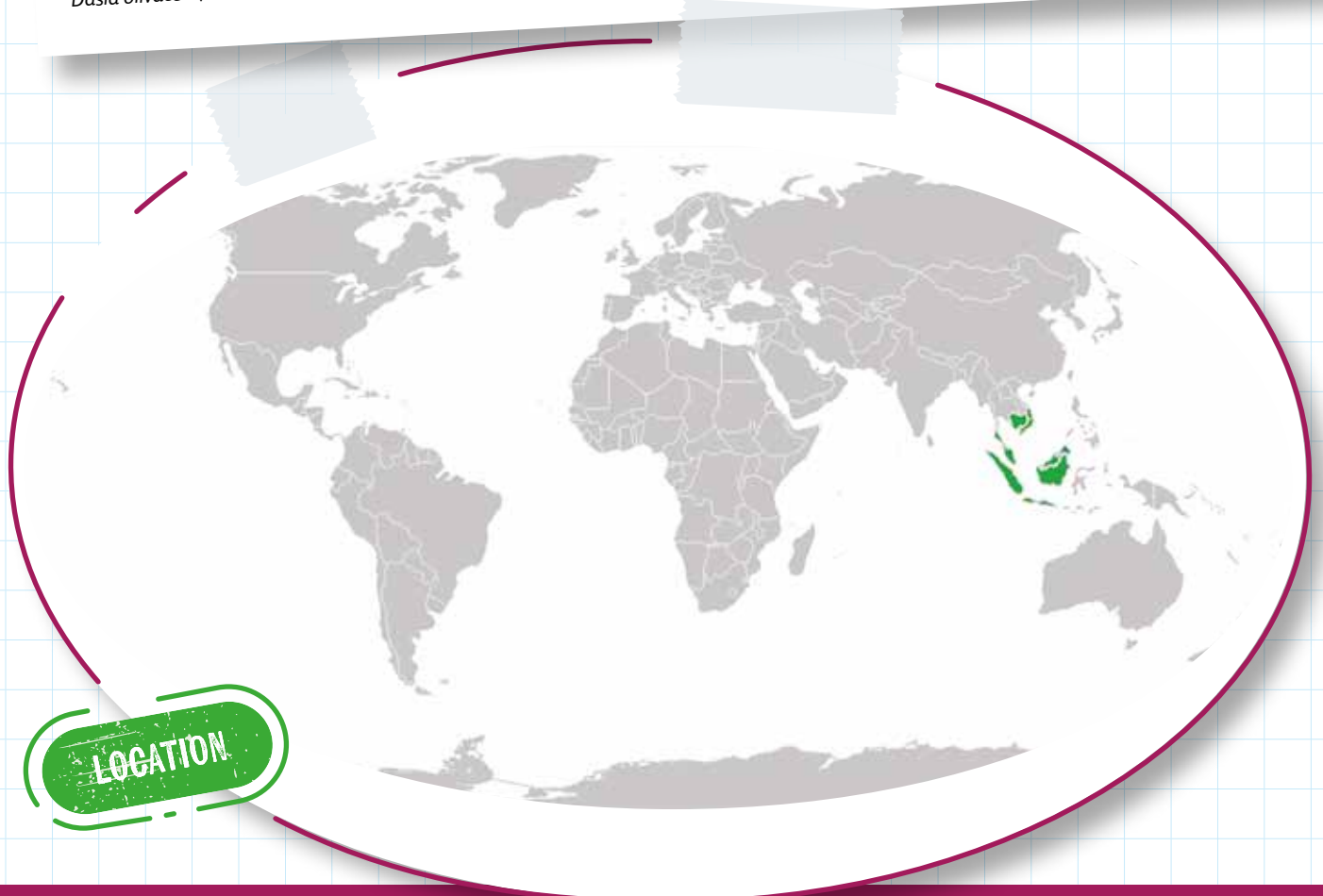


OLIVE TREE SKINK

Dasia olivacea



"*Dasia olivacea* (Olive Tree Skink)" by GeeC is licensed under CC BY 2.0.



OLIVE TREE SKINK

Dasia olivacea



HABITAT:

- There are many species of skink, these ones are found throughout South East Asia.
- They live in lowland forests and almost never walk on the ground.

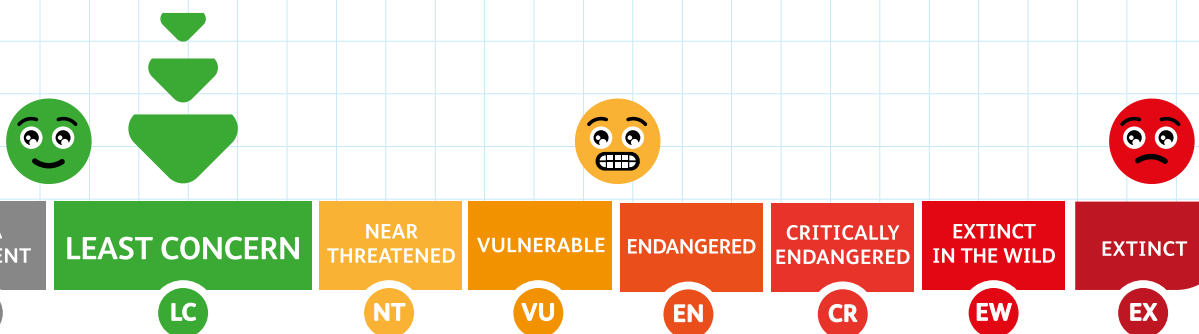
DIET: Skinks are omnivores and eat both plants and animals usually eating insects and fruit.

FOOD CHAIN: Skinks will be eaten by many predators like hawks, snakes, monkeys and even leopards.

SIZE: This species of skink can grow up to 29cm long from nose to tail- that is about as long at a ruler!

FACTS:

- Because they almost never touch the ground these skinks lay their eggs under the bark of trees.
- Because the olive tree skink is so widespread it is not considered threatened at this time however deforestation in its range could cause a reduction in population.
- The green and brown colouring of the skink helps it to camouflage into the trees.



LONG-TAILED MACAQUE

Macaca fascicularis



"Long tailed macaque" by shankar s. is licensed under CC BY 2.0.



LONG-TAILED MACAQUE

Macaca fascicularis



HABITAT:

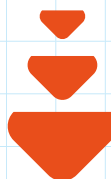
- Long-tailed macaques live in South East Asia, but macaque species are widespread throughout Asia and North Africa.
- They live in jungles and mangroves but always very close to water.

DIET: They are omnivores but mainly eat fruit, seeds and leaves as well as small birds, crabs and insects.

FOOD CHAIN: They are hunted by big cats, snakes and birds of prey.

FACTS:

- Long-tailed macaques are very good swimmers and often play in rivers and pools.
- Macaques often come into contact with humans and can cause conflict due to stealing food or shiny objects.
- In Thailand and Myanmar long-tailed macaques have been observed using tools to break open nuts and shellfish.
- They are an invasive species in places like Hong Kong and Taiwan where they outcompete other native species.



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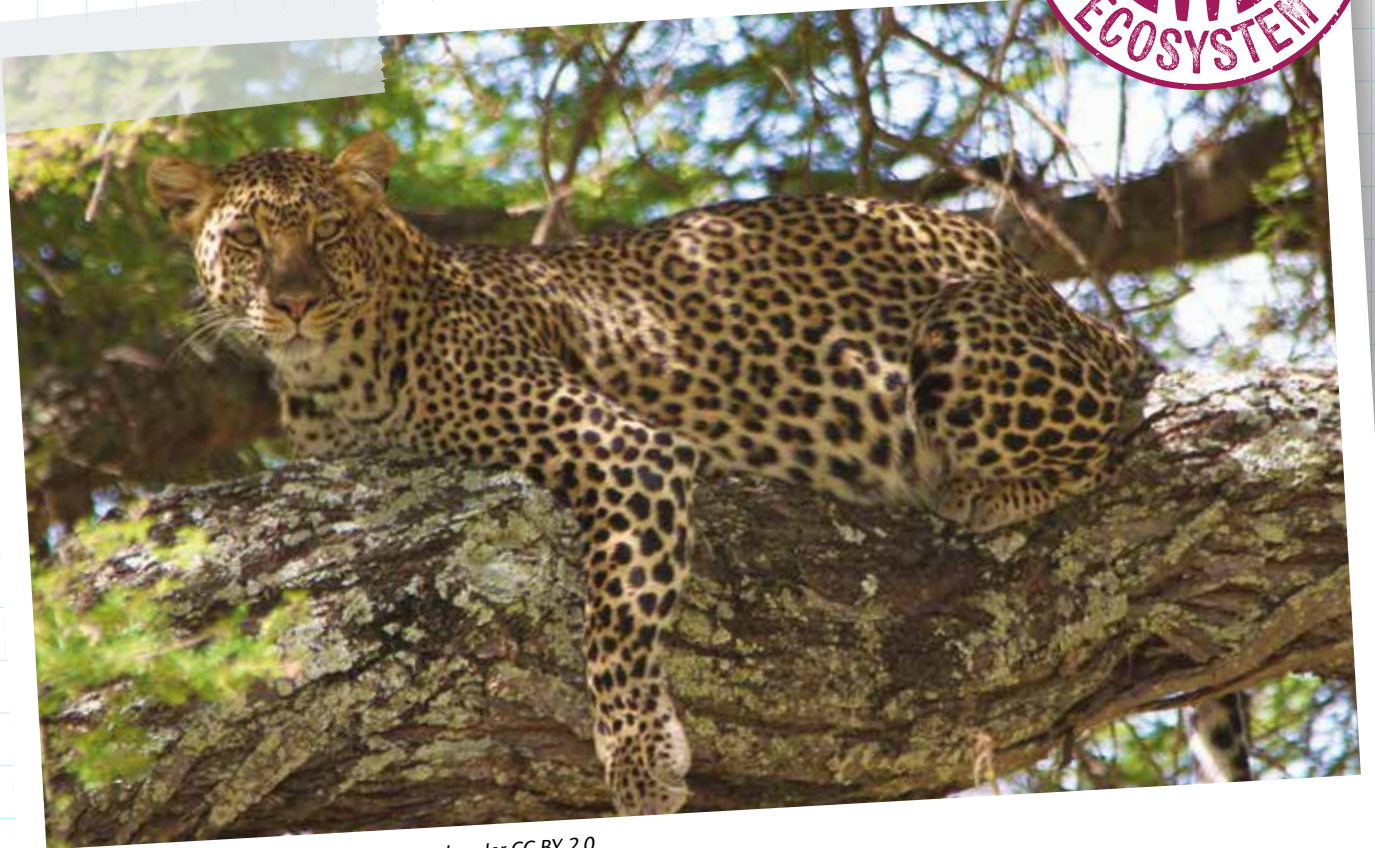
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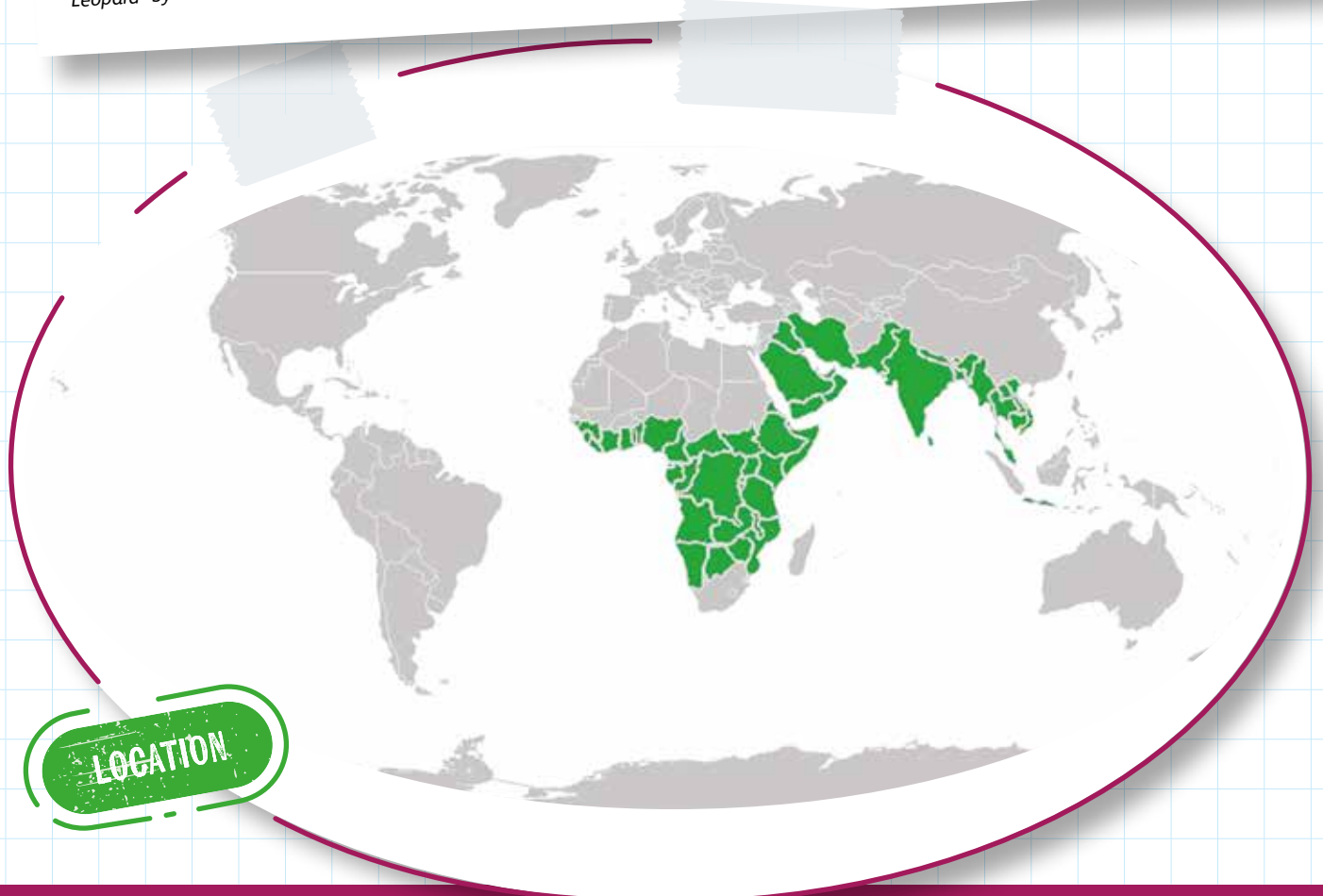
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LEOPARD

Panthera pardus



"Leopard" by Mitchell Fitzsimmons is licensed under CC BY 2.0.



LOCATION

LEOPARD

Panthera pardus



HABITAT:

- Leopards have a huge range and are found throughout Asia and Africa.
- They occupy many different habitats from rocky hills to grasslands to forests.

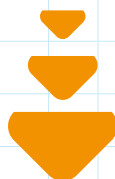
DIET: They are carnivores and eat many different animals including birds, monkeys, rodents, deer and lizards.

FOOD CHAIN: Leopards have no natural predators but will sometimes fight with other big cats over food. Python snakes have been known to eat injured leopards.

SIZE: They are the smallest big cat but are still about four times the size of an average house cat! Up to 285cm long.

FACTS:

- The leopards' spots are camouflage which make them difficult to see in long grass and trees.
- They are also great climbers and can drag prey up to three times their body weight into trees.
- Despite being very adaptable they are under threat from humans due to habitat loss.
- Although the whole species is listed as vulnerable some sub species are critically endangered.



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JUNGLE NYMPH

Heteropteryx dilatata



"Jungle Nymphs (*Heteropteryx dilatata*)" by guppiecat is licensed under CC BY-NC-ND 2.0.



LOCATION

JUNGLE NYMPH

Heteropteryx dilatata



HABITAT: This insect is found in Malaysia and Indonesia.

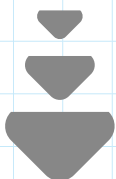
DIET: They eat the leaves of many different trees and jungle plants.

FOOD CHAIN: Jungle nymphs are eaten by snakes, monkeys and other predators.

SIZE: The female can grow up to 20cm long which is the width of an A4 piece of paper.

FACTS:

- The females are much bigger and bright green, and the males are smaller and brown.
- They are commonly kept as pets.
- There is very little research on this animal so it is unknown if anything threatens them.
- Deforestation is a huge issue that threatens the jungle nymph's habitat.



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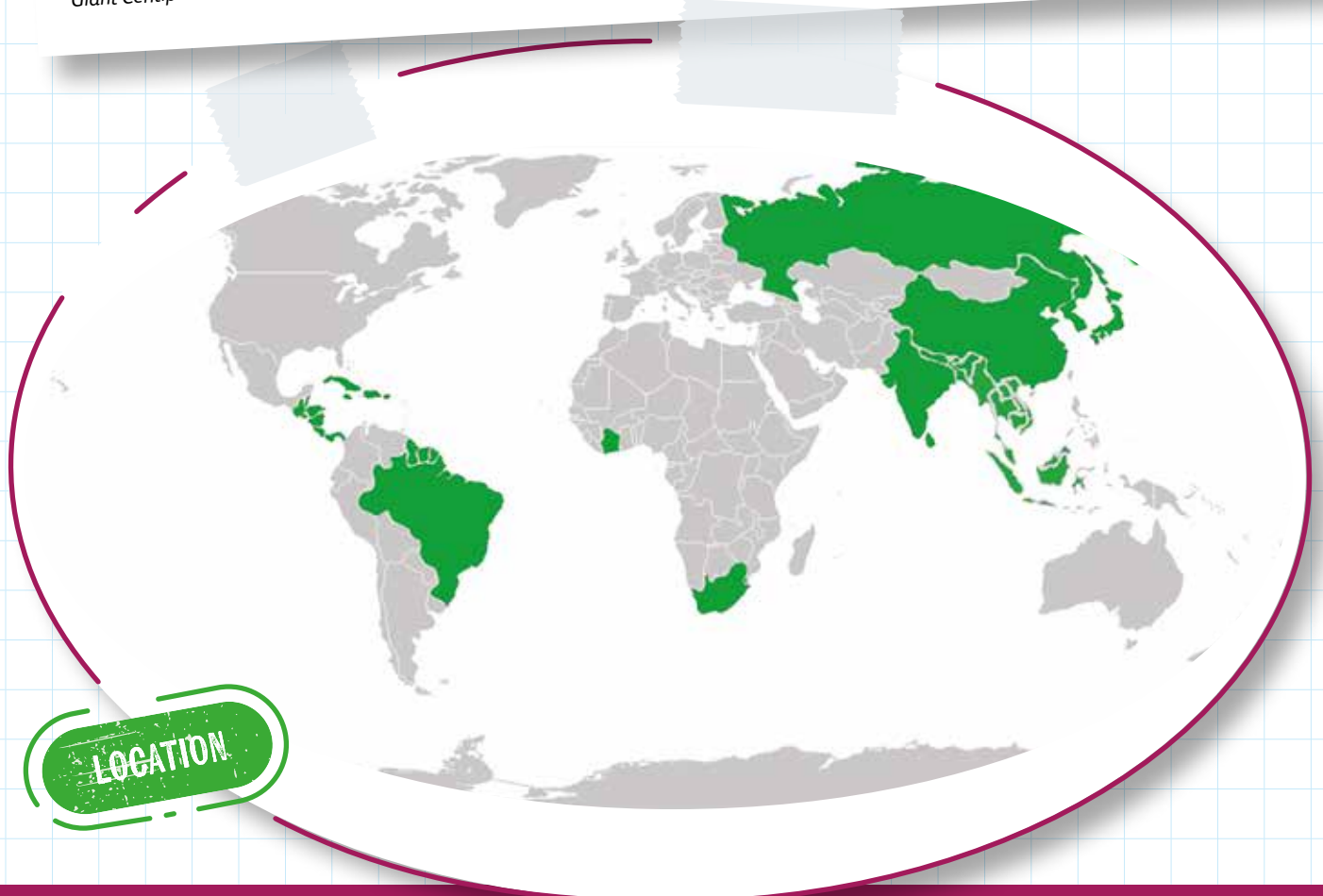
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GIANT CENTIPEDE

Scolopendra subspinipes



"Giant Centipede in Kaeng Krachan national park" by tontantravel is licensed under CC BY-SA 2.0.



LOCATION

GIANT CENTIPEDE

Scolopendra subspinipes



HABITAT:

- This centipede is native across Asia and Australia but is also found in the Americas and Caribbean. Because of its size it is a popular pet so may have been introduced in some areas.
- They prefer warm damp places and often hide under rocks or logs.

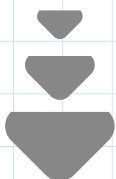
DIET: They are carnivores and will attack and eat almost anything the same size as them or smaller.

FOOD CHAIN: Birds, snakes and some larger mammals eat centipedes.

SIZE: It can grow up to 20cm long which is the width of an A4 piece of paper.

FACTS:

- This centipede is very venomous, and its bite can cause bruising and pain for up to a week.
- This centipede will protect its young from predators by wrapping its body around them.
- This centipede has not yet been assessed by the ICUN Red List, probably as it is abundant in its range. There are also lots of similar subspecies which people often mix up making it difficult to find data on them.
- Its main threat from humans is extermination near human habitation due to the danger of bites.



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KLUGIA

Rhynchoglossum notonianum



"Kilaneeli (Malayalam:)" by Dinesh Valke is licensed under CC BY-SA 2.0.

KLUGIA

Rhynchosyllum notonianum



HABITAT: This plant is found widely throughout India and Sri Lanka.

FOOD CHAIN: Leafcutter ants harvest both the leaves and the flowers and other insects will eat them too.

FACTS:

- The large elongated bottom petal is called a bee platform to make it easy for bees to get the nectar.
- The leaves grow more on one side than the other which means that the plant can turn towards the sun.

WILD GINGER

Zingiber officinale



"Zingiber officinale" by D.Eickhoff is licensed under CC BY-NC-SA 2.0.

WILD GINGER

Zingiber officinale



FOOD CHAIN: The leaves will be eaten by many insects and the fruit and flowers by birds and monkeys.

SIZE: They can grow up to 5m tall but usually are much smaller.

FACTS:

- This is the wild relation of the farmed ginger that we use as a spice.
- It is the root that is used and eaten by humans to season food.
- It grows large fleshy yellow or pink flowers which smell of ginger.

MALAYSIAN JUNGLE FOOD WEB



PRIMARY PRODUCER

PRIMARY CONSUMER

SECONDARY CONSUMER

TERTIARY CONSUMER

APEX PREDATOR

⇒ Indicates the flow of energy

