



هيئة البيئة - أبوظبي
Environment Agency - ABU DHABI

TERRESTRIAL & MARINE

**SPECIES OF
ABU DHABI
EMIRATE 2016**



INTRODUCTION

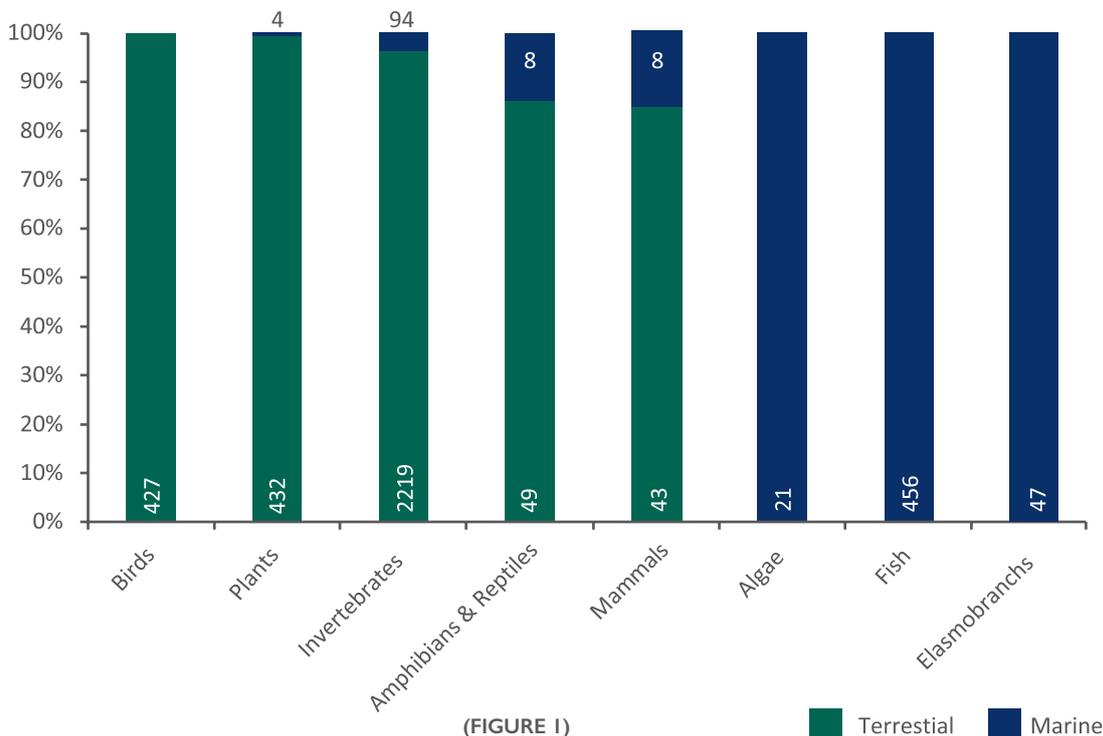


Long term biodiversity monitoring documents the types of species present in any given area. This can be used to prepare species lists such as (Drew et.al. 2005) who listed the mammals, reptiles and amphibians and birds of the UAE. However; the lists have grown over the years as new records have been added and it has become important to update species information.

An initial list of alien (non-native) species of the UAE, including Abu Dhabi, was also prepared in 2015 and recorded a total of 146 species for all major taxa (Soorae et al., 2015). The total numbers of species belonging to different categories in Abu Dhabi emirate are shown in (Figure 1).

Species by EAD. Meanwhile the current available algae records are only from the marine environment.

// THE TOTAL NUMBER OF SPECIES BY CATEGORY





STATUS CATEGORIES:

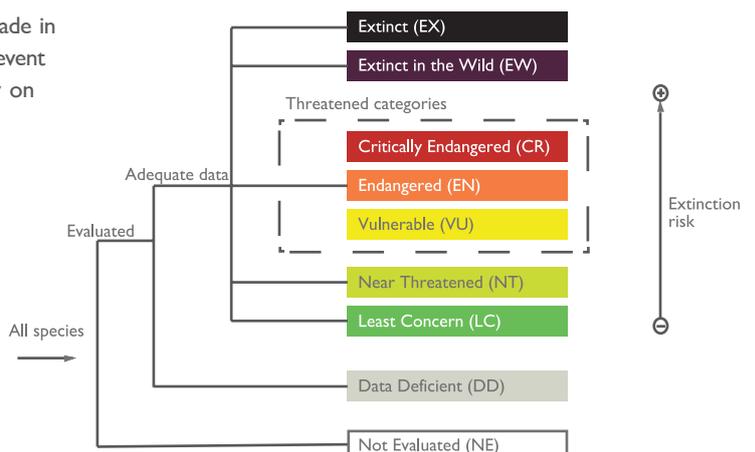
This report summarizes the status of the species under different international categories. In addition to the status of the global threatened species that have been evaluated under the IUCN Red List (2014) and the Convention of International Trade in Endangered Species (CITES).

CITES CATEGORIES:

- Appendix I**
 lists species that are the most endangered among CITES-listed animals & plants. They are threatened with extinction and CITES prohibits international trade in specimens of these species except in exceptional circumstances for scientific research.
- Appendix II**
 lists species that are not necessarily now threatened with extinction but may become so unless trade is closely controlled.
- Appendix III**
 lists species included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation. International trade is allowed only on presentation of the appropriate permits or certificates.

IUCN Red List:

EAD is working to evaluate the local threatened species according to the IUCN Red list.



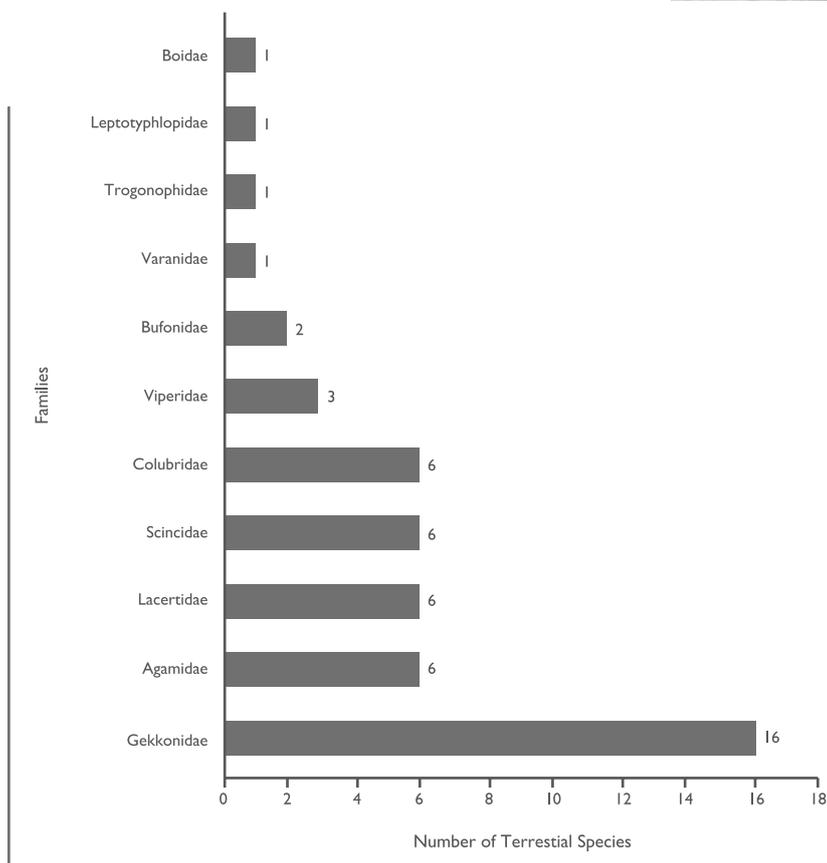
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AMPHIBIA OF ABU DHABI

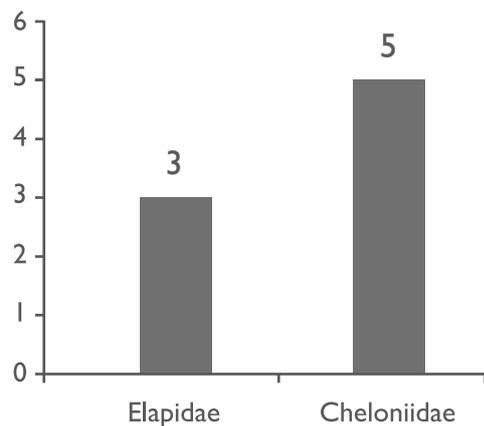


Abu Dhabi emirate has a total of 57 species of terrestrial and marine reptiles and two species of amphibians. Out of the 57 species of reptiles, 49 are terrestrial and eight are marine species. These reptiles and amphibians belong to three main orders namely Anura, Squamata and Testudines and 13 families. The family Gekkonidae has the highest numbers of species at 16, followed by 6 species each for the Agamidae, Lacertidae and Scincidae. There are 11 species of terrestrial snakes in the following families Leptotyphlopidae (one species), Boidae (one species), Colubridae (six species), Viperidae (three species). The marine snakes represented by three species are found in the family Elapidae (Figure 2).

// NUMBER OF SPECIES BELONGING TO DIFFERENT FAMILIES



NUMBER OF MARINE SPECIES



(FIGURE 2)

AMPHIBIANS AND REPTILES ABU DHABI EMIRATE



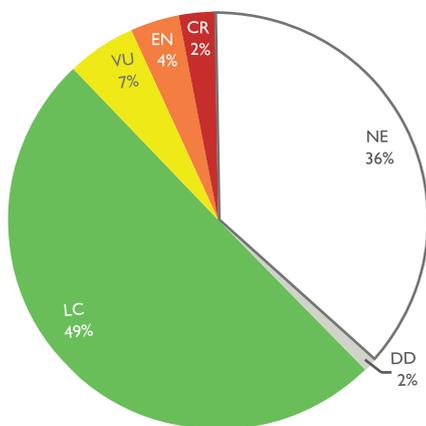
// SPECIES UNDER DIFFERENT CITES CATEGORIES

According to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), six species are in Appendix I and three species are in Appendix II.

CITES Appendix	Terrestrial Species	Marine Species
I	1	5
II	3	-

(TABLE 1)

// PROPORTION OF SPECIES UNDER DIFFERENT THREAT CATEGORIES ACCORDING TO IUCN



(FIGURE 3)

IUCN Categories	Terrestrial Species	Marine Species	Total
CR	—	1	1
EN	—	2	2
VU	2	2	4
LC	25	3	28
DD	1	—	1
NE	21	—	21

On the global scale, following IUCN (International Union for Conservation of Nature) Red List categories, seven species are listed as threatened where one is the Hawksbill turtle (*Eretmochelys imbricata*), is listed as Critically Endangered (CR), two are listed as Endangered (EN) including the Green turtle (*Chelonia mydas*), while four species are listed in the Vulnerable (VU) category. Meanwhile 28 species are listed in the Least Concern (LC) category (Figure 3).



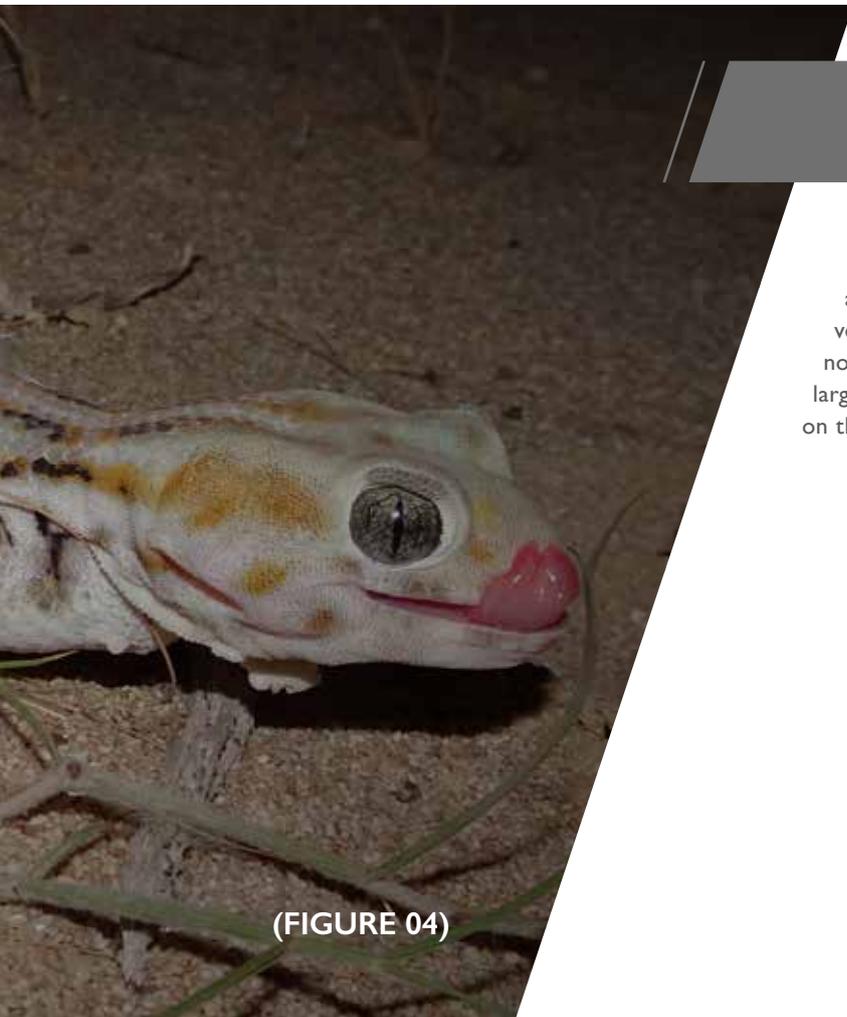
// **Spiny-Tailed Lizard** (*Uromastix aegyptia*
lepteni & *Uromastix aegyptia microlepis*):

This is a large diurnal lizard that lives in areas with sandy but compacted soils where it can dig burrows. They are mainly herbivorous feeding on a variety of plant species and usually live in colonial burrows. This species is also threatened by developmental activities and competition for grazing by livestock. They are listed as Vulnerable (VU) on the IUCN Red List (Figure 5).



// **Wonder Gecko** (*Teratoscincus keyserlingii*):

This is a nocturnal gecko species with a limited distribution found along the coastal sands from Abu Dhabi city into Dubai. It lives in a very narrow ecological niche, of coastal sand dune areas, which are now being subjected to intense development activities. It is one of the largest gecko species in the UAE. They are listed as Not Evaluated (NE) on the IUCN Red List (Figure 4).



(FIGURE 04)



(FIGURE 05)



// **Arabian Horned Viper** (*Cerastes gasperettii*):

This viper can reach 50 cm in length and can be encountered mainly on sandy habitats of Abu Dhabi Emirate and is more common in well-vegetated areas. They will feed mainly on geckos, lizards and rodents. This species also has horns on top of the head but these are not present on all individuals. They breed by laying eggs in burrows and young will hatch mainly in spring and we have recorded young in the Houbara Protected Area of Abu Dhabi's Western Region. This species is listed on the IUCN Red List as Least Concern (LC) (Figure 7).



// **Desert Monitor** (*Varanus griseus*):

This lizard has an elongated snout and a long tail and can reach 70 cm in size. They can be seen during the day hunting for prey usually small mammals and birds, and raid bird nests for eggs. They also hide during the heat of the day in burrows and can use other burrows dug by Red Foxes or Spiny-tailed Lizards. This species is listed on CITES Appendix I and as Not Evaluated (NE) on the IUCN Red List (Figure 6).

(FIGURE 06)

(FIGURE 07)

// **Yellow-Spotted Agama** (*Trapelus flavimaculatus*):

In the UAE this species can be encountered on gravel plain areas with small bushes such as *Acacia* trees. They can be seen basking on the branches and will also climb small bushes in the heat of the day. This species also opens its mouth (Figure 8) as a threat display posture. This species is listed on the IUCN Red List as Least Concern (LC).

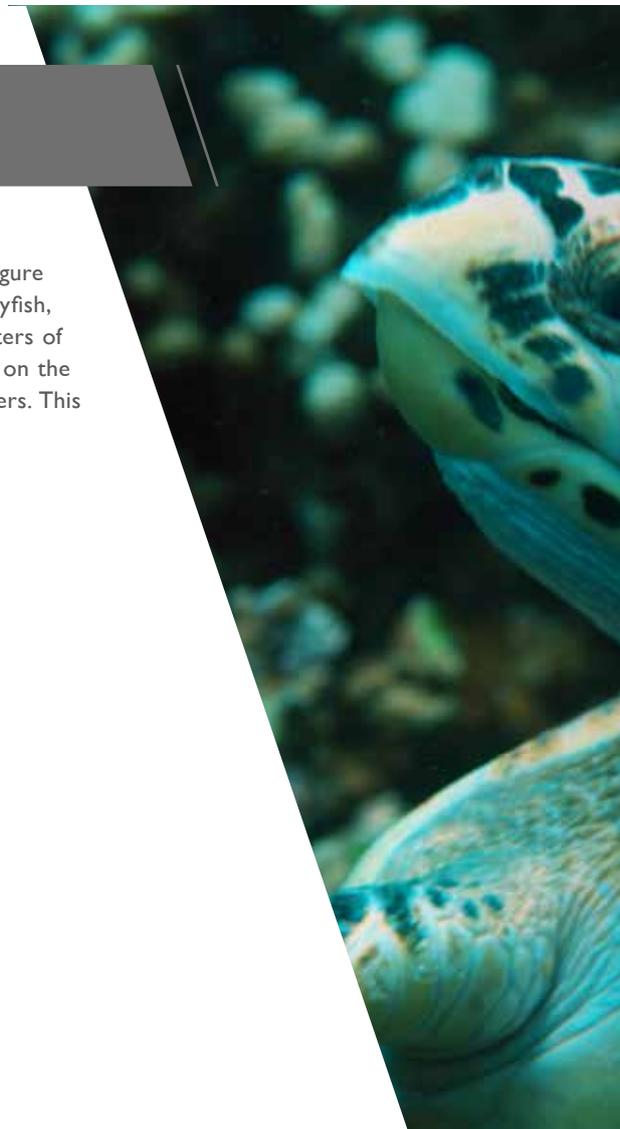
(FIGURE 08)



(FIGURE 09)

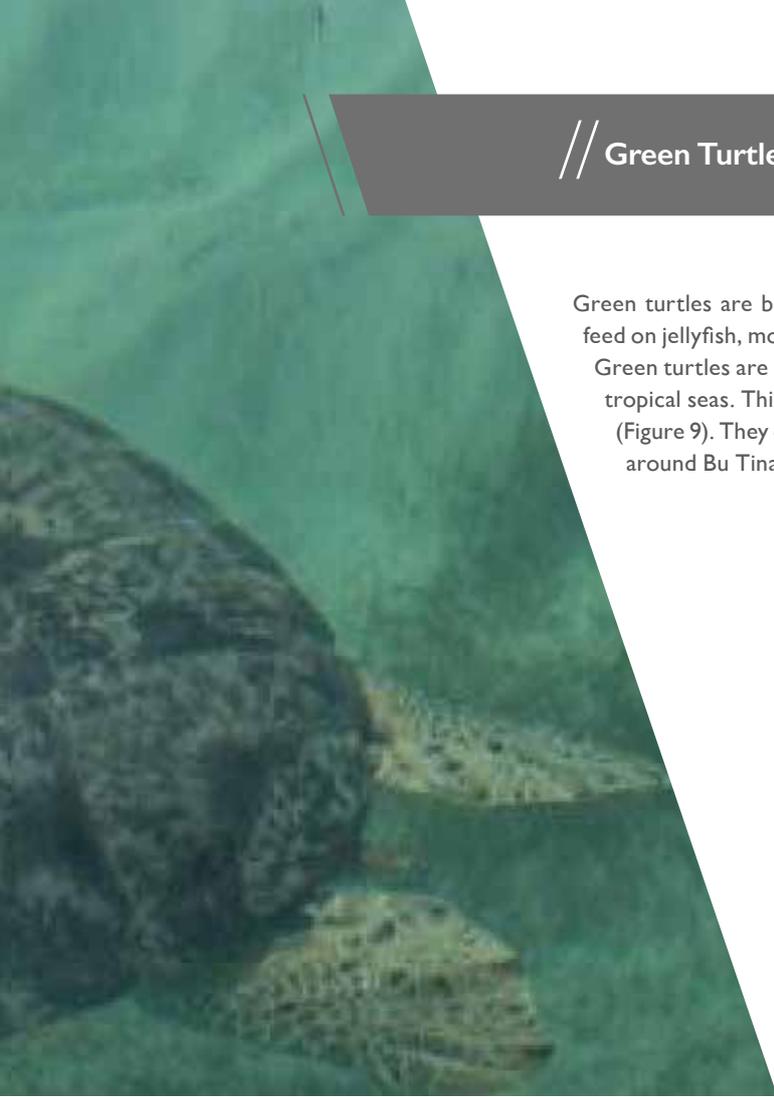
// **Hawksbill Turtle** (*Eretmochelys imbricata*):

The hawksbill turtle is brown in colour, with splashes of orange, yellow, or reddish brown (Figure 10). It has a small head with hawk-like beak (Figure 11). They mainly feed on sponges, jellyfish, squid, and other invertebrates found on coral reefs. Hawksbills are found in offshore waters of mainland and island shelves but are more common near coral reef formations. They nest on the off-shore islands of Abu Dhabi, notably, Jarnain, Bu Tinah, Zirkuh and Arzanah amongst others. This species is listed on the IUCN Red List as Critically Endangered (CR).



// Green Turtle (*Chelonia mydas*):

Green turtles are bluish black, green, or brown in color with brown mottling. Their juveniles feed on jellyfish, mollusks, and sponges and adults are herbivores and feed on seagrass and algae. Green turtles are usually found near seagrass meadows, coral reefs and bays in subtropical and tropical seas. This turtle is known to forage in UAE waters and is long lived and slow growing (Figure 9). They occur at particularly high densities in the Marawah Marine Biosphere Reserve around Bu Tinah Island. This species is listed on the IUCN Red List as Endangered (EN).



(FIGURE 11)



(FIGURE 10)



(FIGURE 13)



(FIGURE 14)



// Arabian Gulf Sea Snake (*Hydrophis lapemoides*):

The Arabian Gulf sea snake can be identified by its patterning, comprising 33 – 35 dark bands along the length of the body, contrasted against a background colour of yellow or pale green. In the sea they feed mainly on fish. This is a common sea snake of the Arabian Gulf. We have recorded them around Jernain Island. They can be found close to shore, nearby mangroves, and they possess fatal neurotoxic venom (Figure 12). This species is listed on the IUCN Red List as Least Concern (LC).

(FIGURE 12)



// Ornate Reef Sea Snake (*Hydrophis ornatus*):

The ornate reef sea snake is a large-headed, robust marine snake of roughly uniform thickness and can grow up to 95 cm in length. The Ornate reef sea snake has a flat paddle-like tail (Figure 13). This species is listed on the IUCN Red List as Least Concern (LC).

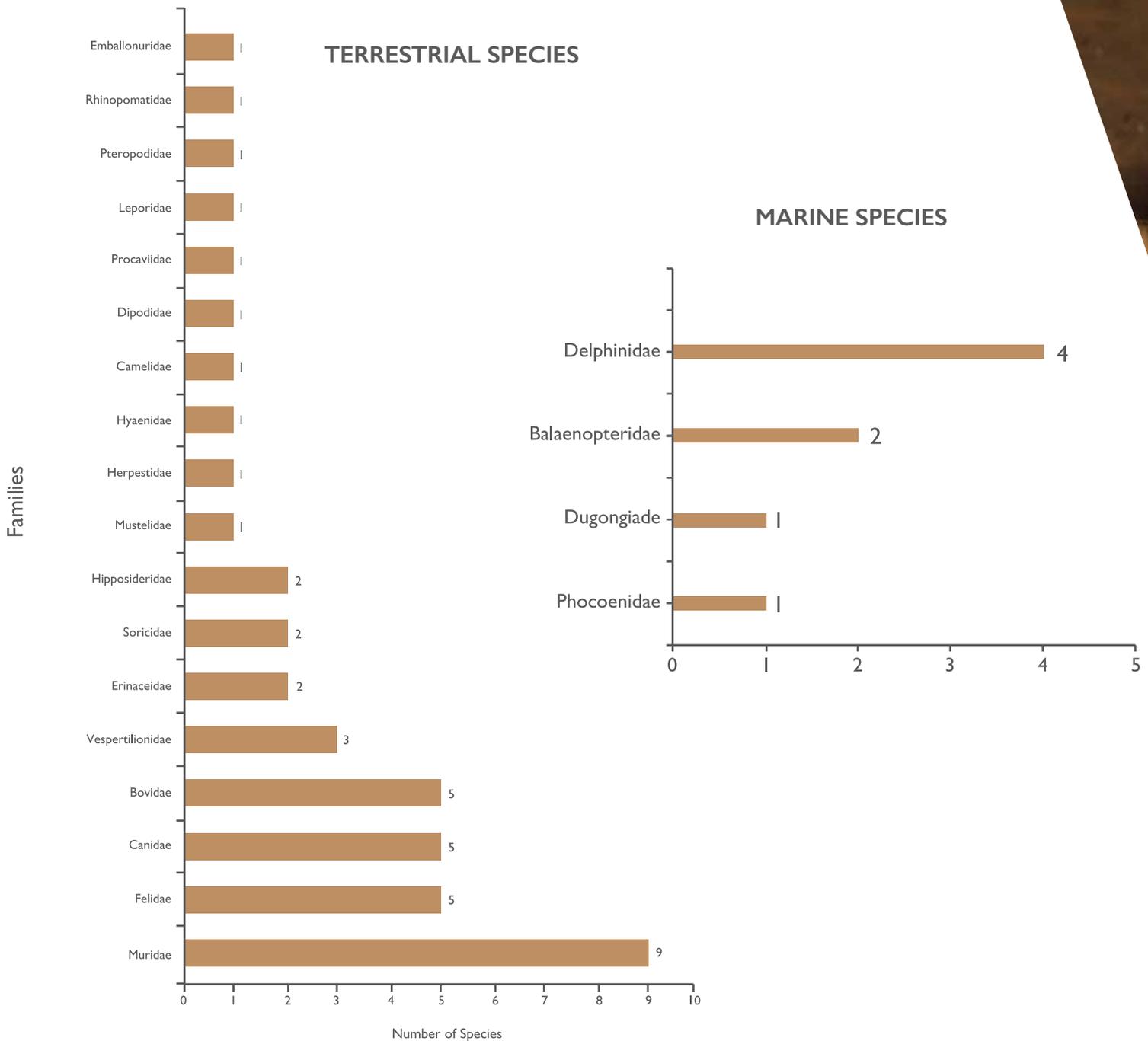
// Yellow-Bellied Sea Snake (*Pelamis platura*)

The yellow-bellied sea snake has a distinctive bicolour pattern with a yellow underbelly and brown back, making it easily distinguishable from other sea snake species. This snake is the most widely distributed sea snake species, found in the warm waters of the Pacific and Indian Oceans. Unlike most other sea snakes, the yellow-bellied sea snake is found in the open ocean and has been recorded from areas around Abu Dhabi Island and they feed exclusively on fish (Figure 14). This species is listed on the IUCN Red List as Least Concern (LC).

MAMMALS OF ABU DHABI EMIRATE

There are a total of 51 species of mammals recorded in Abu Dhabi Emirate (Figure 15). Terrestrial mammals are represented by 43 species (84%) while only eight species (16%) are marine. These species belong to 10 orders and 22 families. Muridae has the highest number with nine species in the family followed by Bovidae; Canidae, Felidae with five species each.

NUMBER OF MAMMALS BY FAMILY



(FIGURE 15)

SPECIES UNDER DIFFERENT CITES CATEGORIES

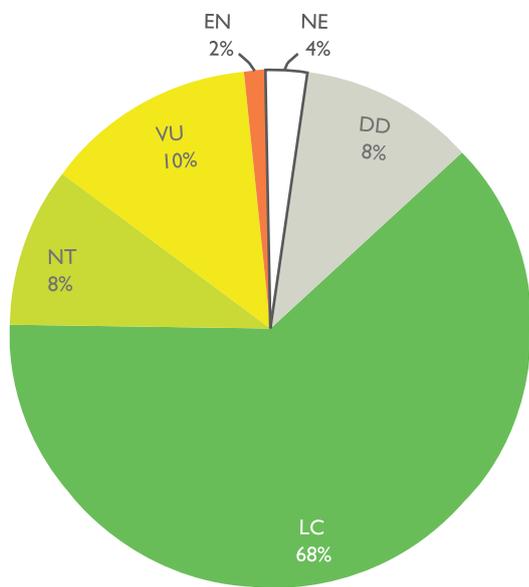
According to CITES nine species are in Appendix I and six species are in Appendix II (Table 2).

CITES Appendix	Terrestrial Species	Marine Species
I	4	5
II	3	3

(TABLE 2)



PROPORTION OF SPECIES BY IUCN THREAT CATEGORY.



(FIGURE 16)

IUCN Categories	Terrestrial Species	Marine Species	Total
EN	1	—	1
VU	3	2	5
NT	3	1	4
LC	34	1	35
DD	0	4	4
NE	2	—	2

On the global scale, following IUCN Red List categories, six species are listed as threatened. The Arabian Tahr (*Hemitragus jayakari*) is the only Endangered species (EN) and another five species are listed as Vulnerable (VU). Meanwhile four species are recorded as Near Threatened (NT) and 35 species are Least Concern (LC) (Figure 16).



(FIGURE 17)

// Arabian Oryx (*Oryx leucoryx*):

This is the largest wild mammal species in the UAE with a distinct shoulder bump, long, straight horns, and a tufted tail. This species is Vulnerable according to the IUCN Red List and is listed on CITES Appendix I. The habitat of this species is mainly gravel plains and might also be seen in sandy areas. This species is mainly found in the Oryx Protected Area (Umm Al Zammoul area) and in private collections (Figure 18).



(FIGURE 19)

// Arabian Sand Cat (*Felis margarita harrisoni*):

This is an elusive animal, which lives in sandy habitats and is listed as Near Threatened according to the IUCN Red List and is listed in CITES Appendix II. This species has only been recorded sporadically over the years across Abu Dhabi Emirate. We have confirmed records from Sweihan in the, Eastern Region and in the Houbara Protected Area, in the Western region. In the Houbara Protected Area it was recorded after an absence of 10 years in 2015. The confirmation was made by using wildlife trail cameras (Figure 17).



(FIGURE 18)

// Arabian Tahr (*Hemitragus jayakari*):

This animal lives on the steep rocky slopes of Jebel Hafeet mountain within Abu Dhabi Emirate which is a designated terrestrial protected area. This mountainous species only lives in rocky areas and is listed as Endangered by the IUCN Red List. Based on camera trapping results, female tahrs were recorded with small kids on Jebel Hafeet. This species can easily be confused for a feral goat but on closer observation their long reddish-brown hair, with a dark stripe down their back and short horns differentiate it clearly. The greatest threats to this species are the loss of habitat because of development activities on Jebel Hafeet and from increased numbers of feral dogs and goats on the mountain (Figure 19).



(FIGURE 20)

// Sand Fox (*Vulpes rueppellii*):

This species is smaller than the Red Fox and has larger ears with a bushier tail and white tip though they can be mistaken for juvenile Red Foxes in the wild. These species are creamish-brown in color and usually have a white ventral coloration. It is listed as Least Concern in the IUCN Red List. In Abu Dhabi Emirate, it occurs in a variety of desert habitats including sand sheets, sand dunes and gravel plains of the Western Region. These foxes face persecution for their perceived impact on game species like Houbara Bustard and livestock (Figure 21).

// Cape Hare (*Lepus capensis*):

This is a widespread and commonly seen hare in desert habitats across Abu Dhabi Emirate. It is listed as a Least Concern in the IUCN Red List. Cape hares vary in coloration ranging from pale sandy to almost rusty brown, with white underparts. This species breeds all year round, with one or two offspring in each litter and prefers shrubs to shelter under in the hot summer season. Trail camera trapping results indicate large populations in key terrestrial protected areas of Abu Dhabi with especially high numbers in the Houbara Protected Area in Abu Dhabi's Western Region (Figure 20).



(FIGURE 21)

// Dugong (*Dugong dugon*):

The Dugong is generally grey in color (Figure 22) and grows up to 3 meters long, weighing up to 500 kg. The dugong is unique in being the only marine mammal species that is completely herbivorous feeding uniquely on seagrass with adults consuming about 40 kg a day. The dugongs of Abu Dhabi are consequently found in association with seagrass beds, particularly in and around the Marawah Marine Biosphere Reserve. This species is listed on the IUCN Red List as Vulnerable (VU).





(FIGURE 23)

// Indian Ocean Humpback Dolphin (*Sousa plumbea*):

The Indian Ocean humpback dolphin has a typically streamlined body and a long slender beak. These are slow-swimming dolphins, typically travelling at around 4.8 km per hour. They feed primarily on reef-associated and estuarine fish (Figure 23). The Indian Ocean humpback dolphin is found in shallow waters and channels close to shore in the off-shore islands and mainland of Abu Dhabi where it occurs either as a solitary individual or in groups of up to 25 individuals. This species is listed on the IUCN Red List as Not Evaluated (NE).



(FIGURE 25)

// **Indo-Pacific Finless Porpoise**
// (*Neophocaena phocaenoides*):

The Indo-Pacific finless porpoise lacks a dorsal fin, and instead has a ridge that runs down the middle of its back. It can be distinguished by its rounded head, which lacks an apparent beak. This small marine mammal has a relatively slender body, which is dark to pale grey on the upper side and lighter on the underside. It can weigh up to 70 kg and grow up to 170 centimetres (Figure 25). It is an extremely rare animal with only 5 encounters being made during 50 days of at sea surveys, often being sighted in shallow coastal waterways close to ports. This species is listed on the IUCN Red List as Vulnerable (VU).

A photograph of an Indo-Pacific bottlenose dolphin leaping from the water, creating a large splash. The dolphin's body is partially visible above the surface, and the water is dark blue with white foam from the splash.

// Indo-Pacific Bottlenose Dolphin // (*Tursiops aduncus*):

The Indo-Pacific bottlenose dolphin has a dark grey back and its belly is lighter grey or nearly white with grey spots. They grow up to 2.6 meters and weigh up to 230 kg. Indo-Pacific bottlenose dolphins feed on a wide variety of fish and cephalopods (particularly squid). (Figure 24). The Indo-Pacific Bottlenose dolphin is found in the coastal and off-shore waters of Abu Dhabi where it can occur in groups of up to 45 individuals. This species is listed on the IUCN Red List as Data Deficient (DD).

(FIGURE 24)

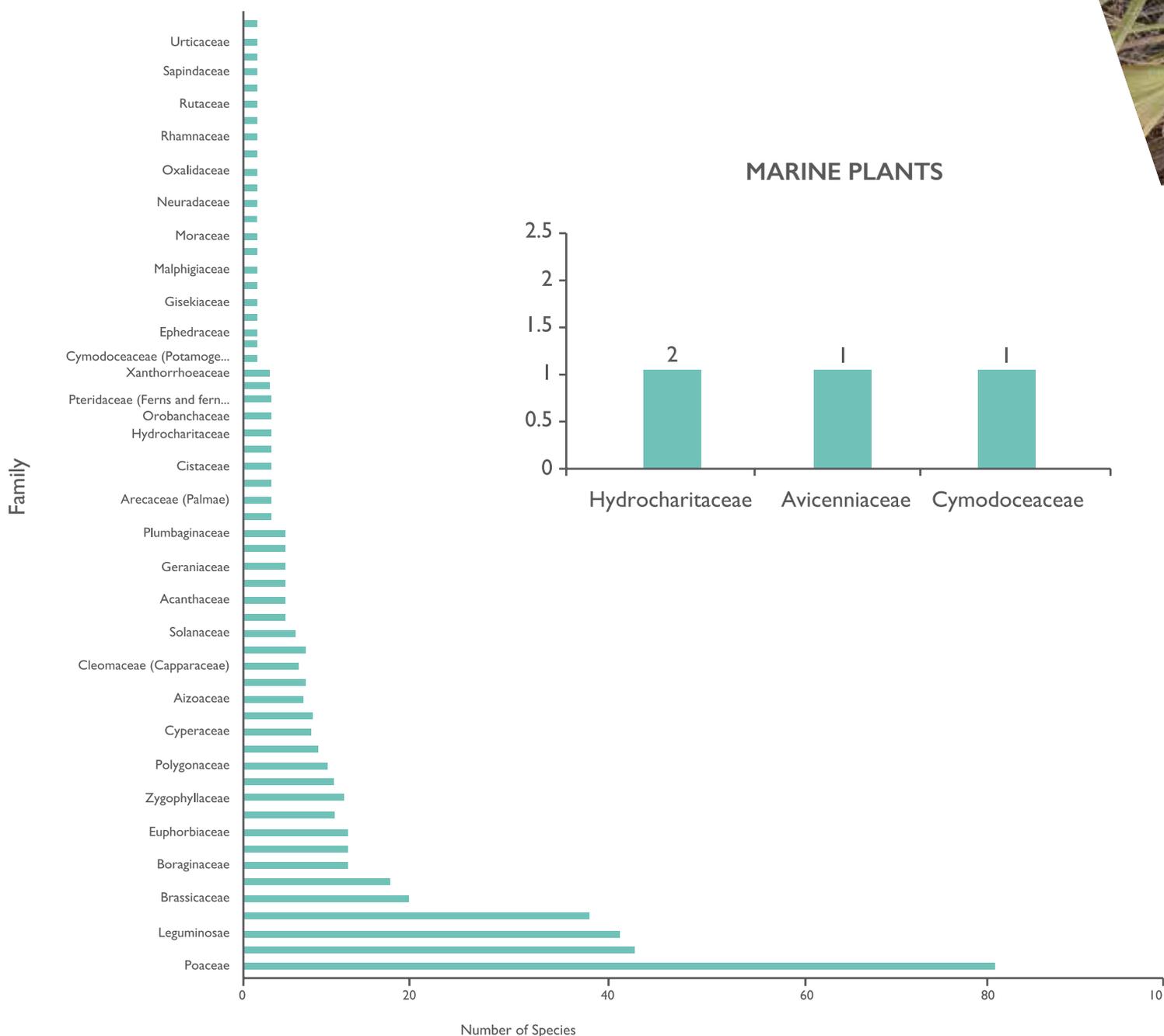


PLANTS OF ABU DHABI EMIRATE

A total of 436 species of plants have been recorded from Abu Dhabi Emirate. Out of these 432 are terrestrial species and four are marine. A total of 419 species of terrestrial plants belong to 24 orders and 62 families, the marine species belong to two orders and three families.

Of the terrestrial species, the order Poales and Caryophyllales have the highest number of species, at 90 and 86 respectively, This accounts for 63% of all plant species recorded in Abu Dhabi Emirate. The family Poaceae (Graminae) and Compositae (Asteraceae) have the highest number of species at 81 and 43 respectively, followed by Leguminosae (Fabaceae) with 41 species (Figure 26).

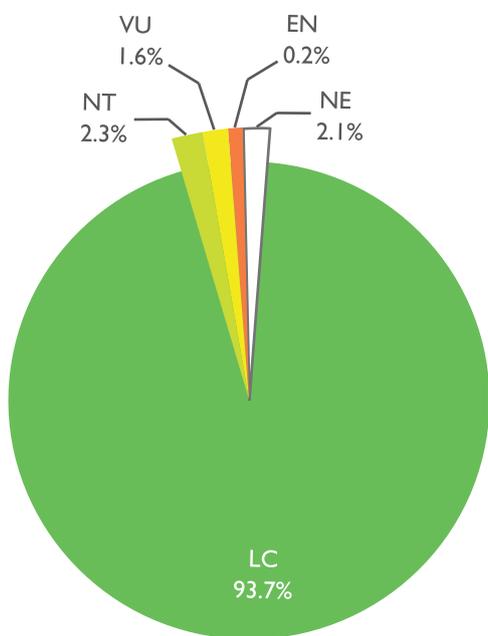
NUMBER OF PLANT BY FAMILY



(FIGURE 26)



PROPORTION OF SPECIES BY IUCN THREAT CATEGORY



(FIGURE 27)

IUCN Categories	Terrestrial Species	Marine Species	Total
EN	1	—	1
VU	7	—	7
NT	10	—	10
LC	398	4	402
NE	9	—	9

According to the IUCN Red List, eight plant species are listed as Threatened and *Schweinfurthia imbricata* is the only Endangered (EN) species. There are seven Vulnerable (VU) species, 10 are Near Threatened (NT) and 402 species are Least Concern (LC) in the draft UAE Plant Red list (Figure 27).



// White Saxaul (*Haloxylon persicum*):

Haloxylon persicum is a large shrub belonging to the family Amaranthaceae (former Chenopodiaceae). It grows up to 4.5 m in height.

The stem is woody and the leaves of the tree are so small that it appears to be without leaves, giving it a dull grey appearance. The saxaul has small yellow flowers, which are hermaphrodite (Figure 28).

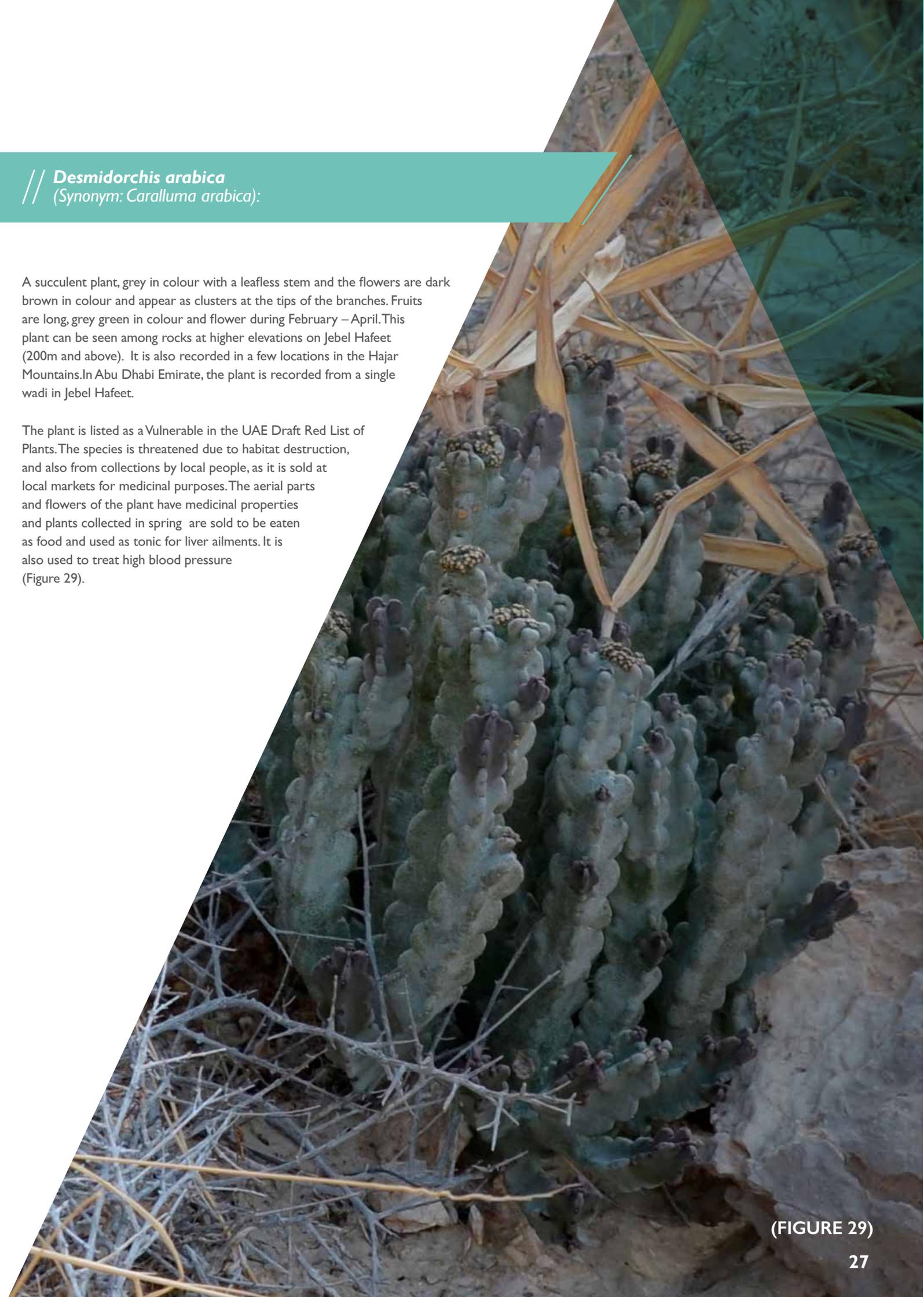
Stands of *Haloxylon persicum* occupy a geographically distinct and well delineated area south of Abu Dhabi City, where they form a characteristic species found on low dunes. The fine branches of the shrubs comb out droplets of water from the atmosphere, and this feature has resulted in them being called a dew forest. The species is listed as Vulnerable in the draft UAE Plant Red List.

// ***Desmidorchis arabica***
(Synonym: *Caralluma arabica*):

A succulent plant, grey in colour with a leafless stem and the flowers are dark brown in colour and appear as clusters at the tips of the branches. Fruits are long, grey green in colour and flower during February – April. This plant can be seen among rocks at higher elevations on Jebel Hafeet (200m and above). It is also recorded in a few locations in the Hajar Mountains. In Abu Dhabi Emirate, the plant is recorded from a single wadi in Jebel Hafeet.

The plant is listed as a Vulnerable in the UAE Draft Red List of Plants. The species is threatened due to habitat destruction, and also from collections by local people, as it is sold at local markets for medicinal purposes. The aerial parts and flowers of the plant have medicinal properties and plants collected in spring are sold to be eaten as food and used as tonic for liver ailments. It is also used to treat high blood pressure (Figure 29).

(FIGURE 29)





// Oriental Cherry (*Acridocarpus orientalis*):

The oriental cherry, *Acridocarpus orientalis* (locally known as Qafas) belongs to the family Malpigiaceae, is the only member of its genus in the Arabian Peninsula. It is a perennial large shrub or a small evergreen tree, up to 6 m tall, with conspicuous large leathery leaves which grow at alternating points along the central stem. The yellow flowers are arranged in terminal racemes. The five yellow petals of the flower have fringed edges and not jointed to each other. The fruits resemble those of a sycamore. The single seeds of the plant are contained within the winged fruit, with the seed found at the base of the slightly hairy wings. In the UAE, the species is known only from Jebel Hafeet, but is fairly common in the foothills and slopes of the Jebel Akhdar and Musandam mountains of Northern Oman from where the species was originally described. The main population on Jebel Hafeet is at the head of Wadi Tarabat, where shady conditions prevail for part of the day. The species is listed in the Near Threatened category in the draft UAE Plant Red list, (Figure 30).

(FIGURE 30)



// Ghaf (*Prosopis cineraria*):

In Abu Dhabi, wild populations of ghaf (*Prosopis cineraria*) are restricted to the eastern part of the Emirates. The western distribution limit of the species on the Arabian Peninsula is between Sweihan and Abu Dhabi. Small stands are seen in Al Khatam area extending towards Umm Al Zumul. Ghaf stands are much less frequent in the south. As a keystone species, the tree is of considerable ecological importance, particularly in providing habitat for a number of fauna. The fruits, flowers and leaves are used by various animals, as they are rich source of protein (Figure 31).

(FIGURE 31)



(FIGURE 32)

// Dwarf Palm
(*Nannorrhops ritchieana*):

In the UAE, the species is known from the Northern Emirates and the Hajar Mountains, where isolated clumps are found. Populations in these areas are fragmented and are at threat from developmental activities. In Abu Dhabi emirate, the species is currently known from Jebel Hafeet where it thrives with a mosaic of native plant communities. The species is listed as Vulnerable in the draft UAE Plant Red list (Figure 32).

// Mangrove (*Avicennia marina*):

Mangrove trees grow where no other tree can grow. They are able to survive inundation by salt water twice a day, and in soil which is unstable and poor in oxygen (anaerobic).

To deal with salt, all mangrove trees exclude some salt at the root level, and all can tolerate more salt in their tissues than normal plants, often in quantities that would kill other plants. *Avicennia* does this best and is often the only tree to survive in hot salty regions (Figure 33).

Mangrove roots not only help provide support in unstable soils and to withstand currents and storms, but also accelerate gaseous exchange.

They develop aerial or air-breathing roots. These take in above ground air. These roots not only transport air, but also provide a reservoir of air during high tide when all the aerial roots may be underwater. The function of aerial roots is to absorb air and to provide structural support in the soft mud.

(FIGURE 33)



BIRDS OF ABU DHABI EMIRATE

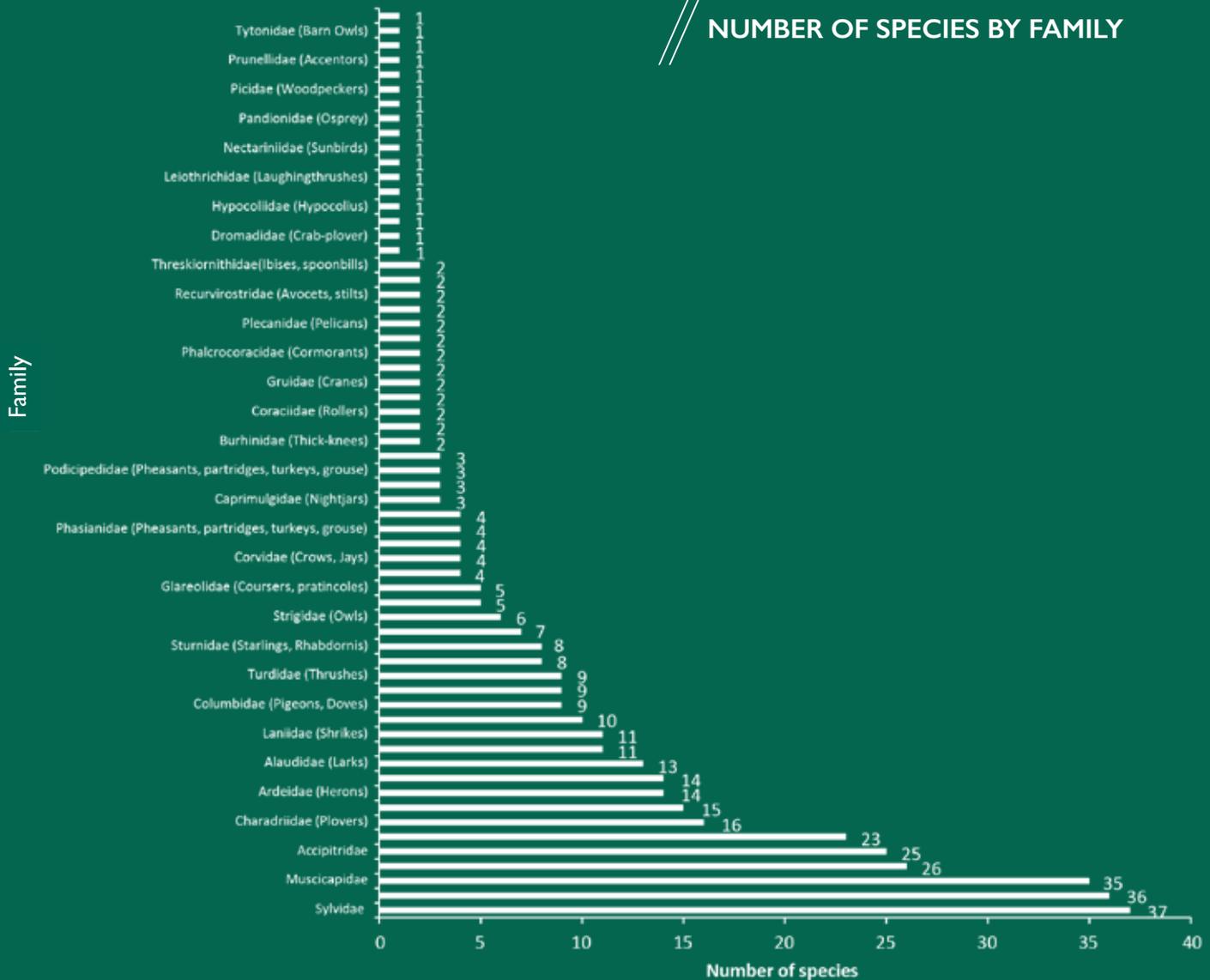
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The emirate of Abu Dhabi has recorded 427 species of birds. These belong to 25 orders and 62 families. Out of these, 410 are native and the remaining 17 species are non-native which have been deliberately or unintentionally released in the wild.

Order Passeriformes and Charadriiformes have the highest number of 185 and 92 species respectively, accounting for 63% of all the bird species recorded in the country.

Families Sylviidae and Scolopacidae have the highest number of 37 and 36 species respectively followed by Muscicapidae with 35 and Laridae with 26 species (Figure 34).

NUMBER OF SPECIES BY FAMILY

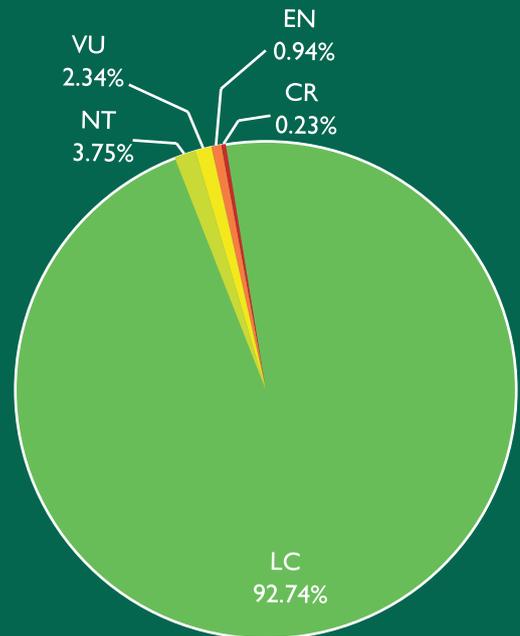


(FIGURE 34)



PROPORTION OF SPECIES BY IUCN THREAT CATEGORY

According to the IUCN threatend categories, *Vanellus gregarius* is Critically Endangered (CR), four species (*Neophron percnopterus*, *Falco cherrug*, *Acrocephalus griseldis*, *Emberiza aureola*) are endangered (EN), 10 species are vulnerable (VU), and 16 are Near Threatened (NT). The remaining of the species are Least Concern (LC) (Figure 35).



(FIGURE 35)

SPECIES BY CITES CATEGORIES

According to CITES category two species are on Appendix I, while four species are on Appendix II.

CITES Appendix	Number of species
I	2
II	4

(TABLE 3)

IUCN Categories	Number of Species
CR	1
EN	4
VU	10
NT	16
LC	396



(FIGURE 36)

// **Socotra Cormorant**
(*Phalacrocorax nigrogularis*):

This is a specialized marine species endemic to the Arabian Gulf, Oman and Yemen. It is globally threatened (Vulnerable) and breeds on six offshore islands in Abu Dhabi emirate. Breeding sites are under threat from development and disturbance. Apart from breeding birds, large colonies of roosting birds are recorded throughout the year.

It suffers persecution, egg collection and chick theft. Increased awareness is vital for the long term conservation of the species (Figure 36).



// **Sooty Falcon** (*Falco concolor*):

It is a summer visitor to UAE that breeds on a few near- shore islands in the western region in Abu Dhabi Emirate. It makes its nest in small gaps on rocky islands where it hunts for migratory passerines. Though it is not globally threatened, the number of breeding pairs in the Emirate has declined drastically.

Disturbance at the breeding sites and loss of breeding habitat due to development has been the main reason for the decline in numbers. Conservation of breeding areas is essential for the conservation of the species (Figure 37).



(FIGURE 37)



// **Greater Flamingo**
(*Phoenicopterus roseus*):

It is a winter visitor to UAE with some overwintering birds recorded in summer months. Recent successful breeding in Abu Dhabi Emirate has highlighted the importance of coastal mudflats and inland wetlands as areas of high conservation value.

Successive breeding has been recorded in Al Wathba Wetland Reserve since 2010. Birds build a colony of closely placed mud mounds with a small depression in which a single egg is laid. Chicks form a crèche that is cared for by a few adult birds until they fledge (Figure 38).

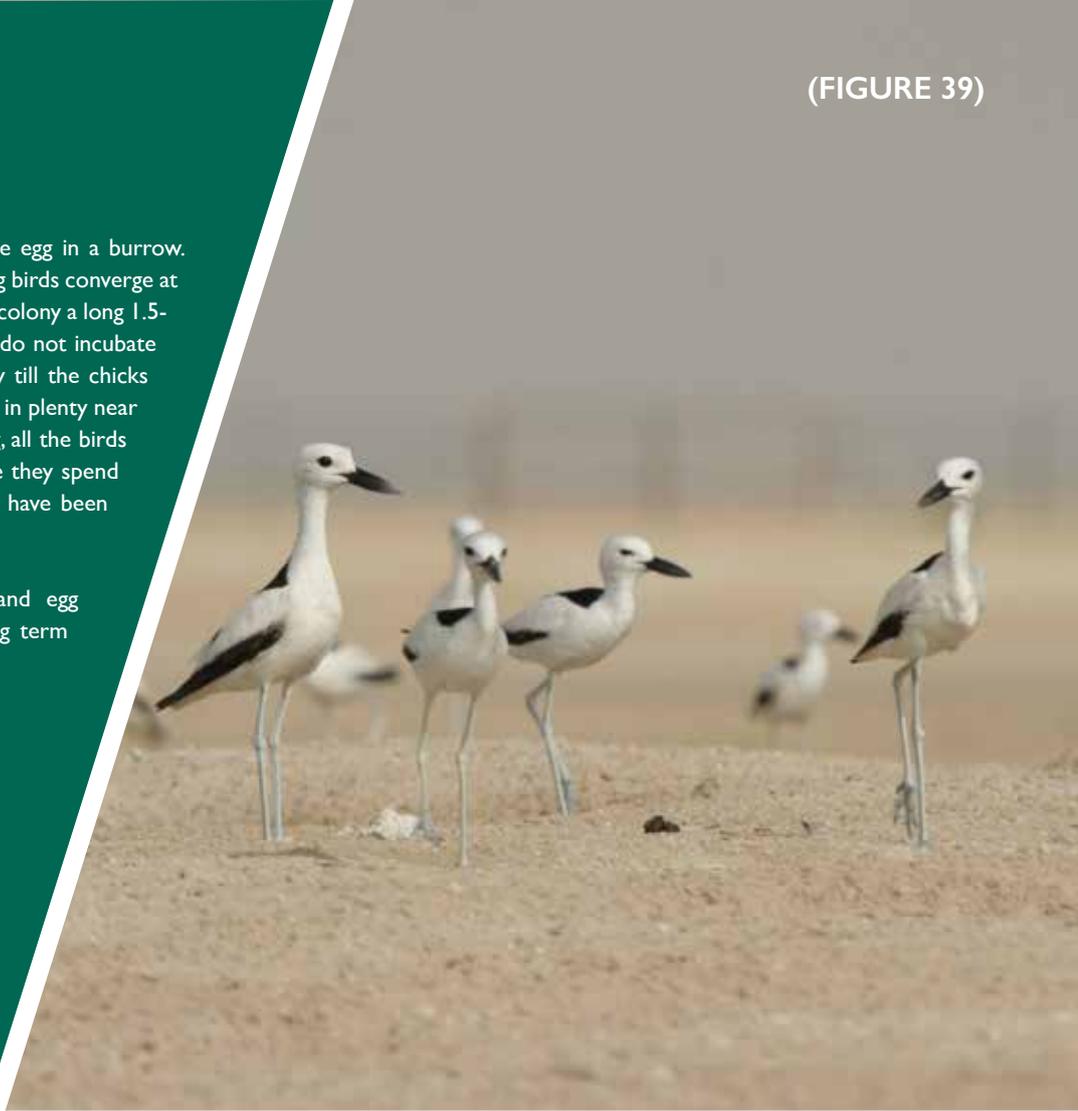


(FIGURE 38)

// **Crab Plover**
(*Dromas ardeola*):

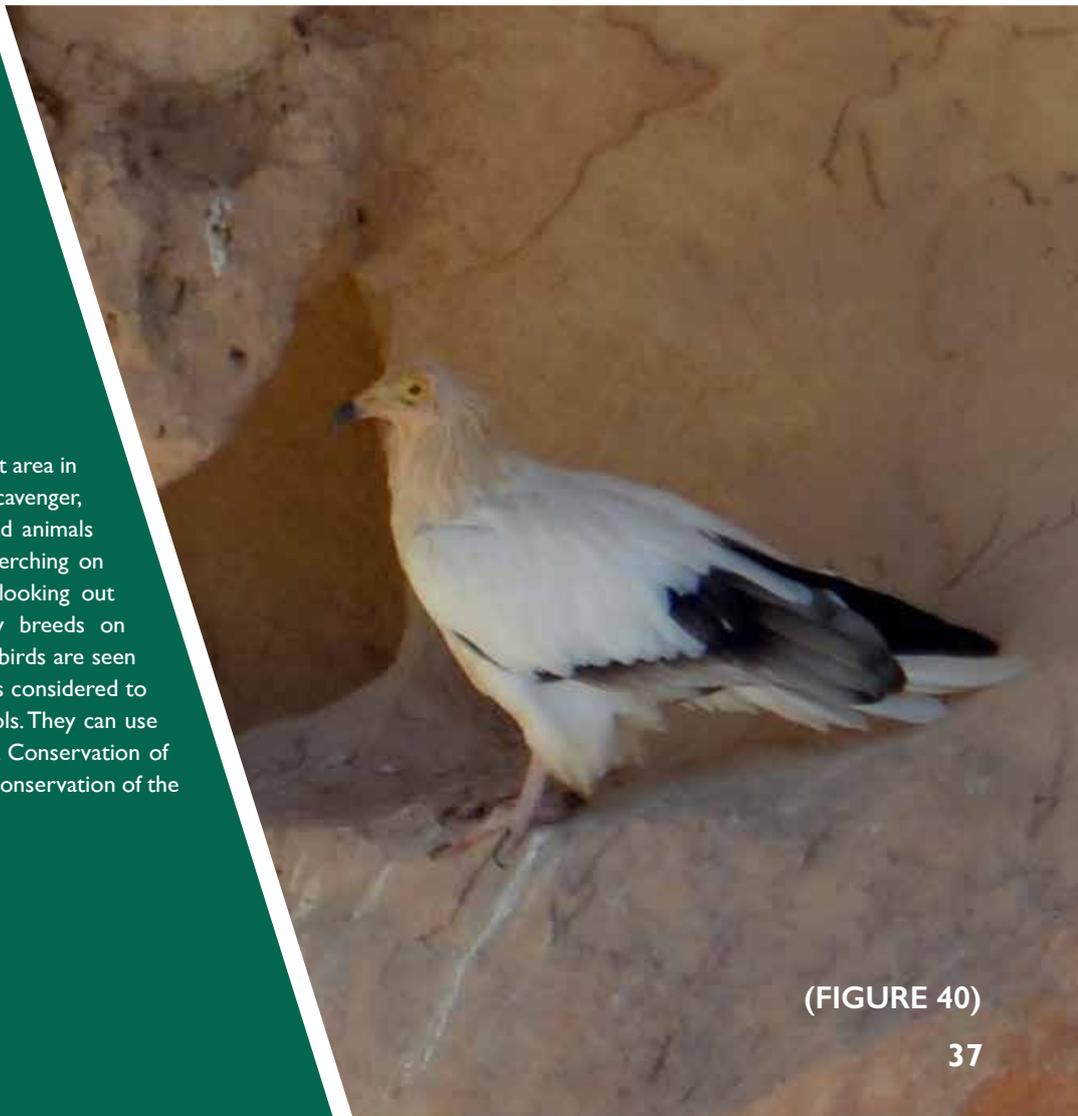
It is the only wader species that lays a single egg in a burrow. During hot summer, large numbers of breeding birds converge at two island breeding sites in Abu Dhabi. At the colony a long 1.5-2 metre long burrow is excavated. The birds do not incubate the eggs; these are turned a few times a day till the chicks hatch. These are fed with crabs that are found in plenty near the breeding colonies. At the end of breeding, all the birds move east towards northern emirates where they spend the winter. Some birds tagged in Abu Dhabi have been found to fly up to Seychelles.

Disturbance at breeding sites, predation and egg collection have to be controlled for the long term conservation of the species (Figure 39).



// **Egyptian Vulture**
(*Neophron percnopterus*):

This species is found only in the Jebal Hafeet area in Al Ain in Abu Dhabi Emirate. An efficient scavenger, it provides free services to get rid of dead animals and other waste. Birds are usually seen perching on very high towers on the high mountain looking out for potential food. The species probably breeds on Jebal Hafeet as many young and sub-adult birds are seen throughout the year. The Egyptian vulture is considered to be very clever having the ability to use tools. They can use stones to break open tough shells of eggs. Conservation of the whole Jebal Hafeet area is vital for the conservation of the species in the Emirate (Figure 40).



INVERTEBRATES OF ABU DHABI EMIRATE

Invertebrates are the most diverse species group (2,313) of which 2,219 are terrestrial and 94 are marine. The terrestrial species belong to two Phyla; Arthropoda having 2,207 species and Mollusca with 12 species. These belong to five classes; Class Insecta has the highest number of species with 2,105 (95%). Meanwhile marine species also belong to two classes namely Anthozoa and Polychaeta (Table 4).

NUMBER OF SPECIES BELONGING TO DIFFERENT CLASSES IN THE INVERTEBRATE CATEGORY

Class	Terrestrial	Marine	Total
Arachnida	99	-	99
Gastropoda	12	-	12
Insecta	2105	-	2105
Malacostraea	1	-	1
Scolopendromorpha	2	-	2
Anthozoa	-	35	35
Polychaeta	-	59	59
Total	2219	94	2313

(TABLE 4)

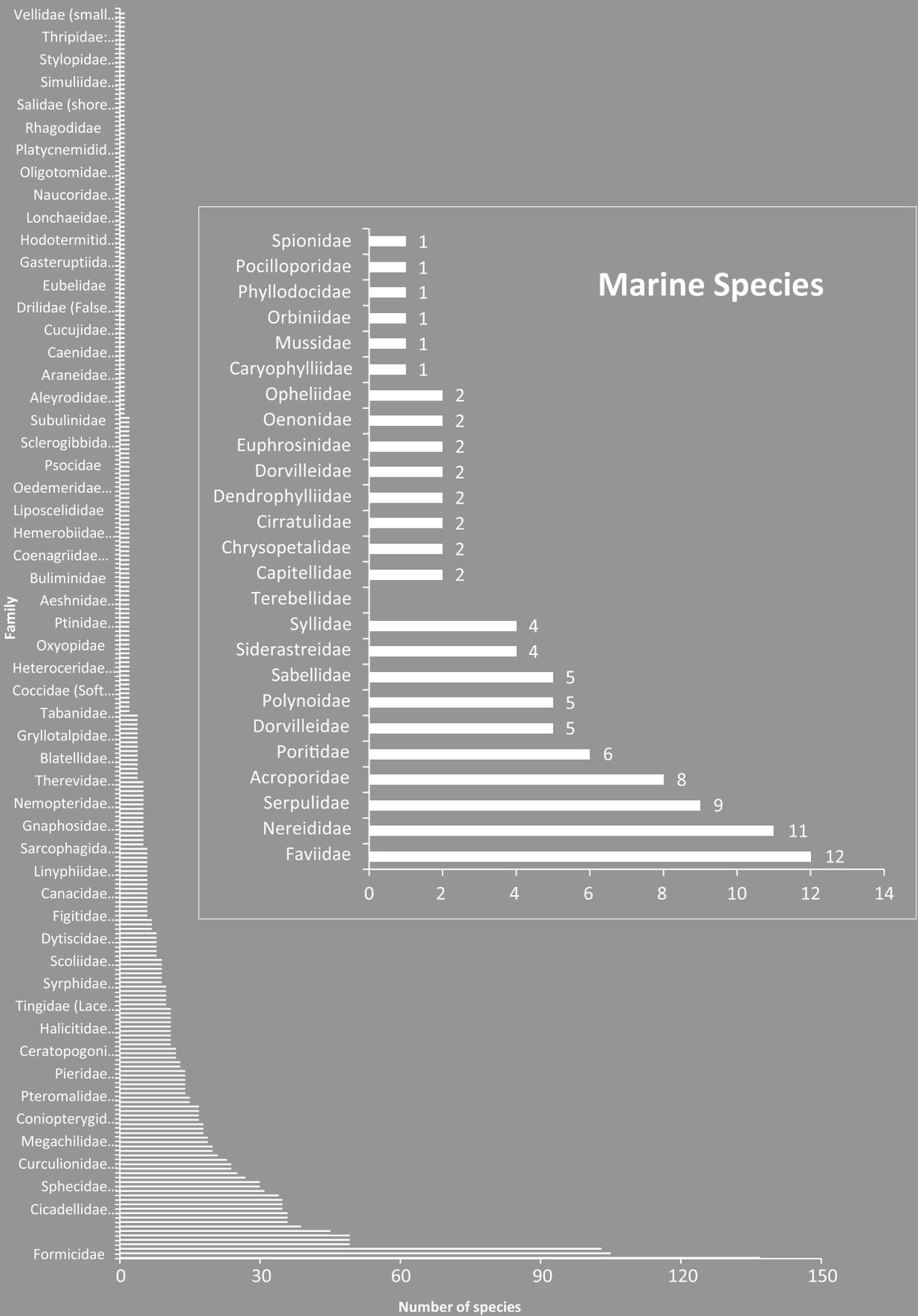
The terrestrial species are represented by 32 orders and 277 families. The Order Hymenoptera which includes bees, wasps & ants has the higher number of 643 species, this is followed by Coleoptera which includes beetles with 409 species. The family Formicidae that includes ants has the highest number of 125 species followed by Crabronidae that includes digger wasps with 105 and Noctuidae with 103 species respectively (Figure 40). A total of 55 species are non-native which make less than 3% of the species.

However the marine species are represented by seven orders and 13 families. Order Scleractinia has the higher number with 35 species; this is followed by the order Phyllodocida which has the second highest number with 23 species. The family Faviidae has the highest number with 12 species followed by Nereididae with 11 species respectively (Figure 41).

05



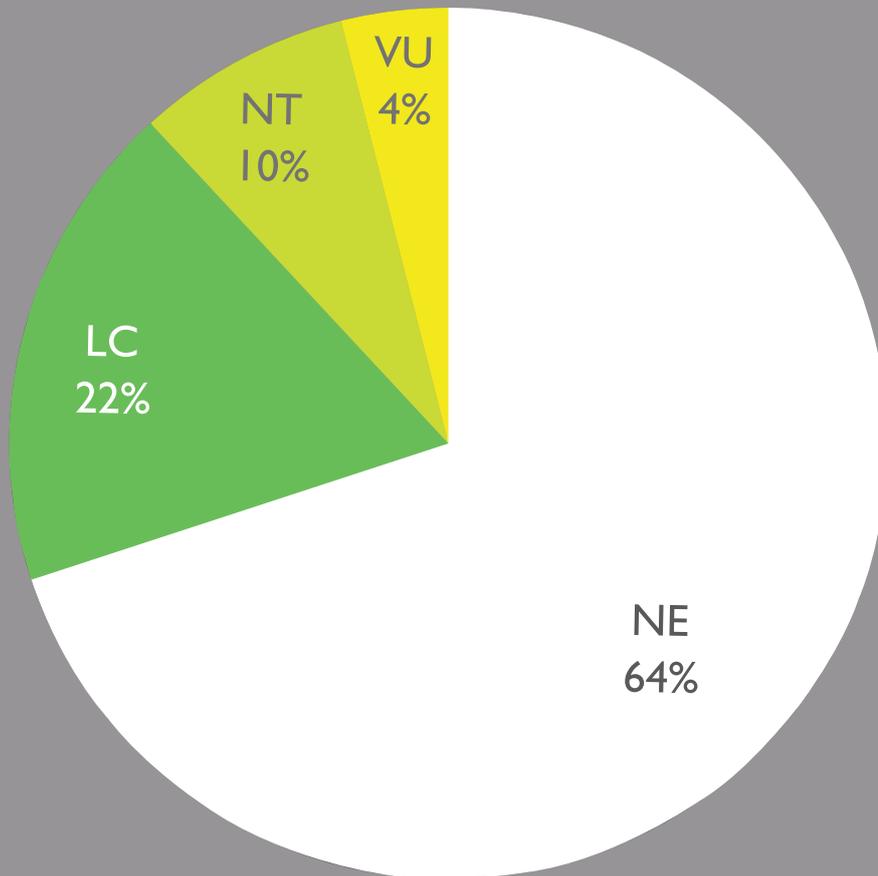
NUMBER OF INVERTABRATE SPECIES BY FAMILY



(FIGURE 41)

PROPORTION OF MARINE INVERTEBRATE SPECIES UNDER DIFFERENT THREAT CATEGORIES ACCORDING TO IUCN

IUCN Categories	Number of Species
VU	4
NT	9
LC	21
NE	60



(FIGURE 42)

According to IUCN threat categories, four marine species are classified under the Vulnerable (VU) category, nine species are Near Threatened (NT), and twenty one species are Least Concern (LC) (Figure 42). Currently none of the invertebrate species within the UAE have been evaluated as Endangered species in the IUCN Red List. So far, the invertebrate species are classified as Data Deficient (DD), as the lack of data prevents evaluation of the extinction risk in the UAE.



(FIGURE 43)

// Desert Locust (*Schistocerca gregaria*):

The desert locust is a species of grasshopper, that has the ability to swarm for great distances. The desert locust occurs in two forms: solitariform and gregariform, which differ in their morphology. Both sexes of the solitariform are green to light- brown, reflecting their environment. Plagues of desert locusts have threatened agricultural production in Africa, the Middle East, and Asia for centuries. Potentially the most dangerous pest of agriculture and its voracious feeding habit causes significant crop loss (Figure 44).





// **Black Fat Tailed Scorpion** (*Androctonus crassicauda*):

The black fat-tailed scorpion is a dangerous scorpion species which is found in dry habitats often occurring near human habitations (walls of houses, stone fences) but prefers mostly desert and desert scrub. The colouration is usually golden brown to nearly black, sometimes pale yellow; but varies considerably from olive brown to reddish brown to slate grey to black. Adult size is about 105 mm in length and usually females are heavy-bodied. The pincers of the black tailed scorpion are relatively small and thin; fixed and movable fingers bear 13-15 rows of granules, but the tail and sting are abnormally fat and muscular hence it is called “Black fat tailed Scorpion”. It is considered medically important for its high venom intensity. It is frequent in human dwellings and can pose a significant threat to human health (Figure 43).



(FIGURE 44)



(FIGURE 45)

// **Samsun Ant** (*Pachycondyla sennaarensis*):

African savanna ant species are known from Arabia for the last 100 years. It is now spreading rapidly to most human settlements and is found along all major road-side developments, oases, plantations and urban areas of the UAE. It is a scavenger feeding on food refuse and arthropods. They defend themselves with their stings that cause sufficient irritation and annoyance and its venom has a high potency. The danger caused by this ant indicated by its specific local Arabic common name – “Samsun ant”. (*Pachycondyla sennaarensis*) workers are dangerous to playing children, picnickers and families sitting on lawns. The workers are large range from 4 - 6 mm in length. Its venom can be life threatening to hypersensitive people. This species also raids bee hives and destroys honey bees (Figure 45).

// Cuckoo Wasp (*Hedychridium anithae*):

The metallic-coloured Cuckoo Wasp (*Hedychridium anithae*) is a species 'new to science' discovered from Al Wathba Wetland Reserve. It measures just under 4 mm and has now been added to the list of hundreds of invertebrates already recorded on the Al Wathba Wetland Reserve. Cuckoo wasps are one of the most beautiful groups of wasps, with iridescent blue and purple bodies commonly known as 'cuckoo wasps' or 'emerald wasps', often highly sculptured, body with brilliant metallic colours. As the name suggests, though, these are wasps that like to leave the job of rearing their young to other insects. Mother wasps will sneak into the nests of other insects, where they lay their eggs on to the developing larvae. When the baby cuckoo wasp hatches out, it will first eat the host larva, and then consume any provisions that might have been left in the nest. They are actually one of only a few groups of wasp which are physically incapable of stinging to defend themselves; they will roll up tightly into a ball instead. They are ecologically most important to humans as pollinators of wild and cultivated flowering plants (Figure 46).



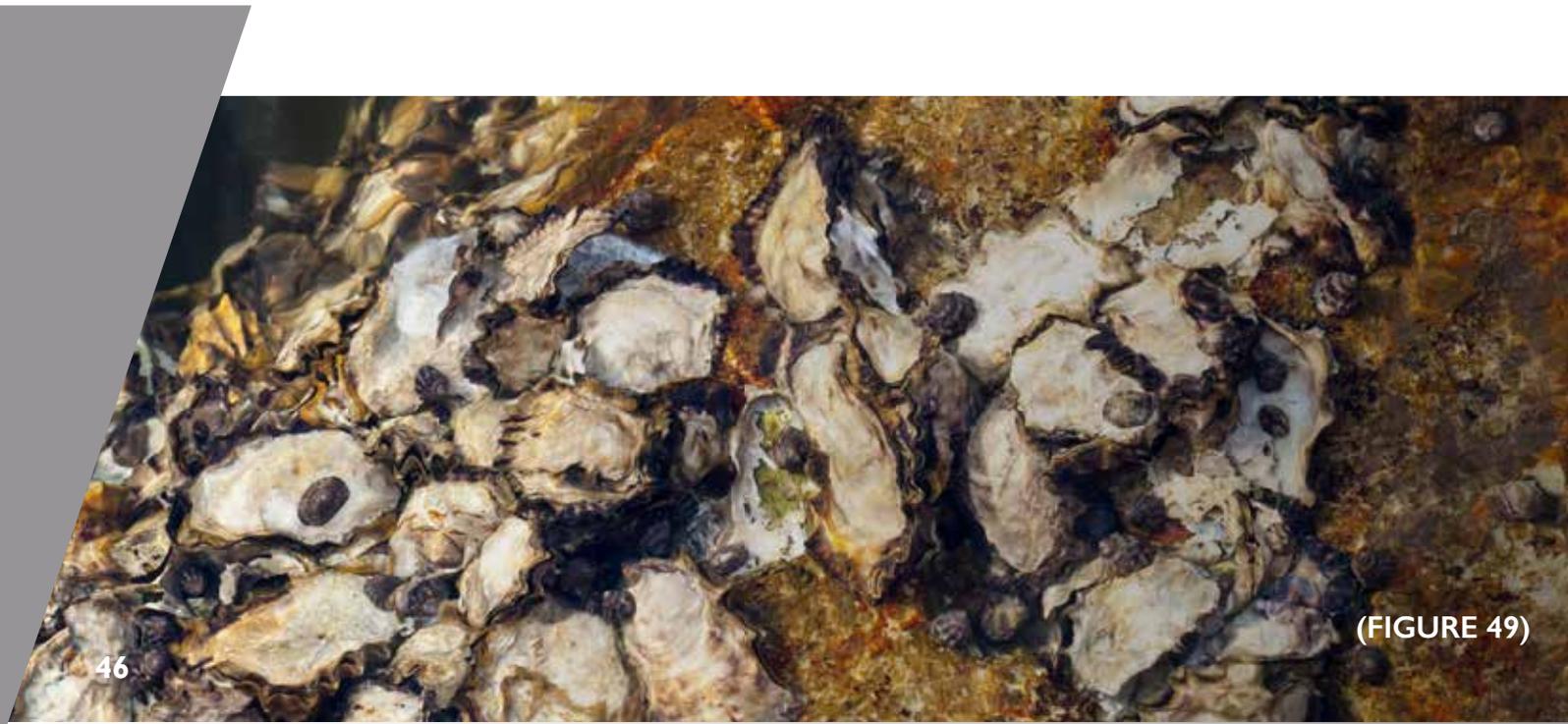
(FIGURE 46)



(FIGURE 47)

// Mottled Crab (*Metapograpsus messor*):

The mottled crab grows up to 30 mm wide. The carapace and legs are mottled brownish green, while the claws are brownish red. The mottled crab is capable of surviving the enormous 20°C fluctuation in temperature between the summer and winter months. In Abu Dhabi, the mottled crab is frequently seen foraging on the floor of the mangroves during low tide and is one of the most abundant crustaceans (Figure 48).



(FIGURE 49)



// Brine Shrimp (*Artemia sp.*):

The brine shrimps (*Artemia sp.*) are species of aquatic crustacean having a complex lifestyle and very important organisms in wetland ecosystems. They are found in the main lake of Al Wathba Wetland Reserve in saline areas. This dominant macro-zooplankton is one of the major food resources for the Greater Flamingo (*Phoenicopterus roseus*), the main flagship species, as well as providing supplementary food for large number of migratory water fowl and waders visiting wetlands. This typically primitive arthropod having segmented body consists of 19 segments and the first 11 segments which are attached broad leaf-like 11 pairs of appendages and swim frantically in the water. This small crustacean is about 8 – 10 mm in length for adult male and 10-12 mm for adult females. Females can be distinguished by large visible egg sacs.

Artemia can reproduce in two ways, through viviparous or live reproduction (free swimming nauplii) occurring in lower salinity levels. Oviparous reproduction occurs at salinities exceeding 150 ppt. The *Artemia* will switch reproductive modes to maximize their survival according to the physico-chemical conditions of the water. During oviparous reproduction, the embryo develops into gastrulae at which stage they are encapsulated in a cyst shell and their metabolism is reversibly interrupted. As the salinity drops in the rainy season, the dehydrated cysts will hydrate and the hatching mechanism will be triggered (Figure 47).



(FIGURE 48)



// Oyster (*Saccostrea cucullata*):

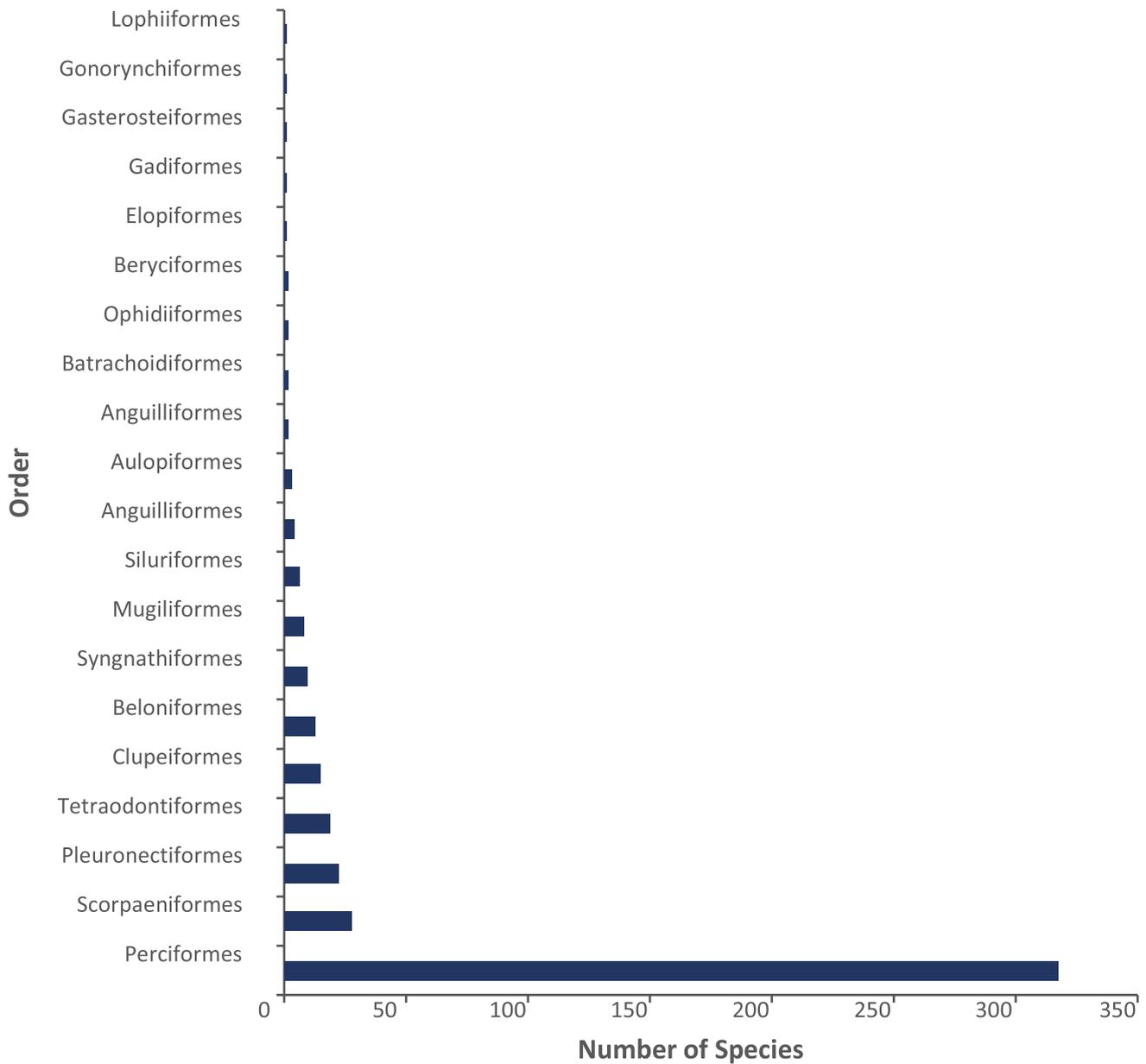
The Hooded Oyster's shape is sometimes nearly circular or may be oblong or roughly oval, often with an irregular outline and their valves are thick and solid. As a species of bivalve, the hooded oyster is a filter feeder occurring throughout the intertidal zone. In Abu Dahbi it is often found attached to mangrove roots. The hooded oyster is capable of creating a temporary seal from the external environment by clamping its shell shut. In this way it is able to survive periods of exposure and reduced water quality (Figure 49).

FISH OF ABU DHABI EMIRATE

Abu Dhabi Emirate has recorded 456 species of bony fish belonging to twenty orders. The order of Perciformes has the highest number of representative species 317, followed by the Scorpaeniformes 28, Pleuronectiformes 22 and the order of Tetraodontiformes 19 (Figure 50).

The fish of Abu Dhabi Emirate belong to ninety six families, of which the Gobiidae has the highest number of representative species 50, followed by Carangidae with 36 species, Labriidae 20, Apogonidae 18, Blennidae 16, Sparidae 13, Epinephelidae 12 and Clupeidae 12.

NUMBER BY SPECIES BY ORDER

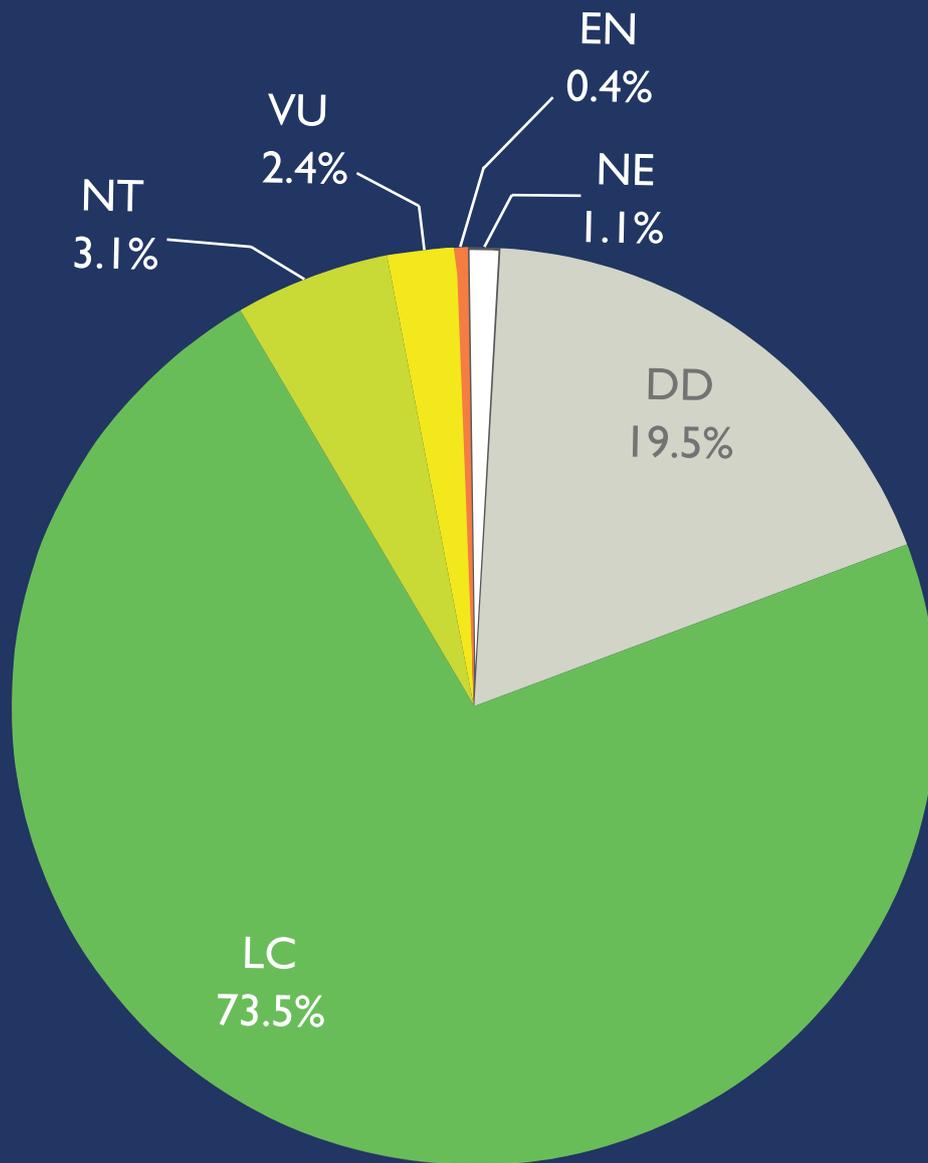


(FIGURE 50)

06



THE PROPORTION OF BONY FISH SPECIES BY IUCN THREAT CATEGORY ACCORDING TO THE REGIONAL RED LIST ASSESSMENT WORKSHOP HELD IN DOHA, QATAR IN 2013.



(FIGURE 51)

According to IUCN threat categories, two species (*Eleutheronema tetradactylum*, *Gobiodon citrinus*) are listed as Endangered (EN), seven species are Vulnerable (VU), and fourteen species are Near Threatened (NT). The remaining of the species are of Least Concern (LC) (Figure 51).

IUCN Categories	Number of Species
EN	2
VU	11
NT	14
LC	335
DD	89
NE	5

Since 2002, EAD has carried out stock assessments on 28 commercially important key fish species. The status of these species is summarized as follows:

- 13 species are over-exploited
- 15 species are exploited within sustainable limits

The following Table shows the assessed IUCN status for the thirteen fish species that were locally assessed as over-exploited at the Regional Red List Assessment Workshop held in Doha, Qatar in 2013 (Table 5).

ABU DHABI OVER-EXPLOITED FISH SPECIES

Common English Name	Common Arabic Name	IUCN Red List Category	Local Threat Status
King soldier bream	كوفر	LC	Over-exploited species (OE)
Orange spotted trevally	جش أم الحلا	LC	Over-exploited species (OE)
Yellow fin hind	اشنينو	NT	Over-exploited species (OE)
Painted sweetlips	فرش	NT	Over-exploited species (OE)
Orange spotted grouper	هامور	VU	Over-exploited species (OE)
Golden trevally	زريدي	LC	Over-exploited species (OE)
Snub nose emperor	يماه	LC	Over-exploited species (OE)
Spangled emperor	شعري	LC	Over-exploited species (OE)
Mangrove red snapper	مرجان	LC	Over-exploited species (OE)
Goldlined seabream	قابط	NT	Over-exploited species (OE)
Talang queenfish	ضلع	LC	Over-exploited species (OE)
Narrow-barred Spanish mackerel	كنعد	VU	Over-exploited species (OE)
White-spotted spinefoot	صافي عربي	LC	Over-exploited species (OE)

(TABLE 5)

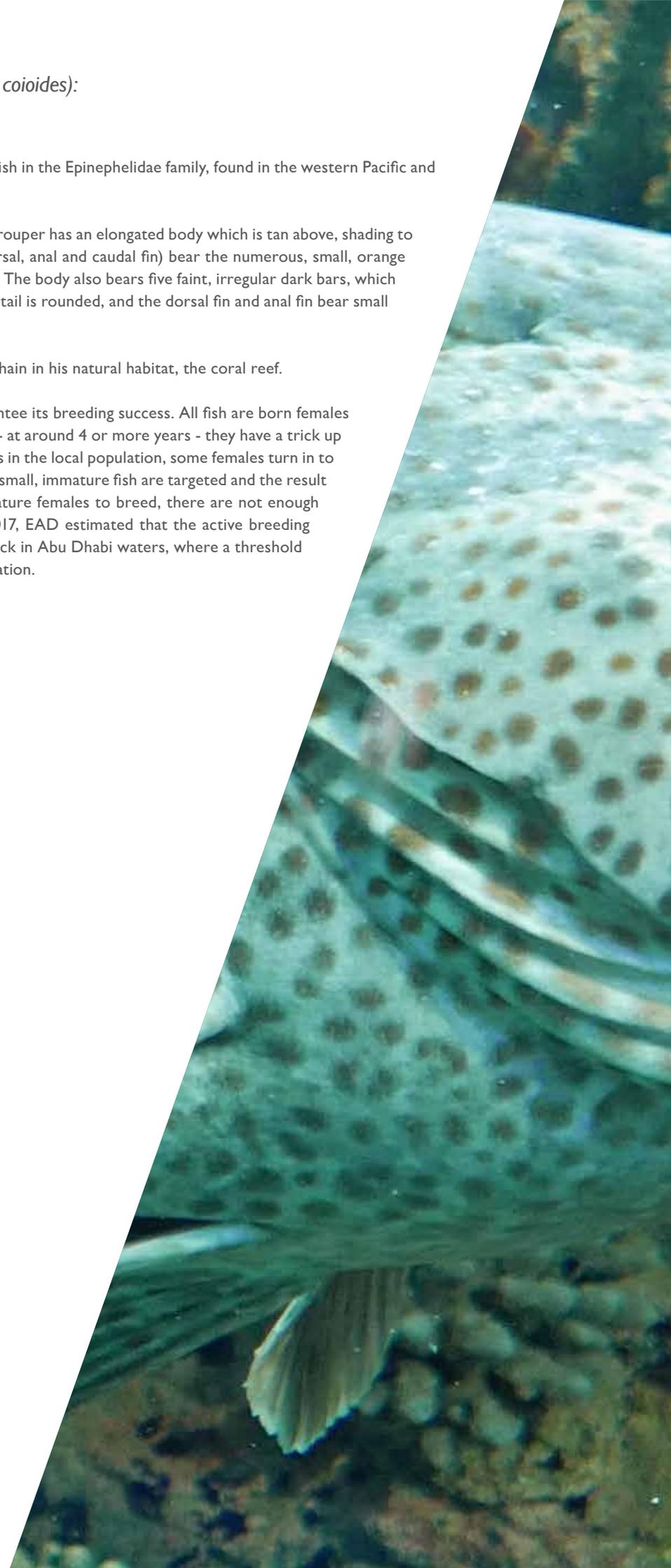
// Orange-Spotted Grouper (*Epinephelus coioides*):

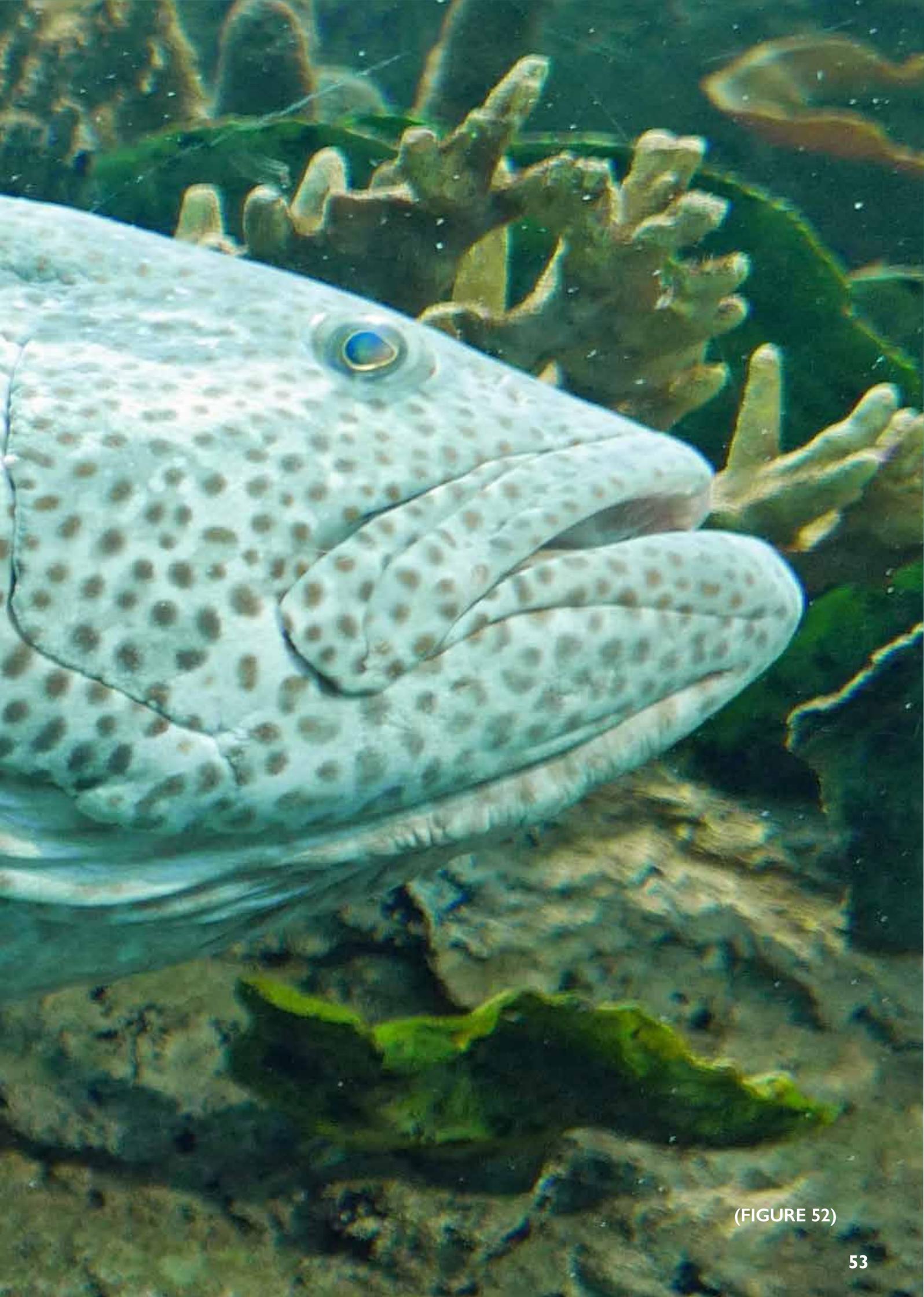
The hamour or orange-spotted grouper, is a species of fish in the Epinephelidae family, found in the western Pacific and the Indian Ocean (Figure 52).

A rather large, robust marine fish, the orange-spotted grouper has an elongated body which is tan above, shading to whitish below. The head, body and median fins (the dorsal, anal and caudal fin) bear the numerous, small, orange or reddish-brown spots for which this species is named. The body also bears five faint, irregular dark bars, which divide into two towards the underside of the body. The tail is rounded, and the dorsal fin and anal fin bear small spines.

An aggressive predator, hamour is at the top the food chain in his natural habitat, the coral reef.

The hamour has an unusual tactic which ought to guarantee its breeding success. All fish are born females and although they mature for reproduction very slowly - at around 4 or more years - they have a trick up their metaphorical sleeves. If there are not enough males in the local population, some females turn in to males. Unfortunately, with over-fishing, more and more small, immature fish are targeted and the result is doubly disastrous: not only are there not enough mature females to breed, there are not enough males also. The population plummets as a result. In 2017, EAD estimated that the active breeding population of hamour had fallen to 4.7% of the total stock in Abu Dhabi waters, where a threshold limit of 30% is the targeted level for sustainable exploitation.

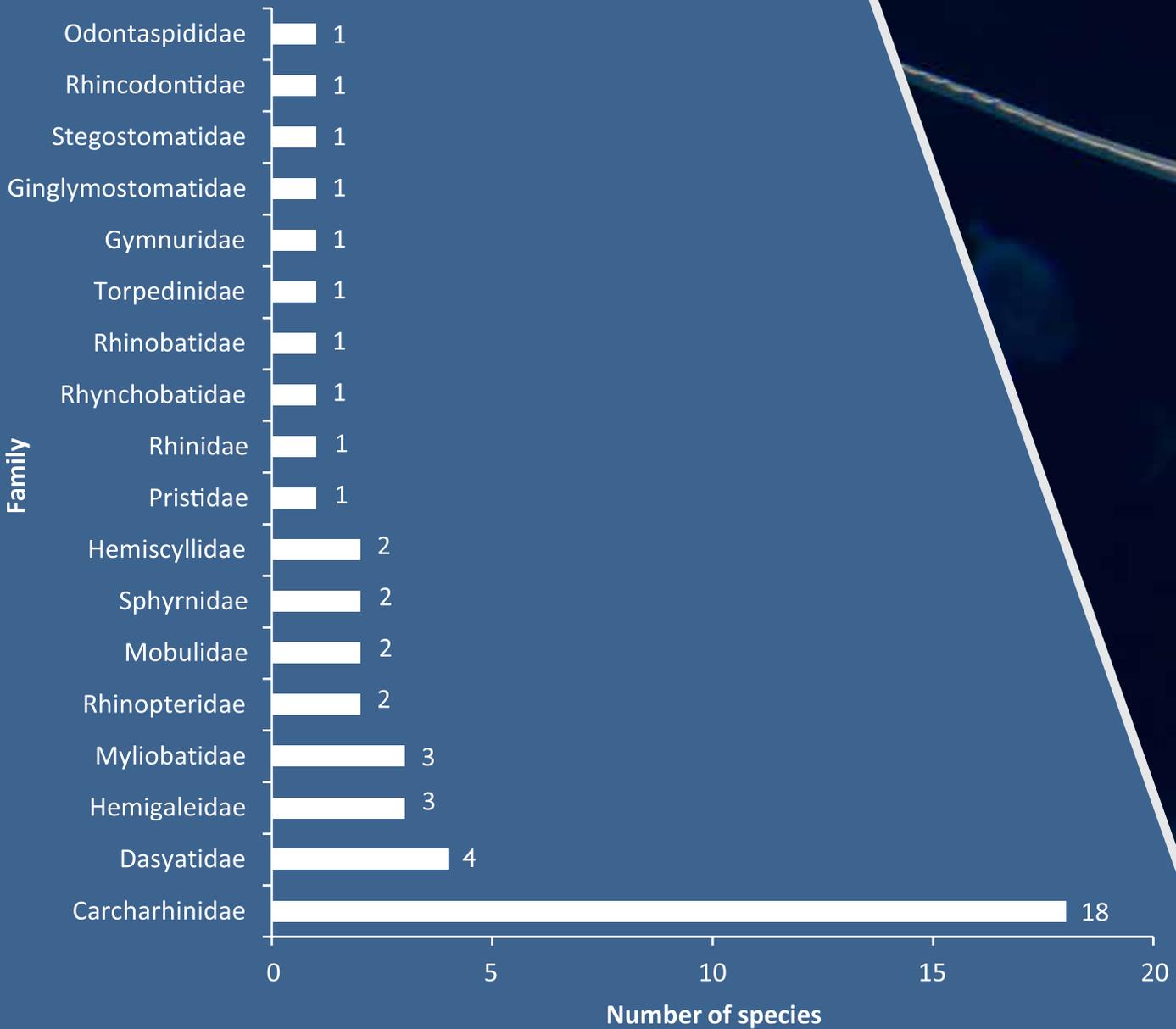




(FIGURE 52)

In Abu Dhabi Emirate, there are 49 species of elasmobranchs of which 29 are sharks and 18 are batoids (rays, guitarfish and sawfish). The sharks belong to three orders and eight families with the largest number of species belonging to the Carcharinidae family. The batoids belong to five orders and 10 families with the highest number of species belonging to the Dasyatidae family. Figure 53 provides a breakdown of the number of species in each shark and batoid family occurring in Abu Dhabi waters.

NUMBER OF SPECIES BY FAMILY



(FIGURE 53)

ELASMOBRANCHS OF ABU DHABI EMIRATE



07



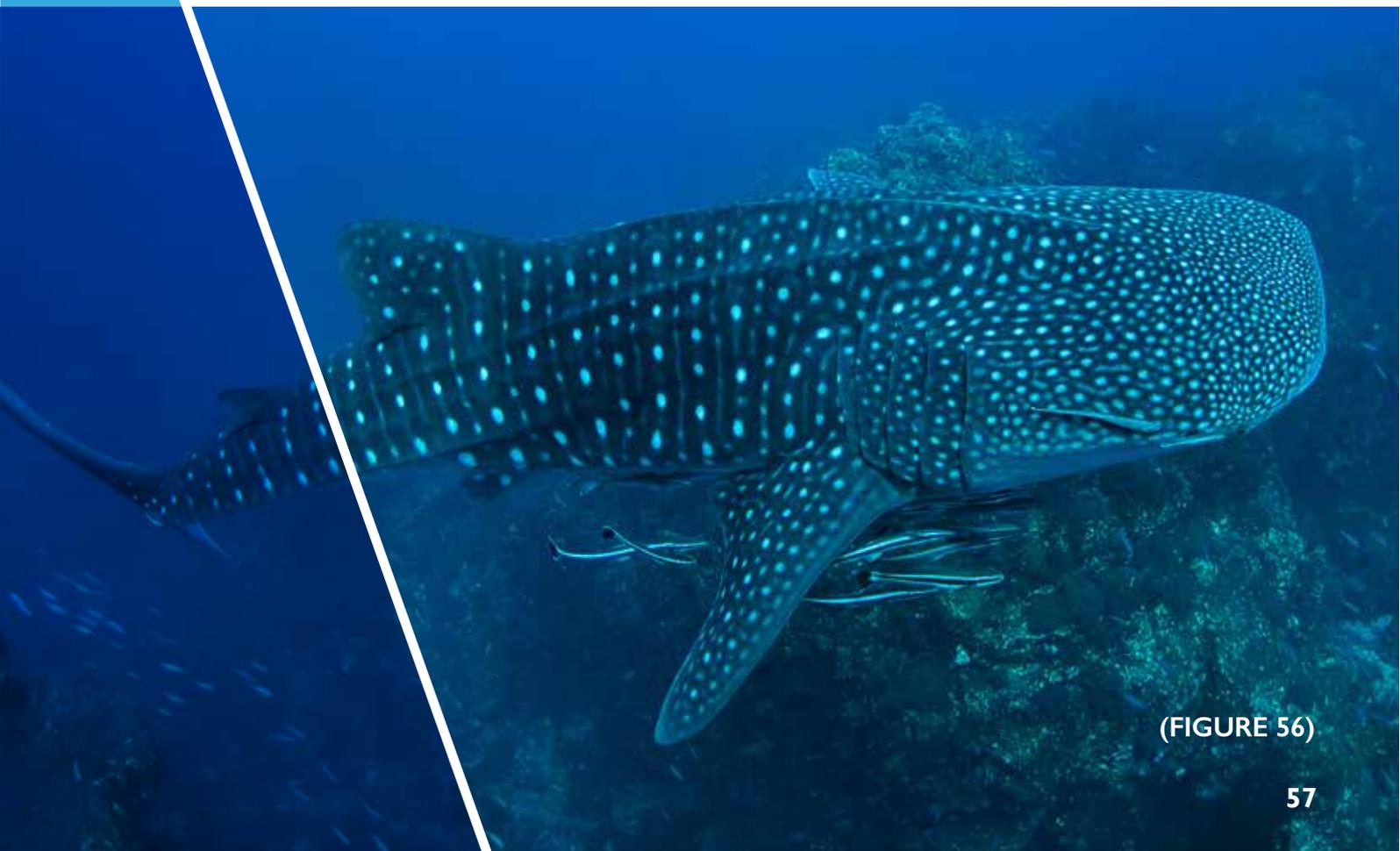
(FIGURE 55)

// Green Sawfish (*Pristis zijsron*):

The green sawfish is a batoid species, with a shark-like body and an elongated snout with protruding teeth, known as a saw or rostrum. This species can reach sizes of over 700 cm with the saw, usually having between 23 and 37 pairs of teeth, measuring over 100 cm. It is a coastal species with the young reported to occur in shallow nearshore areas, while adults are believed to be more common offshore. The life history characteristics of this species are poorly known but recent reports indicate that this is the most threatened marine species in the world with many populations having gone extinct. Fishermen in Abu Dhabi confirm that they were once abundant in these waters and are still occurring, highlighting the importance of the UAE for the long-term survival of this species (Figure 55).

// Whale Shark (*Rhincodon typus*):

The whale shark is the largest known fish species and can reach over 16 m in length. It is a slow moving filter feeder, feeding almost exclusively on plankton, and occurs in all tropical waters. This species is known to aggregate in several areas of the world, including in offshore Qatari waters and along the Saudi Arabian coastline in the Red Sea. These aggregations typically show sex-based segregations with coastal sites usually dominated by juvenile male sharks. They are known to occur in Abu Dhabi waters over the late summer and early autumn months and are frequently seen around the marinas (Figure 56).



(FIGURE 56)

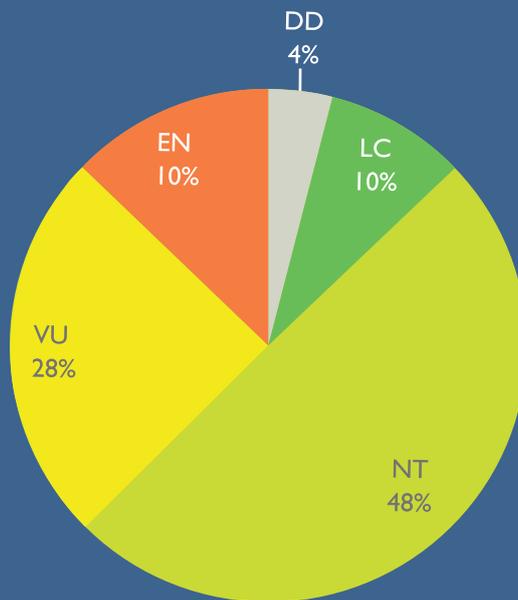
SPECIES UNDER DIFFERENT CITES CATEGORIES

According to CITES , for the species occurring in Abu Dhabi waters, one species of batoid is in Appendix I and five species of shark and batoid are in Appendix II. (Table 6)

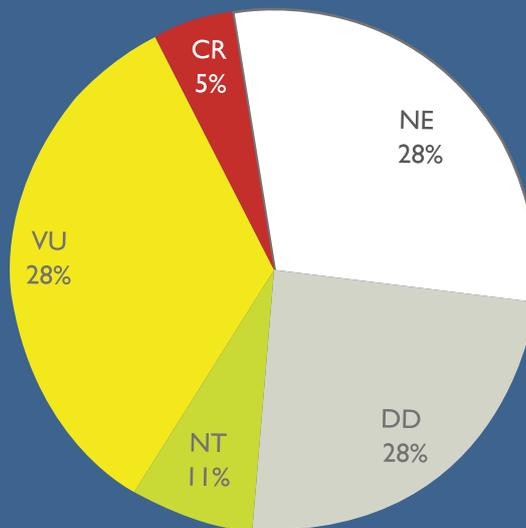
CITES Appendix	Shark Species	Batoid species
I	-	1
II	3	2

(TABLE 6)

THE PROPORTION OF ELASMOBRANCH SPECIES UNDER DIFFERENT THREAT CATEGORIES ACCORDING TO THE IUCN RED LIST



A: SHARK SPECIES



B: BATOID SPECIES

(FIGURE 54)

According to IUCN threatened categories, one species of elasmobranch, the green sawfish, *Pristis zijsron*, is considered Critically Endangered (CR), while two shark species, the great hammerhead *Sphyrna mokarran*, and the scalloped hammerhead, *Sphyrna lewini* are considered Endangered (EN). From an overall perspective, sixteen species are Near Threatened (NT) and thirteen species are Vulnerable (VU). The remaining species are either Least Concern (LC), Data Deficient (DD) or have not been evaluated (NE) (Figures 54).

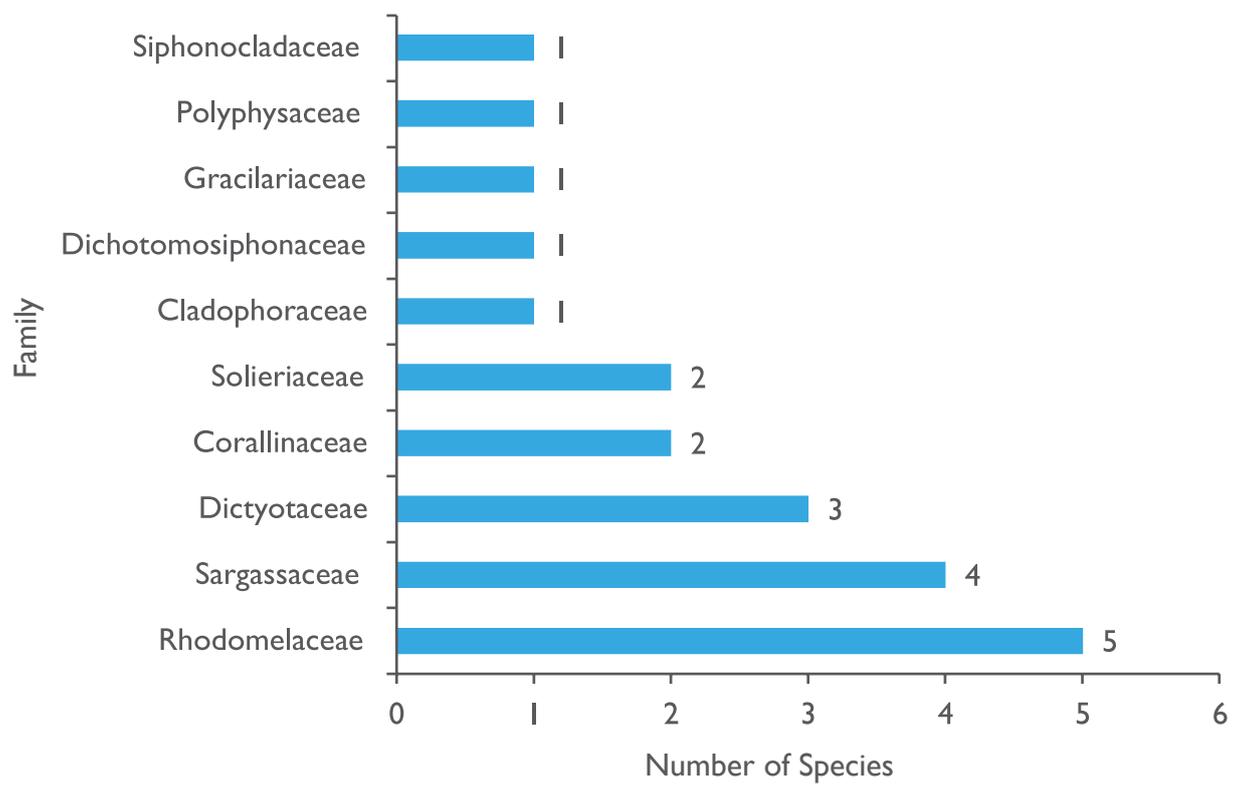
IUCN Categories	Number of Species
CR	1
EN	3
VU	13
NT	16
LC	3
DD	6
NE	5



ALGAE OF ABU DHABI EMIRATE

Comprehensive surveys of the seaweeds along the coast carried out over 5 years by John and George (1998; 2004; 2005) document a total of 121 species - 67 Rhodophyta (Red Seaweeds), 18 Chlorophyta (Green Seaweeds), 23 Phaeophyta (Brown Seaweeds), 1 Xanthophyta (Yellow-Green Seaweeds) and 12 Blue-green algae from Abu Dhabi waters. (Figure 57).

NUMBER OF ALGAE SPECIES BY FAMILY



(FIGURE 57)

These Algae species are not listed neither in IUCN category nor in CITES appendices.



(FIGURE 58)

Sargassum is a genus of brown (class Phaeophyceae) macroalgae (seaweed) in the order Fucales. Sargassum species are found throughout tropical areas of the world and are often the most obvious macrophyte in near-shore areas. They grow subtidally and attach to dead coral, rocks or shells in moderately exposed or sheltered and rocky areas. They undergo seasonal cycles of growth and decay in concert with seasonal changes in sea temperature.

Numerous species of sargassum are distributed throughout the temperate and tropical oceans of the world, where they generally inhabit shallow water and coral reefs. Species of this genus of algae may grow to a length of several metres. They are generally brown or dark green in color and consist of a holdfast, a stipe, and a frond. Sargassum decurrens has a rough sticky texture, which together with a robust but flexible body, helps it to withstand strong water currents. The thick masses of Sargassum provide an environment for a distinctive and specialised group of marine animals and plants and are important as nursery grounds for juvenile fish (Figure 58). Mixed sargassum macro algal beds are a common marine habitat in the shallow coastal waters of Abu Dhabi.

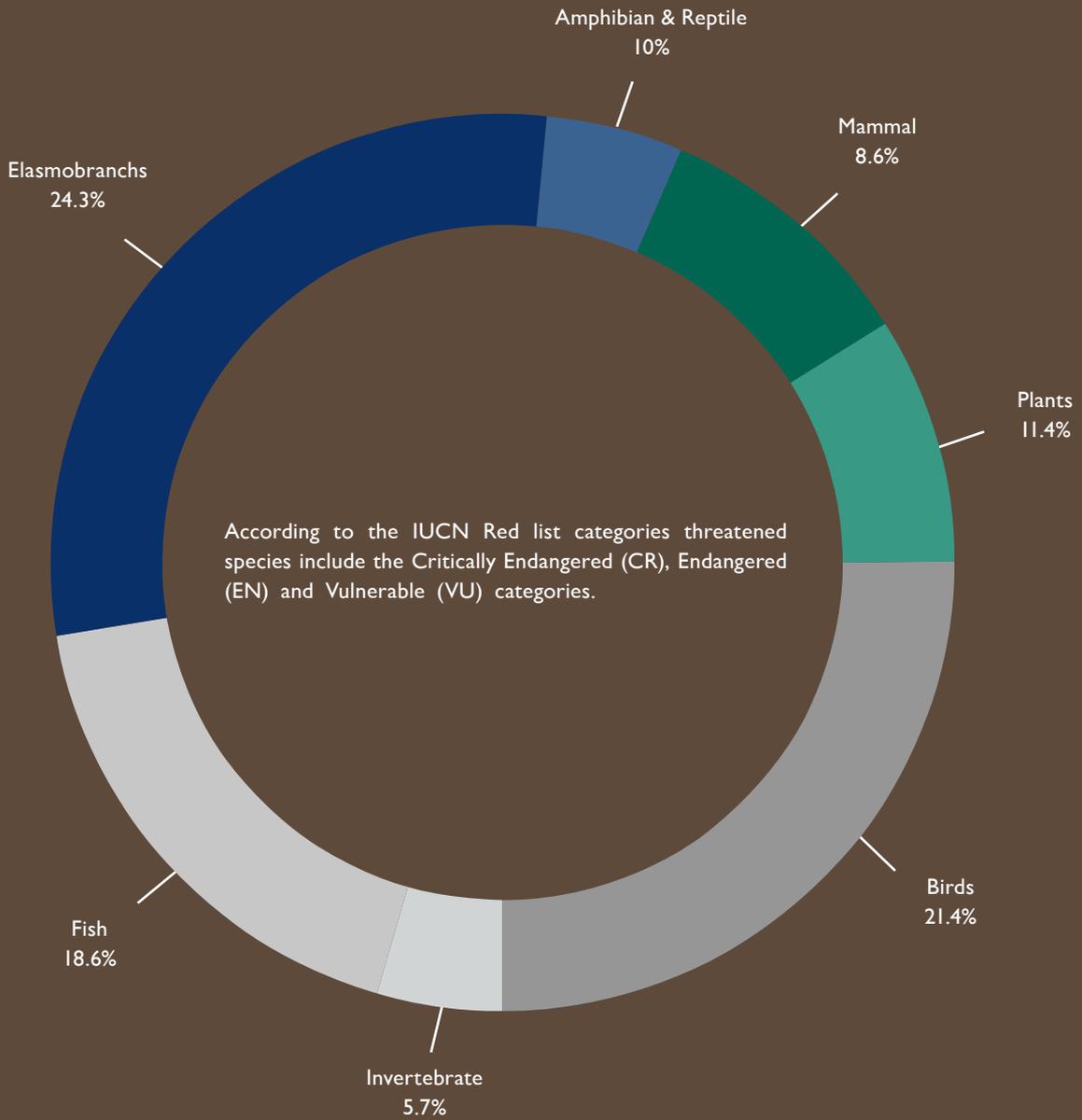


SPECIES STATISTICS OF ABU DHABI EMIRATE

THREATENED SPECIES ACCORDING TO IUCN RED LIST

Amphibian & Reptile	Mammal	Plants	Birds	Invertebrate	Fish	Elasmobranchs
7	6	8	15	4	13	17

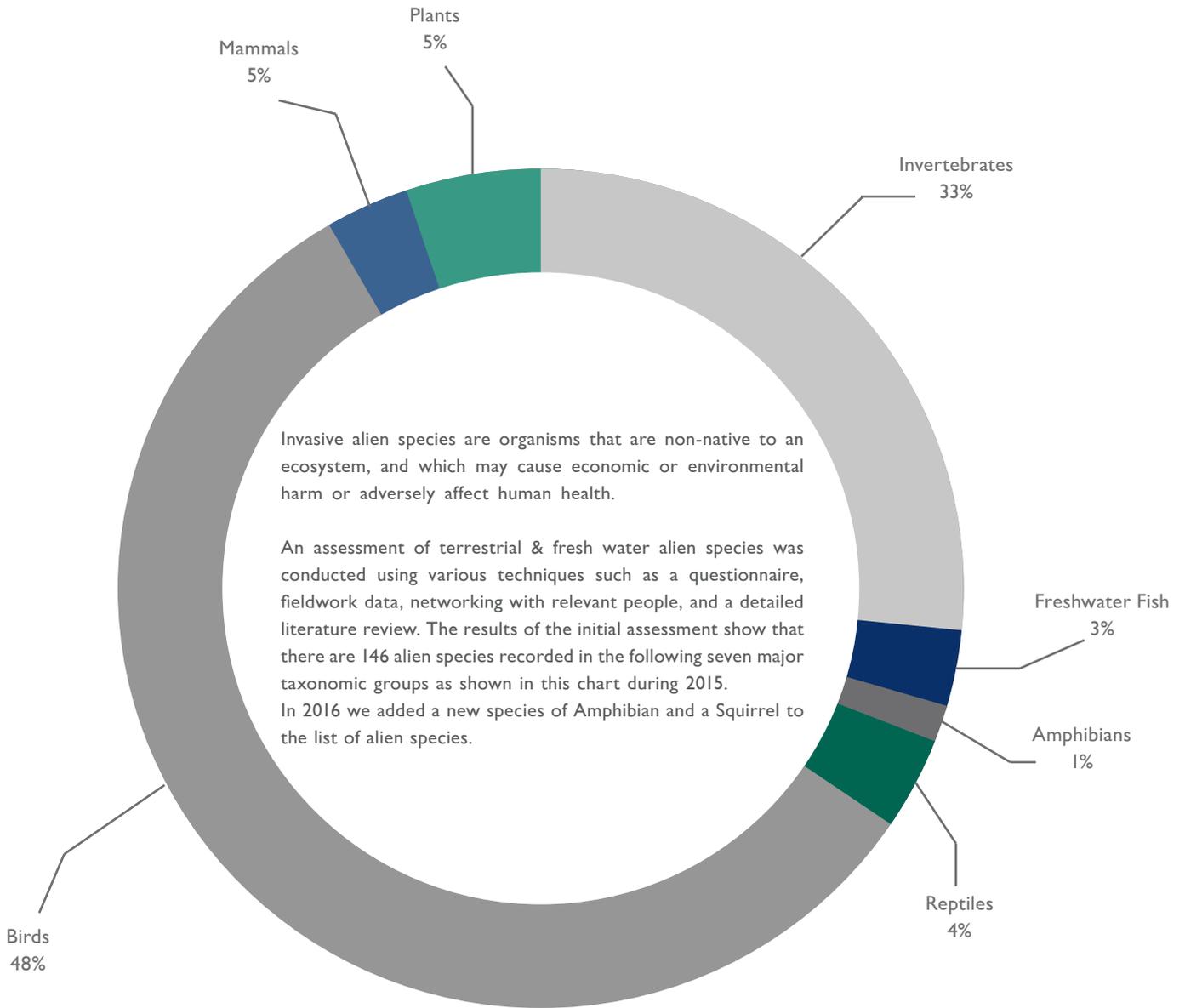
ABU DHABI THREATENED SPECIES BY MAJOR TAXONOMIC GROUP



(FIGURE 59)



ALIEN SPECIES RECORDED IN THE UNITED ARAB EMIRATES: AN INITIAL LIST OF TERRESTRIAL AND FRESHWATER SPECIES



(FIGURE 60)

	Number of Species	%
Invertebrates	49	33
Freshwater Fish	5	3
Amphibians	2	1
Reptiles	6	4
Birds	71	48
Mammals	7	5
Plants	8	5
	148	100

* This data is based on the Soorae et al., 2015 and includes the addition of an amphibian and mammal species in 2016.







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