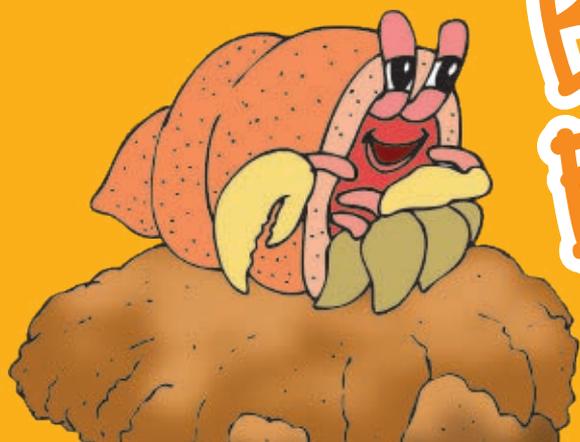




Field Guide to

# Maldivian Birds & Beach Ecosystems

with Baaree Baraveli



Developed for Educational Development Centre, Ministry of Education,  
Republic of Maldives by:



March 2008

Adapted for children from 'the Little Green Book' written by Anke Hofmeister for Soneva Fushi Resort and Six Senses Spa by: Elaine Glen, Jady Smith, Zameela Ahmed, Mariyam Shazna and Fathimath Shafeeqa

Proofed by: Mausooma Jaleel and Beverly McAloon

Support and critical review by: Anke Hofmeister, Mohamed Zahir, Dr. Margaret Card, Dr. Valeria Bers, Reinhard Kikinger, Ian Montgomery and Brenda Kranz.

Illustrated by: Afzal Shaafiu Hasan

Design and layout by: Karen Young

Photography by: Live & Learn Environmental Education, Anke Hofmeister, Elaine Glen, Ahmed Saleem (Environment Research Centre), Mohammed Zahir, Ahmed Riyaz Jauhary, Steve Crichton, Dr. Valeria Bers and Mohamed Mazin. Photos of female Koel, Crow and Waterhen sourced from Ali Nishan (ERC).

High-resolution photos of Cattle Egret, Crow, White-Tailed Tropicbird, male Koel and Whimbrel sourced from Ian Montgomery ([www.birdway.com.au](http://www.birdway.com.au)).

© Copyright: UNICEF and Educational Development Centre

Disclaimer: This document was prepared by consultants for UNICEF. The findings, interpretations, and conclusions expressed in it do not necessarily represent the views of UNICEF or those of its member governments. UNICEF does not guarantee the accuracy of the data included in this report and accepts no responsibility for any consequences of their use.

#### ACKNOWLEDGEMENTS

This Field Guide was developed with the assistance and support from many organizations, teachers, government departments and individuals. The principal authors of these field guides are Anke Hofmeister, Elaine Glen, Jady Smith, Zameela Ahmed, Mariyam Shazna and Fathimath Shafeeqa. A special mention must be given to Karen Young from Live & Learn who dedicated many hours to the outstanding graphic design of this field guide.

Substantial contributions were also provided by Dr. Sheema Saeed, Ahmed Riyaz Jauhary, Fathmath Nahid Shakir, Aminath Ismail, Hidayah Mohamed Zahir, Gulfshan Shafeeu and Aminath Mohamed from Educational Development Centre to review and strengthen this field guides and their linkages to the Environmental Studies curriculum. Ken Maskall, Johan Fagerskiold, David Proudfoot, Shadiya Adam and Mohamed Latheef from UNICEF also provided ongoing support and advice on the development of this field guide.

Thanks also go to the teachers of Seenu Hithadhoo for actively participating in the pre-testing of these materials which has only served to strengthen the final products. Finally appreciation is expressed to many individuals who have contributed their photos for inclusion in this field guide, including Anke Hofmeister, Ahmed Saleem and Ali Nishan (Environment Research Centre), Mohammed Zahir, Ahmed Riyaz Jauhary, Steve Crichton, Dr. Valeria Bers, Mohamed Mazin, Marine Research Center and Ian Montgomery.

Information from several websites was also summarized including: <http://encarta.msn.com/dictionary>, [http://animaldiversity.ummz.umich.edu/site/accounts/information/Pteropus\\_giganteus.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Pteropus_giganteus.html), <http://www.birding.in>, <http://www.bird-friends.com>, <http://www.turtles.org>, [http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page), <http://www.gould.edu.au/>

Information from the Maldives was also summarized from articles by Ahmed Saleem in ERC newsletter Pemphis, State of Environment Report Maldives (2004), First National Report to the Conference on the Parties to the Convention on Biological Diversity (2002), 'A Field Guide to the Birds of India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh and the Maldives' (2000) Pica Press.

# Contents



## Section 1: Introduction ..... 2

Beaches .....	3
Threats to Beaches .....	4
Names of Animals and Plants .....	5
Safety Issues .....	5

## Section 2: Bird Identification ..... 6

Threats to Birds .....	8
1. Asian Koel .....	9
2. House Crow, Common Crow.....	10
3. White-Breasted Waterhen .....	11
4. Grey Heron .....	12
5. White-Tailed Tropicbird .....	13
6. Whimbrel .....	14
7. White Tern .....	15
8. Cattle Egret .....	16

## Section 3: Other Common Beach Animals ..... 17

1. Land Hermit Crab .....	17
2. Ghost Crab .....	18
3. Swift-footed Rock Crab .....	19
4. Variable Lizard, Common Garden Lizard, Crested Tree Lizard .....	20
5. Indian Flying Fox .....	21
6. Hawksbill Turtle .....	22
7. Green Turtle .....	23

## Section 4: Special Things on the Beach ..... 24

## Section 5: Final Comments From Baaree Baraveli ..... 26

Other Books in this Series .....	26
Table 1: Summary of Bird Names ....	27
Table 2: Summary of Animal Names	28
Glossary .....	28

## Fun Pages ..... 29

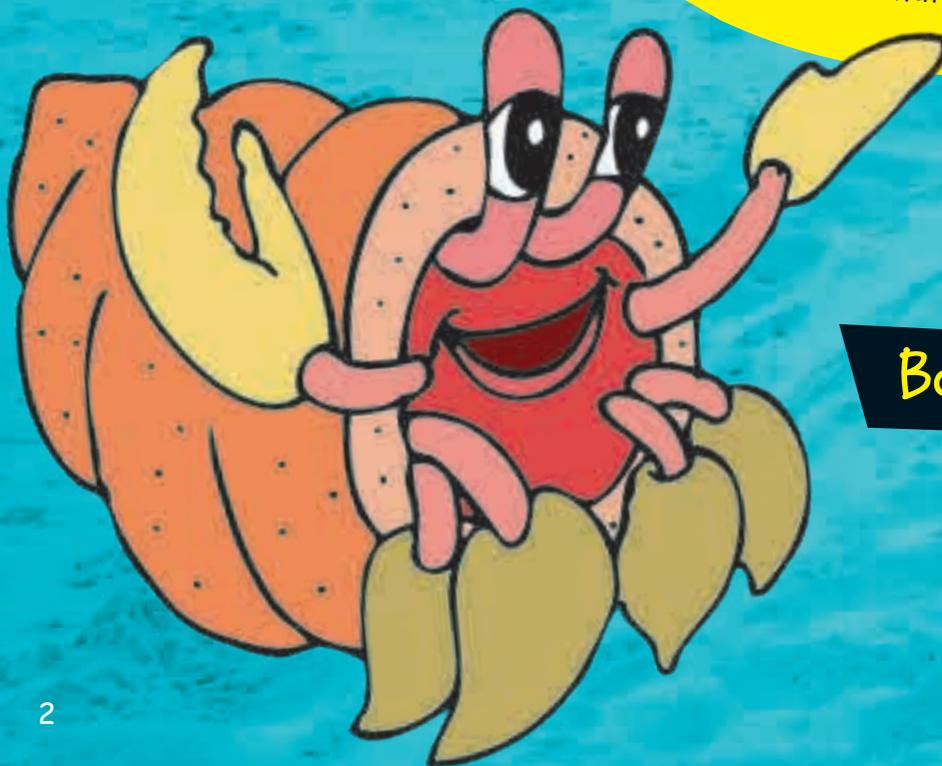
Word Puzzle .....	29
Colouring Page .....	30

# SECTION 1 Introduction

Hi my name is Baaree Baraveli  
and I am a hermit crab!

I live on beaches in the Maldives.  
If you look very carefully you might see me moving  
along the sand very slowly. But you have to be  
quick, because I go back into my shell  
if I am disturbed.

Living on the beach every day  
I know the **ecosystem** very well. I see how the  
sand comes and goes in the different monsoons  
and I see the different birds who live here.  
So when it comes to **beaches** and **birds**, I am a bit of  
an expert. So stay with me as I tell you about  
the beach ecosystem and the animals  
that live here.



**Baaree Baraveli**

## BEACHES

The islands of the Maldives are known as coral reef islands and there is a close relationship between the islands, the beaches and the surrounding reef. The islands are for the most part, low-lying sand cays. They are always changing their size and position in response to wind, waves and currents. Beaches are continuously changing – from day to day, month to month, and year to year – as the natural forces of wind and water meet the land.

### Effects of the monsoons

In the Maldives the beaches change as a result of the different monsoons. During the southwest monsoon (Hulhan'gu Moosun) the waves come from the west and southwest and sand is moved so that in many cases it builds up on the eastern side of the islands. During the northeast monsoon (Iruvai Moosun) the reverse happens, with the waves and currents coming from the northeast and sand often builds up on the western side of the island. People living in the islands will be most familiar with the seasonal patterns and how they affect their beaches. Each island and each beach has its own specific changes, and it is important to look at each beach separately.

Some beaches are losing more sand than they are gaining: this is called erosion. Other beaches may be gaining more sand than they are losing: this is called build up. Beach erosion and beach build-up are natural processes, but human action can interfere with the natural processes and make erosion more severe. For example mining sand from the beach or coral stone from the reef reduces the size of the beach and leaves the land vulnerable to erosion by the waves. It is important to keep as many plants as possible along the beach as their roots hold the sand together and protect buildings.

### Beaches are special places

A beach is more than a place where the ocean meets the land. It is also a coastal ecosystem. An ecosystem is a community of plants, animals and micro-organisms, which interact with each other and with the physical environment. A beach is a special environment where the plants and animals live in difficult or harsh conditions. Some small animals burrow into the sand and feed on material deposited by the waves. Crabs and shorebirds feed on these beach dwellers. Many shorebirds rely on beaches for nesting too! Sea turtles also lay their eggs on beaches.

## Threats to Beaches

Beaches have long been a popular attraction for tourism and recreation. Large white sand beaches are popular for resorts, especially in the Maldives. The soft sand is comfortable to sit or lie on, and is nice to walk along with bare feet! One of the many attractions of a sand beach, especially for children, is playing with the sand, like building sand castles.

Unfortunately beaches are often dumping grounds for waste and litter! In the past, people dumped organic waste like food and fish waste which would break down, but now people are dumping plastics and metals which takes a very long time to break down. Every day waste is dumped onto the beach, it looks horrible, smells bad and causes problems for animals like us! If this waste gets washed into the sea, other animals such as turtles can accidentally eat plastic bags and they can die!

↓ Dumping waste on beaches is a big threat to wildlife.

When I grow out of my shell and start to look for a new shell to live in, it can be a very hard job because there is so much waste on the beach! I find tin cans, deodorant bottles and toothpaste caps.... But I can't live in these things.... Look at my friend Badhuru who made a home in this bottle - all the other hermit crabs laugh at him.

**It makes me very angry!!!**  
Remember this the next time you are about to throw waste on the beach!



# Names of animals and plants

All plants and animals have many names:

- 1 An official common name e.g. Asian Koel
- 2 A scientific name written in italics e.g. *Eudynamys scolopacea*
- 3 Unofficial local names e.g. 'Koveli'.

Scientists give all living things on the planet a unique name- called a scientific name. In fact they are given 2 names to identify them using the **binomial classification system**. The classification system starts from largest to smallest: Kingdom, Phylum, Class, Order, Family, Genus, Species.

For example: **Kingdom:** Animalia, **Phylum:** Chordata, **Class:** Aves, **Order:** Cuculiformes, **Family:** Cuculidae, **Genus:** *Eudynamys*, **Species:** *scolopacea*.

**SAFETY ISSUES WITH  
STUDYING PLANTS & ANIMALS**

## Safety issues

Don't touch animals on the beach;  
you can hurt them if you pick them up.  
Let them live peacefully on the beach.  
Watch them with your eyes- not your hands!  
Don't damage beach plants - it took a long  
time for them to grow and it might be a home  
for an animal!

Also be careful where you step, there are  
sharp rocks or pieces of coral on the  
beach that might  
hurt you!

If you are going to  
the beach, take water, put on  
sun block and a hat and tell someone  
where you are going. Stay away from  
dangerous areas of the beach such  
as where large waves  
are breaking.



## SECTION 2

# Bird Identification



One of the most common types of animals found in the beach ecosystem are birds. In this field guide you will learn how to identify some of the common bird species found on or near beaches. Of the 190 species of birds found in the Maldives, there are 36 seabirds, 91 shorebirds and 63 landbirds. Out of these, only 5 sub-species of birds have been identified as being endemic to the Maldives. These include:

- Maldivian Pond Heron
- Maldivian Little Heron
- Central Maldivian Heron
- Maldivian Water Hen
- Asian Koel

Birds are special animals. Why are they special?

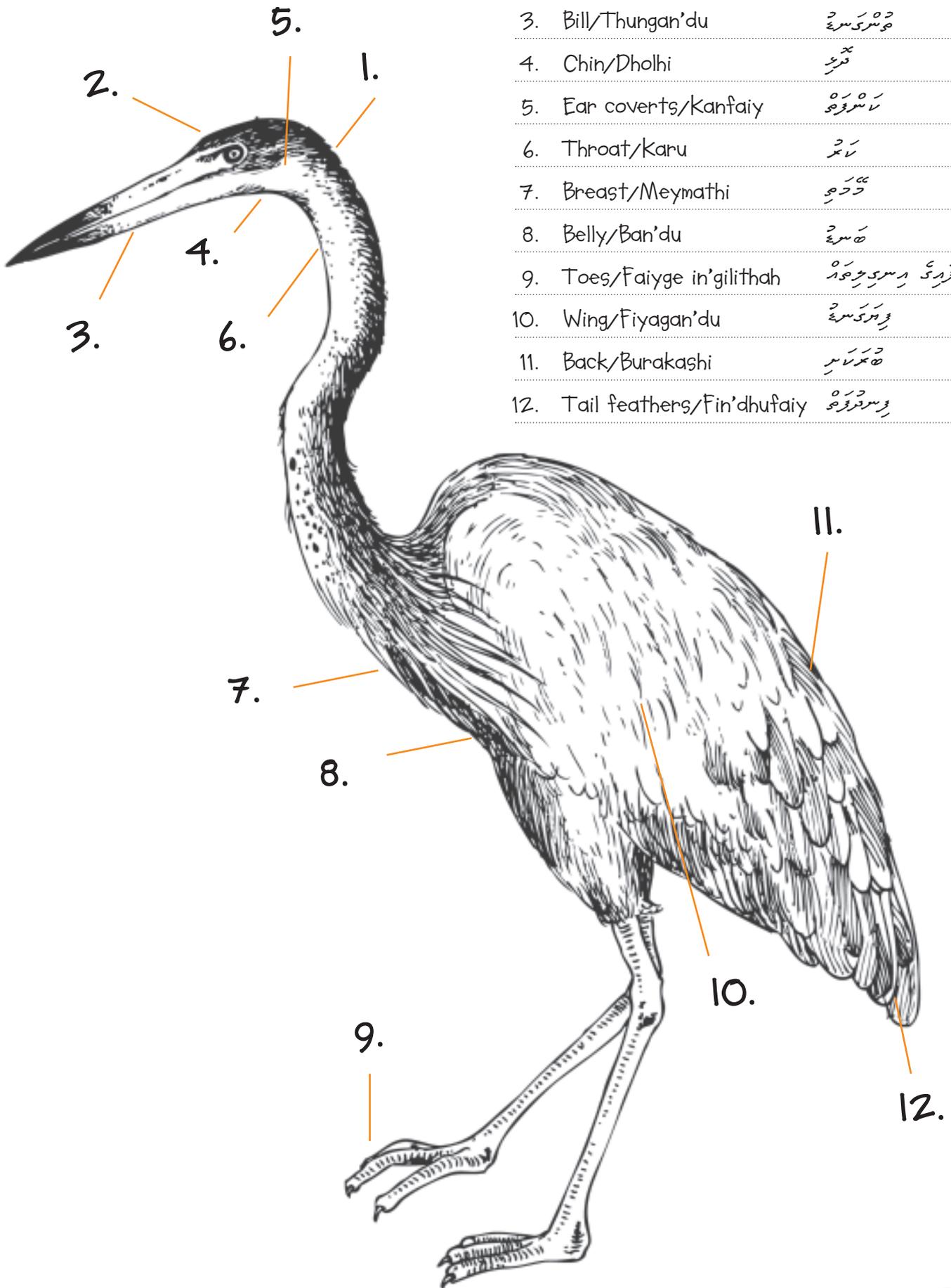
Well most people would say birds are special because they have feathers on their bodies and wings so that they can fly. But remember there are a few species of birds that can not fly such as the ostrich or emu. Birds also lay eggs, have beaks and come in all sorts of sizes and colours. They also have excellent eyesight, better than many other animals including humans. Birds also have hollow bones, so they are light enough to get off the ground. To help you identify birds, firstly you need to know about their main features, as shown in the following diagram.

Only about 20 of the 170 species of birds documented to be found in the Maldives are believed to live here all year round. The others are called migratory birds. That is, they only come to visit at certain times of the year.



# Main features of a bird

1. Crown/Hulhi	كُرُون
2. Forehead/Nikkuri	سِرَارِ نِكُّرِي
3. Bill/Thungan'du	كُوسِي سِرِي
4. Chin/Dholhi	دُھولِي
5. Ear coverts/Kanfaiy	كَنْفَايِي
6. Throat/Karu	كَارُو
7. Breast/Meymathi	مَيْمَاثِي
8. Belly/Ban'du	بَنْدُو
9. Toes/Faiyge in'gilithah	فَايْجِي اِنْغِيلِيثَاھ
10. Wing/Fiyagan'du	فِيَاغَانْدُو
11. Back/Burakashi	بُرَاكَاشِي
12. Tail feathers/Fin'dhufaiy	فِيْنْدُھُوْفَايِي

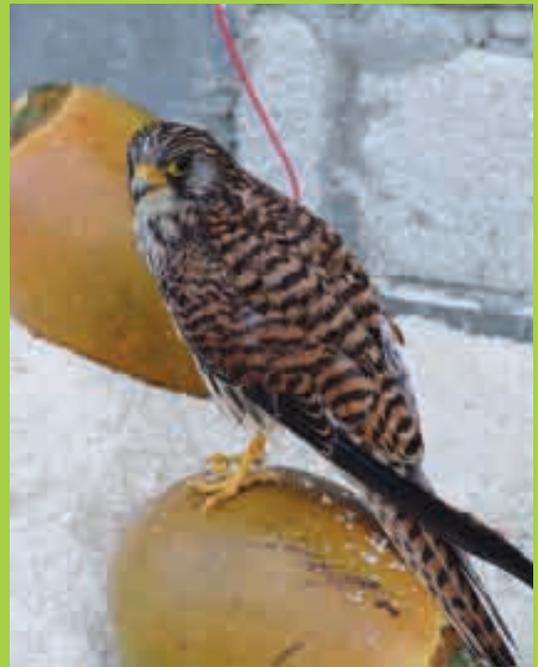


## Threats to Birds

In many countries, including the Maldives many people catch and keep wild birds in captivity because of their beauty.

However keeping wild birds in captivity is very stressful to the bird. For protected birds in the Maldives this is illegal. Also if you take bird eggs or bird nests you are reducing the numbers of wild birds in the Maldives. Remember that wild birds are beautiful to watch, but they belong in the wild, not in a cage.

↓ Brown Noddy tied up.



↑ Common Kestrel tied up



↑ Bird trap



↑ Male Koel/Kaalhu Koveli



↓ Female Koel/Didin Koveli

## 1. Asian Koel

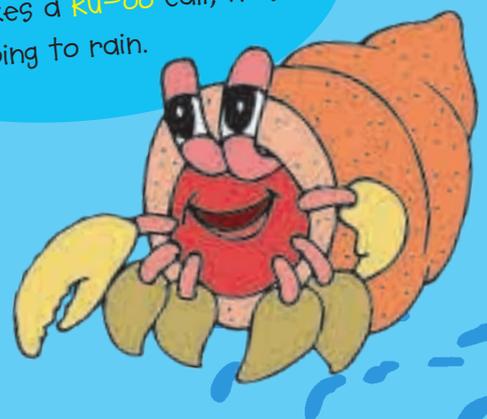
Scientific name: *Eudynamys scolopacea* (family Cuculidae)  
Dhivehi name: Dhivehi Koveli

**Distribution:** The Asian Koel likes woodlands, parks and gardens. Found in tropical Southern Asia, India, Sri Lanka and Australia. This bird is protected under the *Environmental Protection and Preservation Act (4/93)*, so capturing, selling or keeping this bird in captivity is illegal.

**Description:** Considered by many Maldivians as the alarm clock of the island, the Koel is a noisy bird which is usually heard rather than seen, making repeated and loud “ku-oo ku-oo” calls as well as other cackles and screams. The male is all black in colour, has a yellow-green bill and red eyes, while the female has a brownish colour and is heavily

striped and spotted. Their diet mostly consists of fruits, but also insects. It can be hard to identify the Koel because the male resembles the Crow. The easiest way to tell them apart is to look at the colour of the eye- if it is red, then it is a Koel!

In Australia the Koel is called the “storm bird”. This is because people believe that when the Koel makes a ku-oo call, it is going to rain.



## 2. House Crow, Common Crow

Scientific name: *Corvus splendens*  
(family Corvidae)

Dhivehi name: Kaalhu

**Distribution:** The Indian House Crow is found across Southern Asia and lives close to human settlements. Being a clever bird it has been able to live in many types of environments from small villages to large cities, such as Male'. It is perhaps the most common bird found in the Maldives. The bird is found in almost every habitat and Atoll except the two Southern-most atolls of Addu and Fuvah Mulah.

**Description:** The bird is generally dark and has a grey neck. Both male and female are alike. Their eyesight and hearing is also very good. They are a bold and curious bird. Their voice is a loud "cawww, cawww". Crows use their voice to communicate messages to other crows. This includes alarm, feeding, comeback and fight calls. In the wild, crows live 6 to 7 years.



Crows generally nest once or twice per year. The nests are usually placed high in tall trees. The nests are cup shaped and made of twigs and bark and lined with grass, leaves, hair, feathers etc. An average of 5 eggs is laid; they are bluish-green in colour with brown markings. Being omnivorous (ie they can eat both meat and fruits/vegetables), their diet consists of almost anything: seeds, fruits, nuts, insects, mollusks, earthworms, eggs, nestlings, frogs, mice and garbage.

In many agricultural islands, Crows are often accused of robbing the farmers' fruits. However Crows do help farmers when they eat pest insects attracted by their crops.



When disturbed this shy bird flies off with a loud noise sounding like "quarr". Its tail rises when it senses danger and the pair hides themselves and calls out to each other.



### 3. White-Breasted Waterhen

Scientific name: *Amaurornis phoenicurus*  
(Family Rallidae)

Dhivehi name: Dhivehi Kan'bili

**Distribution:** The White-Breasted Waterhen is a resident bird in the Maldives. In the past this beautiful bird was known to be abundantly found in all the islands of the Maldives. But due to population pressure, habitat loss and direct catching of the bird, the population is going down rapidly through out the country. This bird is protected under the *Environmental Protection and Preservation Act* (4/93), so capturing, selling or keeping this bird in captivity is illegal.

**Description:** The secretive White-Breasted Waterhen is usually heard before it is seen. It is a noisy bird, especially at dawn and dusk, with a loud "ruak ruak" call. This bird can often be seen out in the open in the morning and evening; when disturbed, though, it will quickly run into the dense undergrowth of the jungle for protection. You can identify this bird by its white breast and reddish-brown tail feathers, the dark back and the yellow bill and legs. It has dark red eyes with a white ring around them. Both male and female look alike.

This bird mostly lives in pairs. During the breeding time of the year (June-October) the Waterhens make their nests on low lying trees. It lays about 4-7 eggs at a time. The chicks are black and fluffy and they can be seen to follow the parent birds.



↑ Waterhen looking for food

## 4. Grey Heron

Scientific name: *Ardea cinerea* (Family Ardeidae)  
Dhivehi name: Maakaanaa

**Distribution:** The Grey Heron is the most common of the twelve heron, bittern and egret species recorded in the Maldives. You will often see it walking on our beaches looking for an easy feed on the tiny herrings and silversides that swim in dense schools in the shallow lagoon waters. It lives in all kinds of larger, open inland and coastal waters, as well as wetlands and mangrove swamps. This bird is protected under the *Environmental Protection and Preservation Act* (4/93), so capturing, selling or keeping this bird in captivity is illegal.

**Description:** It is easily identified by its grey feathers (plumage), large size (96cm) and long neck. When approached too closely, it will move away; its flight is slow, the long neck looks like an 'S' shape. This bird breeds in groups (called colonies) in trees and builds a bulky stick nest. The call is a loud croaking "chraik".



↑ Grey Heron eating a fish



↑ Heron perching in a tree

↓ Grey Heron



The Grey Heron is one of the most commonly seen birds in the Maldives and is also one of the birds which is the least scared of people. So if you are quiet you may be able to move closer for a better look.



↑ Tropicbird flying



↑ Tropicbird with chick

## 5. White-Tailed Tropicbird

Scientific name: *Phaethon lepturus*  
(family Phaethontidae)

Dhivehi name: Dhan'difulhu Dhooni

**Distribution:** The White-Tailed Tropicbird is not considered very common in the Maldives, although there are many records for this bird in the Atlantic, Indian and Pacific Oceans. These birds like to live near the ocean or sea coast and sometimes follow ships. This bird is protected under the *Environmental Protection and Preservation Act (4/93)*, so capturing, selling or keeping this bird in captivity is illegal.

**Description:** White-Tailed Tropicbirds have a diagonal black line on the upper wing, a black eye stripe, beautiful long white tail-streamers and yellow or orange bill. Their two long central tail streamers make the birds easy to identify, especially in flight. The long streamers are used in acrobatic courtship flights. Both male and female are similar, although males often have a longer tail. Young birds do not have the tail streamers and have a green-yellow bill. The call is a high screamed "kee-kee-krrrt-krrt-krrt".

The White-tailed Tropicbird travels widely across the oceans when not breeding, and sometimes wanders far away from the mainland or islands in search of food.



The White-Tailed Tropicbird tends to feed on its own, although sometimes it is seen in pairs. They catch their prey by diving, with wings half-folded, into the water. The catch is swallowed before re-taking flight. The birds feed on fish and squid. The bird breeds on tropical islands, laying a single egg directly onto the ground. The nests are therefore in a vulnerable location and can easily be disturbed. If you are lucky to find a Tropicbird nest, make sure you do not disturb the birds!

↓ Whimbrel looking for food



## 6. Whimbrel

Scientific name: *Numenius phaeopus phaeopus*  
(Family Scolopacidae)

Dhivehi name: Bulhithun'bi

**Distribution:** The Whimbrel is the one of the most widespread of the curlews, breeding across much of subarctic North America, Europe and Asia. This is a migratory species. This bird is protected under the *Environmental Protection and Preservation Act* (4/93), so capturing, selling or keeping this bird in captivity is illegal.

**Description:** The Whimbrel is a large wading bird that has a distinct down-curved bill. This is a large wader at 37-45 cm length. It is mainly greyish brown, with a white back and rump and a long curved bill (longer in the adult female). It is generally shy and cautious of humans. The usual call is a rippling whistle. The Whimbrel feeds by using its bill to find food in the mud, such as small invertebrates and by picking small crabs off the surface of the mud.

Near the end of the 19th century hunting of this bird in Europe decreased the numbers a lot, but the population is now increasing again.



## 7. White Tern

Scientific name: *Gygis alba*  
(family Sternidae)

Dhivehi name: Dhondheeni /  
Kandhuvalu Dhooni

This small tern is famous for laying its egg on bare thin branches in a small fork or depression without a nest. This balancing act is a clever way to avoid predators because the branches they choose are too small for rats or even small lizards to climb.



**Distribution:** The White Tern can be found widely across the Pacific and Indian Oceans, and also nests in some Atlantic islands. This seabird is commonly found in all the islands in Addu Atoll, the southernmost atoll of the Maldives. This bird is protected under the *Environmental Protection and Preservation Act (4/93)*, so capturing, selling or keeping this bird in captivity is illegal.

**Description:** The White Tern is a small, all white tern with a long black bill, black ring around eye, blue legs and base of bill. The White Tern spends most of its time during the day looking for food out in the open ocean. It is a long-lived bird, having been recorded living for 17 years.

Adults will carry small fish in their bills back to their chicks. Both parents share responsibility of feeding the chick. The bird is known to lay only one egg at a time and on large trees, such as breadfruit trees and coconut trees. The White Tern builds no nest, but lays its single egg on depressions in thick branches or in forks between 2 branches. White Terns will protect their territories and the young ones from other bird species.



↑ White Tern perching in tree



↑ White Tern with egg

## 8. Cattle Egret

Scientific name: *Bubulcus ibis coromandus* (Family Ardeidae)

Dhievhi name: Iruvaahudhu

In many countries this bird has the habit of following cattle. This explains how it got its common name.



**Distribution:** The Cattle Egret likes open grazing areas and wet fields such as the land around the Gan airport in Seenu Atoll. This bird is protected under the *Environmental Protection and Preservation Act (4/93)*, so capturing, selling or keeping this bird in captivity is illegal. This bird is found all over the world in Asia, Africa, Europe, Pacific and South/North America.

**Description:** When it is breeding it has a distinctive orangy wash on its head and neck. When it is non-breeding it can be identified from other white egrets by its small size, relatively short, thick neck, yellow bill, black feet and round headed appearance.



↑ Cattle Egret/Iruvaahudhu

↓ Cattle Egret flying





↑ Land Hermit Crab

**Distribution:** Land hermit crabs are found from Tanzania in Africa, to the South West Pacific and Australia.

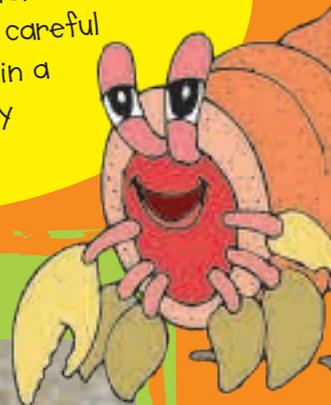
**Description:** All land hermit crabs found along our beaches or in the island's vegetation have adapted to a life outside the sea. They breathe through wrinkled, thin skin at the tip of their soft body. Only the females return to the sea during the reproductive season to release their larvae. Because of their soft body they are in danger of drying out (called dehydration). This is why they only live in tropical regions and come out mostly at night. Land hermit crabs also cover their body with a shell. The shell helps them to stop drying out and whenever predators come near, the hermit crab can crawl back into the shell and wait until it is safe to come out. Land hermit crabs are omnivorous scavengers and feed on all types of dead organic matter (both meat and vegetable matter).

## 1. Land Hermit Crab

Scientific name: *Coenobita species*  
(order Decapoda)

Dhivehi name: Baraveli

As hermit crabs grow, we must swap our shell for a larger one. There is a lot of competition among the hermit crabs for the available shells - if you are not careful you can end up living in a bottle - just like my friend *Badhuru!*



↑ Land Hermit Crab

## 2. Ghost Crab

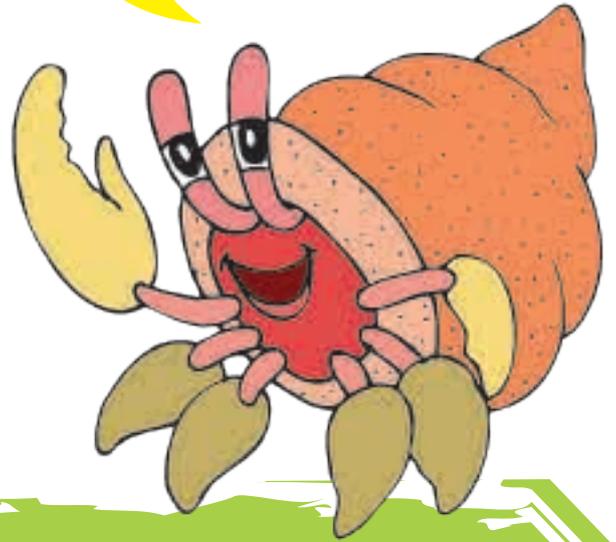
Scientific name: *Ocypode species* (order Decapoda)

Dhivehi name: Kirukakuni

**Distribution:** Ghost Crabs are found widely on tropical shores from Africa, across the Indian Ocean, to Brazil in South America. They inhabit sandy beaches in the upper intertidal zone.

**Description:** Ghost Crabs live in deep, cool and moist burrows during the day to avoid the heat and predators. At night, they can be seen feeding on animal and plant waste such as plankton washed ashore by the tides. The most noticeable species is *Ocypode ceratophthalma* with its stalked eyes. They are the largest of all tropical Ghost Crabs, and can also be easily identified by their square-shaped carapace (shell).

These crabs are called "ghosts" because they can quickly disappear when disturbed, scuttling at high speed along the beach making sharp changes in their direction.



↑ Ghost Crab/Kirukakuni



These crabs are called **swift-footed rock crabs** for a good reason. So you can see them from a distance, but they move so fast that they are very difficult to get close to.



↑ Swift-footed Rock Crabs

### 3. Swift-footed Rock Crab

Scientific name: *Grapsus albolineatus*  
(order Decapoda)

Dhivehi name: Gaakakuni

**Distribution:** Swift-footed Rock Crabs live in beach rock, rock walls, boat ramps and jetties across the Indo-Pacific region.

**Description:** You can identify this species easily because it has many colours and the fine, greenish lines on the shell (called carapace). Male rock crabs usually have much larger claws than females, but both male and female can re-grow their claws once lost. The species eats algae but also small invertebrates.



↑ Swift-footed Rock Crab/Gaakakuni

↓ Lizard up-close



#### 4. Variable Lizard, Common Garden Lizard, Crested Tree Lizard

Scientific name: *Calotes versicolor* (Squamata)

Dhivehi name: Bon'du

**Distribution:** The Variable lizard is found throughout South and South East Asia, including many Maldivian islands, and is regularly found among the undergrowth in open habitats as well as highly urban areas. You may find this animal near the beach warming itself in the sun or climbing a tree.

**Description:** It is normally dull brown or grey with speckles and bands, but can also be seen in other colours. Sometimes they are very difficult to see against a tree or sitting in leaves- they are camouflaged very well. Unlike other lizards, this species does not drop its long tail when in danger. It mainly feeds on insects and small vertebrates. It is prey for birds.

↓ Male lizard on a tree



↓ Lizard/Bondu



Males become very territorial when in breeding season and try to put off other males with reddened heads and push-ups, while at the same time attracting females.



**Distribution:** Flying Foxes live in the tropics and subtropics of Australia, Africa and Asia, including remote islands in both the Indian and Pacific Oceans. These animals can be found in forests and swamps. Standing on the beach and looking back across the trees is a great place to see flying foxes.

**Description:** These animals are commonly called flying foxes or fruit bats, and are some of the largest bats in the world: with a wingspan of up to 150 cm. They are usually dark brown, gray, or black body color with a yellowish chest. They have well-developed eyes and noses that help them to easily find their main food items: nectar, flowers, pollen and fruits. The animals come out during the day and night, especially at dusk. During the hottest part of the day they usually sleep in trees, hanging upside down

## 5. Indian Flying Fox

Scientific name: *Pteropus giganteus*  
(Order Chiroptera, family Pteropodidae)

Dhivehi name: Vaa

by their feet with their wings wrapped around themselves. The Flying Fox likes to live with other flying foxes and they like to make noise! They “chatter” and “squawk”, especially when threatened. Female Indian Flying Foxes give birth to only one pup a year and can live up to 30 years.

The favourite fruits of Maldivian flying foxes include those of Banyan and Indian Almond trees, but they also like guava, mango and papaya. They play an important role in the entire island ecosystem by pollinating flowers and spreading plant seeds.



↑ Flying Fox/Vaa

Although they have wings the Flying Fox is not a bird. Flying Foxes are mammals. So what is the difference between a bird and a mammal? Mammals give birth to live young ones, whereas birds have feathers and lay eggs.





↑ Hawksbill Turtle swimming

## 6. Hawksbill Turtle

Scientific name: *Eretmochelys imbricata*  
(order Testudines)

Dhivehi name: Kahanbu

Despite laws being in place, international trade in hawksbill shells and use of meat and eggs continue in many countries. The global survival of the species is at threat because of this.

**Distribution:** Hawksbill Turtles like coastal reefs, rocky areas and lagoons. Although it is a marine animal for most of the time, it does have a very special connection to beaches. This is where the life of a Hawksbill Turtle begins. The Hawksbill Turtle is listed as an endangered species globally, partly due to changes in beach ecosystems around the world. This species has been protected under Maldivian law since 1995. No person is allowed to kill, catch or take this species from Maldivian waters.

**Description:** A Hawksbill Turtle has a beak-like mouth, hence the name, two claws on each flipper, and a thick brown shell (carapace). Some people say the beak-like mouth makes this turtle look a little like a bird. Hawksbills nest on beaches in tropical oceans of the world, often sharing with Green Turtles. Nests are often found under vegetation (e.g. trees or shrubs). Sponges are the main food of Hawksbills when they enter shallow coastal waters and begin feeding.



↑ Hawksbill Turtle with beak-like mouth

## 7. Green Turtle

Scientific name: *Chelonia mydas*  
(order Testudines)

Dhivehi name: Velaa

**Distribution:** Besides the Hawksbill Turtle, which is frequently observed, the Green Turtle is the most common turtle species in the Maldives. This turtle lives near coastlines and in areas with sea grass beds. Although it is a marine animal for most of the time, it does have a very special connection to beaches. This is where the life of a Green Turtle begins. This species has been protected under Maldivian law since 1995. No person is allowed to kill, catch or take this species from Maldivian waters.

**Description:** If you are very lucky, a female Green Turtle may be seen on the beach scooping out a nest, laying eggs or making her way back to the water. Or you may see her tracks leading up and down the beach. During the turtle's nesting season from March to November, around 100 eggs per nest are laid. A Green Turtle



↑ Green Turtle on beach

↓ Green Turtle laying eggs



may come ashore 6-8 times at two weekly intervals to nest. It is herbivorous and mainly feeds on algae and sea grass. The Hawksbill Turtle has a different diet (mainly invertebrates in the reef) to the Green Turtle so the two species are not in direct competition. Unfortunately they do face the same human threats of egg harvesting, habitat destruction and hunting.

↓ Green Turtle trail marks on the beach

If you have the chance to see this animal laying eggs they look like they are crying. But they are really just keeping their eyes moist.



## SECTION 4

# Special things on the beach

24

If you walk along the beach you can find special things at any time of the year, but after a storm is the best. In different seasons you will find different things. Sometimes what you find is easy to identify and explain, such as a plastic bottle, a fishing line or a coconut, but other things are a mystery. You may find things that have come from a long way, or things that have come from the deep ocean.



## 1. Skeleton of the Blue Coral

When the coral is alive, this limestone skeleton is covered by brownly coloured tissue. Only when pieces of this coral are broken off, the blue colour of the skeleton can be seen. The colour is caused by the presence of certain minerals.

## 2. Skeleton of the Organ Pipe Coral

Similar to the Blue Coral, the red color of the inside skeleton comes from certain minerals. When the coral is alive, you can see little tentacles coming out of the "organ pipes"/tubes, which capture tiny plankton organisms for food.

## 3. Skeleton of the Mushroom Coral

The upper side of the coral looks like the top of a mushroom. The slit in the centre is the mouth opening. With the tentacles that are visible in the live animal, it captures plankton and directs the food into the mouth. It lies loosely in the reef.

## 4-6. Different Species of Hard Corals

The cup-like holes or pores you see on the surface are the places where single animals called coral polyps live. Many of these polyps make up colonies and give out limestone at their base, so that, over a long time, coral rock is created.

## 7 . Cowry Shells

Cowry shells, which are made by marine snails, usually have a very glossy surface, as long as the snail is alive. When the animal is dead and the shell is empty, the seawater and sand rubs off the shine, and the shell is washed up on the beach.

## 8. Cone Shells

These shells were made by snails, which are predators and inject their dart like teeth onto their prey and paralyse them with a strong poison. It is IMPORTANT not to touch those shells when found in seawater as they are POISONOUS to humans. On the beach, the empty shells may be a home for hermit crabs.

## 9. Trapdoors of the Turban Snail

The lid (called operculum) is attached to the living snail and serves as a protection, when the snail goes back into the shell. Because of the lid's color, the snail is sometimes also called cat's eye snail. The animal lives on the reef floor and feeds on algae.

## 10. Skeleton of a Sea Urchin

When the animal is alive, the skeleton protects the inner organs of the animal and holds the pointed spines on the small bumps on the shell's surface. These animals are covered in spines, which protect their fragile bodies. They have tube feet like their relatives, sea stars. The spines fall off, when the urchin is dead. When a sea urchin dies its round skeleton is often washed up onto the beach. They come in all shapes, colours and sizes.

## 11. Skeleton of a Sea Star

Just like sea urchins, sea stars are pentagon-shaped (everything is fivefold). The animals move very slowly over the reef floor by using tiny sucking feet located in grooves along the legs and eat algae, corals, clams etc. The mouth is at the bottom side. Most sea stars have five arms but some have up to eleven. They move around on lots of tiny tubes with

suckers on their ends. Starfish feed in an unusual way by pushing their stomach out of their mouth and wrapping it around their prey.

## 12. Skeleton of a Cuttlefish

Cuttlefish look similar to octopuses in that they also have a soft body and long arms with suckers but swim in the water instead of hiding in holes. The light-weight inside skeleton is used for floating. When a cuttlefish dies and the body is eaten or rots away, the cuttlefish bone floats to the surface and may be washed up onto a beach. The skeleton is used as bird nutrition.

## 13. Shells of a Post Horn Squid

These skeletons come from small squid that live far away from the shore in the deep sea. When they die, the shells can be found washed up on the beach. The living animal has eight arms and two tentacles.

## 14 . Shell/Carapace of a Crab

Finding a crab shell does not mean that the animal is dead. As crabs grow their hard outside skeleton becomes too small and they moult. This occurs several times throughout their life. Sometimes you may find an empty shell on the beach.

## 15. Remains of the Cactus Alga

Cactus algae are plants that are made from hard calcium-carbonate segments, which are covered by the living green tissue. The algae grow on the reef floor. When they die, the skeleton is washed up, turns a white colour in the sun and breaks down on the beach to form new sand.

# SECTION 5 Final comments

From this field guide you can see that every beach is special in its own way. In fact beaches are so special that our islands would be very different without them! So don't forget to look after the beaches and animals that live there. Don't take your waste to the beach – remember it is an ecosystem for many plants and animals. Remember to keep learning about them at school and from your family and friends. I hope you enjoyed reading this field guide.

I told you I knew a lot about the beaches and birds of the Maldives. Now so do you! Next time you are walking around your island with your friends or classmates, have a close look at the animals and see if you can name them.

See you around...  
Baaree Baraveli



## Other books in this series

Field Guide to Maldivian Plants with Bakuru and Basheera Bon'du

Field Guide to Maldivian Mangroves with Minna Mas.

## Further Reading

V. Selvam (2007) 'Trees and Shrubs of Maldives' Ministry of Fisheries, Agriculture and Marine Resources, and Food and Agriculture Organisation

Environment Research Centre (2008) 'Identification of Mangroves in the Maldives'

Kazmierczak, K (2000) 'A Field Guide to the Birds of India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh and the Maldives' Pica Press

## Weblinks:

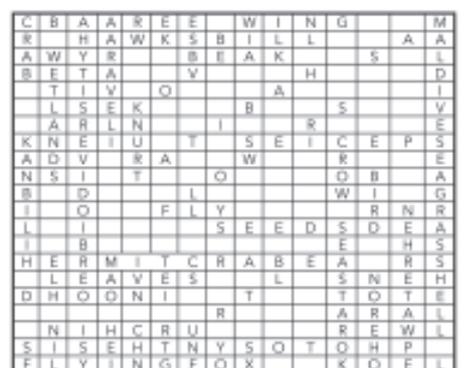
<http://www.orientalbirdimages.org/index.php>

- Images of birds from Asia

[www.birdway.com.au](http://www.birdway.com.au)

- Images of birds from Asia and Australia/Pacific

<http://www.crabzilla.net> - images of hermit crabs



Answers: Bird Word Puzzle

## Table 1: Summary of bird names

Common Name	Dhivehi name	Scientific Name
Asian Koel	Dhivehi Koveli	<i>Eudynamys scolopacea</i> (family Cuculidae)
House Crow, Common Crow	Kaalhu	<i>Corvus splendens</i> (family Corvidae)
White-Breasted Waterhen	Dhivehi Kan'bili	<i>Amaurornis phoenicurus</i> (Family Rallidae)
Grey Heron	Maakanaa	<i>Ardea cinerea</i> (Family Ardeidae)
White-Tailed Tropicbird	Dhan'difulhu Dhooni	<i>Phaethon lepturus</i> (family Phaethontidae)
Whimbrel	Bulhithun'bi	<i>Numenius phaeopus</i> (Family Scolopacidae)
White tern	Dhondheeni	<i>Gygis alba</i> (family Sternidae)
Cattle Egret	Iruvaahudhu	<i>Bubulcus ibis</i> (Family Ardeidae)

## Table 2: Summary of animal names

Common Name	Dhivehi name	Scientific Name
Land Hermit Crab	Baraveli	<i>Coenobita spp.</i> (Decapoda)
Ghost Crab	Kirukakuni	<i>Ocypode spp.</i> (Decapoda)
Swift-footed Rock Crab	Gaakakuni	<i>Grapsus albolineatus</i> (Decapoda)
Variable Lizard, Common Garden Lizard, Crested Tree Lizard	Bon'du	<i>Calotes versicolor</i> (Squamata)
Indian Flying Fox	Vaa	<i>Pteropus giganteus</i> (Chiroptera)
Green Turtle	Velaa	<i>Chelonia mydas</i> (Testudines)
Hawksbill Turtle	Kahan'bu	<i>Eretmochelys imbricata</i> (Testudines)

# Glossary

<b>Biodiversity</b>	The variety of life on earth.
<b>Carapace</b>	Animal shell: a thick hard case or shell made of bone or chitin that covers part of the body, especially the back, of an animal such as a crab or turtle.
<b>Camouflage</b>	To disguise or hide.
<b>Carnivore</b>	An animal that eats other animals.
<b>Decay</b>	To rot or become rotten; decompose.
<b>Ecosystem</b>	A community of plants, animals and micro-organisms that are linked and that interact with each other and with the physical environment.
<b>Endangered</b>	Threatened with extinction, as a species of plant or animal.
<b>Endemic</b>	Belonging to or characteristic of a specific place.
<b>Environment</b>	Everything that surrounds a living thing and affects its growth and health.
<b>Erosion</b>	Wearing away of the earth's surface by wind or water.
<b>Habitat</b>	The area where an animal, plant or micro-organism, lives and finds the nutrients, water, sunlight, shelter and other essential needs for survival.
<b>Herbivore</b>	An animal which eats only plants.
<b>Invertebrates</b>	Animal without backbone: an animal that does not have a backbone, e.g. an insect or worm.
<b>Omnivores</b>	Animal that eats anything: an animal that will feed on any type or many different types of food, including both plants and animals.
<b>Plumage</b>	All the feathers that cover a birds body.
<b>Coral Polyps</b>	The tiny animals that join together to form coral reefs. When a coral polyp dies, it leaves behind its hard calcium skeleton.
<b>Predator</b>	Preying of one species on another: the relationship between two groups of animals in which one species hunts, kills, and eats the other.
<b>Species</b>	A group of organisms that has a unique set of characteristics that distinguishes them from other organisms.
<b>Wildlife</b>	Wild animals that live independently to humans.

Now that you know a lot about birds and animals that live on the beach, see if you can find all the **hidden words** in the following word puzzle. There are more than 20 words.

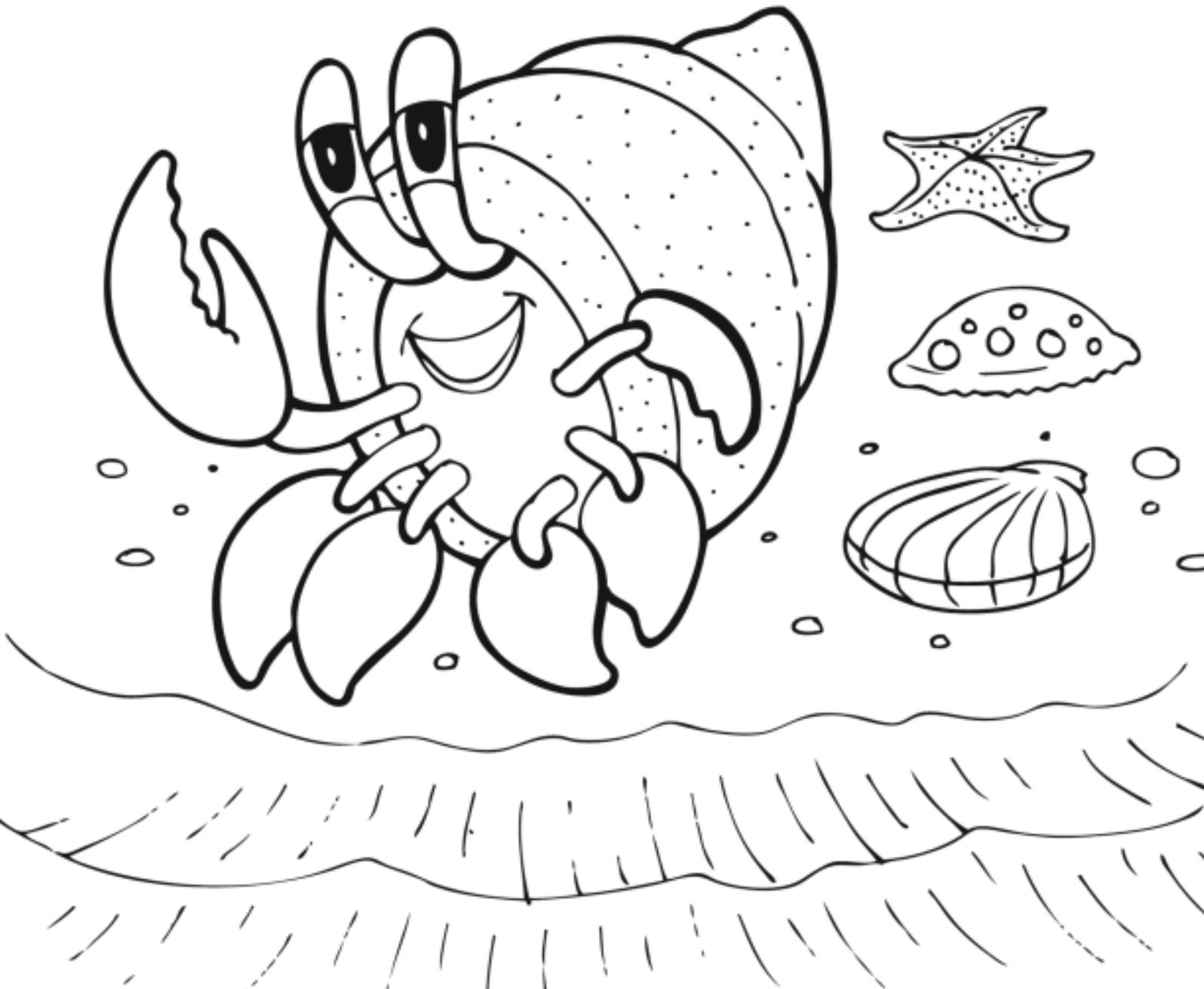
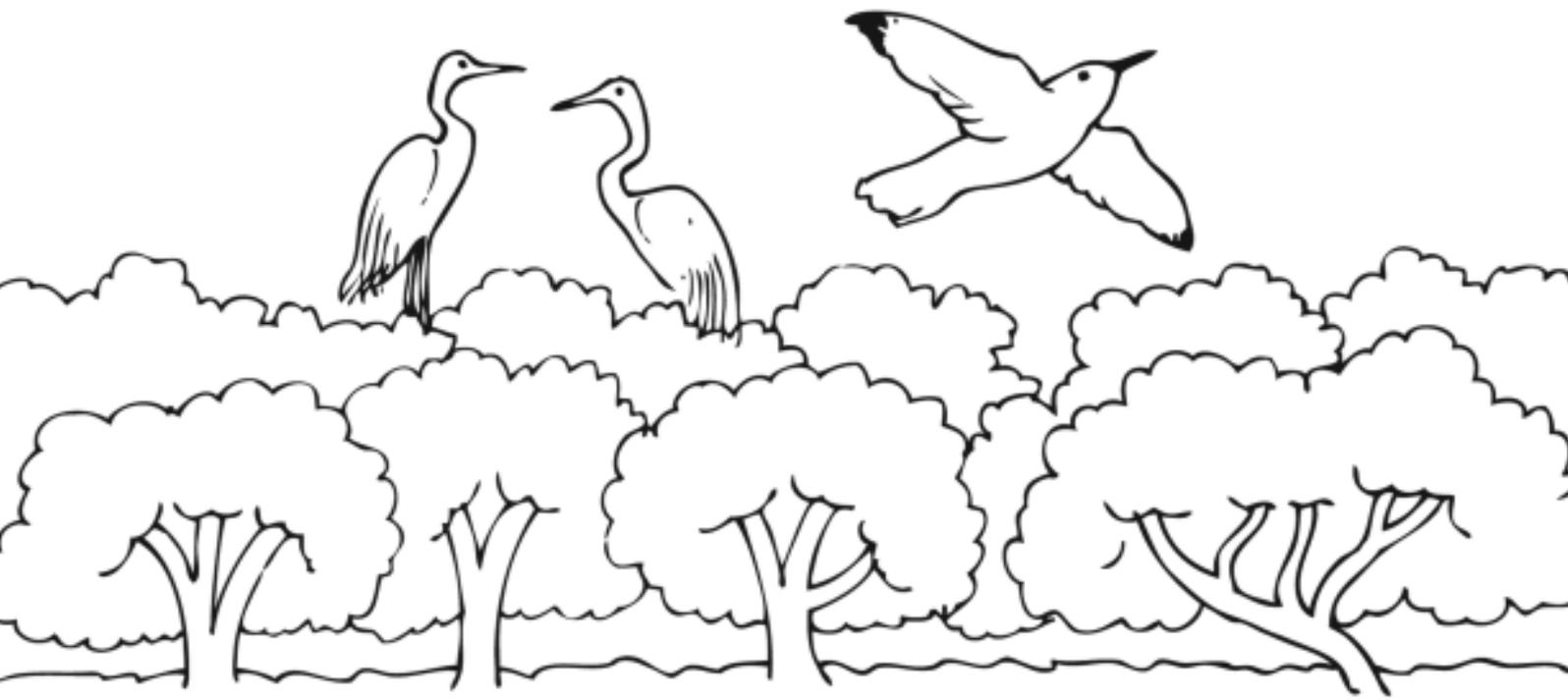


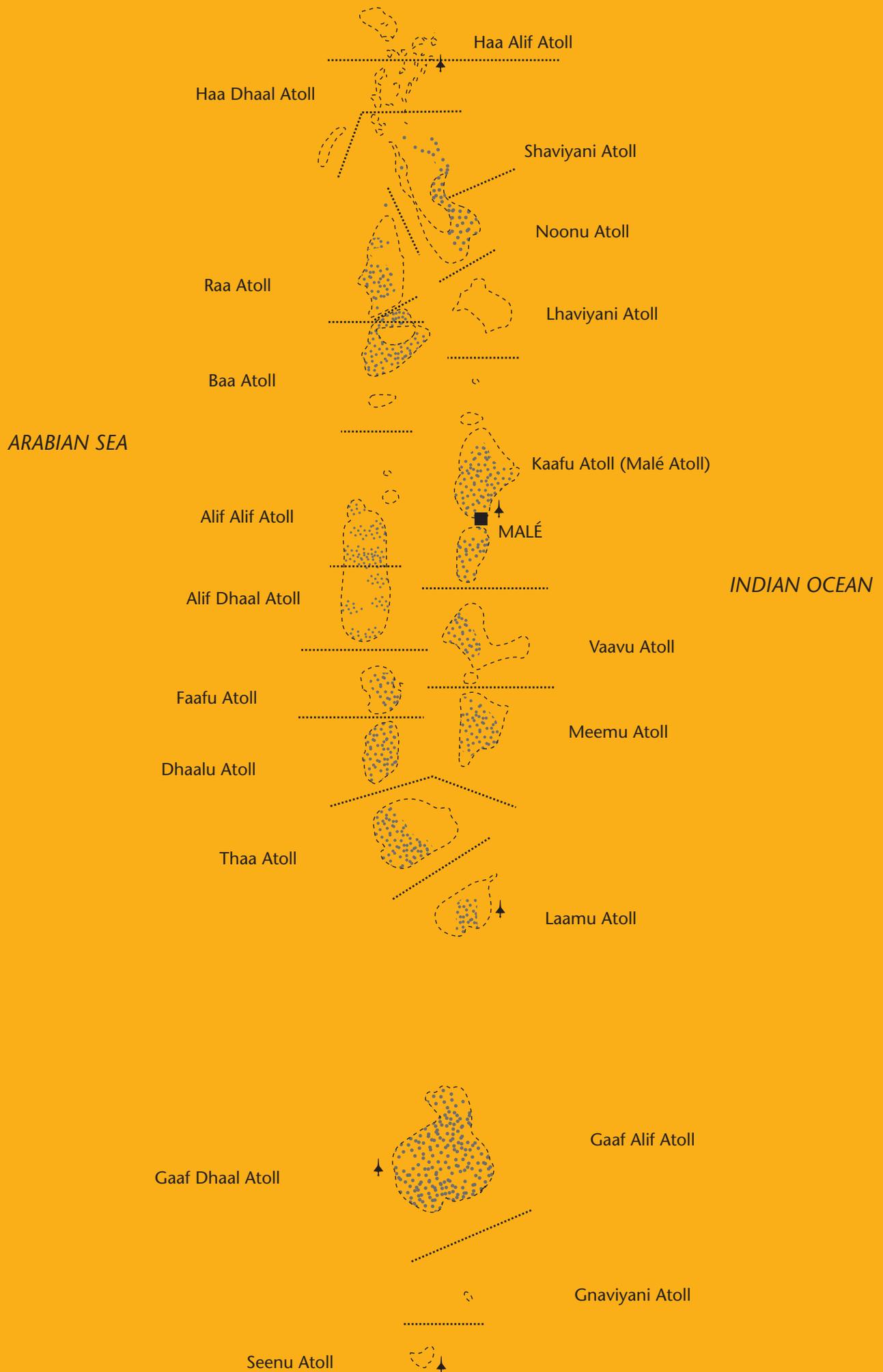
## FUN PAGE:

### BIRD AND BEACH WORD PUZZLE

C	B	A	A	R	E	E	E	W	I	N	G	R	T	M
R	I	H	A	W	K	S	B	I	L	L	U	Y	A	A
A	W	Y	R	O	P	B	E	A	K	L	K	S	H	L
B	E	T	A	C	X	V	Z	A	S	H	D	F	G	D
V	T	I	V	B	O	N	M	L	A	K	J	H	G	I
H	L	S	E	K	K	J	H	B	F	D	S	S	A	V
P	A	R	L	N	O	I	I	U	Y	R	T	R	E	E
K	N	E	I	U	C	T	B	S	E	I	C	E	P	S
A	D	V	G	R	A	F	D	W	S	A	R	Q	W	E
N	S	I	H	T	J	K	O	L	M	N	O	B	V	A
B	X	D	C	V	B	L	N	M	Z	X	W	I	C	G
I	Q	O	E	R	F	L	Y	T	U	I	O	R	N	R
L	G	I	H	J	K	L	S	E	E	D	S	D	E	A
I	F	B	D	S	A	Z	X	C	V	B	E	B	H	S
H	E	R	M	I	T	C	R	A	B	E	A	N	R	S
E	L	E	A	V	E	S	R	T	L	U	S	N	E	H
D	H	O	O	N	I	R	T	T	H	Y	T	O	T	E
Q	W	E	R	T	Y	N	R	U	G	J	A	R	A	L
A	N	I	H	C	R	U	S	D	H	N	R	E	W	L
S	I	S	E	H	T	N	Y	S	O	T	O	H	P	X
F	L	Y	I	N	G	F	O	X	N	M	K	O	E	L

Answers to word puzzle on page 26.





See you around...  
Baaree Baraveli

