Large whales of the Bay of Biscay and whale strike risk
Large whales killed by ship strikes

There have been several reports in the press of ships hitting and killing large whales; does this happen in the Bay of Biscay?

Unfortunately yes. One of the busiest shipping routes in the world occurs through the western edge of Biscay; container vessels, tankers and bulk carriers all move goods from northern Europe to the Mediterranean, Asia and Africa. Couple this with high densities of large whales, the risks of whale strike is inevitably going to be high.

How many whales are killed in Biscay every year?
No one knows. Biscay is a very large expanse of deep water and very few carcasses are washed up on the shore. We are reliant on ships reporting a strike or near miss. Many large ships are unaware that they have hit a whale and only discover this fact when they arrive in port with it draped over their bulbous bow.

So, if we cannot quantify the problem, how do we know that there is one?

There are well documented cases of whale strikes in other regions. A study of fin whales in the northwest Mediterranean showed that between 1972 and 2001, 46 out of 287 (16%) fin whale mortalities had injuries indicating that the fatality was most likely due to ship strike. The Pelagos Sanctuary (87,500 km²) and adjacent waters documented 82.2% of all fin whale mortalities were due to ship strikes.

Density estimates of fin whales in the Pelagos Sanctuary in the Mediterranean Sea, where we know there is a problem of ship strike, are 0.0020 animals km⁻². Estimates for the Bay of Biscay are 0.0050 animals km⁻², which is approximately 2.5 times more than that from the Pelagos Sanctuary.

Shipping density in the Bay of Biscay is as high if not higher than in the Mediterranean, therefore it can be inferred that there will be at least a comparable risk of ship strikes in these areas. This suggestion is supported by further scientific research, which identified the Bay of Biscay and Southwest Approaches as areas of high risk of fatal ship strike.

Do animals suffer after a strike?

Imagine you have a pet dog or cat (or perhaps you do) and it runs into the road. It’s struck by a car and suffers horrific injuries. It does not die immediately. In fact it takes many minutes before the animal dies. Imagine how much suffering that animal endured. Like cats and dogs, whales are mammals imagine a 25
meter fin whale being hit by a large vessel. Imagine rapid blood loss; internal bleeding and muscle, bone and neural trauma. The death is not quick and the individual suffers considerably. Not for minutes, but perhaps for hours or days. The whale is unable to feed properly. It cannot swim normally or breathe well. Over weeks and perhaps months the animal slowly starves to death because it was hit by a vessel.

As a bridge officer, what whales should I be looking out for?
Large whales are the ones most likely to be hit by ships. In the Bay of Biscay, fin whales are the most likely to get stuck on the bulbous bow of a ship and these are the animals most commonly recorded being brought into port by a vessel. Juveniles are more often recorded than adults, possibly because they may be less spatially aware. Sperm whales are less likely to ride up onto the bulbous bow due to their body shape. These animals maybe knocked underneath the keel and hit the propeller. Minke whales are also at risk of whale strike in the Bay of Biscay. It is useful to understand more about the behaviour of these animals to help avoid them once they have been spotted by crew. The identification and distribution of these animals are discussed on pages 5 – 10 of this document.

If a whale is seen in the distance in front of the ship and you can track it from its blows, take a series of compass bearings. If the whale’s position does not change as you approach, it means you will hit it (unless its course and speed is identical to yours). If the bearing changes you will either pass ahead or astern of it.

Sometimes, a whale strike will be unavoidable, especially on vessels that have a limited view directly in front of their bow and/or little manoeuvrability at cruising speed. If a whale strike does occur, it is important to report this to the International Whaling Commission. Reporting a strike will not bring any bad publicity to your company. Reports can remain confidential and are used to help scientists identify high risk areas of a ship strike and allow them to help shipping industry to reduce risk. Ways of reporting a ship strike are discussed on pages 11 and 12 of this document.

The ORCA and WSPA ship strike reduction initiative

Is anything being done to help reduce risk?
In November 2011, WSPA and ORCA came together to collaborate on a 6 month project focusing on reducing ship strikes of large whales in the Bay of Biscay. With WSPA’s funding and understanding of animal welfare issues and ORCA’s scientific knowledge of the Bay of Biscay, a great synergy was created to develop a solutions based workshop in April 2012. Now WSPA is helping ORCA drive forward the outcomes of the workshop to help maritime organisations reduce ship strike risk in Biscay.

In April 2012, ORCA and WSPA held an international ship strike workshop in collaboration with Aberdeen University; British Chamber of Shipping; Brittany Ferries; CMA CGM; IFAW; Maersk; MARINELife; MEER; P&O Ferries; Souffleurs d’Ecume; St. Andrews University; Tethys Institute; Seawatch Foundation and WDC.

This solutions driven workshop highlighted the need for more information about ship strike in general and particularly in the Bay of Biscay. The workshop agreed to engage with captains, unions and companies operating in the Bay of Biscay by:-

- Creating a communications strategy to engage with shipping masters and their navigation staff, companies (CSR departments, managers etc), unions and the chamber of shipping.
- Produce training materials on where whale abundance is greatest so crews are more aware and perhaps are able to tweak planned routes to avoid high risk areas.
- Enable crews to simply and systematically record evidence of collisions, close encounters and avoiding action. These data will help inform and improve our ability to identify high risk areas in the future.

Can ships use technology to alert whales of their vessels presence?
Possibly, but it is not as simple as that. During the workshop it became clear that to reduce the number of whales hit by ships on a global scale; we need to explore new technologies to help crews reduce ship strike risk. However, there are currently are no suitable technologies commercially available and it takes time to develop these. ORCA is investigating two potential options. If you would like to know more, please contact us at shipstrikes@orcaweb.org.uk.
The Bay of Biscay

Where is the Bay of Biscay?
The Bay of Biscay (as shown in the below map) is the water body that follows the western coast line of France and northern coast lines of Spain and Portugal; creating a large bite mark out of the continent.

Why is the Bay of Biscay good for wildlife?
There are lots of different environments in the Bay of Biscay; from shallow waters and deep-sided submarine canyons to the extensive abyssal plain (the deep ocean floor) that is over 4,000 meters deep where dense cold water carries lots of nutrients. The diversity of different physical environments means that the Bay of Biscay supports habitats that are suitable for a range of whale, dolphin and porpoise species.

The cold, dense waters at the bottom of the abyssal plain are forced up the slope of the continental shelf and come into contact with sun light in the shallow water of the shelf edge. The combination of lots of nutrients and strong sun in the summer and early autumn allows plankton blooms to grow, which in turn attract many fish, dolphins, and whales.

Closer to Spain and Portugal, there are two canyons (Torrelavega and Cap Breton Canyon) where squid live. These are the main food for a group of whales called beaked whales. In the Bay of Biscay, the most common species is the Cuvier’s beaked whale. Sperm whales can also be found in the canyons and abyssal plain.

How many types of whales and dolphins are there in the Bay?
A total of 18 species of cetaceans have been recorded in the Bay of Biscay, this is almost ¼ of the total number found in the world (about 85 species).

What are the most common whales and dolphins in Biscay?
Common dolphins are the most common species and pods (a group of dolphins) of several hundred are frequently seen. They can mass into super pods where thousands of animals may be present. For example, the ORCA Wildlife Officers saw over 1,500 individuals on one trip in May 2010.

There are an estimated 9,000 fin whales in the northeast Atlantic and many of these are found in Biscay, particularly in August and September. They are found predominantly along the shelf edge, in the deeper waters and over the abyssal plain. Until 2004 the densities of animals were relatively high. Since then, the number of fin whales seen has been less. The reasons for this change are unclear. Fin whales use the Bay for feeding, migration and have been recorded giving birth there. Mother – calf pairs have also been seen on a number of occasions.

Relative densities of Cuvier’s beaked whale in the Bay are some of the highest in the world. They are regularly spotted in the canyons approaching Spain, as well as over the abyssal plain and other canyon features on the northern edge of Biscay.
**Fin whale**
*Balaeonoptera physalus*

**French name – Rorqual commun**  
**Spanish name – Rorcual común**

| **Length** | 18 to 22 m in Northern Hemisphere; up to 27 m in the Southern Hemisphere |
| **Weight** | 30 to 80 tonnes in the Northern Hemisphere; up to 120 t in Southern Hemisphere |
| **Sociability** | Solitary, in pairs or small groups |
| **Longevity** | 75 to 100 years |
| **Dive time** | 5 to 15 min, up to 25 min |

**Identification**

**Colour**
- Silver to dark grey or brownish black on back and sides
- No mottling, compared to the blue whale
- White underneath
- Asymmetrical head colour with a white lower right jaw and a dark lower left jaw. This feature is not found on any other large whale species.

**Dorsal fin (the one on its back)**
- Two to three metres in height, sickle or hook shaped and curving towards the back
- Is seen shortly after the blow

**Blow**
- Tall, narrow column, up to 8 metres in height, takes several seconds to dissipate

**Tail fluke**
- Fin whales rarely lift their tail above the water
Fin whales are the second largest animals on Earth; are long and streamlined with a V-shaped head which is flat on top. The head is about ¼ of its body length and has a single ridge that extends from the blowhole to the tip of the rostrum (upper jaw). The jaw is large and the lower jaw protrudes slightly beyond the tip of the snout. The dorsal fin (on its back) is set two thirds of the way along the back, and is falcate (hooked), and often slopes backwards. Its tip may be pointed or rounded. Despite its size, the fin whale is a very fast swimmer. Its average speed ranges between 5-8 knots, but may reach 23 knots for short period of time. During migration, it has been calculated that they can swim around 80 nautical miles a day.

**Surface behaviour**
When surfacing, the top of the head appears first, blows and submerges the blowhole, then the body rolls forward arching the back and dorsal fin above the surface. The dive sequence is a series of 2 to 8 blows, 10 to 70 seconds apart before a longer dive of around 15 minutes. Mean blow intervals last approximately 50 seconds when feeding at the surface. They rarely raise their tail flukes when diving, and dives can be as deep as 550 metres (1,800 feet). Because of this variation in breathing behaviour, it is hard to determine where and when they will surface. Fin whales occasionally breach out of the water, typically landing on their belly, but may twist in mid-air and land on one side or on the back. At night they have been observed to stay motionless at the surface.

**Social behaviour**
Fin whales are often alone or in pairs, but can form pods of 3 to 20 animals. Migrating animals group together by sex and age: Males migrate first, followed by adult females, with immature whales at the rear.

**Distribution**
Fin whales have an almost global distribution, but are more common in temperate and polar regions than in the tropics. In the Bay of Biscay, they are most often seen in the summer months, with a mini peak during May followed by a much larger peak starting in late July and going through to September. In recent years (2004 to present), there has been a marked decline in their numbers in the Biscay area, but the reasons for this are unclear. For more information on fin whale global distribution, feeding habits and breeding, see Appendix 1.
Minke Whale
Balaenoptera acutorostrata

French name – Petit rorqual
Spanish name – Rorcual aliblanco

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<tbody>
<tr>
<td><strong>Length:</strong></td>
<td>6 to 9 m, up to 10 m</td>
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<tr>
<td><strong>Weight:</strong></td>
<td>6 to 8 t, up to 10 tonnes</td>
</tr>
<tr>
<td><strong>Sociability:</strong></td>
<td>Solitary, sometimes in pairs or groups</td>
</tr>
<tr>
<td><strong>Longevity:</strong></td>
<td>50 – 60 years</td>
</tr>
<tr>
<td><strong>Dive time:</strong></td>
<td>2 to 10 min, up to 20 min</td>
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Identification

**Colour**
- Head and body are dark grey to black above but with grey areas on flanks
- Some have a light coloured chevron on the back behind the head
- White on the belly and the underside of the tail flukes and pectoral fins (on the side of the body)
- There is a diagonal white band on top of the pectoral fins

**Dorsal fin (the one on its back)**
- Relatively tall, falcate (hooked) and situated nearly two-thirds along the back

**Blow**
- Inconspicuous (usually not visible) vertical blow 2-3m high almost simultaneous with seeing the dorsal fin

**Tail fluke**
- Minke whales rarely lift their tail above the water
The minke whale is the smallest member of the rorquals (those whales with throat pleats). One of its most distinctive features is the narrow, triangular rostrum (upper jaw), which is proportionally shorter than in fin whales. A single ridge runs along the top of its head. Its body is sleek and streamlined.

Adults average around 8 m (26 feet) with a maximum length of 10.7 m (35 feet) and weigh about 10 tonnes. Both sexes are slightly larger in the Southern Hemisphere.

**Swimming**
An agile swimmer, capable of reaching speeds of 18-24 knots.

**Surface behaviour**
When surfacing, the head and dorsal fin appear almost simultaneously, with a rarely visible bushy blow that reaches up to 3 meters in height. They generally breathe 2 to 5 times between dives at intervals between 15 seconds to 1 minute; arching their back sharply before diving, but not bringing their tail above the surface. Dives last from 2 to 4 minutes, but can be as long as 20 minutes. They spend relatively little time at the surface between dives.

It can be difficult to spot a minke at sea, because its blow is rarely visible and it tends to disappear quickly after exhaling. It’s relatively small size allows it to be hidden in choppy seas. However, sometimes they breach vertically out of the water, falling back on their backs or bellies. This may be repeated several dozen times, with short intervals between bouts.

**Social behaviour**
Minke whales tend to live alone, sometimes in pairs or threes. For more in-depth information, see Appendix 2.

**Distribution**
In Biscay, minke’s are mainly seen in the shallower waters of the continental shelf, off the Brittany coast of northern France and to the southwest approaches of the English Channel.

For more information on minke whale social behaviour, global distribution, feeding habits and breeding, see Appendix 2.
**Sperm whale**
*Physeter macrocephalus*

French name – Cachalot macrocephal  
Spanish name – Catchalote

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tr>
<td><strong>Length:</strong></td>
<td>Adult females: 11 m (36 feet); Adult males are much larger: 15 – 18 m (49-59 feet)</td>
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<tr>
<td><strong>Weight:</strong></td>
<td>Adult females: 13-14 tonnes; Adult males: up to 35-50 tonnes</td>
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<tr>
<td><strong>Sociability:</strong></td>
<td>Family groups with casual acquaintances, although males can be solitary</td>
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<tr>
<td><strong>Longevity:</strong></td>
<td>50 to 70 years</td>
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<tr>
<td><strong>Dive time:</strong></td>
<td>15 to 90 min, up to 2 hrs</td>
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**Identification**

**Colour**
- Usually a dark, brownish grey with light streaks, spots and scratches  
- White skin around its mouth, particularly near the corners  
- The underside of the body is a lighter grey and may have white patches  
- Calves are lighter in colour than adults

**Dorsal fin (the one on its back)**
- Hump-shaped, almost nonexistent, followed by knuckles along the spine  
- Its pectoral fins are small, paddle shaped and slightly tapered,

**Blow**
- Single blowhole is situated on a slightly raised lump on the front left side of the head  
- Bushy blow, angled forward and to the left at about 45 degrees, to a height of up to 3 metres

**Tail fluke**
- Broad, measuring as much as 5 m (16 feet) from tip to tip  
- Very triangular in shape with an almost straight bottom edge, rounded tips, and a deep central notch  
- When diving they lift their tails out of the water

Image: © Wildguides
Sperm whales are the biggest toothed whales, possessing the largest brain in the animal kingdom. However, compared to their large body size, the brain is not exceptional in size. They are easily distinguished at sea from all other cetaceans by their unique blunt, squared off head and a small lower jaw. The head takes up 25–35% of the total body length and more than a third of its mass. Its body has a wrinkled, shrivelled appearance, particularly behind the head and a dorsal ridge, running back from the dorsal fin. They have paddle-shaped pectoral fins, which are small compared to the size of their body.

Swimming
Sperm whales swim fairly slowly at the surface, rarely exceeding 4 knots. If disturbed, they can swim at bursts of 16 knots. They display an almost vertical dive pattern, descending at over 80 metres per minute and often resurface close to where they dive. Dive duration is between 60 and 90 minutes, but can be up to 2 hours. The average dive depths are between 1,000 and 2,000 metres, but have been documented to over 4,000 meters. Studies suggest that large bulls are able to dive more deeply and for longer than females and juveniles. Travel between feeding areas are completed by shallower dives of between 50 – 300 meters.

Surface behaviour
Sperm whales can remain at the surface for extended periods of time, without moving between blows. This is known as ‘logging’ because they can be mistaken for floating trees in the water. Their blow is rounded and angles forward and to the left to a height of up to three metres. The dorsal fin and blow are seen simultaneously at the surface. After a deep dive, they may rest at the surface for around 10 minutes. Their blow rate will average 4 to 6 per minute before diving again. When resting and socialising, their blow rate changes, becoming less obvious and regular.

Sperm whales are known to breach out of the water or lift their tail out of the water and slap it back down again (known as lobtailing). These behaviours are often seen in a social context and when groups are departing or joining; though single whales also breach and lobtail.

Social behaviour
In the Bay of Biscay, sightings tend to be limited to individual animals. For more information on sperm whale social behaviour see Appendix 3.

Distribution
In the Bay of Biscay, sperm whales prefer deep water, with most sightings being recorded in water depths greater than 2,000 metres. Their distribution here is centred around the lower northern Celtic-Biscay shelf-break, the edge of the Biscay abyssal plain and the Santander canyon, near Bilbao.

For more information on sperm whale social behaviour, global distribution, feeding habits and breeding, see Appendix 3.
Reporting a whale strike to the International Whaling Commission (IWC)

Whale strikes are unfortunate, and in many cases with large vessels, unavoidable. The IWC has pledged that no adverse publicity will be given when a whale strike is reported to them. Any details of where and when an incident occurred will help scientists to identify areas of whale strike risk and develop ways to help industry reduce this risk. Please report strikes to the International Whaling Commission either by email to shipstrikes@iwcoffice.org or by mail to IWC, The Red House, 135 Station Road, Impington, Cambridge, CB24 9NP, UK.

An example of a short account of ship strike is detailed below. This example is not a real case and is given purely to show what details can be sent to the IWC.

Event
Date: 02 September 1900,
Time: 07:00 (Exact),
Large Area: Bay of Biscay,
Latitude: N43 58.442,
Longitude: E09 43.381,

Animal
Not known.
Did the animal survive the collision?
Not known.

Information about the incident
Animal was first seen at 008° from the bow approximately 700m from the Bridge and heading at 260°. About 75 seconds later, the impact was heard and felt when the animal hit the ship. There were no other whales seen at the time of the strike. No avoidance action was taken as it was not possible to manoeuvre the vessel at short notice.

Vessel information
Vessel name: Green Ship,
Vessel type: Container ship (>50,000grt),
Overall length (m): 292.00,
Vessel speed at time of strike (knots): 18,
Damage to vessel: None.

Person who completed the form
First and last name: John Smith
Company (optional): Container shipping Ltd
Email: Johnsmith@containershipping.co.uk
Phone number: 020 7123 4567

Overleaf, is a datasheet that can be printed off to help with the recording of ship strikes or near misses.
Ship strike recording form

Ship strikes are unfortunate, and in many cases with large vessels, unavoidable. The IWC has pledged that no adverse publicity will be given when a ship strike is reported to them. Any details of where and when an incident occurred will help scientists to identify areas of whale strike risk and develop ways to help industry reduce this risk. Please report strikes to the International Whaling Commission either by email to shipstrikes@iwcoffice.org or by mail to IWC, The Red House, 135 Station Road, Impington, Cambridge, CB24 9NP, UK. For further details or on-line data entry please visit www.iwcoffice.org/sci_com/shipstrikes.htm

**Event**

Date (dd/mm/yyyy): .............................................  Time (mm:hh): .................................................................

Exact OR Estimated: .................................................................

**Location of strike (if known)**

Location Name (e.g. Northern Biscay)

Latitude: .................................................................  Longitude: .................................................................

**Location of the discovery (if different to above)**

Location Name (e.g. Felixstowe Port)

Latitude: .................................................................  Longitude: .................................................................

**Animal** (please tick)

- [ ] Fin whale  - [ ] Sperm whale  - [ ] Minke whale  - [ ] Not identified  - [ ] Other (please specify): .............................................

- [ ] Survived the collision  - [ ] Died after impact  - [ ] Dead before impact  - [ ] Not known

Please describe the incident and any avoidance action taken:

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**Vessel**

Name: .................................................................  Type: .................................................................

Length: .................................................................  Speed on impact: .................................................................

Damage to vessel: .................................................................

**Person that completed the form:**

First and last name: .................................................................

Company (optional): .................................................................

Email: .................................................................

Phone number: .................................................................
Further information and appendices

The following guides are useful if you would like more information about how to identify whales and dolphins:


Appendix 1 Fin whale further information

Global Distribution
It is thought that most fin whales migrate annually toward the poles in spring and back to temperate waters in the autumn. In the Northern Hemisphere, some appear to congregate along inshore areas in winter, whilst others may be resident year round in some places, such as the Gulf of California and the Mediterranean Sea.

It is estimated that there are just over 80,000 fin whales globally, with about 15,200 in the Southern Hemisphere and 65,300 individuals in the Northern Hemisphere: 25,800 in the central North Atlantic; 17,400 in the Bay of Biscay-British Isles area; 5,700 in the Bering Sea, Aleutian Islands, and Gulf of Alaska; 4,100 in the north eastern Atlantic; 3,500 in the Mediterranean Sea; 3,300 off the west coast of the United States; 2,800 off the east coast of North America (south of the Gulf of St. Lawrence); 1,700 off West Greenland and 1,000 off Newfoundland.

In 2008, the International Union for Conservation of Nature (IUCN) assessed fin whales as being endangered. This was because their data showed a global population declined by more than 70% over the last three generations (1929-2007). Numbers may be slowly increasing again due to less hunting pressure from whaling vessels in recent years. Currently, fin whales are threatened by ship strikes and are the most commonly struck whale. Why this is the case is unclear.

Breeding
Little is known about the breeding behaviours and areas of the fin whale. It is believed that it happens in lower latitudes during the winter months, but as of yet, no breeding ‘grounds’ for fin whales have been found.

Fin whales are the second largest animal on Earth (the blue whale being the largest). Fin whales can reach lengths of up to 27 m and weights of up to 85 tonnes. In the Southern Hemisphere, females become sexually mature at a length of 19.9 m and males at 19.2 m. Breeding peaks in the winter and the young are born 11.25 months later. Lactation occurs for 6 to 7 months. Females give birth approximately every 3 years; though some birth rates have increased due to exploitation by commercial whaling. Both sexes are estimated to reach sexual maturity between 5 - 15 years of age. Interestingly, hybridization between fin and blue whales is not uncommon. Hybridization can happen between either sex of either species. The reproductive capacity of these hybrids is as yet unknown. The number of pregnant females in relation to that of adult females (gross pregnancy rates) typically ranges between 38 - 49%.

Feeding
When feeding, fin whales have been reported to be slow moving and often so absorbed in catching food that they are largely unaware of approaching boats. Fin whales feed primarily on small invertebrates, schooling fish and squids. They can be seen feeding on their sides at the surface, scooping up prey and water. Fin whales are rorqual feeders, meaning they have a pleated throat, which can be expanded out into a massive balloon shape when feeding. They are able to take in up to 70 tonnes of food-rich saltwater into their mouths. They use their baleen to sieve out the food as the water is forced out of their mouth with their tongues. In the Southern Hemisphere, krill is the major prey item. Herring, capelin and other shoaling fish are eaten in both the North Atlantic and North Pacific along with squid, krill and copepods. It has been suggested that the asymmetrical colouring of the head may help fin whales catch their food; the white side of the head is usually downwards when feeding on their side. This would help camouflage them from above as they blend in to the light from above the sea.
Appendix 2 Minke whale further information

Social Behaviour
Although minke whales are usually solitary by nature, at higher latitudes, they can be found in larger groups. For example: In northern Scotland, aggregations can number from 10 to 15 individuals. During the summer months, segregation based on age, sex and reproductive fitness may occur. Males migrate to the open seas of the North Atlantic, while females prefer coastal waters further south and juveniles can be found at even lower latitudes.

Global Distribution
Minke distribution is widespread, ranging from sub-tropical to polar waters; they are rarely observed in the tropics. The present population worldwide is believed to be over a millions animals, with the largest numbers being found in the Southern Hemisphere. The total North Atlantic population is estimated at just over 180,000 individuals. They are widely distributed, but in relatively small numbers along the Atlantic seaboard of Europe; from Norway to France, and in the northern North Sea. In Europe, they are mainly seen in coastal waters from May to October.

Feeding
Minke whales eat krill and small schooling fish (capelin, cod, herring, pollock and sand lance) and may return to the same feeding places every year. They frequently feed at the surface; swimming in circles and underneath their prey to trap them at the surface. They may then leap out of the water; crashing down onto the surface, stunning their prey in the process. This process is known as ‘lunge feeding’.

Breeding
Sexual maturity is reached between 5 and 8 years old. Mating takes place from January to May. Pregnancy lasts 10 to 11 months, with births usually occurring from November to March. Calves nurse for approximately 6 months. Calving is thought to occur once every two years on average.
Appendix 3 Sperm whale further information

Social Behaviour
Female and immature sperm whales live in stable social groups, called ‘Units’. These usually, but not always comprise of close female relations, lead by the oldest female or Matriarch. Units range in size from around 7 animals (found in the Caribbean) up to 12 individuals (found in the Pacific). Adult bulls are mainly sighted alone. The social structure in the Mediterranean appears to be much less defined with animals often been sighted alone. It is a similar story in the Bay of Biscay with the majority of sighting being of individuals. However, mother/calf parings have been recorded in Biscay, as have groups of up to 18 individuals.

Global distribution
Sperm whales are found in all deep oceans of the world, from the equator to the edge of the polar pack ice. They usually live offshore, but may occur close to coasts where water depths exceed 200 metres. They are most common above submarine canyons at the edges of the continental shelf, but also occur in the deep mid-ocean. Their population is estimated to be around 360,000 individuals globally (down from about 1,267,000 before whaling). Adult males spend most of their time at higher latitudes, but will migrate toward lower latitudes to breed. Females, calves, and juveniles remain in the warmer tropical and sub-tropical waters of the Pacific, Atlantic, and Indian Oceans year round.

Feeding
The sperm whale spends a large amount of its time searching for food at great depths. They dive to feed on deep water squid that range in size from 100g (0.2 lbs) to the giant squid, which weighs around 100kg (220 lbs). Their food preferences may vary considerably with geographic area; for example: In Iceland, fish are their main source of food. They are also known to eat sharks, skate, octopus and crabs. Sperm whale teeth are very large and characteristic of a top predator. However, they are not necessary for catching prey and it is thought they are used more often in aggressive displays between males.

Breeding
Sperm whale pregnancy takes 14.5 – 16.5 months. Sperm whales nurse for 2 – 4 years. Calves are left at the surface with ‘babysitting’ adults while the mother dives to forage. Calves appear to begin fluking at around 3 years of age. After weaning, the female may not become pregnant again for nine months. Females generally have birth intervals of 3 to 6 years.

Sexual maturity for both sexes occurs in their early teens, although males are slightly later than females. Young males leave their mothers between 6 – 12 years of age and may form loose bachelor groups. Adult males live mainly solitary lives until they reach ‘social maturity’ around 30 years of age. At this point they return to warmer waters looking for mates. There is inconclusive evidence that females go through the menopause in their forties and can reach as old as 70 years of age.

Female groups develop synchronous oestrus cycles, allowing males brief visits whilst achieving maximum breeding success. As a result, a male’s interaction with a female group may be as brief as a few hours.

In the Northern Hemisphere, conceptions may occur from January to August, peaking in April and May, while in the Southern Hemisphere, conceptions occur from July to March, peaking in September and December. Calves may be born in tropical and temperate waters and are mainly born between November and March.

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