

Marine Mammals in Thailand



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Phuket Marine Biological Center

SEAFDEC TD
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Overview

- What is Marine Mammals
- Taxonomy, Occurrence & Distribution
 - Dugong
 - Dolphins & Whales
- Status and Threats

What is marine mammals

- “Groups of mammals that have return to life in the sea”
- “Get all or most of their food from the aquatic environment”

Order Cetacea

Whale, dolphin and porpoise



Order Sirenia

Dugong & Manatee



Order Carnivora

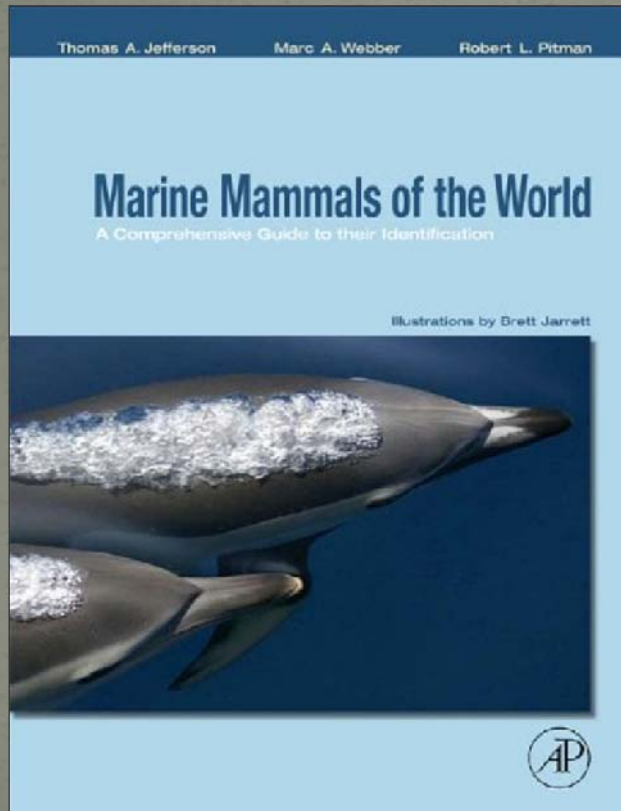
Sea lion, walrus and seal



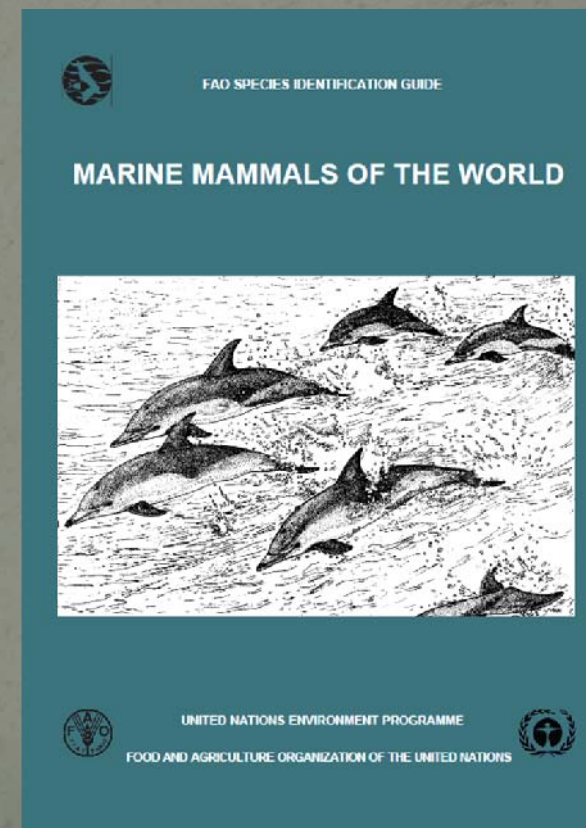


References

Jefferson, T.A., Webber, M.A. & Pitman, R.L. 2008. Marine mammals of the world: A comprehensive guide to their identification. Academic press. 573 pages.



Jefferson, T.A., Leatherwood, S. & Webber, M.A. 1993. Marine mammals of the world: FAO species identification guide. UNEP, FAO. 320 pages.



Taxonomic truthing

- External morphology
- Osteology
- Genetics
- Intraspecific polymorphisms
 - Intraspecific geographic variation
 - Sexual dimorphism
 - Developmental variation
 - Seasonal variation
 - Uncommon color morphs
 - Hybrids and intergrades
 - Individual variation
 - Scaring, injuries and deformaties

Marine Mammals Classification

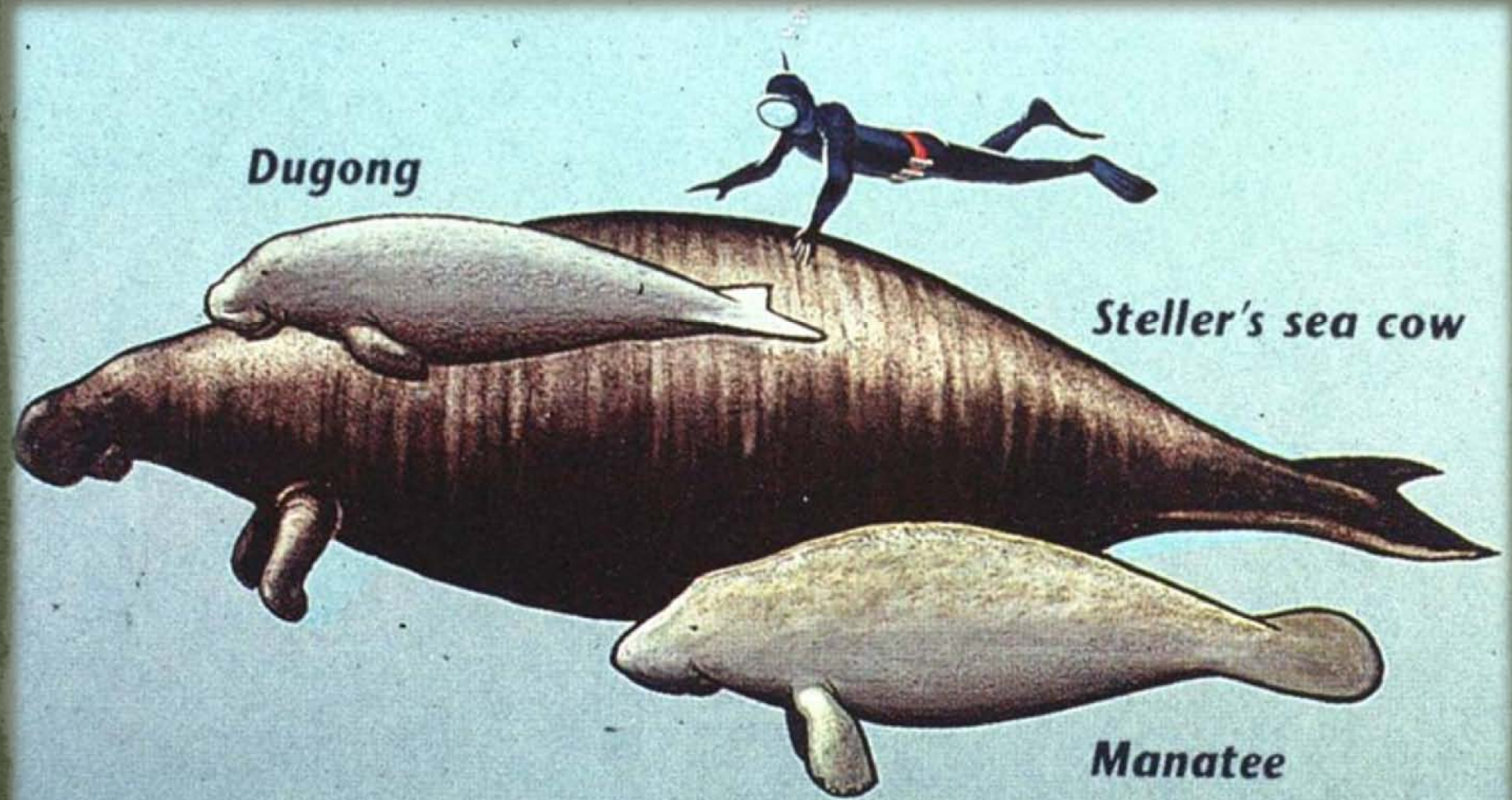
- Order Sirenia –Manatees and dugongs (4)
 - Family Trichechidae –Manatees (3)
 - Family **Dugongidae** –Dugong (1)
 - Steller's sea cow (extinct 1700s)
- Order Cetacea –Whale, dolphin and porpoise (86)



Dugong

Biology, Distribution, Status and threats

Order Sirenia



Dugong, *Dugong dugon*



- Adult length of 2.7 m
- The largest records was 4.03 m and 1,018 kg
- Weight of 250 to 300 kilograms
- Females are larger than males.

Feeding

- Dugongs are referred to as 'sea cows' because their diet consists mainly of sea-grass.
- Benthic feeder
- Their primary feeding mechanism is uprooting sea-grass by digging furrows in the sea-floor with their snouts.
- .



Feeding

Halophila ovalis



Halodule uninervis



- Analysis of 6 dugong stomachs
- 9 species of seagrasses
 - *Halophila ovalis*
 - *Halodule uninervis*
 - *Halodule pinifolia*
 - *Thalassia hemprichii*
 - *Cymodocea serrulata*
 - *Cymodocea rotundata*
 - *Syringodium isietifolium*
 - *Enhalus acoroides*
 - *Halophila decipiens*

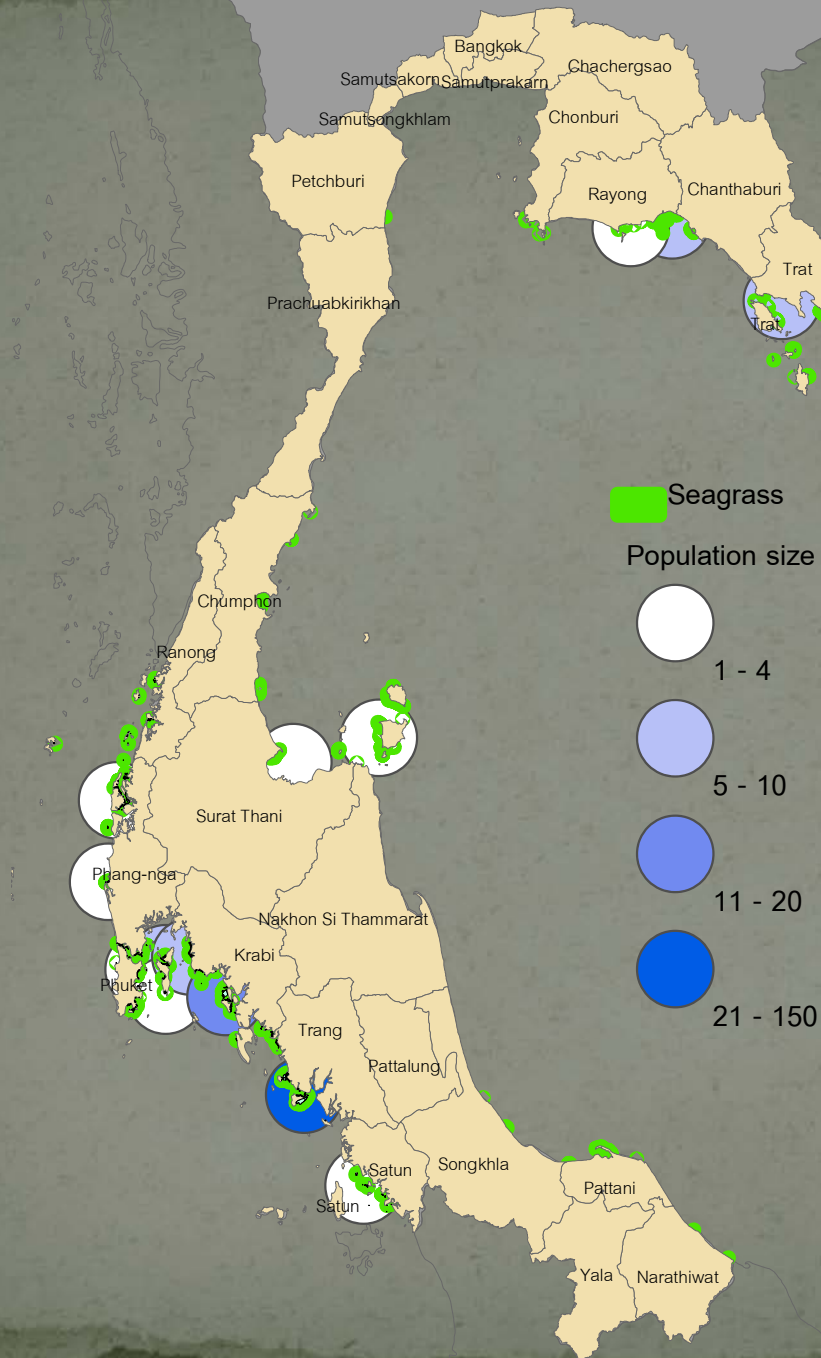
Aerial survey

- Small aircraft: long distance survey
- Helicopter: small area
- Microlite or ultralite: near shore and small bay app 100 m²

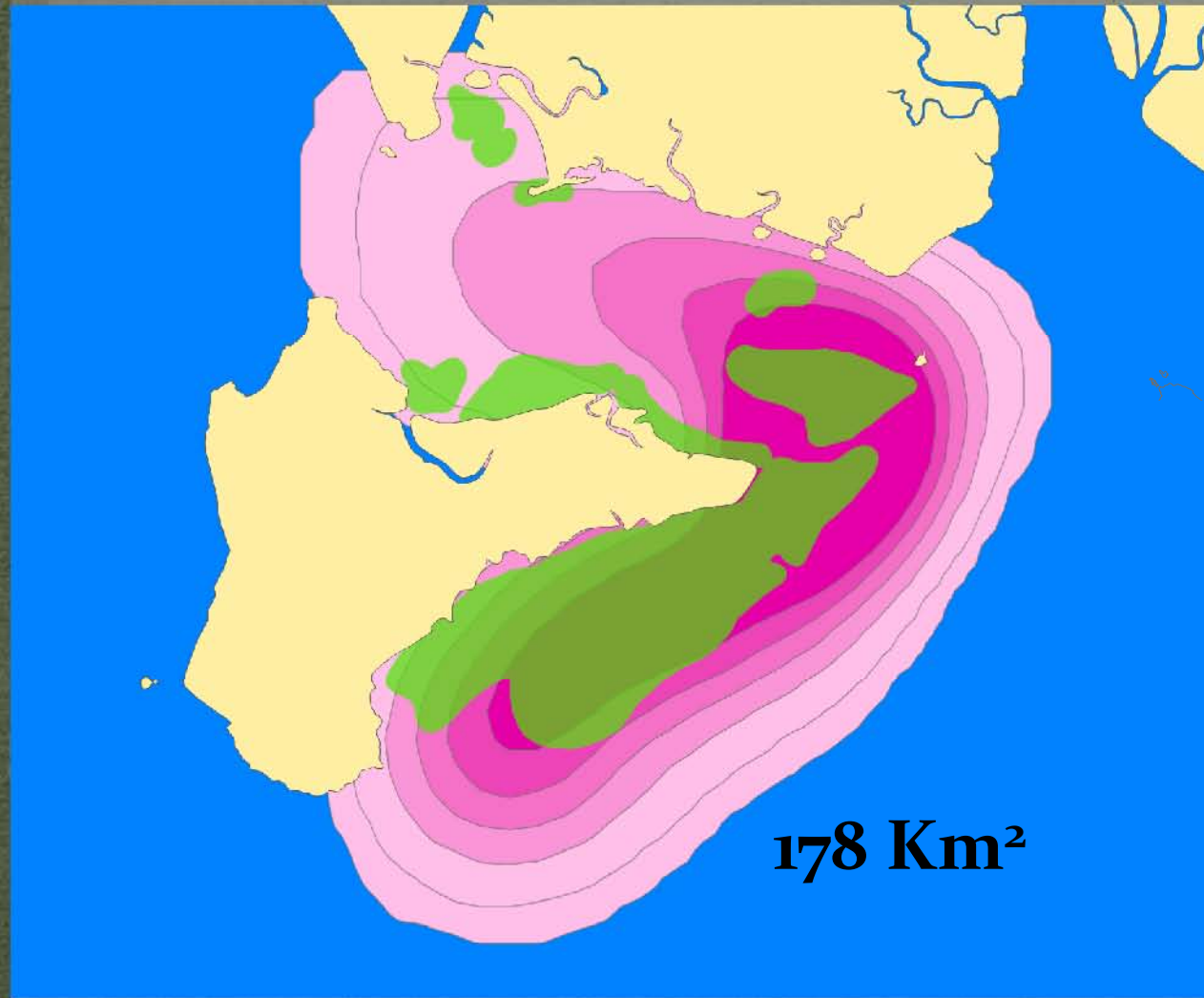


Abundance & Distribution

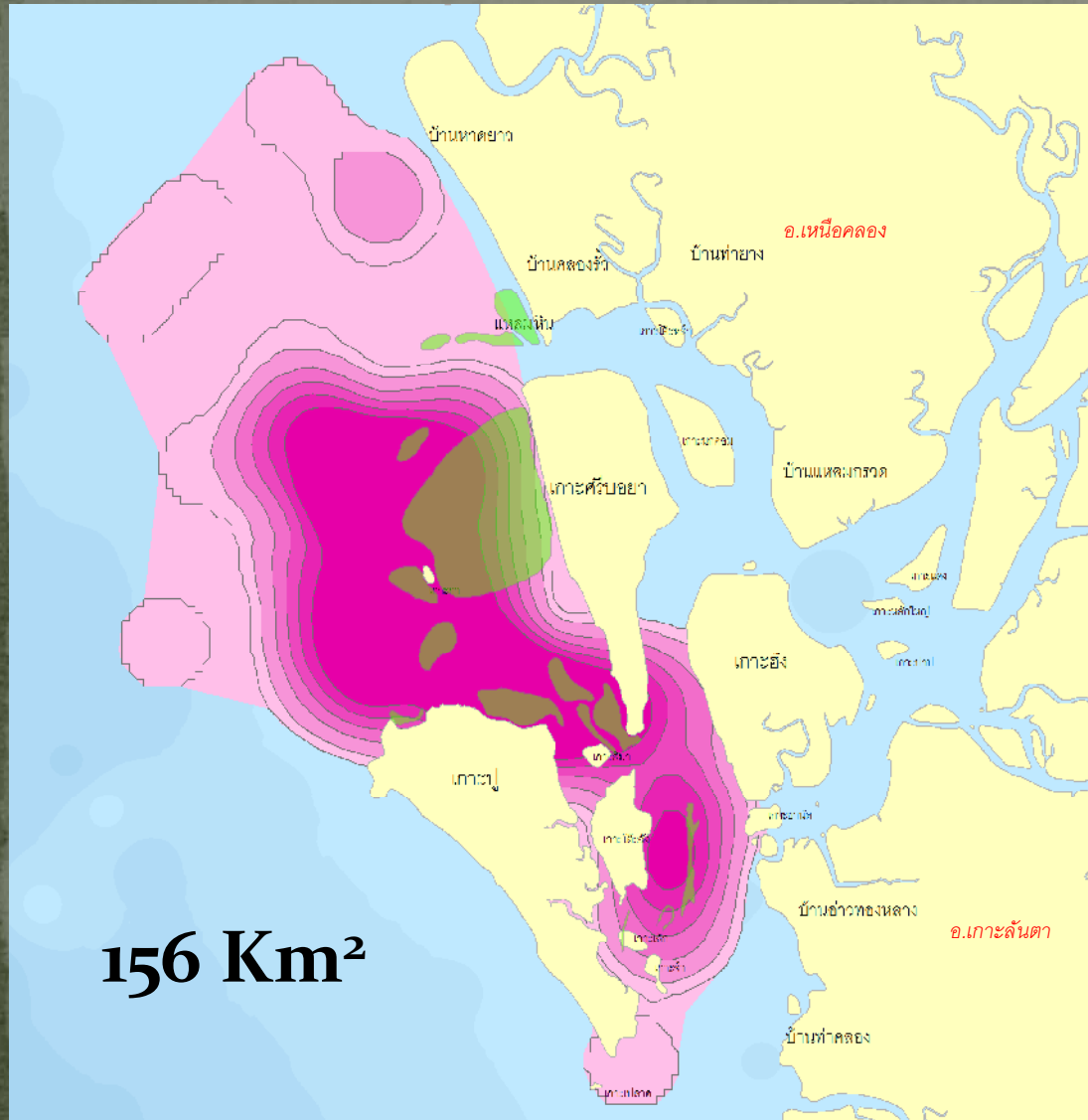
- Andaman: ca 200 ind.
- Gulf of Thailand: ca 50 ind.
- Sea grass: 145 km², 60% Andaman



Trang's population

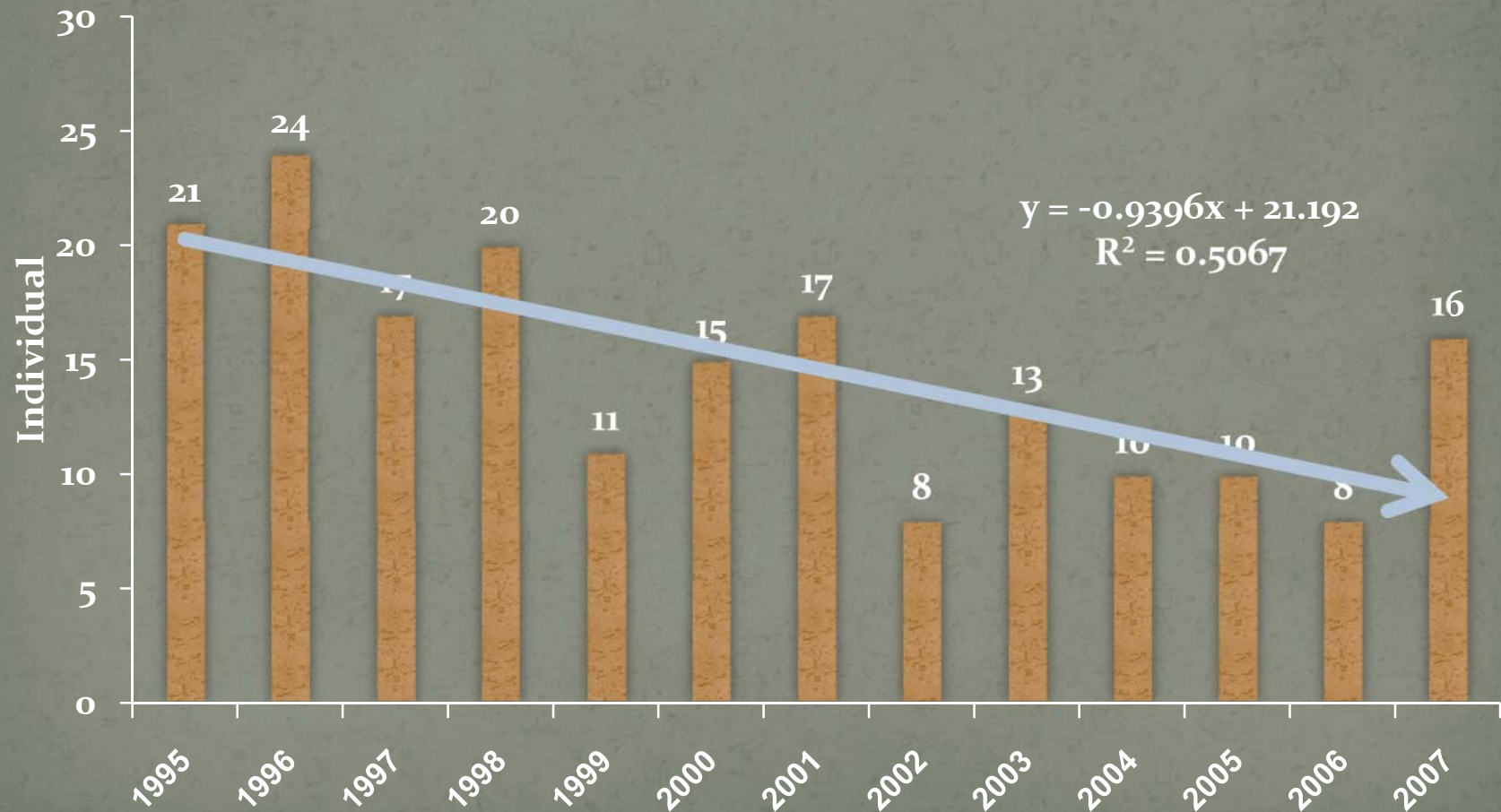
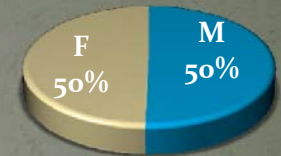


Krabi's population

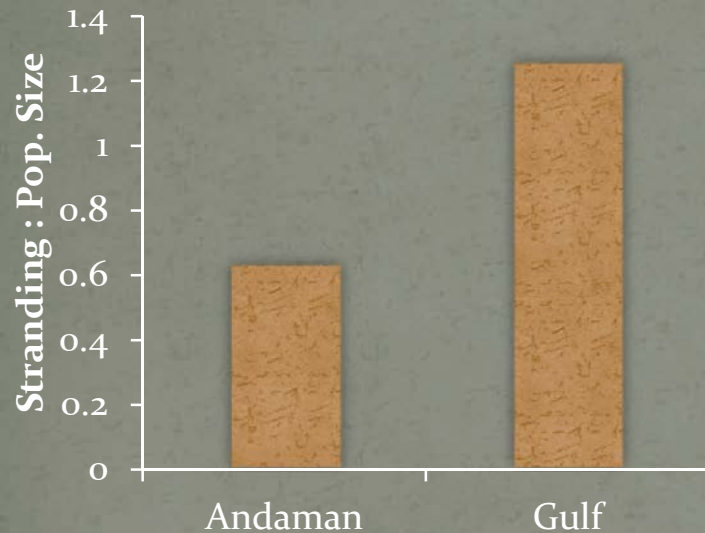


Stranding statistic

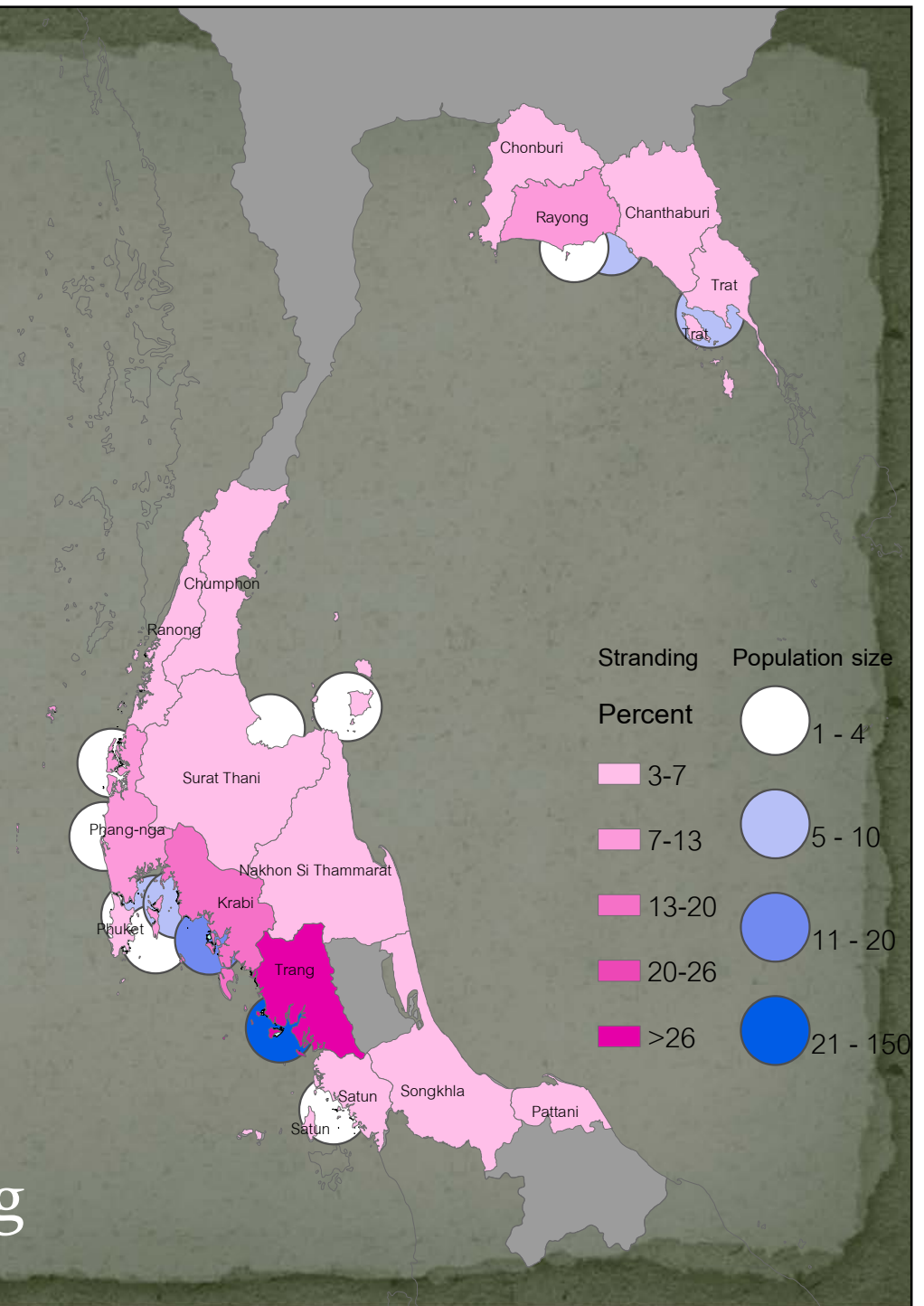
$X \pm CL_{95} = 14.6 \pm 2.8$ ind./year



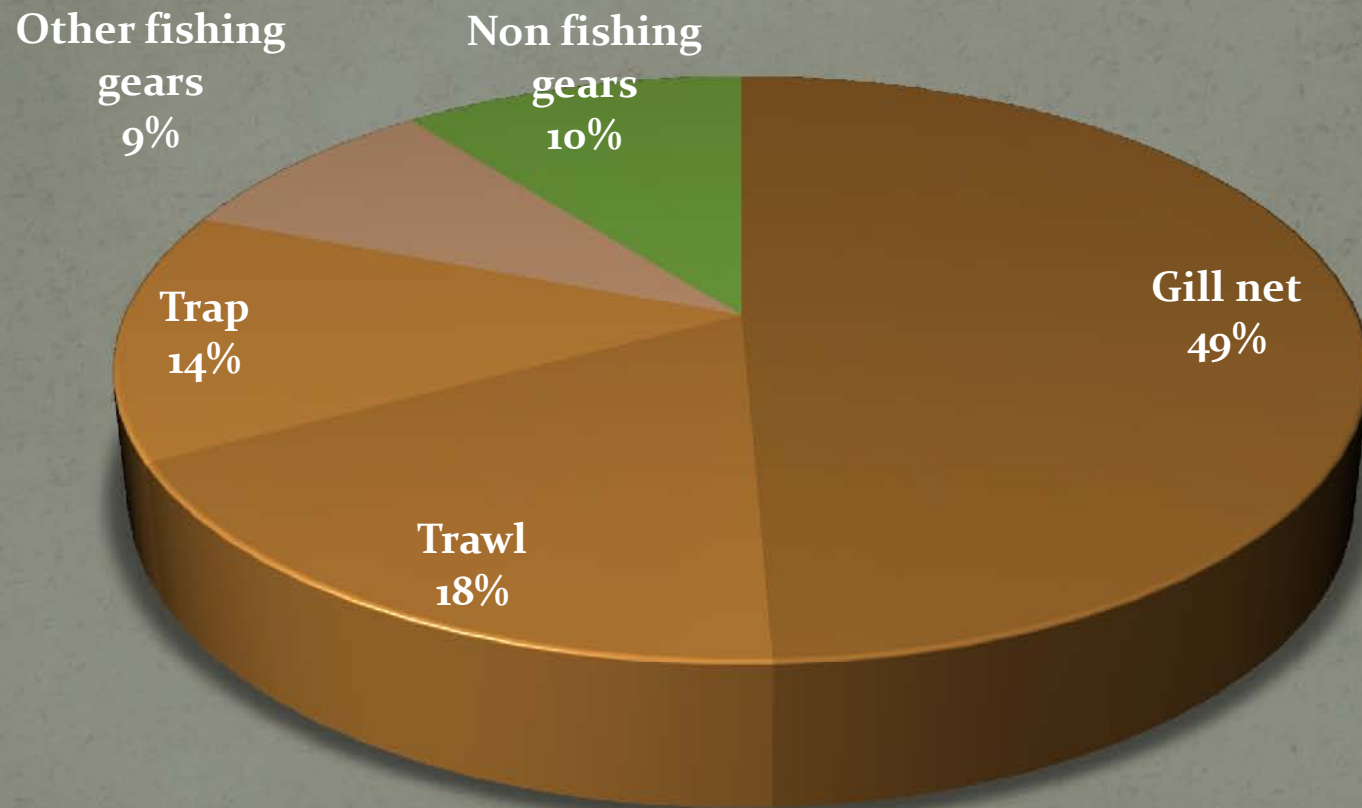
Stranding Sites: 1995-2007



Proportion of
Population size: Stranding



Causes of stranding

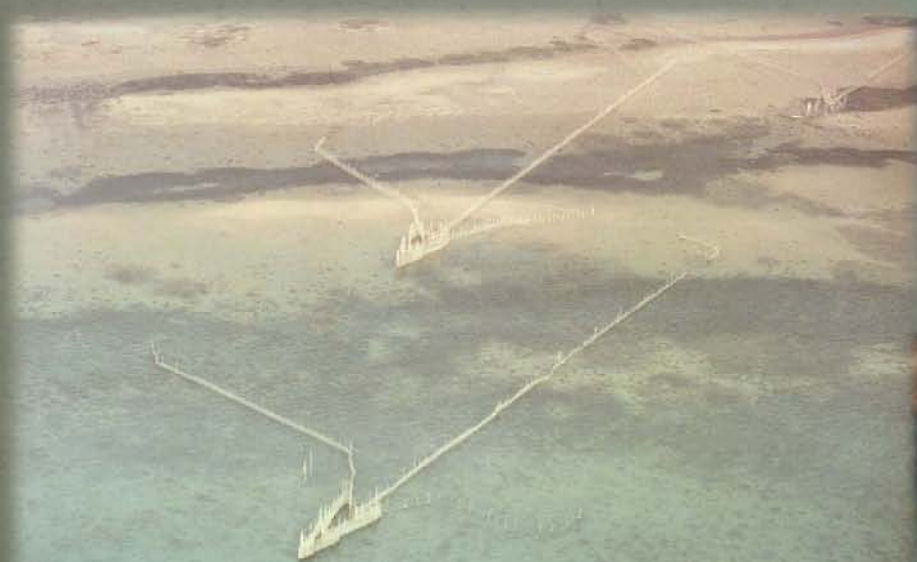


N = 123

Gill nets



Set trap,
Near shore
Long line



Rare cases:
rope of a small crab trap, boat strike, shark attack





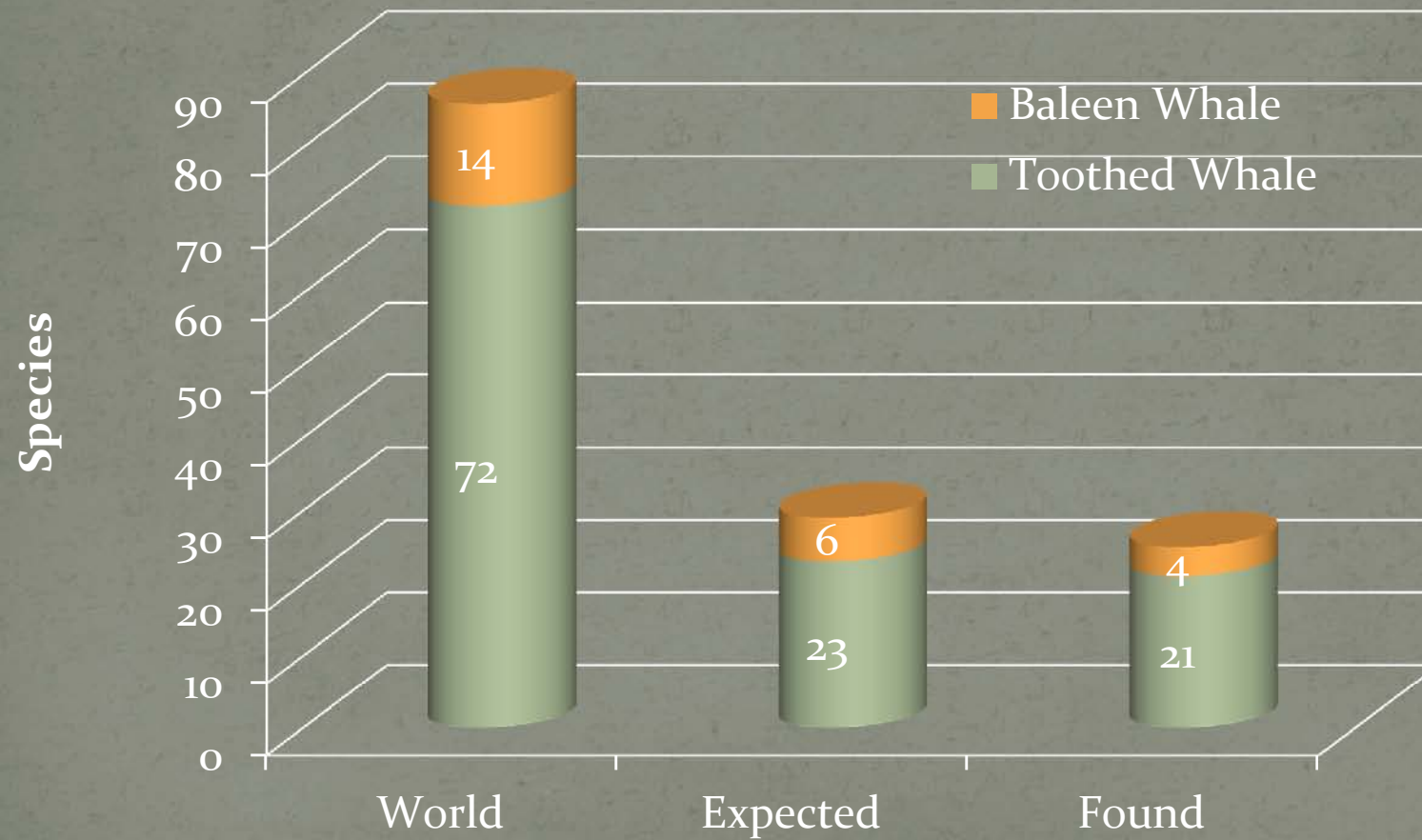
Dolphins & Whales

Species occurrence and distribution

Order Cetacea –Whale, dolphin and porpoise (86)

- Suborder Mysticeti –Baleen whales (14)
 - Family Balaenidae –Right and bowhead (4)
 - Family Neobalaenidae –Pygmy right whale (1)
 - Family **Balaenopteridae** –Rorquals (8-9)
 - Family Eschrichtiidae –Gray whale (1)
- Suborder Odontoceti –Toothed whales (72)
 - Family **Physeteridae** –Sperm whale (1)
 - Family **Kogiidae** –Pygmy and dwarf sperm whale (2)
 - Family Monodontidae –Narwhale and beluga whale (2)
 - Family **Ziphiidae** –Beaked whale (21)
 - Family **Phocoenidae** –Porpoise (6)
 - Family **Delphinidae** –Marine dolphin (36)
 - Family Platinistidae –South Asian river dolphin Susu and Bhulan (1)
 - Family Iniidae –Boto (1)
 - Family Lipotidae –Baiji (1)
 - Family Pontoporiidae –Fraciscana (1)

Species of cetacean



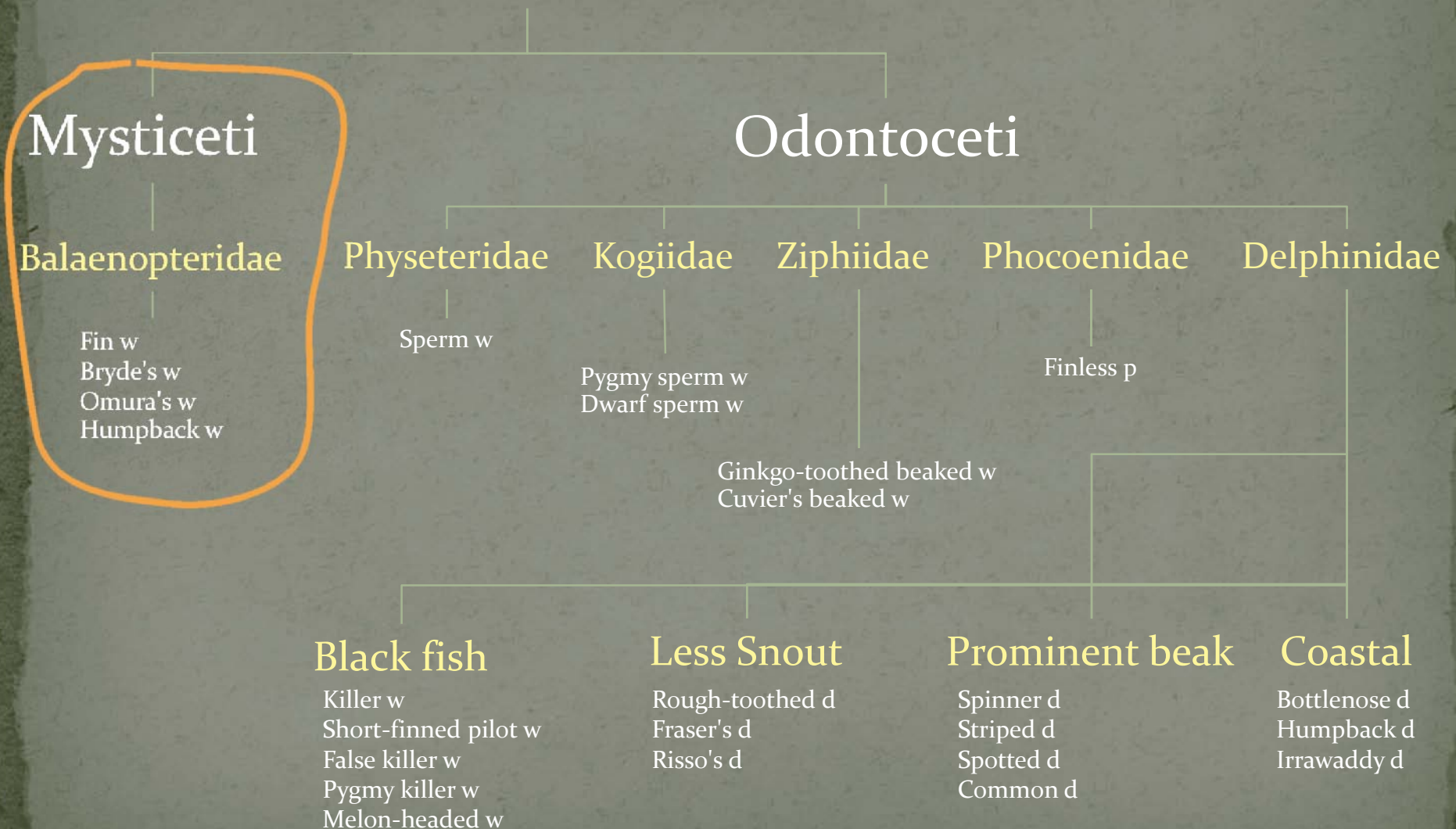
Baleen Whale



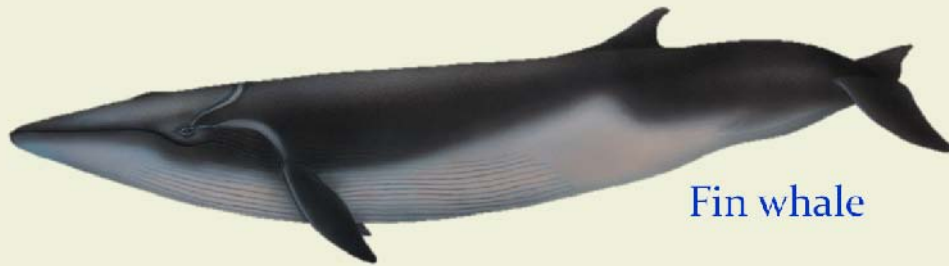
Toothed Whale



Order Cetacea (TH)



Balaenopteridae



Fin whale



Omura's whale



Bryde's whale



Bryde's whale

Fin whale

Bryde's whale

Omura's whale

Humpback whale

Feeding

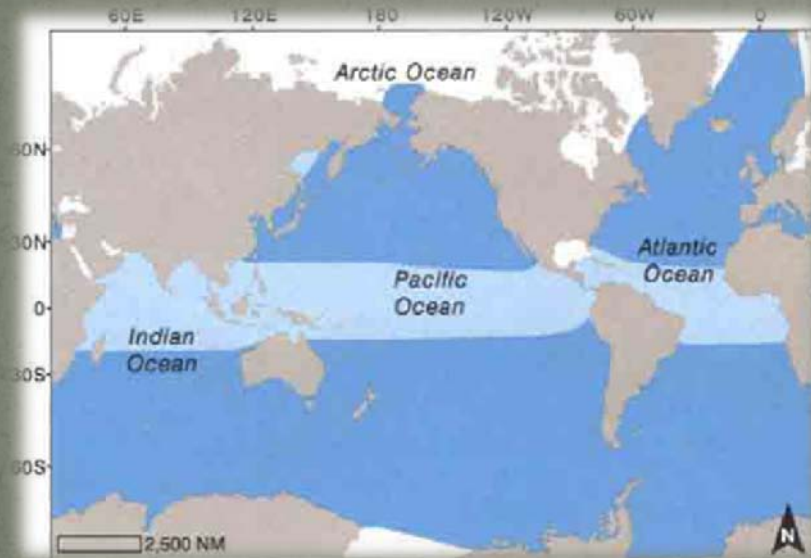


Fin whale

Balaenoptera physalus



- 24-27 m
- $F > M$ 5-10%
- Asymmetrical color in lower jaw
 - Left is mostly dark
 - Right largely white
- Dorsal fin tall and falcate



Fin whale

Occurrence

- Semi-fossilized bones in ChaCherngSao
- C₁₄-dating undetectable (>15,000 y)



Humpback whale

Megaptera novaeangliae

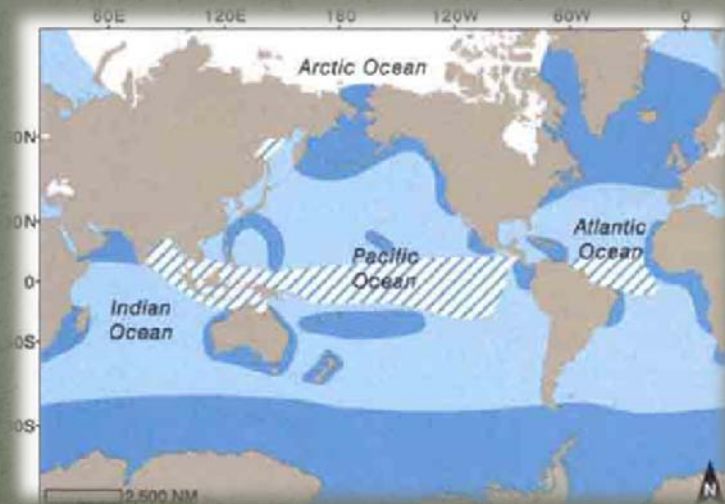


Northern Hemisphere



Southern Hemisphere

- 11-17 m, F>M 1-1.5 m
- robust Body
- enormous Flippers
- Very distinctive Flukes



Humpback whale

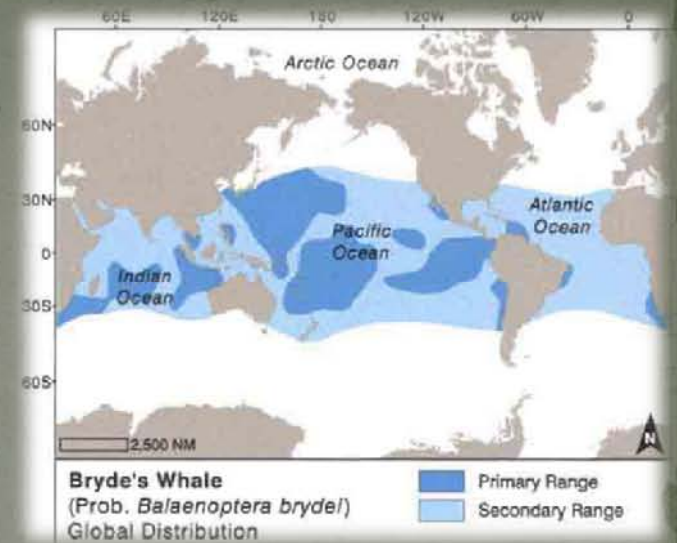
Occurrence

- A sighting record at Phuket in 2009



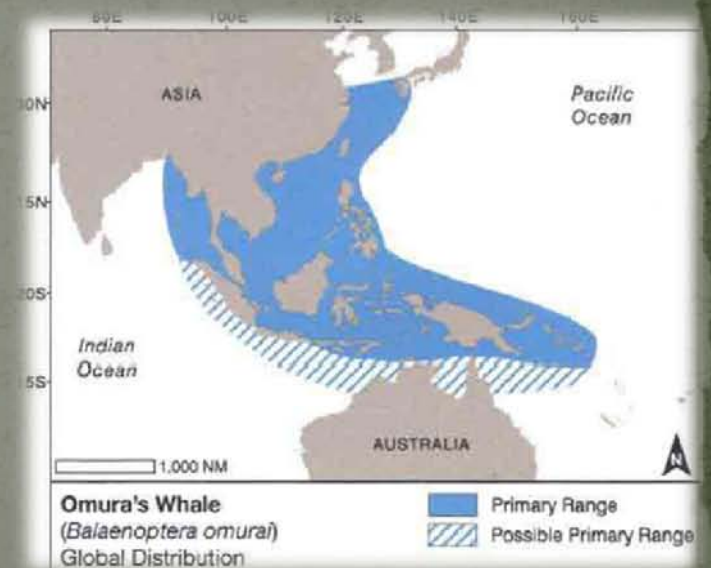
Bryde's whale

Balaenoptera brydei and or *B. edeni*



Omura's whale

Balaenoptera cf. *B. omurai*



Bryde's & Omura's whales

Bryde's whale

Omura's whale



Skull & Rib

Bryde's whale



Omura's whale



Bryde's & Omura's whales

Occurrence

- Yearly sighting
- 85 (19A:66G) records of Bryde's
- 30 (12A:18G) records of Omura's



Bryde's & Omura's whales

Occurrence

- Yearly sighting
- 85 (19A:66G) records of Bryde's
- 30 (12A:18G) records of Omura's



Order Cetacea (TH)

Mysticeti

Balaenopteridae

Fin w
Bryde's w
Omura's w
Humpback w

Odontoceti

Physeteridae

Sperm w

Kogiidae

Pygmy sperm w
Dwarf sperm w

Ziphiidae

Ginkgo-toothed beaked w
Cuvier's beaked w

Phocoenidae

Finless p

Delphinidae

Black fish

Killer w
Short-finned pilot w
False killer w
Pygmy killer w
Melon-headed w

Less Snout

Rough-toothed d
Fraser's d
Risso's d

Prominent beak

Spinner d
Striped d
Spotted d
Common d

Coastal

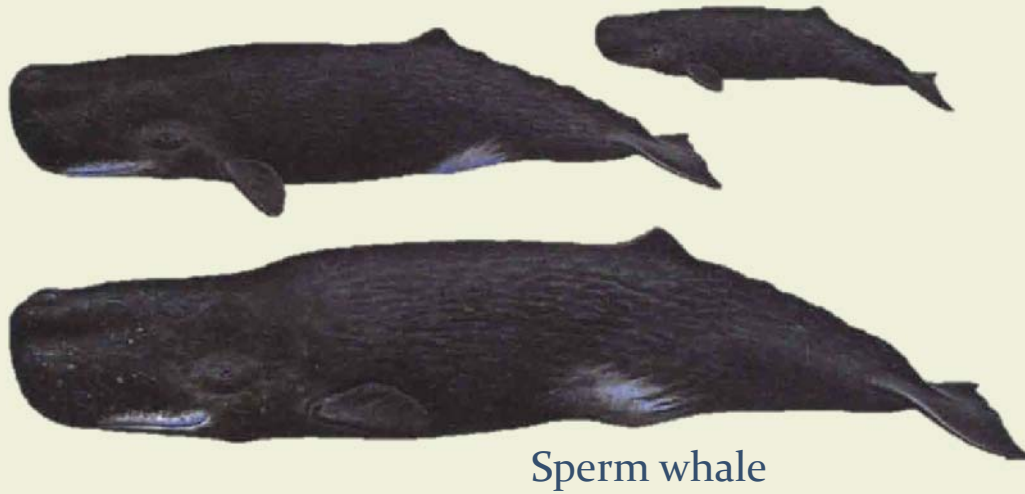
Bottlenose d
Humpback d
Irrawaddy d

Physeteridae Kogiidae

Sperm w

Pygmy sperm w

Dwarf sperm w



Sperm whale



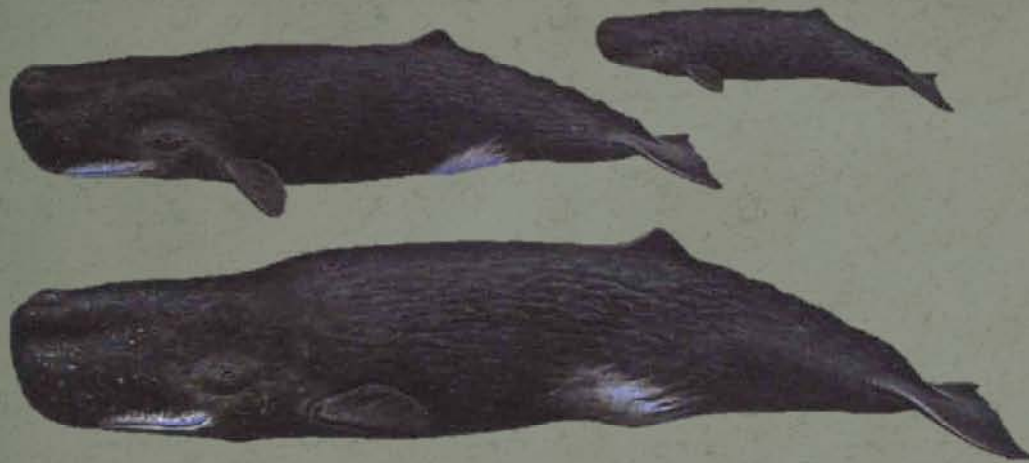
Pygmy Sperm whale



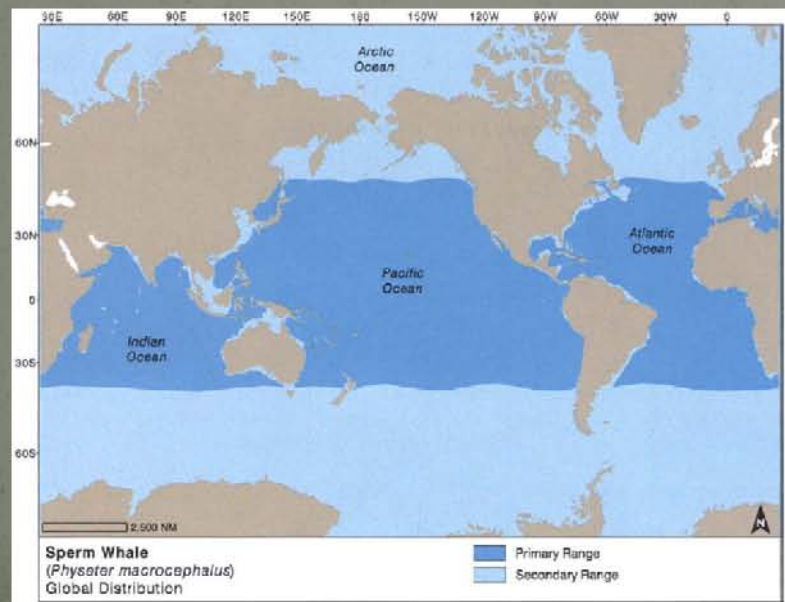
Dwarf Sperm whale

Sperm Whale

Physeter macrocephalus



- Huge head 1/3 of the total length
- M 18 m, F 12 m
- Teeth 18-26 pairs in the only lower jaw
- Inhabit continental slope and oceanic waters deeper than about 1,000 m



Sperm Whale

Physeter macrocephalus

- 13 stranded records, 1991-2010.
- 3-4 m Calf, 8-10 m F (1:1)

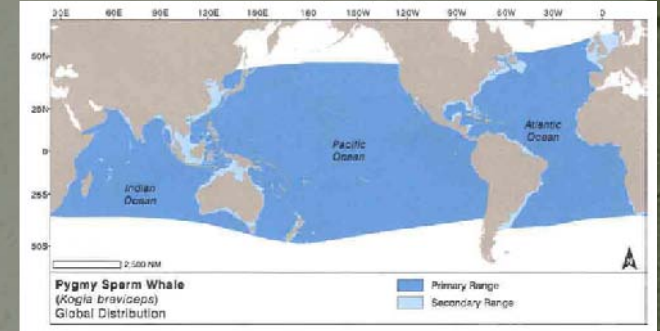


Kogiidae

Pygmy sperm whale

Kogia breviceps

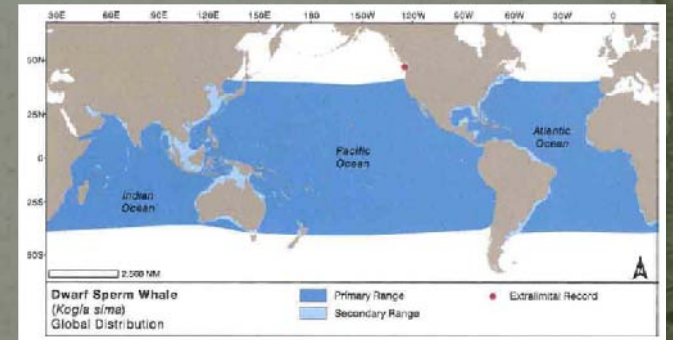
- 12-16 pairs LJ
- 2.7-3.8 m
- Rel. small dorsal fin



Dwarf sperm whale

Kogia sima

- 7-12 pairs LJ
- 2.5-2.7 m
- Rel. large dorsal fin



Pygmy sperm whale

Kogia breviceps

- 8 stranded records
- 1994-2007
- Phuket, PhangNga
- Rayong, Chumporn, Prachuab, Songkhla, Narathiwat



Dwarf sperm whale

Kogia simus

- 7 stranded records
- 1987-2010
- Phuket, PhangNga, Satun



Order Cetacea (TH)

Mysticeti

Balaenopteridae

Fin w
Bryde's w
Omura's w
Humpback w

Odontoceti

Physeteridae

Sperm w

Kogiidae

Pygmy sperm w
Dwarf sperm w

Ziphiidae

Ginkgo-toothed beaked w
Cuvier's beaked w

Phocoenidae

Finless p

Delphinidae

Black fish

Killer w
Short-finned pilot w
False killer w
Pygmy killer w
Melon-headed w

Less Snout

Rough-toothed d
Fraser's d
Risso's d

Prominent beak

Spinner d
Striped d
Spotted d
Common d

Coastal

Bottlenose d
Humpback d
Irrawaddy d



Cuvier's beaked W



Ginkgo-toothed beaked W

Ziphiidae

Ginkgo-toothed
beaked w

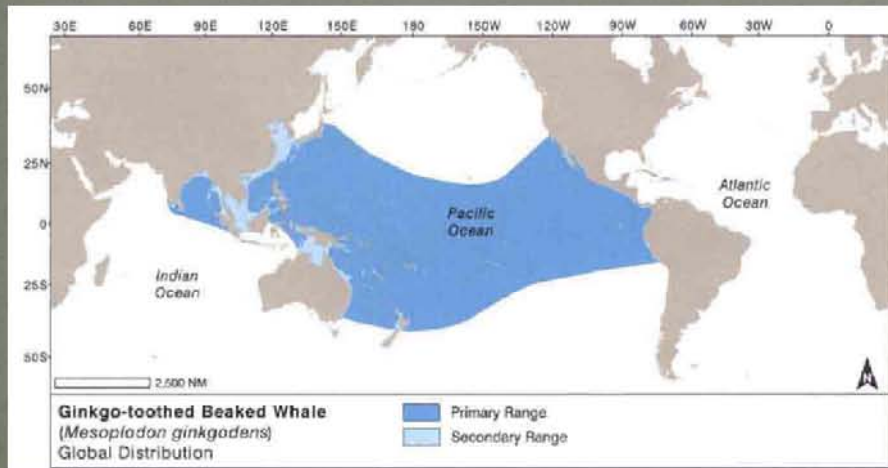
Cuvier's beaked w

Ginkgo-toothed Beaked Whale

Mesoplodon ginkgodens



- A single pair of the ginkgo tree leaf-like teeth at the lower jaw
- a single pair of shallow throat grooves
- 5 m Adult, 2-2.5 m new born



Cuvier's beaked whale

Occurrence

- Single record at Phuket
- 6 Sep 1988, Female 2 m

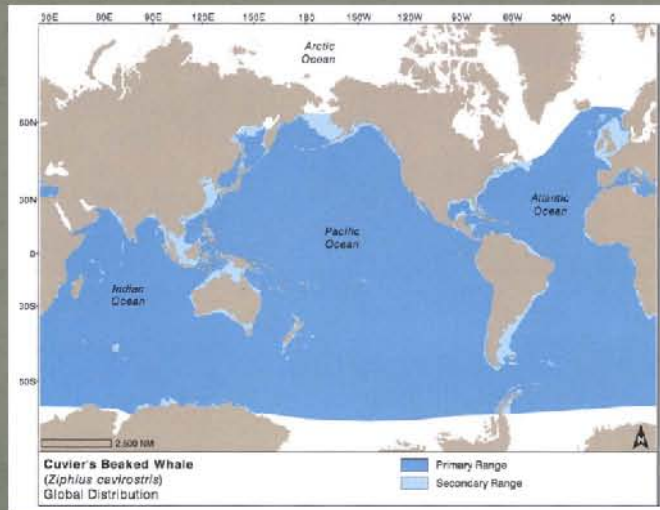


Cuvier's beaked whale

Ziphius cavirostris



- A single pair of conical teeth at the tip of lower jaw
- 7 m Adult, 2.7 m new born



Cuvier's beaked whale

Occurrence

- Single record at Sarai Island
- 11 Aug 1999, Female 5.2 m



Order Cetacea (TH)

Mysticeti

Balaenopteridae

Fin w
Bryde's w
Omura's w
Humpback w

Odontoceti

Physeteridae

Sperm w

Kogiidae

Pygmy sperm w
Dwarf sperm w

Ziphiidae

Ginkgo-toothed beaked w
Cuvier's beaked w

Phocoenidae

Finless p

Delphinidae

Black fish

Killer w
Short-finned pilot w
False killer w
Pygmy killer w
Melon-headed w

Less Snout

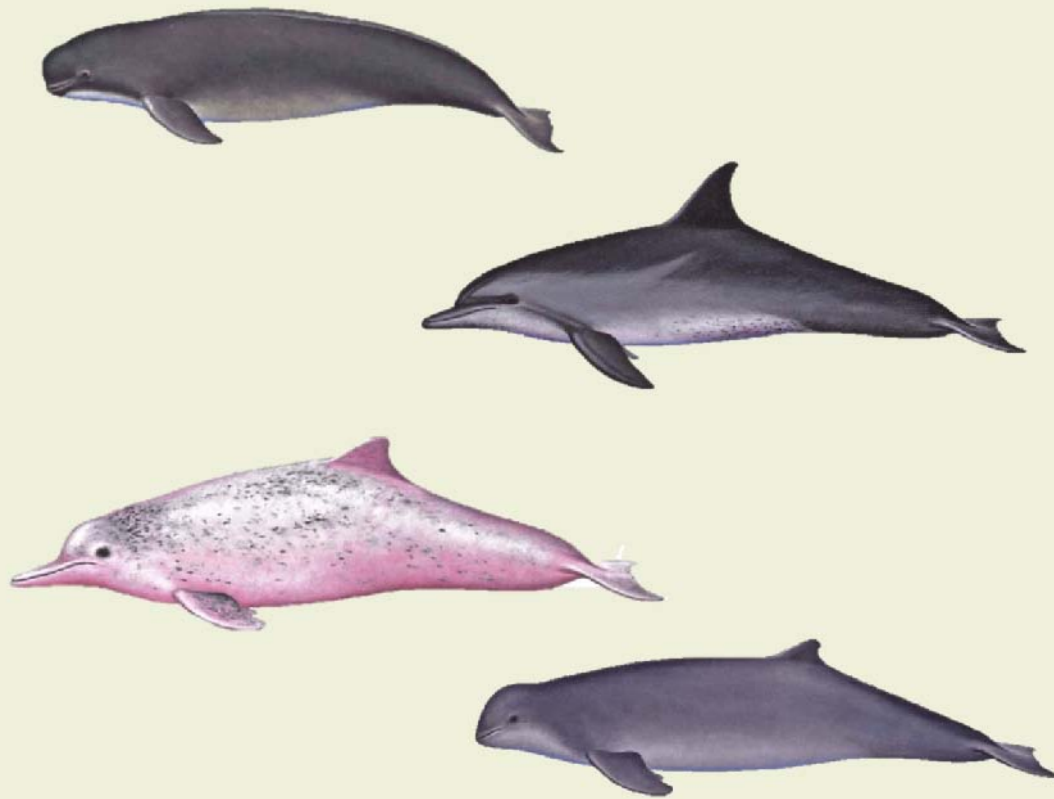
Rough-toothed d
Fraser's d
Risso's d

Prominent beak

Spinner d
Striped d
Spotted d
Common d

Coastal

Bottlenose d
Humpback d
Irrawaddy d



Phocoenidae
Delphinidae
(Coastal)

Finless p

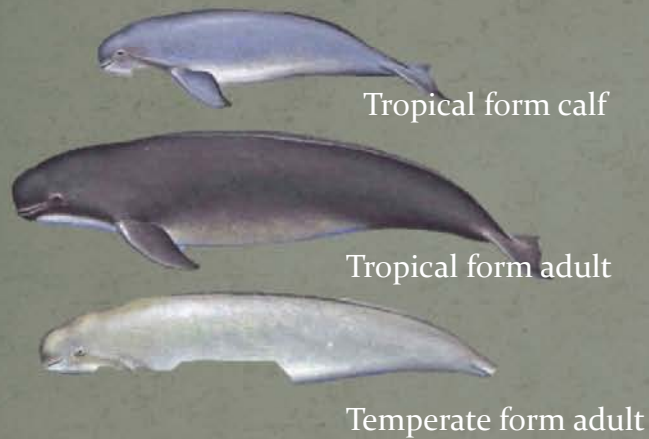
Bottlenose d

Humpback d

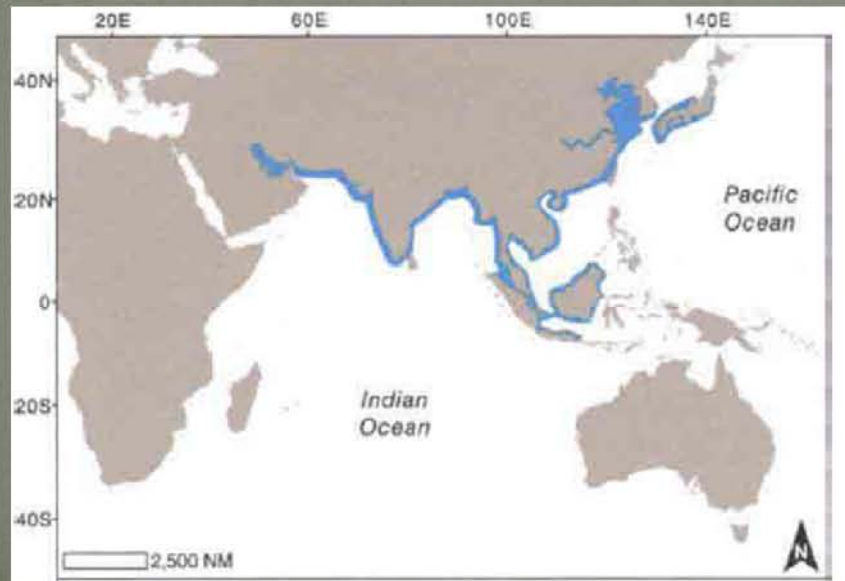
Irrawaddy d

Finless Porpoise

Neophocaena phocaenoides

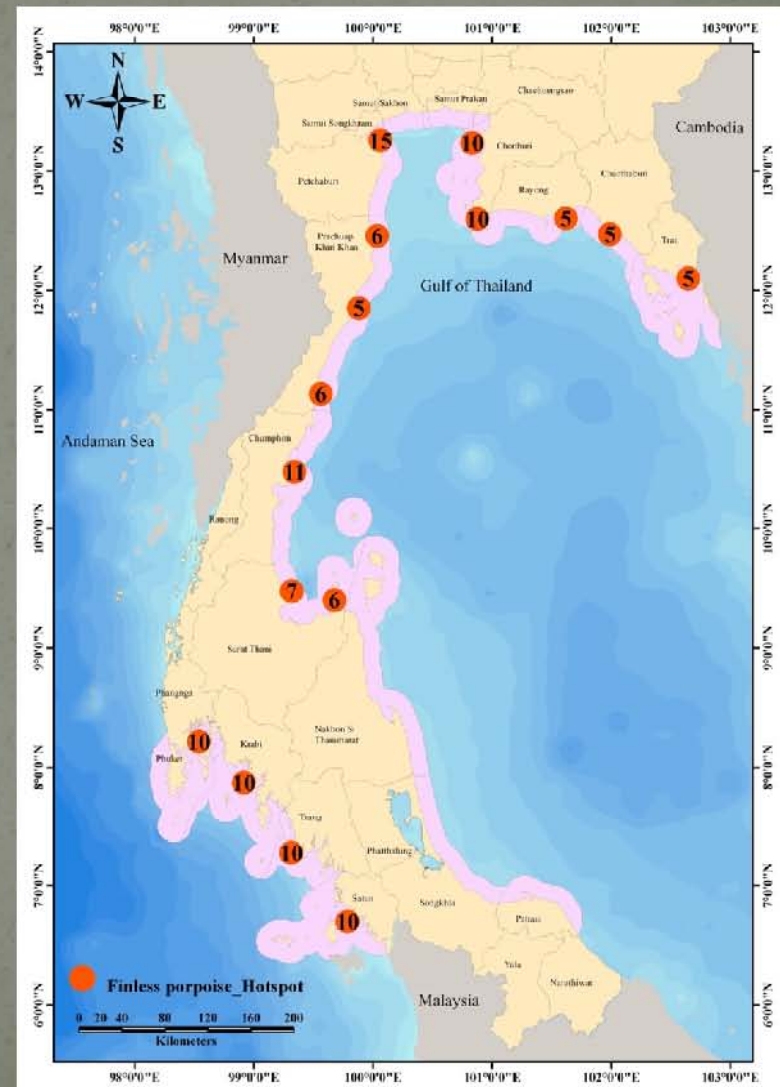


- 15-22 of spade shaped teeth each jaw
- 1.5-2.2 m
- Three subspecies:
 - *N. p. phocaenoides* in the Indian Ocean and South China Sea,
 - *N. p. asiaeorientalis* in the Yangtze River,
 - *N. p. sunameri* from the Taiwan Strait north to northern China and Japan.



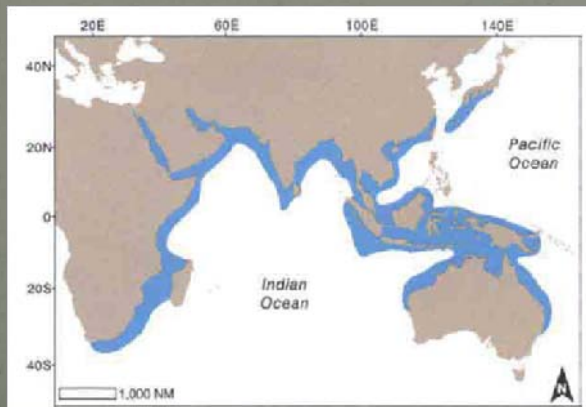
Finless Porpoise

Distribution and abundance

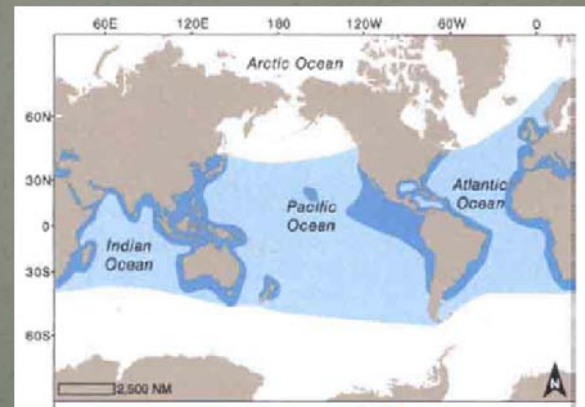


Bottlenose dolphin

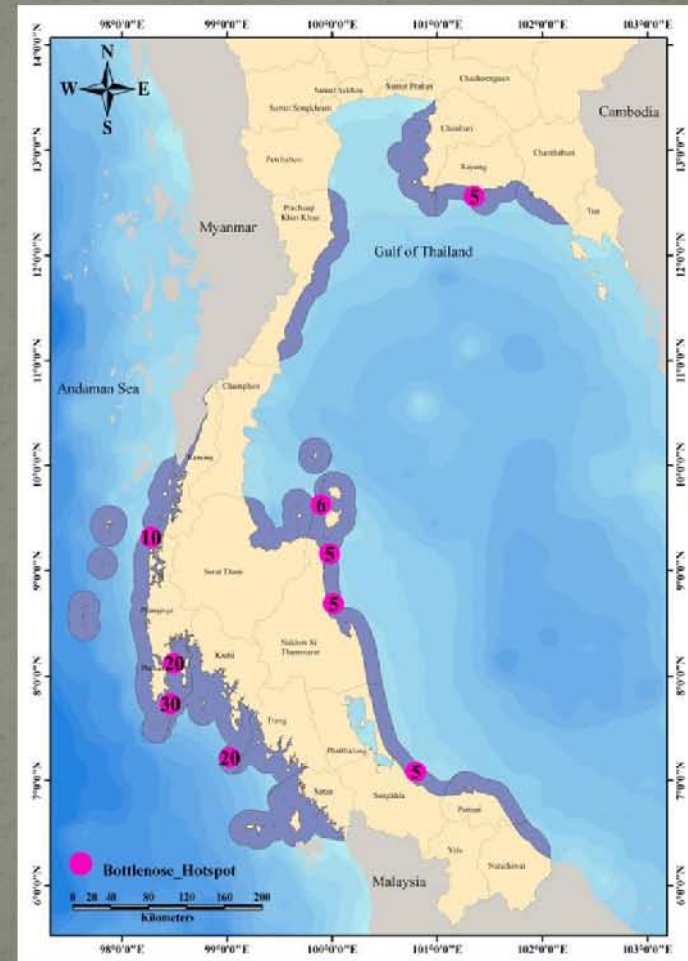
Indo-Pacific Bottlenose Dolphin *Tursiops aduncus*



Common Bottlenose Dolphin *Tursiops truncatus*



Distribution and abundance



Indo-Pacific humpback dolphin

Sousa chinensis

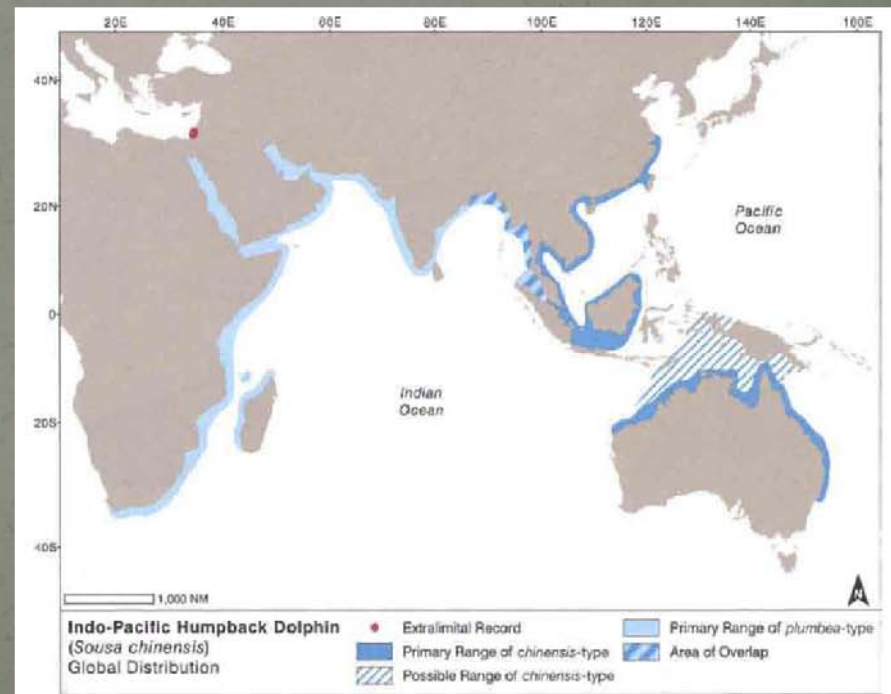
- 31 to 39 teeth in each upper tooth row, and 29-38 in each lower row
- M 2.8 m, F 2.6 m



Chinese type

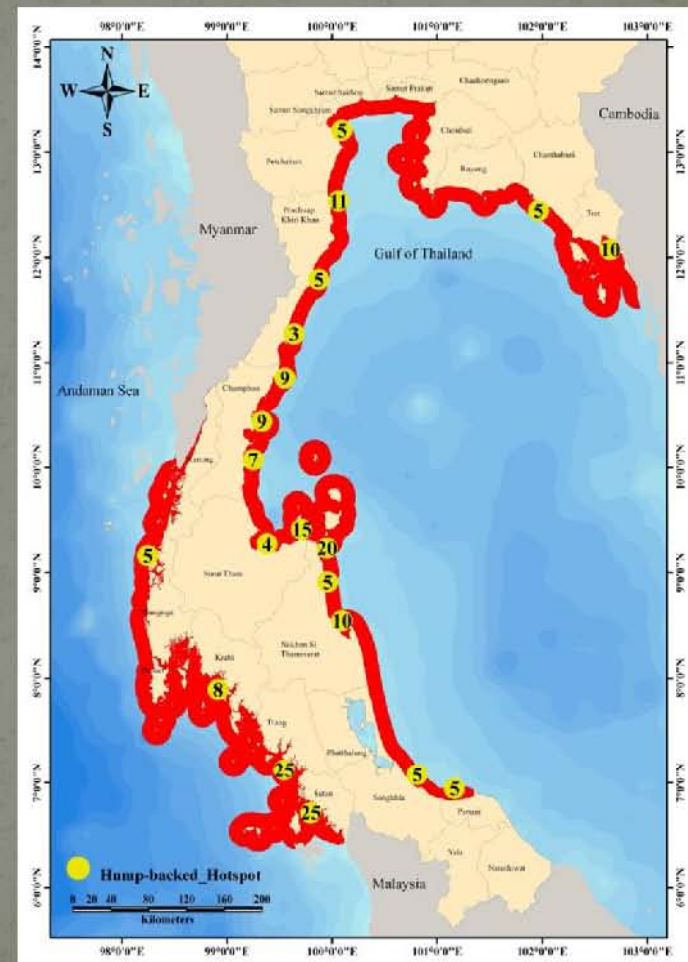


Plumbea type



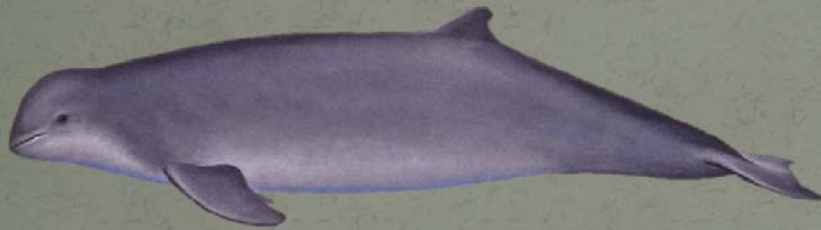
Indo-Pacific humpback dolphin

Distribution and abundance

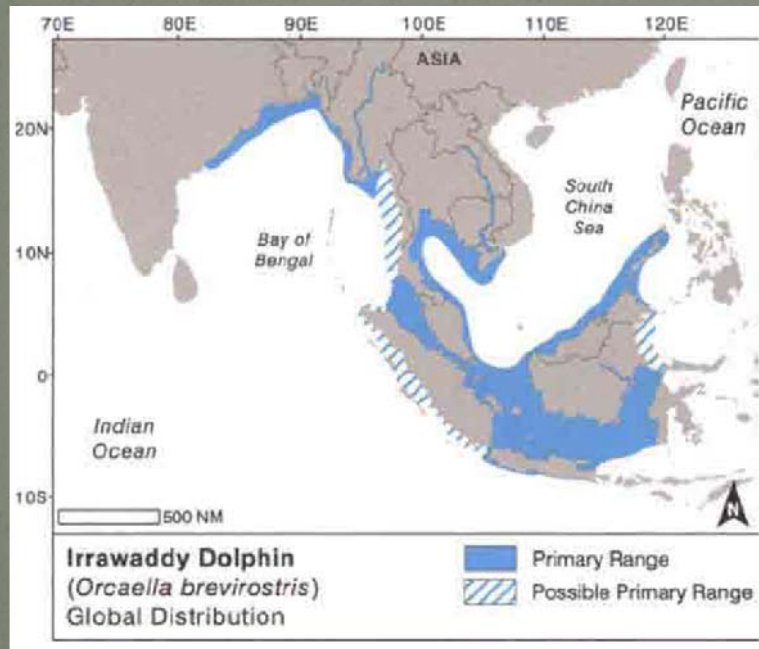


Irrawaddy Dolphin

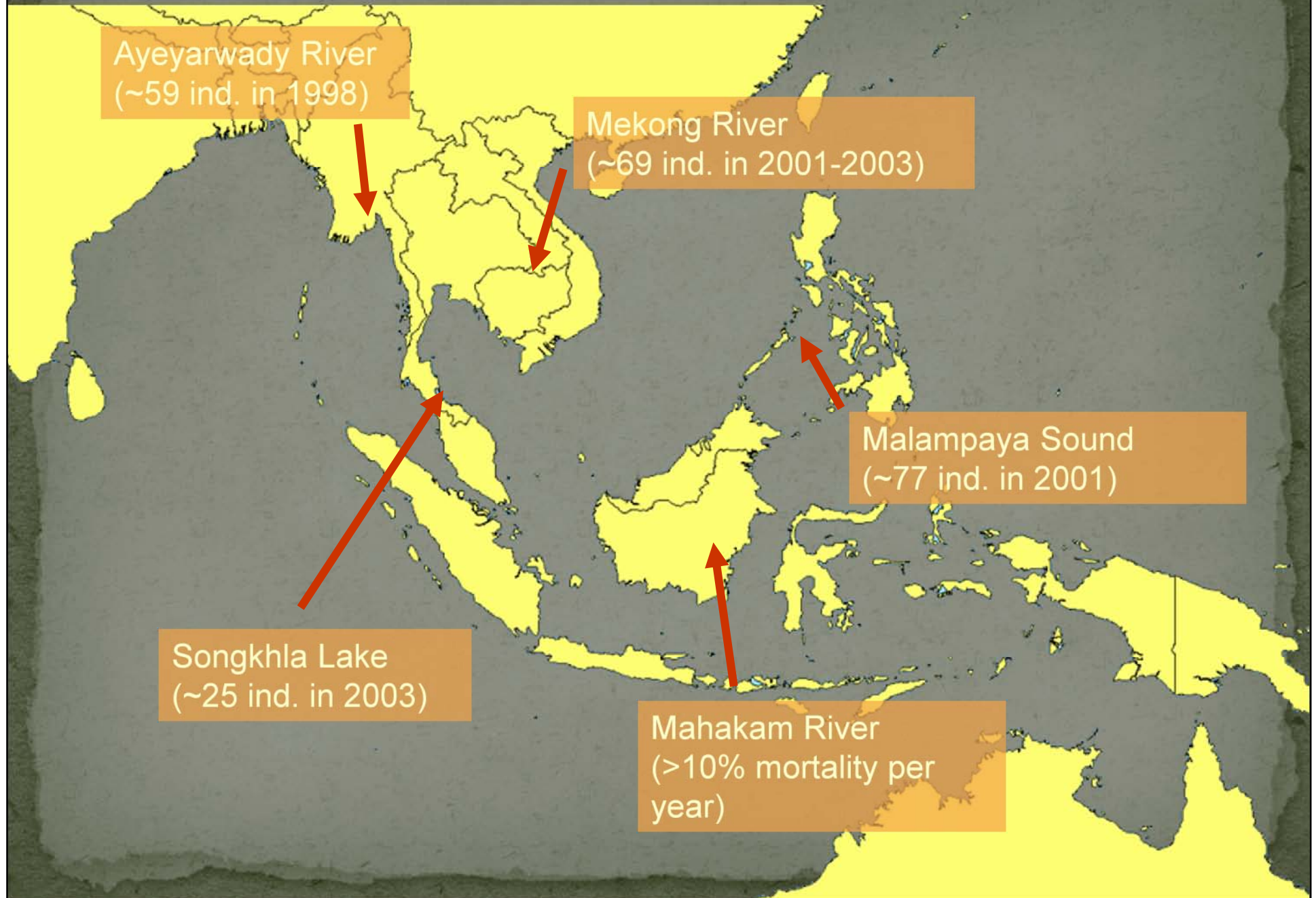
Orcaella brevirostris



- 15 (upper) and 13-14 (lower)
- 1.73-2.75 m and average about 2.05 m
- 5 Fresh water populations

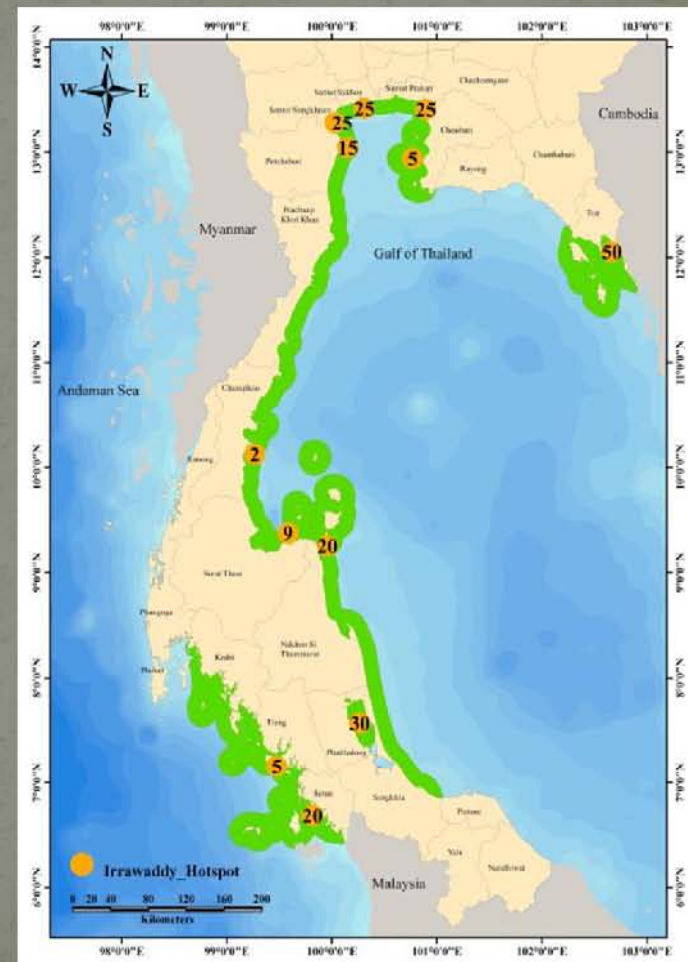


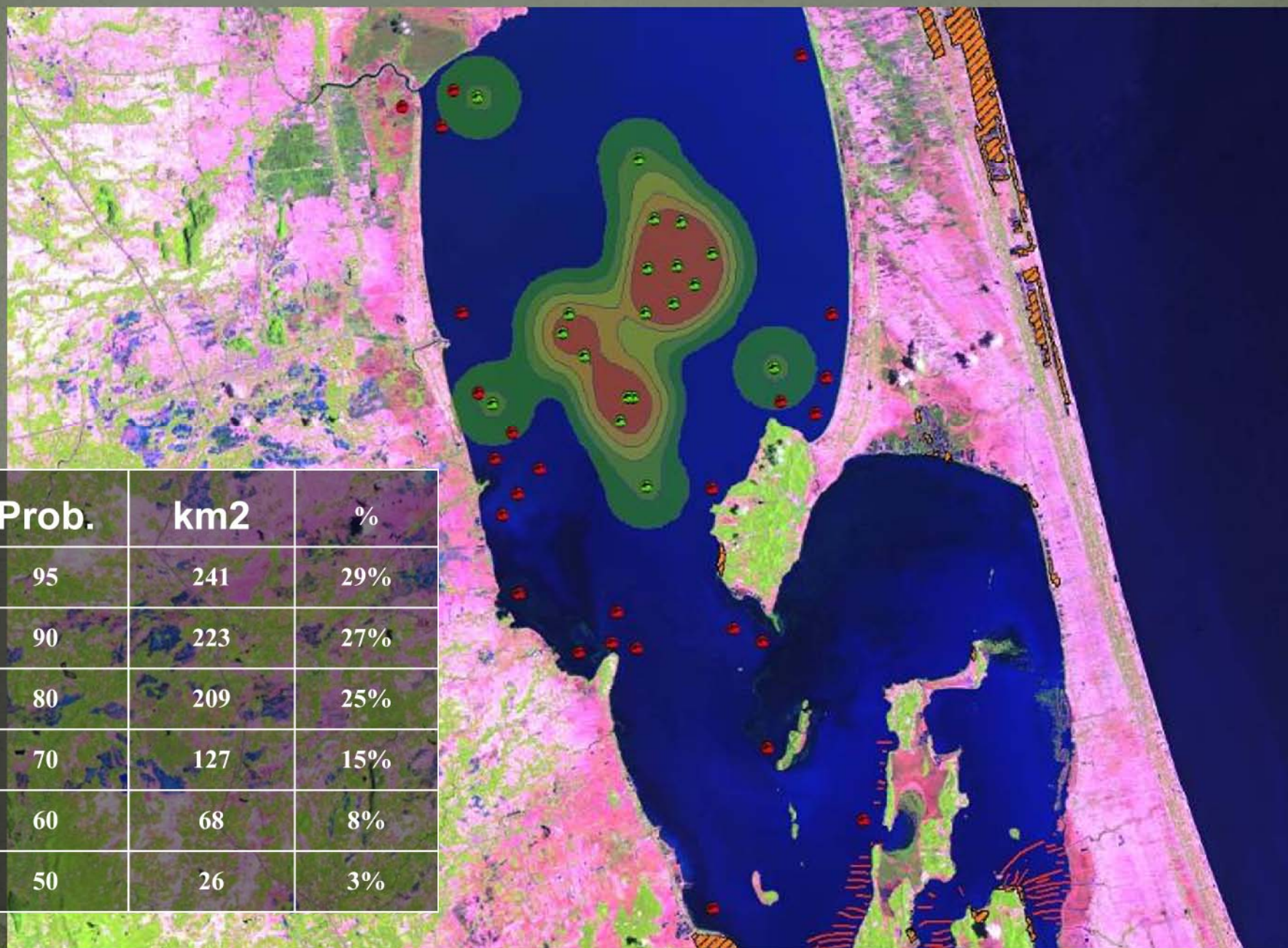
Critically Endangered” populations of Irrawaddy dolphins



Irrawaddy Dolphin

Distribution and abundance





Prob.	km2	%
95	241	29%
90	223	27%
80	209	25%
70	127	15%
60	68	8%
50	26	3%

Order Cetacea (TH)

Mysticeti

Balaenopteridae

Fin w
Bryde's w
Omura's w
Humpback w

Odontoceti

Physeteridae

Sperm w

Kogiidae

Pygmy sperm w
Dwarf sperm w

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Ginkgo-toothed beaked w
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Black fish

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Less Snout

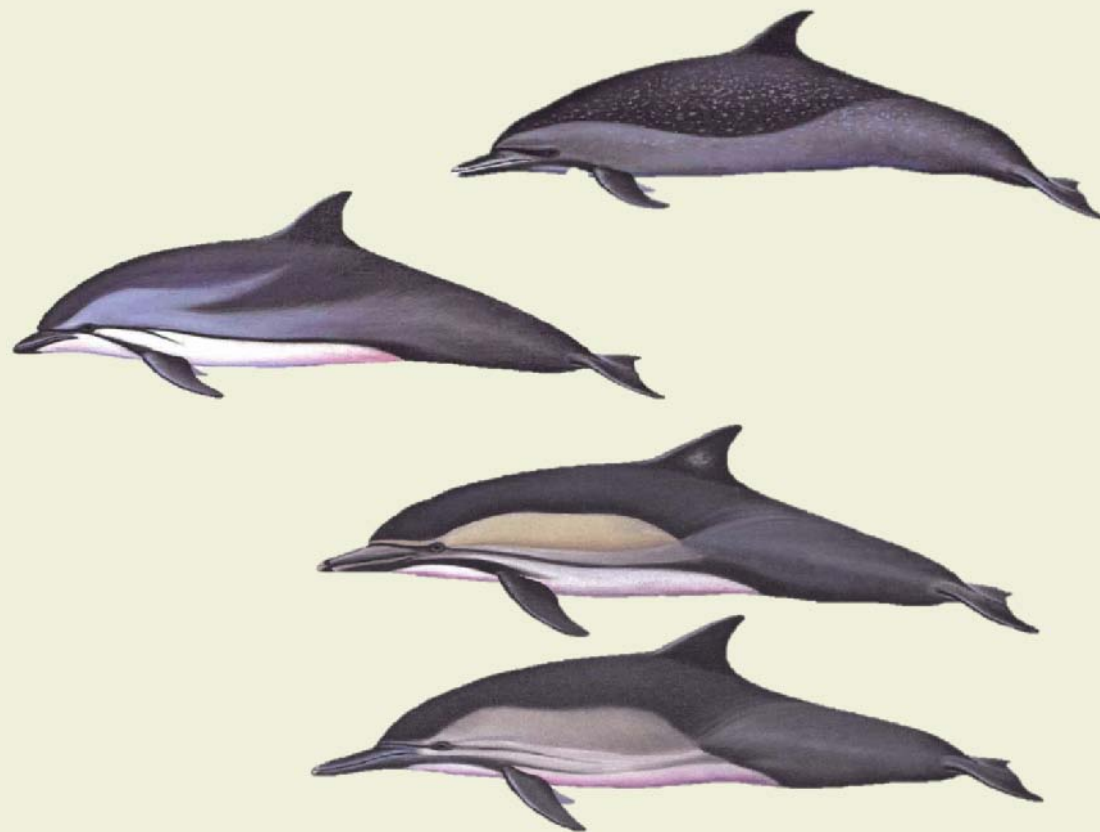
Rough-toothed d
Fraser's d
Risso's d

Prominent beak

Spinner d
Striped d
Spotted d
Common d

Coastal

Bottlenose d
Humpback d
Irrawaddy d



Delphinidae (Prominent beak)

Spinner d

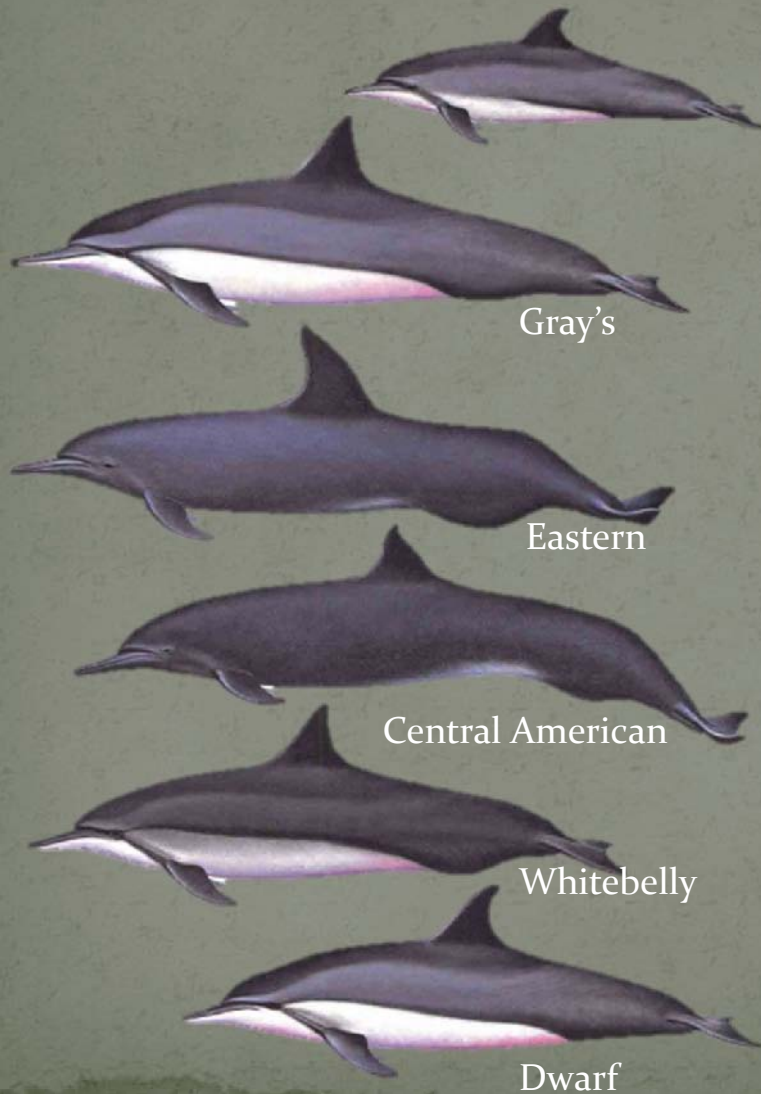
Striped d

Spotted d

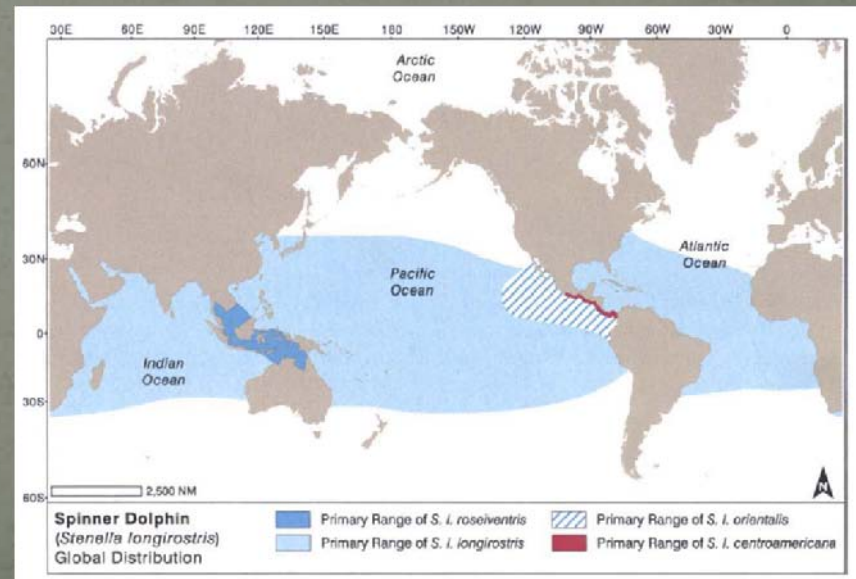
Common d

Spinner Dolphin

Stenella longirostris



- 40-60 per row, 2 m L
- 5 geographic forms
 - Gray's spinner dolphin (*S. I. longirostris*) found in most areas
 - Dwarf spinner dolphin (*S. I. roseiventris*) Southeast Asia and northern Australia



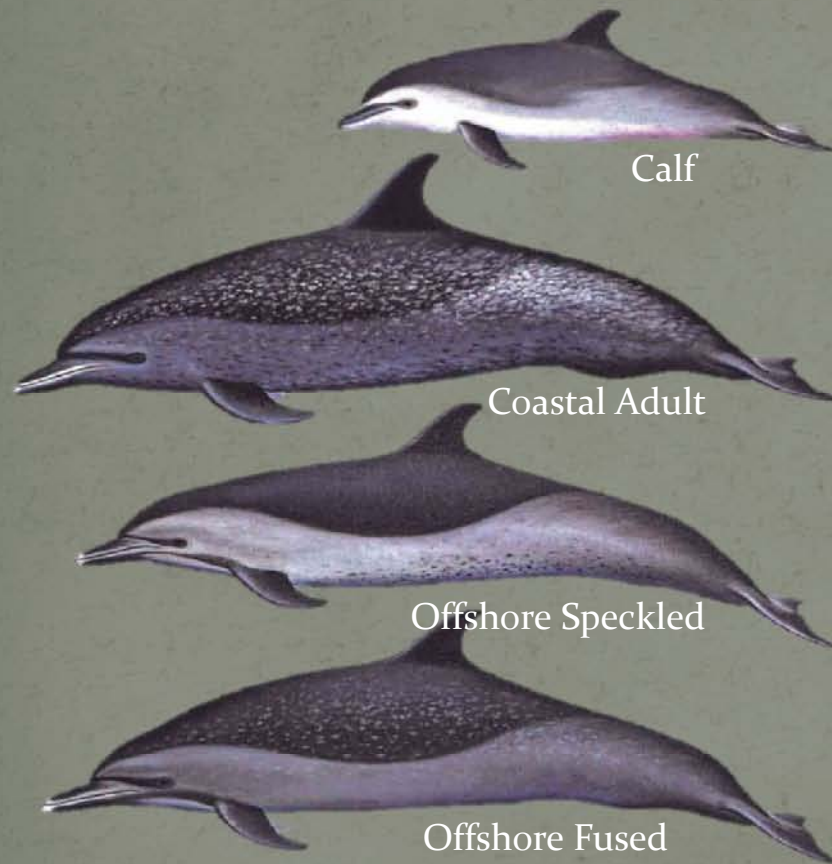
Spinner Dolphin

Stenella longirostris

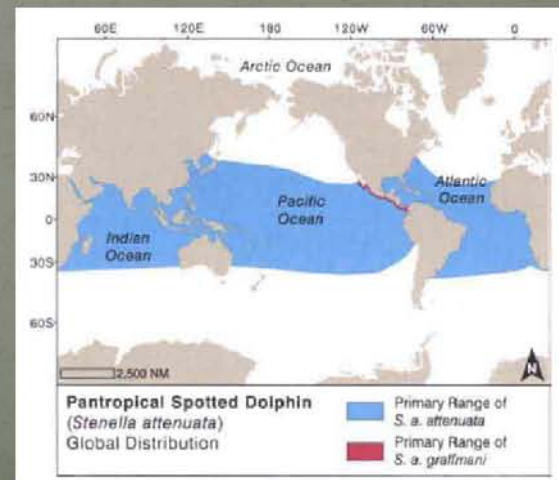


Pantropical Spotted Dolphin

Stenella attenuata



- 1.6 to 2.4 m long
- 2 geographic forms
 - Offshore spotted dolphin (*S. a. attenuata*) smaller and more slender than the coastal form, Dorsal spotting is much less dense, and in some populations can be virtually nonexistent in adults.
 - Coastal spotted dolphin (*S. a. graffmani*) the eastern tropical Pacific, Spotting tends to be much more extensive on the coastal form



Pantropical Spotted Dolphin

Stenella attenuata

- Sighted pops in PhangNga Bay
- Phuket, PhangNga, Krabi, Trang
- Samutprakarn, Prachuab, Choburi, NakornSri

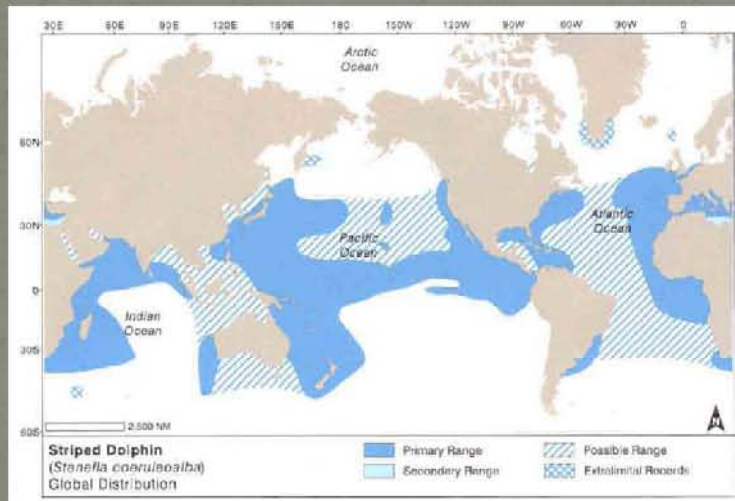


Striped Dolphin

Stenella coeruleoalba



- 40-55 slender pointed teeth in each tooth row
- Adult striped dolphins are up to 2.56 m long



Striped Dolphin

Stenella coeruleoalba

- Sighted pops PhangNga, Phuket
- Stranded records from Ranong to Satun

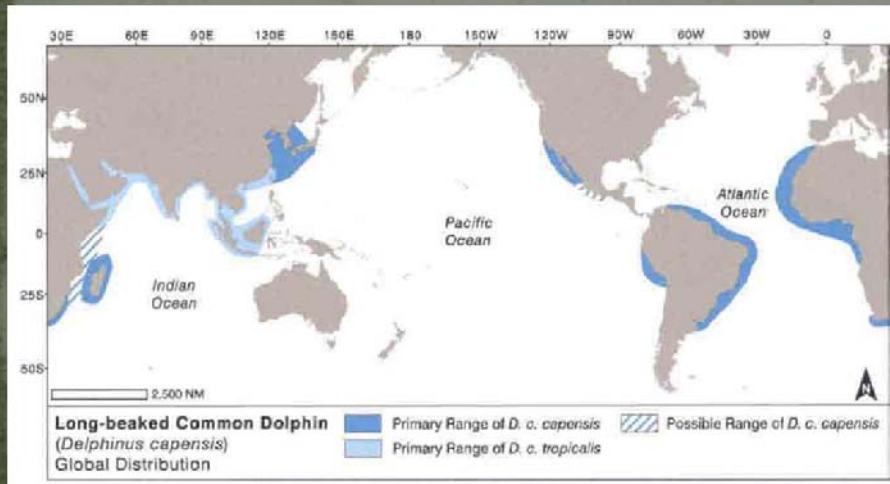


Long-beaked Common Dolphin

Delphinus capensis



- 2 geographic forms
 - Standard long beaked common dolphin (*D. c. capensis*)—the nominal, the Pacific and Atlantic oceans, slightly shorter beak
 - Indo-Pacific common dolphin (*D.c. tropicalis*) , the Indian and far western Pacific oceans. The beak is narrow and long



Long-beaked Common Dolphin

Delphinus capensis

- 2002, 1 record in Prachuab
- 2007, 1 record in Petchaburi
- 2009 2 record in PhangNga and Choburi



Order Cetacea (TH)

Mysticeti

Balaenopteridae

Fin w
Bryde's w
Omura's w
Humpback w

Odontoceti

Physeteridae

Sperm w

Kogiidae

Pygmy sperm w
Dwarf sperm w

Ziphiidae

Ginkgo-toothed beaked w
Cuvier's beaked w

Phocoenidae

Finless p

Delphinidae

Black fish

Killer w
Short-finned pilot w
False killer w
Pygmy killer w
Melon-headed w

Less Snout

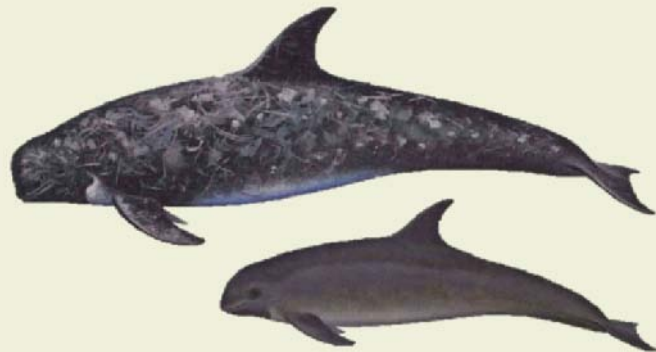
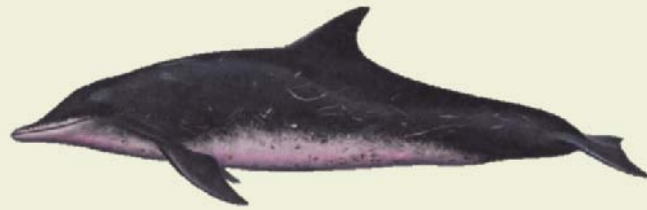
Rough-toothed d
Fraser's d
Risso's d

Prominent beak

Spinner d
Striped d
Spotted d
Common d

Coastal

Bottlenose d
Humpback d
Irrawaddy d



**Delphinidae
(less prominent
snout)**

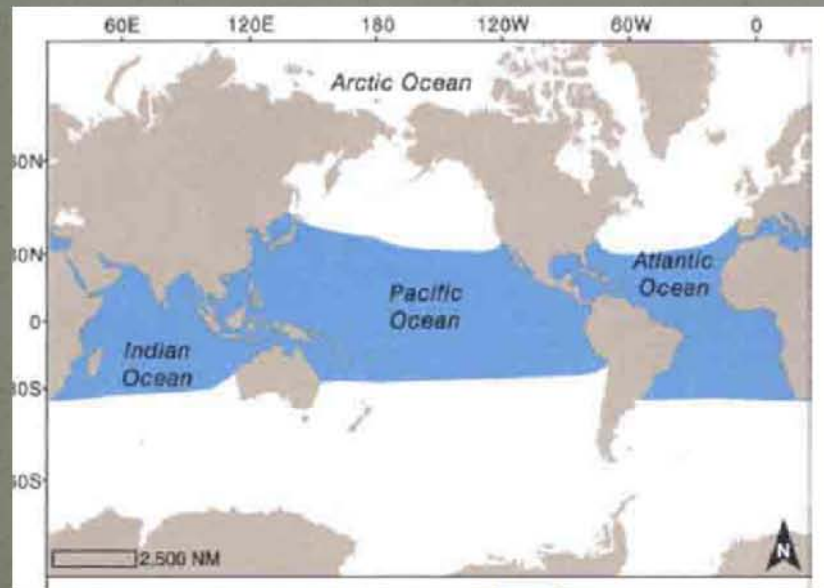
Rough-toothed d

Fraser's d

Risso's d

Rough-toothed dolphin

Steno bredanensis



Rough-toothed dolphin

Occurrence

- 1993-2010, 9 records
- Phuket and Satun
- Nakornsrithammaraj, Chonburi

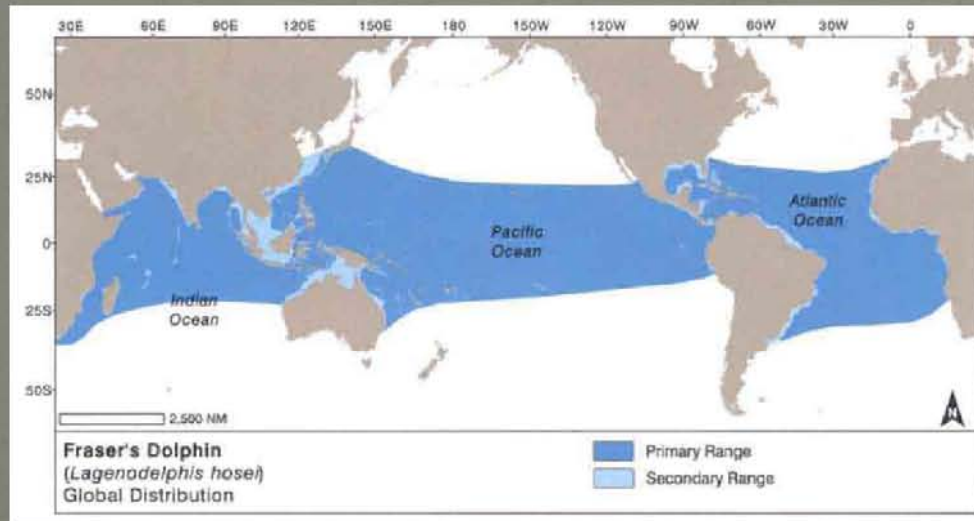


Fraser's Dolphin

Lagenodelphis hosei



Fraser's dolphin



Indo-pacific
bottlenose dolphin

Fraser's Dolphin

Occurrence

- 1996, 1 record in Trang
- 2009, 5 records in Phuket, Trang and Satun

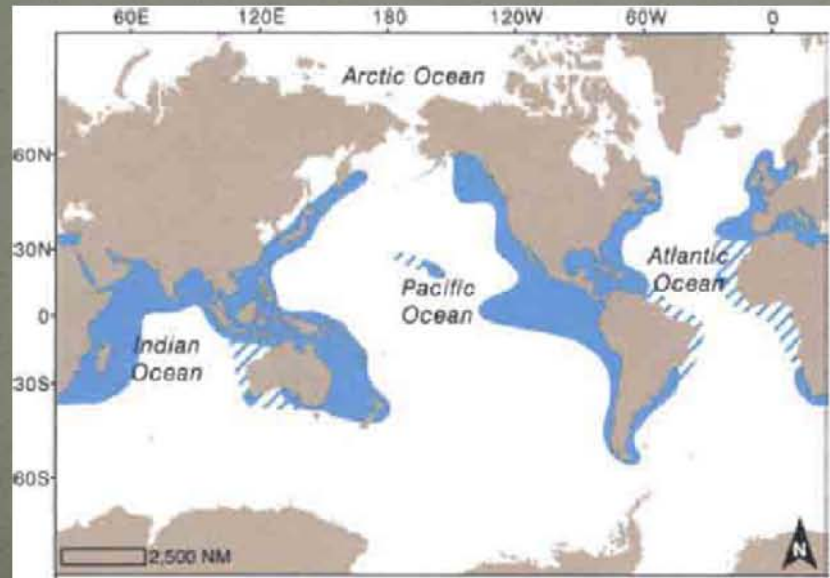


Risso's Dolphin

Grampus griseus



- 2-7 pairs of stout, pointed teeth in the front of the lower jaw, and usually none (but occasionally 1-2 pairs) in the upper jaw
- Adult 3.8 m



Risso's Dolphin

Grampus griseus

- 2003-2009, 4 records in Phuket
- 2010, 1 record in Nakorn



Order Cetacea (TH)

Mysticeti

Balaenopteridae

Fin w
Bryde's w
Omura's w
Humpback w

Odontoceti

Physeteridae

Sperm w

Kogiidae

Pygmy sperm w
Dwarf sperm w

Ziphiidae

Ginkgo-toothed beaked w
Cuvier's beaked w

Phocoenidae

Finless p

Delphinidae

Black fish

Killer w
Short-finned pilot w
False killer w
Pygmy killer w
Melon-headed w

Less Snout

Rough-toothed d
Fraser's d
Risso's d

Prominent beak

Spinner d
Striped d
Spotted d
Common d

Coastal

Bottlenose d
Humpback d
Irrawaddy d



Delphinidae (Black fish)

Killer w

Short-finned pilot w

False killer w

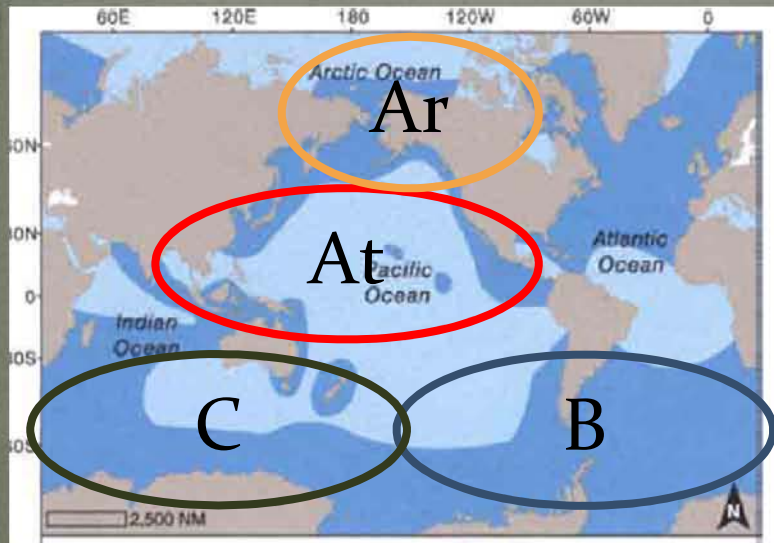
Pygmy killer w

Melon-headed w

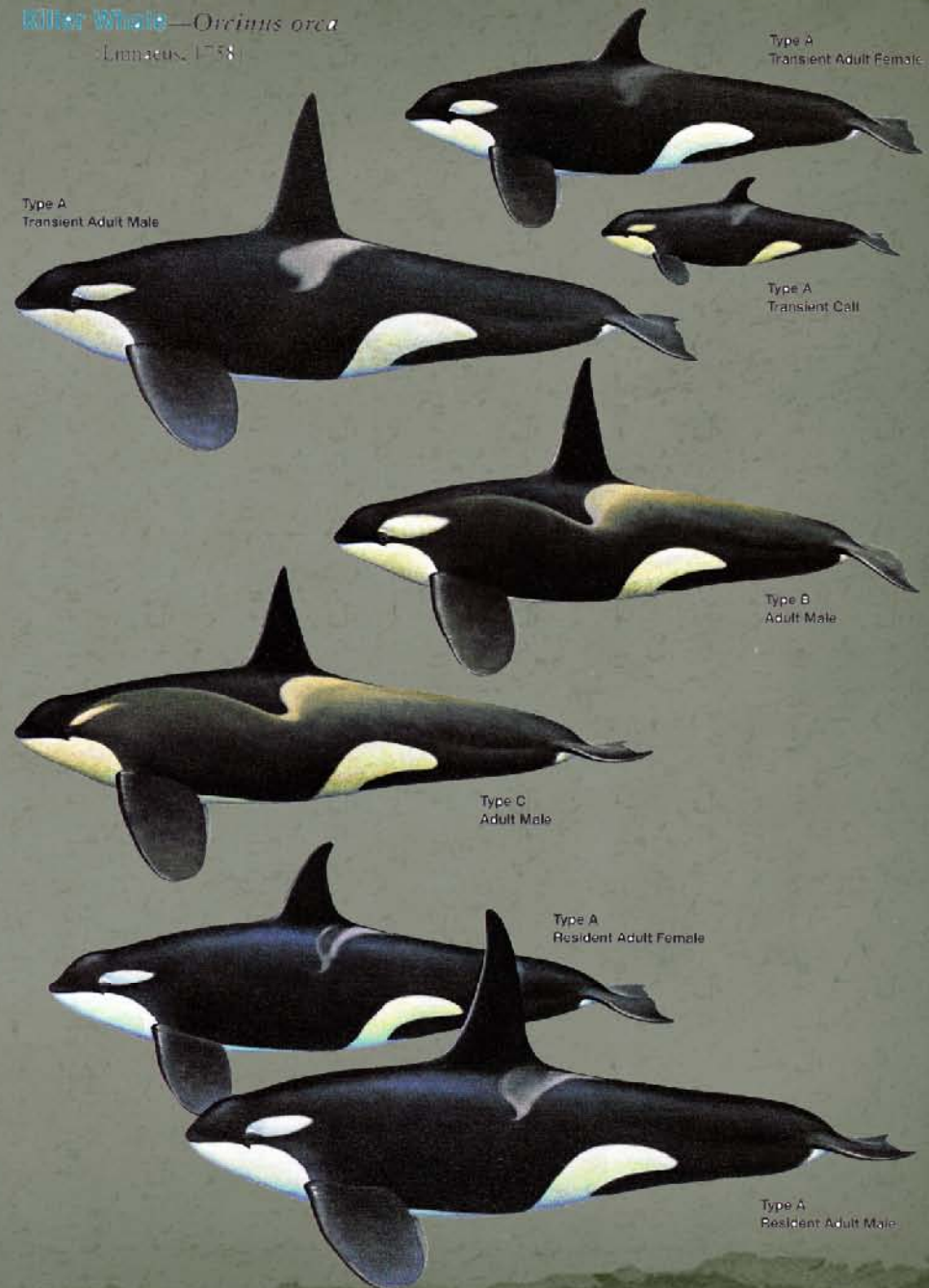
Killer whale

Orcinus orca

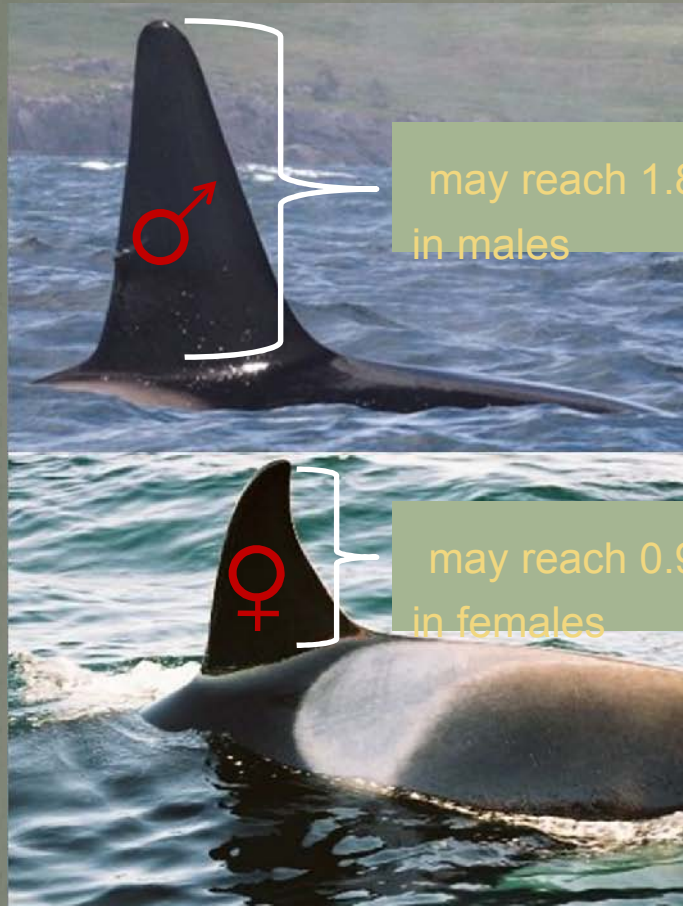
- M 10 m, F 8 m, NB 2.1-2.6 m
- Geographic forms
 - A transient
 - A resident
 - B
 - C



Killer Whale—*Orcinus orca*
—Linnaeus, 1758

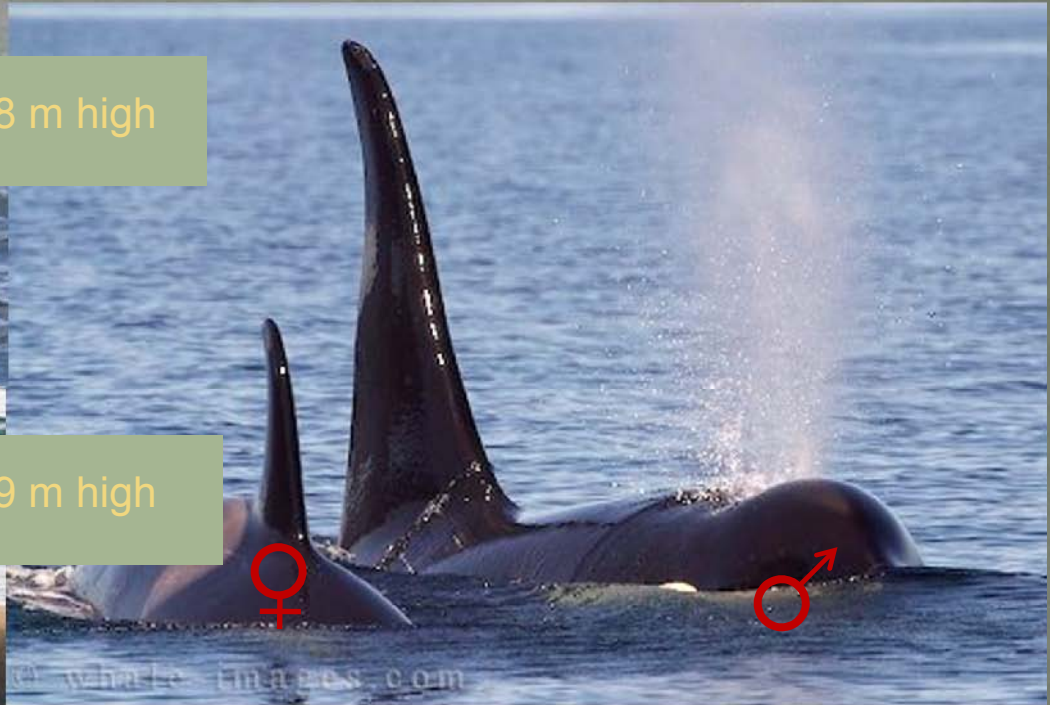


Sex Differentiation



may reach 1.8 m high
in males

may reach 0.9 m high
in females



© whale-images.com

Killer whale

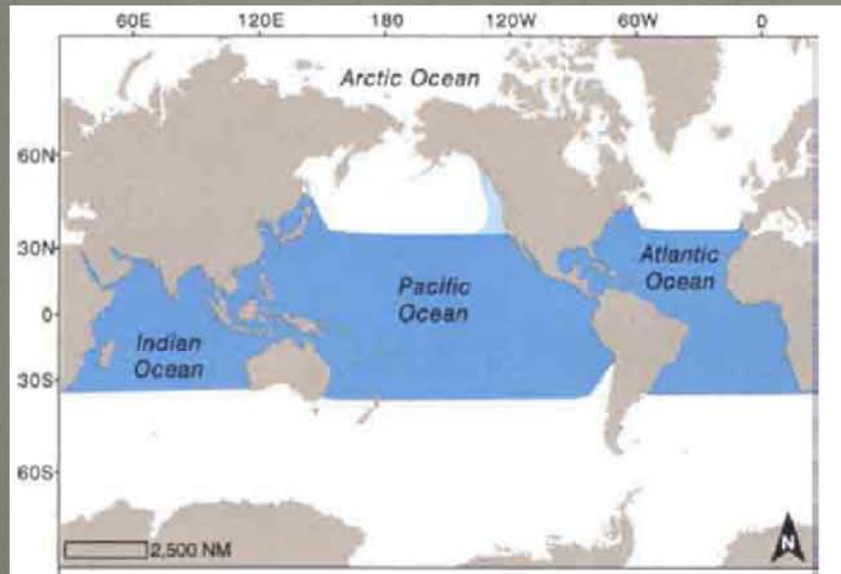
Occurrence

- 10 sighting records
- Surin 2002-2007, Richelieu 2000-2008, Similan 1993, Tachai 2006, Maiton 1994, Racha 1997
- Ko Tao 1995



Short-finned Pilot Whale

Globicephala macrorhynchus



- bulbous head
- The dorsal fin situated 1/3 of the way back from the head
- Low, falcate, very wide base
- 7-9 short, sharply pointed teeth in each tooth row
- M 7 m, F 5.5 m, newborn 1.4-1.9 m
- mass stranding

Short-finned Pilot Whale

Occurrence

- 2001, 2 records in Narathiwat and Nakorn
- 2010, 1 record in Nakorn

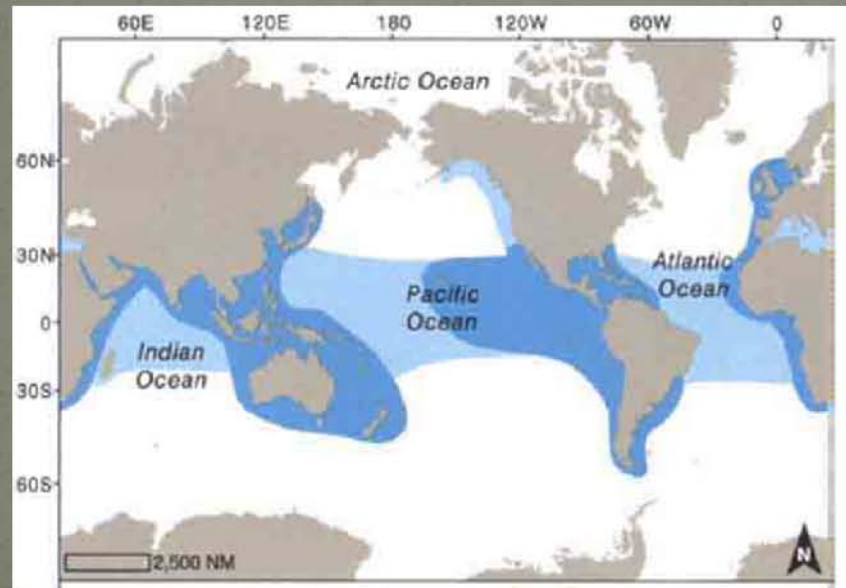


False killer whale

Pseudorca crassidens



- Each jaw contains 7-12 pairs of large conical teeth
- M 6 m, F 5 m, newborns are 1.5-2.1 m
- mass stranding



False killer whale

Occurrence



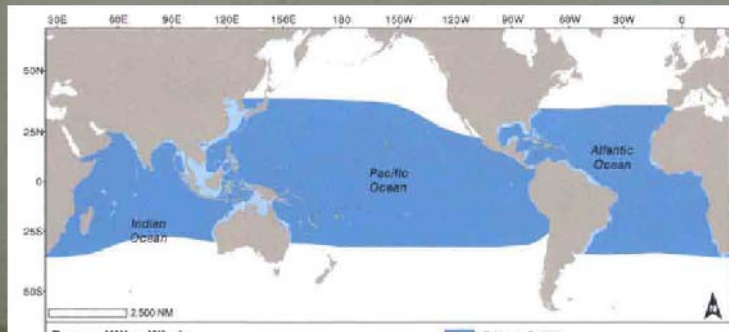
Pygmy Killer & Melon-headed Whales

Pygmy Killer Whale

Peresca attenuata



- 8-13 pairs of large teeth
- Rounded tip flipper
- 2.6 m Adult

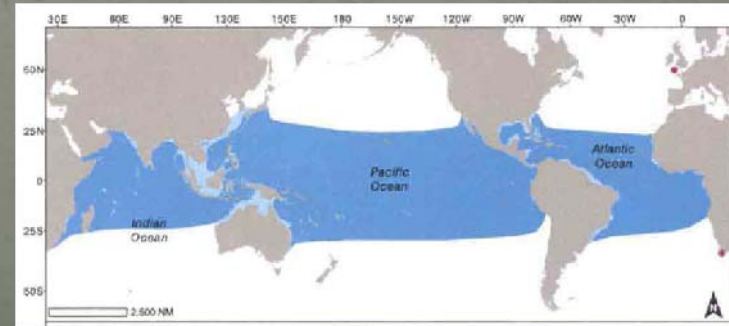


Melon-headed Whale

Peponocephala electra



- 20-25 pairs of small slender teeth
- Pointed tip flipper
- 2.7 m Adult



Pygmy Killer Whale

Occurrence

- 1996, 2 records in Trang
- 2003, 2 record in Petchburi



Melon-headed Whale

Occurrence

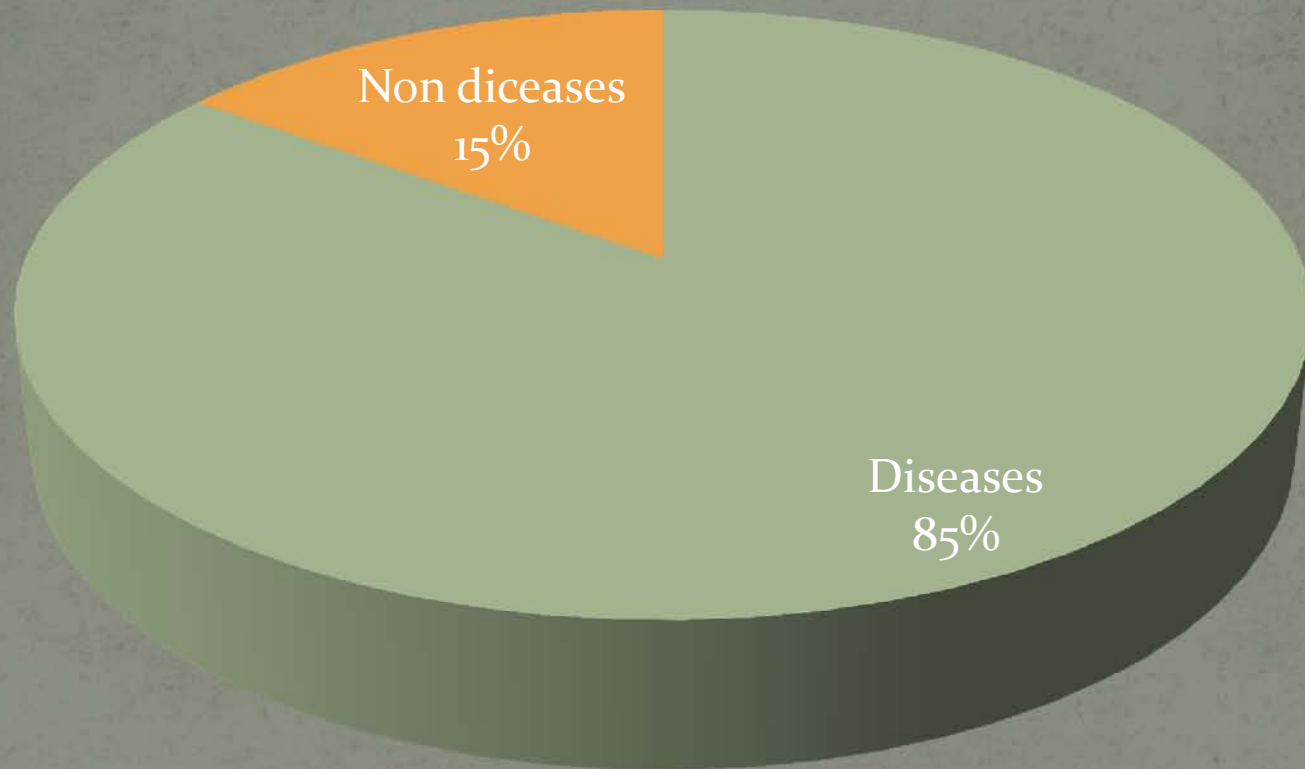
- 1973, 1 record in Songkhla
- 1998, 1 record in Choburi



Status and Threats

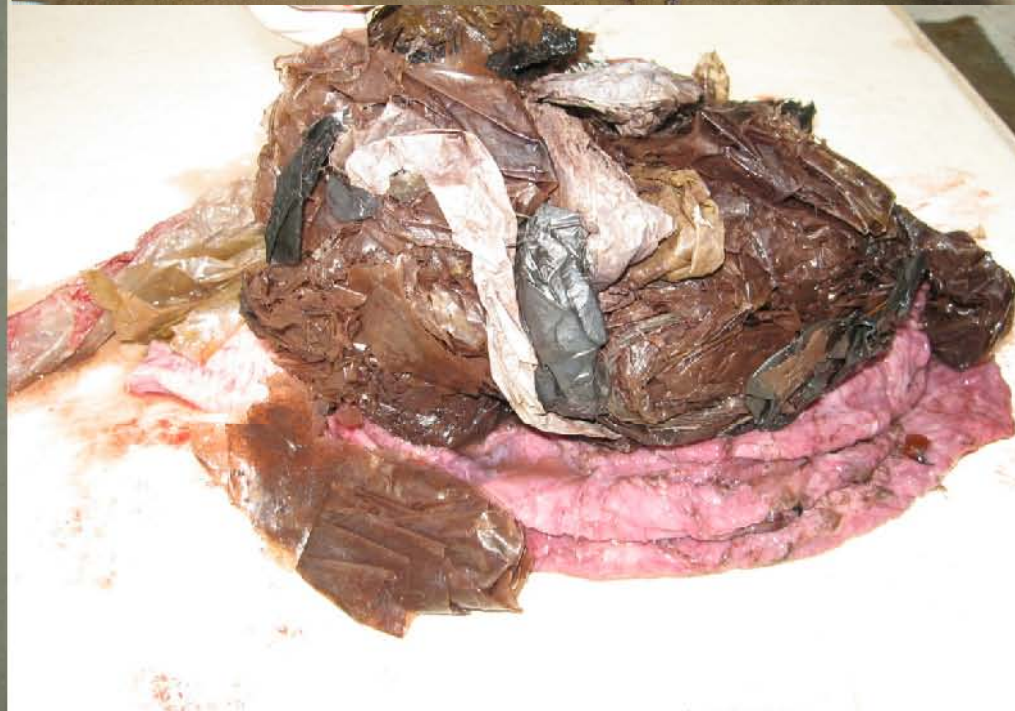
กลุ่มโลมาและปลาวาฬพื้นที่รับผิดชอบ	อ่าว ไทยตอนบน	อ่าว ไทยตอนกลาง	อ่าวไทย ตอนล่าง	อ่าวไทยฝั่ง ตะวันออก	ทะเลอันดามัน	รวมรายการกลุ่มโลมาและ ปลาวาฬ
โลมาปากขวด		6	15	5	30	56
		ปกติ	ปกติ	ปกติ	ปกติ	
โลมาหัวบาตรหลังเรียบ	35	41	25	30	40	171
	ปกติ	ปกติ	ปกติ	ปกติ	ปกติ	
โลมาหลังโหนก	5	63	45	30	60	203
	ปกติ	ปกติ	ปกติ	ปกติ	ลดลง	
โลมากลุ่มสตีเนลลา					90	90
					ปกติ	
โลมาอิรวดี	90	31	20	155	25	321
	ปกติ	ปกติ	ลดลงมาก	เพิ่มขึ้น	ปกติ	
ปลาวาฬบรูด้า	5	3	2	1	7	18
	ปกติ	ปกติ	ปกติ	ปกติ	ปกติ	
รวมตามพื้นที่รับผิดชอบ	135	144	107	221	252	859

Causes of cetacean stranding





Dwarf sperm whale
Patong, Phuket



Sea garbage



Bryde's whale calf
Trang



Net

Thank you

