Sweden. Progress report on cetacean research, May 2007-April 2008, with statistical data for the *calendar year* 2007.

COMPILED BY

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1. SPECIES AND STOCKS STUDIED

| IWC common name | IWC recommended scientific name | Area/stock(s) | Items referred to |
|------------------------------------|---------------------------------|---|-------------------|
| Harbour porpoise | Phocoena phocoena | Skagerrak, Kattegat, Öresund, Baltic Sea | 2.1.1, 2.1.2, 2.2 |
| Humpback whale | Megaptera novaeangliae | North Atlantic; Zanzibar, Tanzania | 3.1.1, 4.4 |
| Indo-Pacific Bottlenose dolphin | Tursiops aduncus | Zanzibar, Tanzania | 3.1.1 |
| Indo-Pacific Humpback dolphin | Sousa chinensis | Zanzibar, Tanzania | 3.1.1 |

2. SIGHTINGS DATA

2.1 Field work

SU(Z) in collaboration with the Danish National Environmental Research Institute conducted six bimonthly (January – November 2007) acoustic surveys of harbour porpoises in the Skagerrak, Kattegat, Danish Belt Seas & Öresund. The objectives were to test hypothesis regarding important areas for harbour porpoises and to initiate population level monitoring.2.1.2 Opportunistic, platforms of opportunity

| Primary species | Area | Data type/method | Collected by | Platform | Location of archive (if applicable) | Contact person/institute and refs |
|---------------------|--|---------------------|-----------------------------------|-------------------------------|-------------------------------------|--------------------------------------|
| Harbour porpoise | Swedish waters (The Skagerrak, Kattegat and the Baltic Sea | Sightings | The public via a webpage | Boats, ferry and from land | NRM, <u>www.gbif.se</u> | Anna.roos@nrm.se |

2.2 Analyses/development of techniques

| Target species | Date | Area | Methods/effort | Parameters/ factors measured | Contact person/institute; refs |
|---------------------|-------------------------------------|--|---|---|--|
| Harbour porpoise | August 2007 | Inner Danish waters | Static acoustic porpoise detectors | Max detection range, detection probability | M. Amundin, KD/LU Report to Swedish Environment Protection Agency |
| Harbour porpoise | July 2006 – September 2007 | Souther Swedish waters (Skåne, Blekinge) | Survey using static acoustic porpoise detectors | Positive porpoise days = days with an acoustic detection of porpoise sonar | M. Amundin, KD/LU report to Swedish Board of fisheries |

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

SU(Z) conducted photo-id boat surveys of humpback whales off the south coast of Zanzibar, Tanzania, in September 2007.

SU(Z) in collaboration with Sea Mammal Research Unit, University of St. Andrews, Scotland, conducted photoid and acoustic (dolphin whistles recordings) boat surveys of Indo-Pacific bottlenose dolphins off the south and north coasts of Zanzibar, Tanzania, between January and March 2008.

| Species | Feature | Area/stock | No. photo- id'd | Catalogue (Y/N) | Catalogue total | Contact person/institute; refs |
|-------------------------|------------------|------------|--------------------|--------------------|--------------------|--------------------------------------|
| I.P. Bottlenose dolphin | Dorsal fin/body | Zanzibar | 100+ | Ν | 170 | P. Berggren, SU |
| I.P. Humpback dolphin | Dorsal fin/body | Zanzibar | 25+ | N | 70 | P. Berggren, SU |
| Humpback whale | Fluke/dorsal fin | Zanzibar | 6 | Y | 33 | P. Berggren, SU |

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

| | n bycatches | | | | | |
|------------------|-------------|-------------------------------------|-----|--------|----------|--------------------------|
| Species | Area/stock | Tissue type(s)* | No | Archiv | No. | Contact person/institute |
| - | | | | ed | analysed | _ |
| | | | col | (Y/N) | | |
| Harbour porpoise | Skagerrak | Blubber, muscle, liver, kidney, etc | 2 | Y | | NRM |
| | | | | | | Anna.Roos@nrm.se |
| Harbour porpoise | Kattegat | Blubber, muscle, liver, kidney, etc | 2 | Y | | NRM |
| | | | | | | Anna.Roos@nrm.se |

4.2 Samples from bycatches

4.3 Samples from stranded animals

| Species | Area/stock | Tissue type(s)* | No. collected | Ar chi | No. analysed | Contact person/institute |
|------------------|------------|------------------------------------|------------------|-----------|-----------------|-----------------------------|
| Harbour porpoise | Skagerrak | Blubber, muscle, liver, kidney etc | 1 | Y | | NRM Anna.Roos@nrm.se |
| Harbour porpoise | Kattegat | Blubber, muscle, liver, kidney etc | 20 | Y | | NRM |
| Harbour porpoise | Öresund | Blubber, muscle, liver, kidney etc | 8 | Y | | NRM |
| Harbour porpoise | The Baltic | Blubber, muscle, liver, kidney etc | 2 | Y | | NRM |

4.4 Analyses/development of techniques

Genetic analysis of mt control region DNA sequences, sex, and microsatellite loci in 3500 humpback samples (SU(GMT))

Analysis of mtDNA control region sequences in harbour porpoises (NRM).

7. STATISTICS FOR SMALL CETACEANS

7.3 Anthropogenic mortality of small cetaceans for the calendar year 2007

7.3.2 Fishery bycatch of small cetaceans

| Species | Sex | No. | Date | Location | Fate | Targeted fish species | Gear | How observ | Source or contact |
|---------------------|-----|-----|--------|-----------|------|-----------------------|------|---------------|-------------------|
| Harbour porpoise | | 1 | 070208 | Skagerrak | D | Gadus morhua | TBB | | anna.roos@nrm.se |
| Harbour porpoise | | 2 | 070421 | Kattegat | D | Gadus morhua | GN | | anna.roos@nrm.se |

8. STRANDINGS

An unusual high number of strandings occurred concurrently with a n epidemic affecting harbour seals, and the porpoises appeared to have similar symptoms. Veterinary and virological investigations are carried out.

| Species | No. strandings | No. post mortems | Contact person(s)/ Institute(s) | Contact email address(es) |
|------------------|-------------------|---------------------|---------------------------------|---------------------------|
| Harbour porpoise | 40 | | Anna Roos, NRM | anna.roos@nrm.se |

9. OTHER STUDIES AND ANALYSES

SU(Z): A five month pinger experiment (August-December 2007) was conducted on the drift-and bottom set gillnet fishery in the Menai Bay Conservation area off the south coast of Zanzibar. In this study a sub-set of the driftnets and bottom set nets were equipped with pingers and a similar number of non-equipped nets were used as controls. We purchased 70 pingers from Fumunda (FMDP-2000) which were shipped in January and delivered to Zanzibar in May 2007. One pinger was attached to the float line of the nets every 100m. Eight

observers were randomly placed on 21 drift gillnet vessels and two observers were used to monitor the bottomset gillnet vessels. Two beach recorders, one in each village, recorded fishing effort and other information from the remaining vessels which did not have observers. The observers collected data on fishery practice, target fish catch and bycatch in order to allow comparisons between nets equipped with pingers and control nets without pingers. Observers monitored 25% of the fishing effort using drift gillnets and 30% of the fishing effort for bottom-set gillnets. During the five month trial, one Indo-Pacific bottlenose dolphin and one spinner dolphin were caught in the control drift gillnets without pingers and none was caught in the drift gillnets equipped with pingers. No dolphin was caught in the control nets. The results indicate that pingers were effective at mitigating dolphin bycatch and further that bycatch rates in the control nets were lower than that recorded during the observer programme conducted in 2003-2004 (Berggren et al. 2007). The final analysis and comparisons will be conducted after the completion of the second phase (January- May 2008) of the experiment.

11. PUBLICATIONS

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Cockroft, V.G. 2007. Sustainable Dolphin Tourism in East Africa. MASMA Technical Report. WIOMSA Book Series No 7, ix+72pp. <u>http://ww.wiomsa.org</u>

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Carlström, J., Berggren, P. and Tregenza N. (In Press). Spatial and temporal impact of pingers on porpoises. Can. J. Fish. Aquat. Sci.

Minton, G., Collins, T., Findlay, K., Ersts, P., Rosenbaum, H., Berggren, P. and Baldwin, R. (InPress). Seasonal distribution and population characteristics of humpback whales in Oman. Southern Hemisphere Humpback Whale Special Issue. J. Cet. Res. Manage.

Teilmann, J., Sveegaard, S., Dietz, R., Petersen, I.K., Berggren, P. & Desportes, G. 2008: High density areas for harbour porpoises in Danish waters. National Environmental Research Institute, University of Aarhus. 84 pp. – NERI Technical Report No. 657. http://www.dmu.dk/Pub/FR657.pdf

Appendix 1. FOA fishing descriptions and codes

| FAO FISHING GEAR CATEGORIE | S: | FALLING GEAR | |
|--------------------------------|-----|------------------------------|-----|
| SURROUNDING NETS | | Cast nets | FCN |
| With purse lines | PS | Falling gear (not specified) | FG |
| One-boat operated purse seines | PS1 | GILLNETS AND ENTANGLING GEAR | |

| Two-boat operated purse seines | PS2 | Set gillnets (anchored) | GNS |
|-------------------------------------|-----|--|-----|
| Without purse lines (lampara) | LA | Driftnets | GND |
| SEINE NETS | | Encircling gillnets | GNC |
| Beach seines | SB | Fixed gillnets (on stakes) | GNF |
| Boat seines | SV | Trammel nets | GTR |
| Danish seines | SDN | Combined gillnet-trammel nets | GTN |
| Scottish seines | SSC | Gillnets and entangling gillnets (not specified) | GEN |
| Pair seines | SPR | Gillnets (not specified) | GN |
| Seine nets (not specified) | SX | TRAPS | |
| TRAWLS | | Stationary uncovered pounds nets | FPN |
| Bottom trawls | TBB | Pots | FPO |
| Beam trawl | OTB | Fyke nets | FYK |
| Otter trawls (side or stern) | РТВ | Stow nets | FSN |
| Pair trawls | TBN | Barriers, fences, weirs, etc | FWR |
| Nephrops trawls | TBS | Aerial traps | FAR |
| Shrimp trawls (not specified) | ТМ | Traps (not specified) | FIX |
| Midwater trawls | | | |
| Otter trawls (side or stern) | OTM | HOOKS AND LINES | |
| Pair trawls | PTM | Handlines and pole-lines (hand operated) | LHP |
| Shrimp trawls | TMS | Handlines and pole-lines (mechanised) | LHM |
| Midwater trawls (not specified) | ТМ | Set longlines | LLS |
| Otter twin trawls | OTT | Drifting longlines | LLD |
| Otter trawls (not specified) | OT | Longlines (not specified) | LL |
| Pair trawls (not specified) | РТ | Trolling lines | LTL |
| Other trawls (not specified) | ТХ | Hooks and lines (not specified) | LX |
| DREDGES | | GRAPPLING AND WOUNDING | |
| Boat dredges | DRB | Harpoons | HAR |
| Hand dredges | DRH | HARVESTING MACHINES | |
| LIFT NETS | | Pumps | HMP |
| Portable lift nets | LPN | Mechanised dredges | HMD |
| Boat-operated lift nets | LNB | Harvesting machines (not specified) | HMX |
| Shore operated stationary lift nets | LNS | MISCELLANEOUS GEAR | MIS |
| Lift nets (not specified) | LN | RECREATIONAL FISHING GEAR | RG |
| | | GEAR NOT KNOWN OR NOT SPECIFIED | NK |
| | | SHARK CONTROL NETS | NSC |
| | | DERELICT FISHING GEAR | |