

Final Report

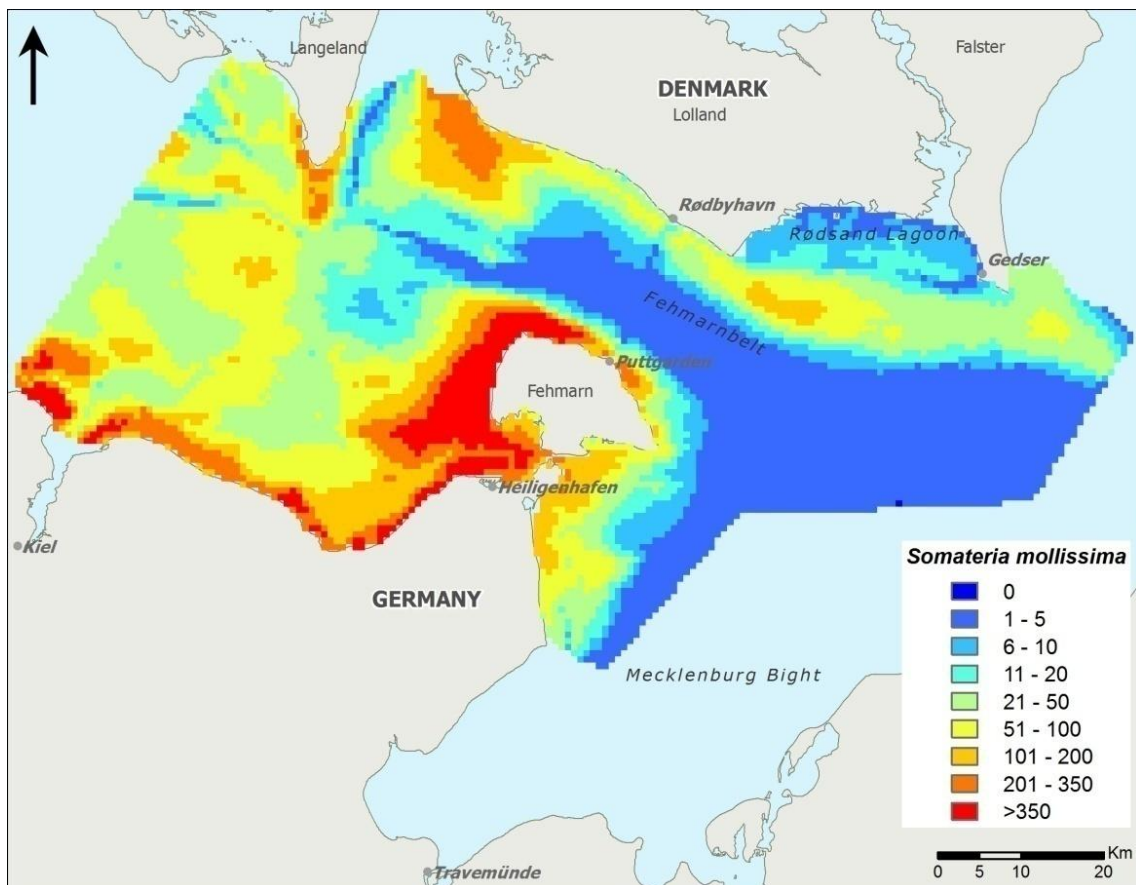
**FEHMARNBELT FIXED LINK
BIRD SERVICES (FEBI)**

Bird Investigations in Fehmarnbelt - Baseline

Waterbirds in Fehmarnbelt

E3TR0011 Volume II – Appendix II, Part II

Maps of aerial surveys in 2010



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Note to the reader:

In this report the time for start of construction is artificially set to 1 October 2014 for the tunnel and 1 January 2015 for the bridge alternative. In the Danish EIA (VVM) and the German EIA (UVS/LBP) absolute year references are not used. Instead the time references are relative to start of construction works. In the VVM the same time reference is used for tunnel and bridge, i.e. year 0 corresponds to 2014/start of tunnel construction; year 1 corresponds to 2015/start of bridge construction etc. In the UVS/LBP individual time references are used for tunnel and bridge, i.e. for tunnel construction year 1 is equivalent to 2014 (construction starts 1 October in year 1) and for bridge construction year 1 is equivalent to 2015 (construction starts 1st January).

1 APPENDIX II - WATERBIRDS IN THE FEHMARNBELT

1.1 Maps of aerial transect surveys 2010

1.1.1 Diver unidentified – *Gavia* spp.

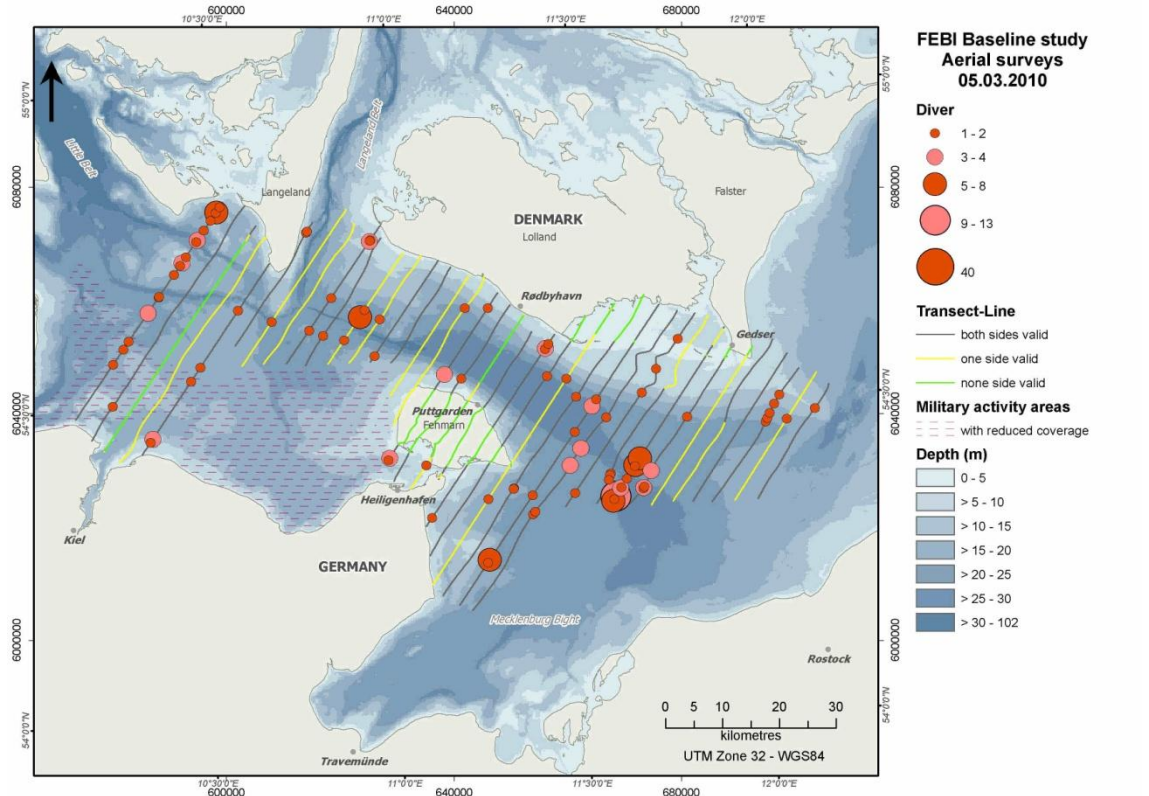


Figure 1.1 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (March 2010).

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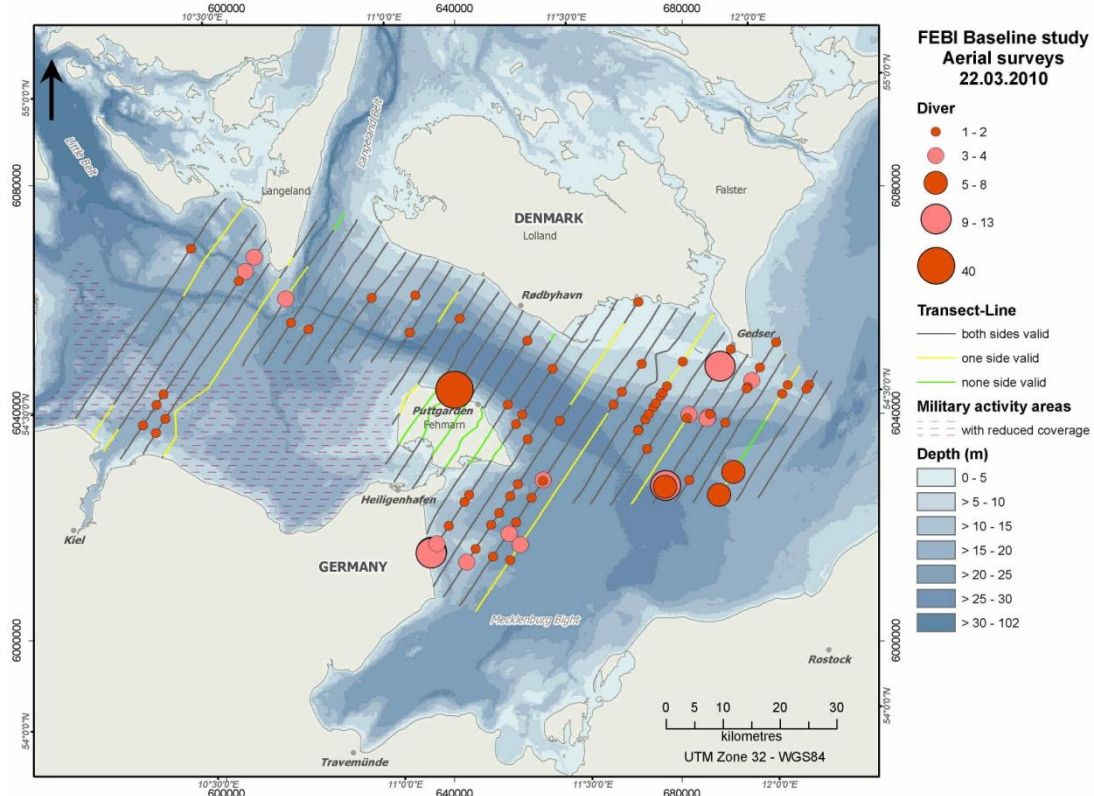


Figure 1.2 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (March 2010).

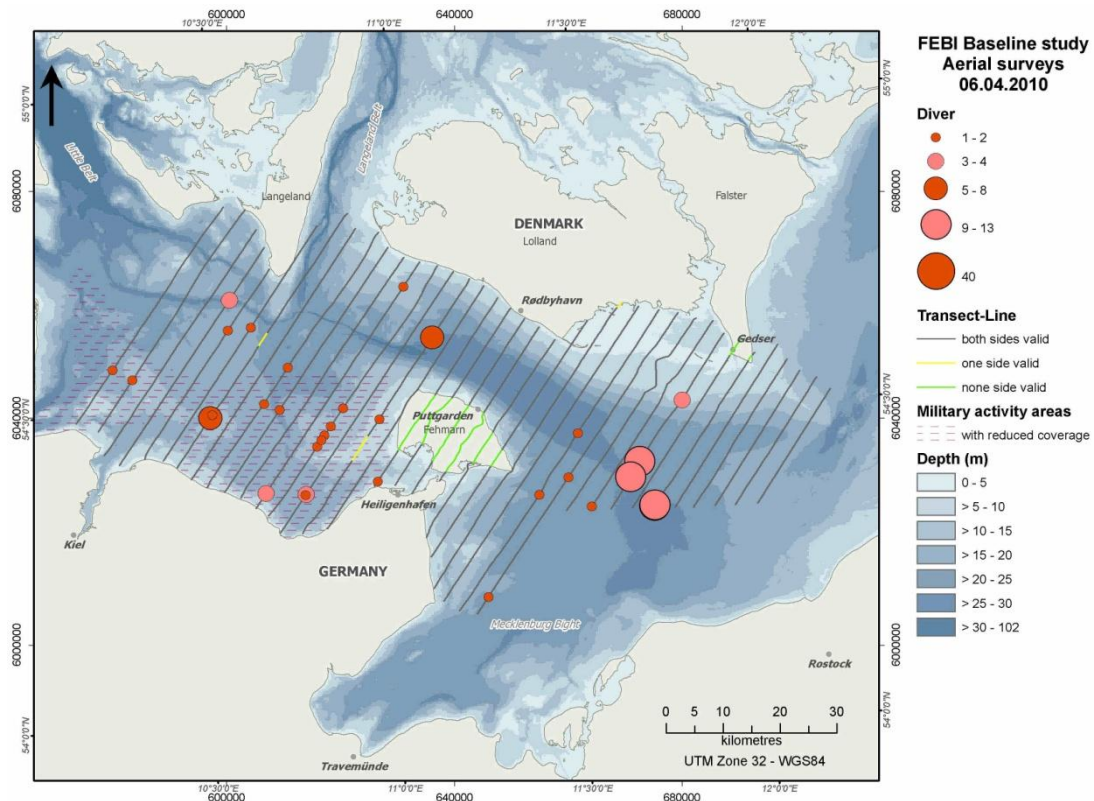


Figure 1.3 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (April 2010).

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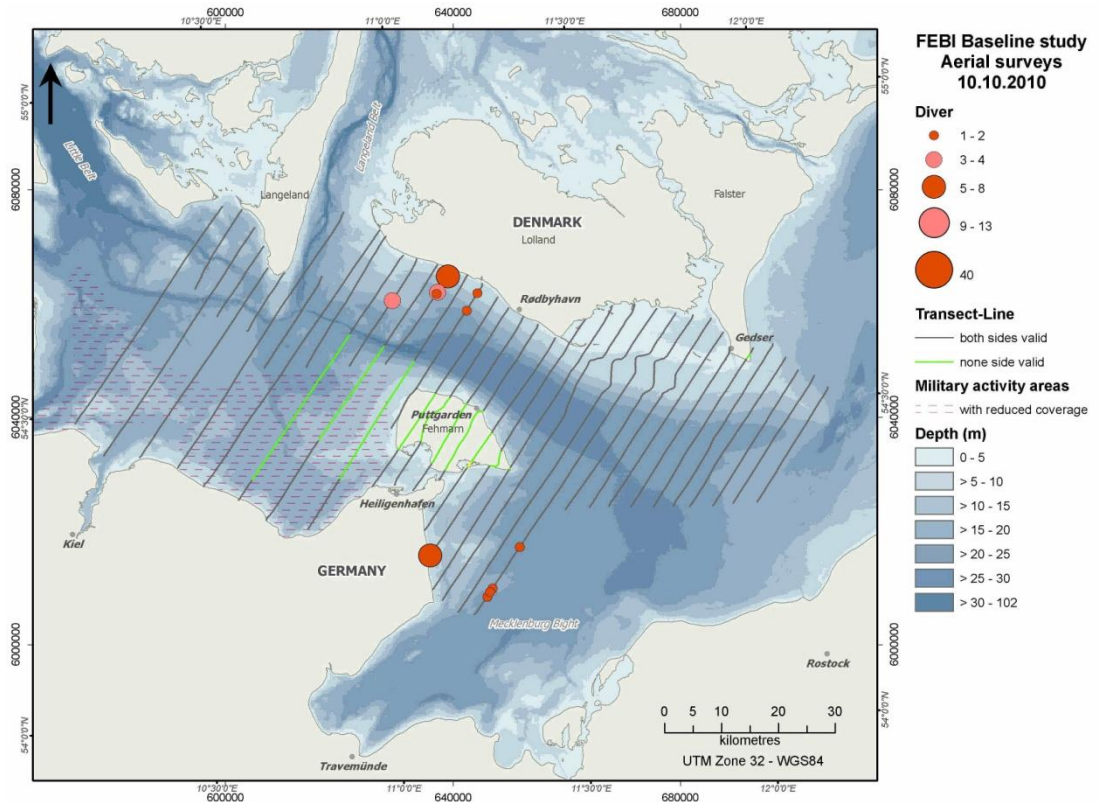


Figure 1.4 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (October 2010).

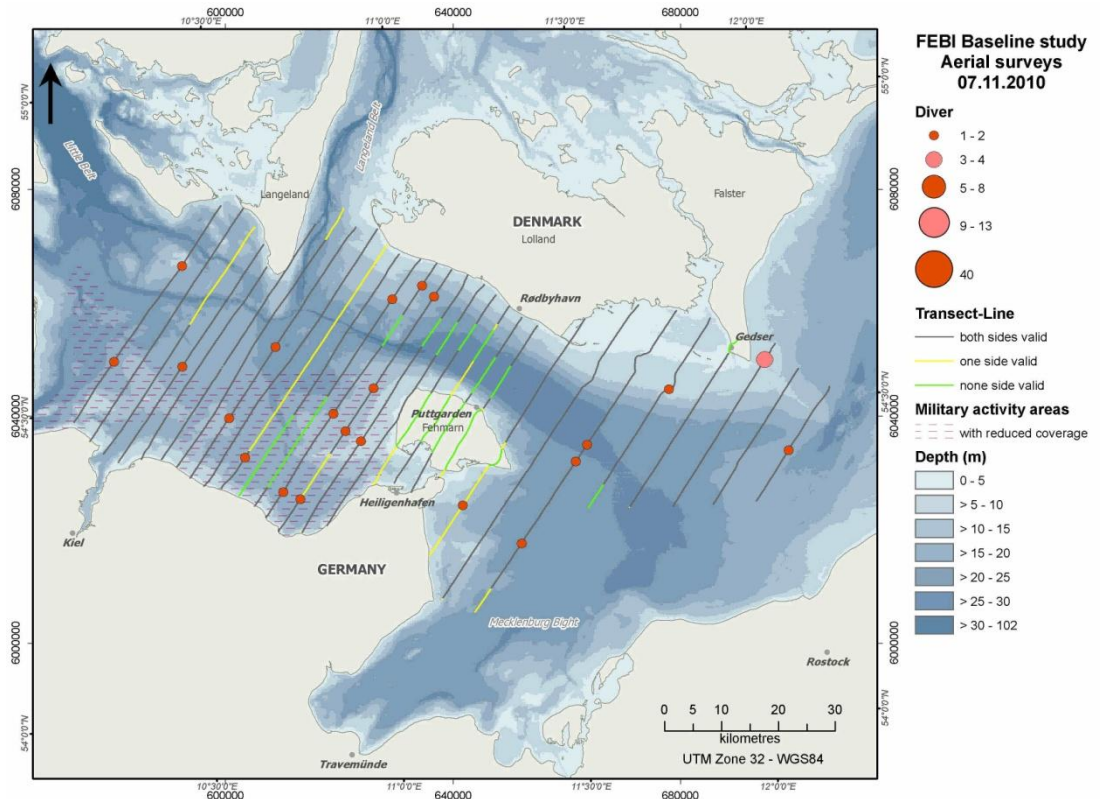


Figure 1.5 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (November 2010).

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1.1.2 Grebe unidentified – Podiceps spp.

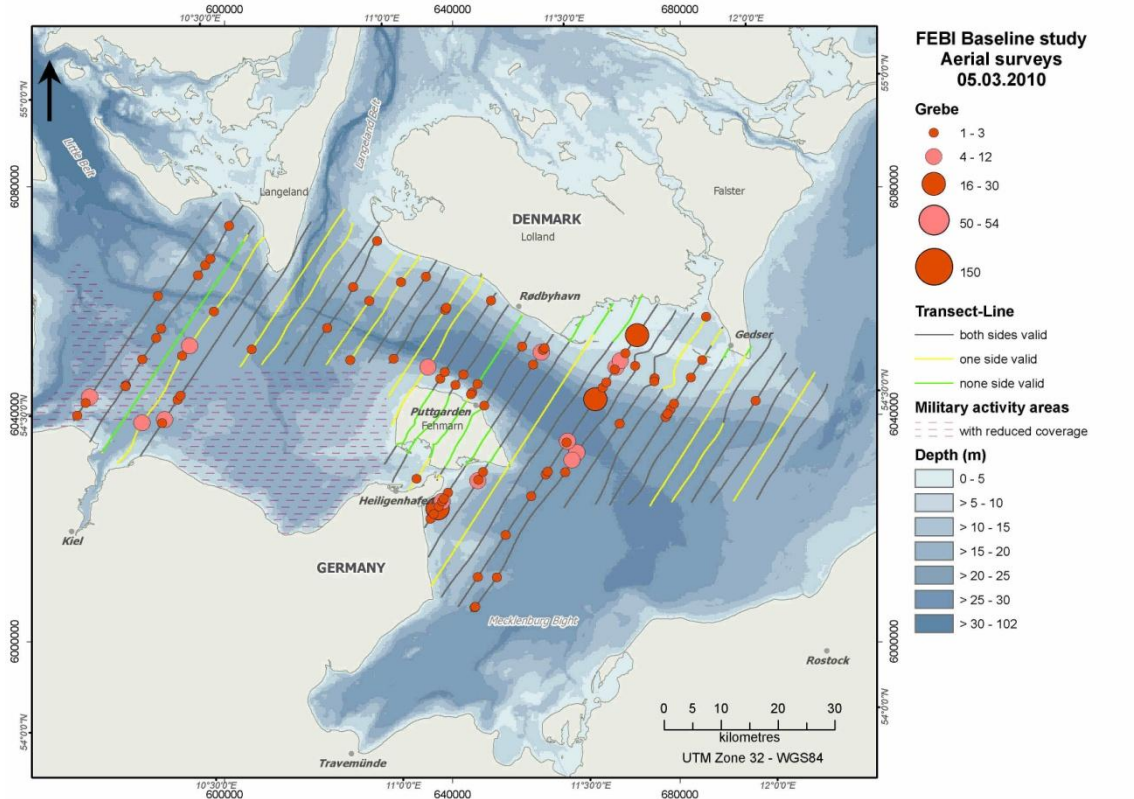


Figure 1.6 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (March 2010).

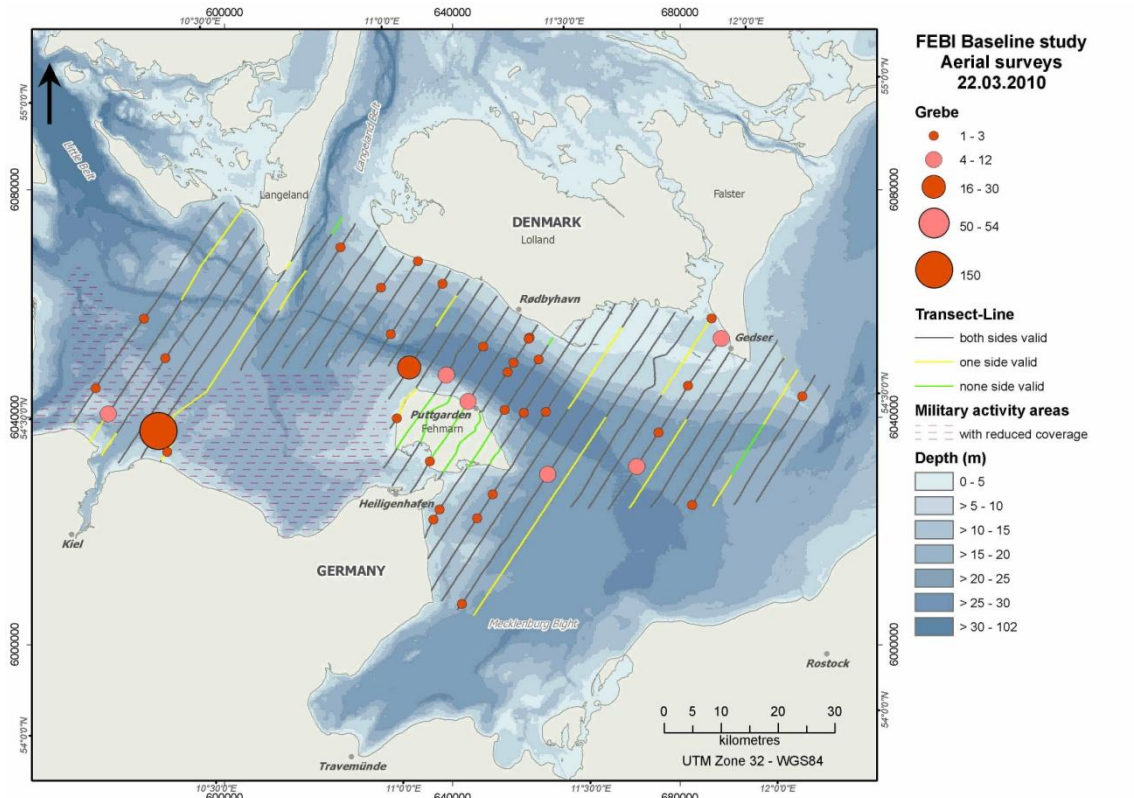


Figure 1.7 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (March 2010).

FEHMARNBELT BIRDS

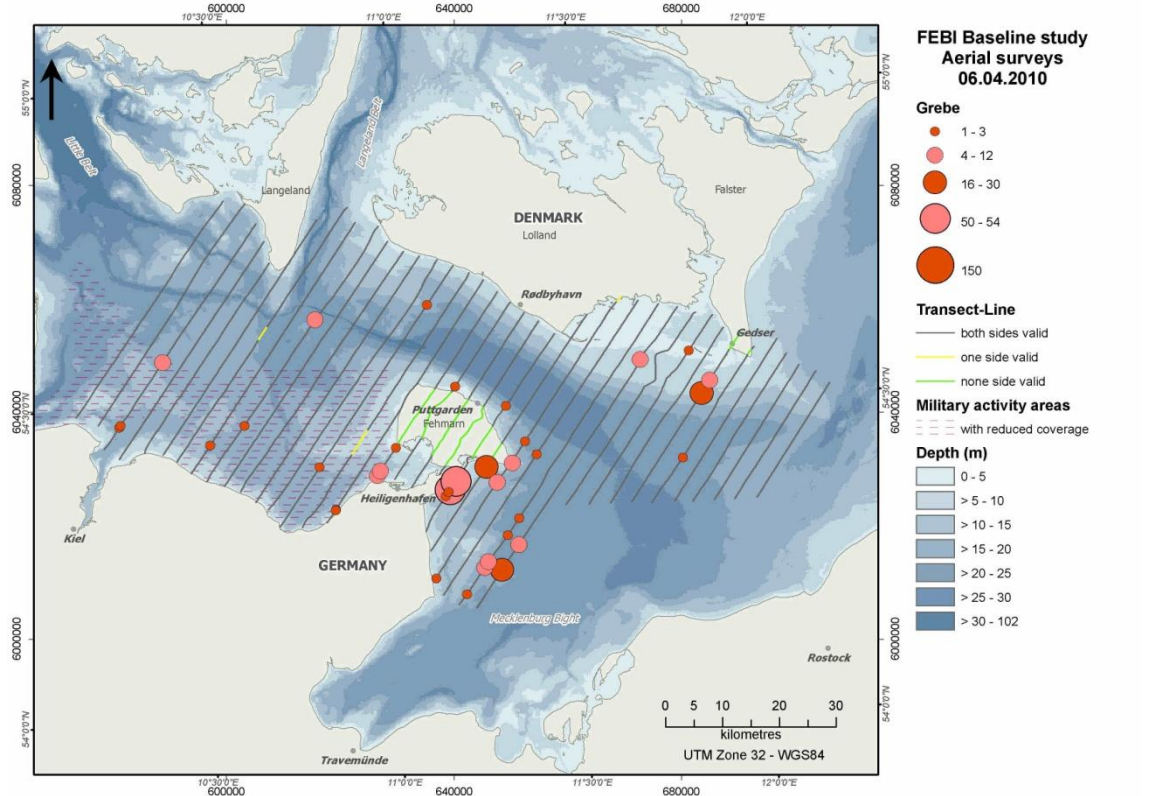


Figure 1.8 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (April 2010).

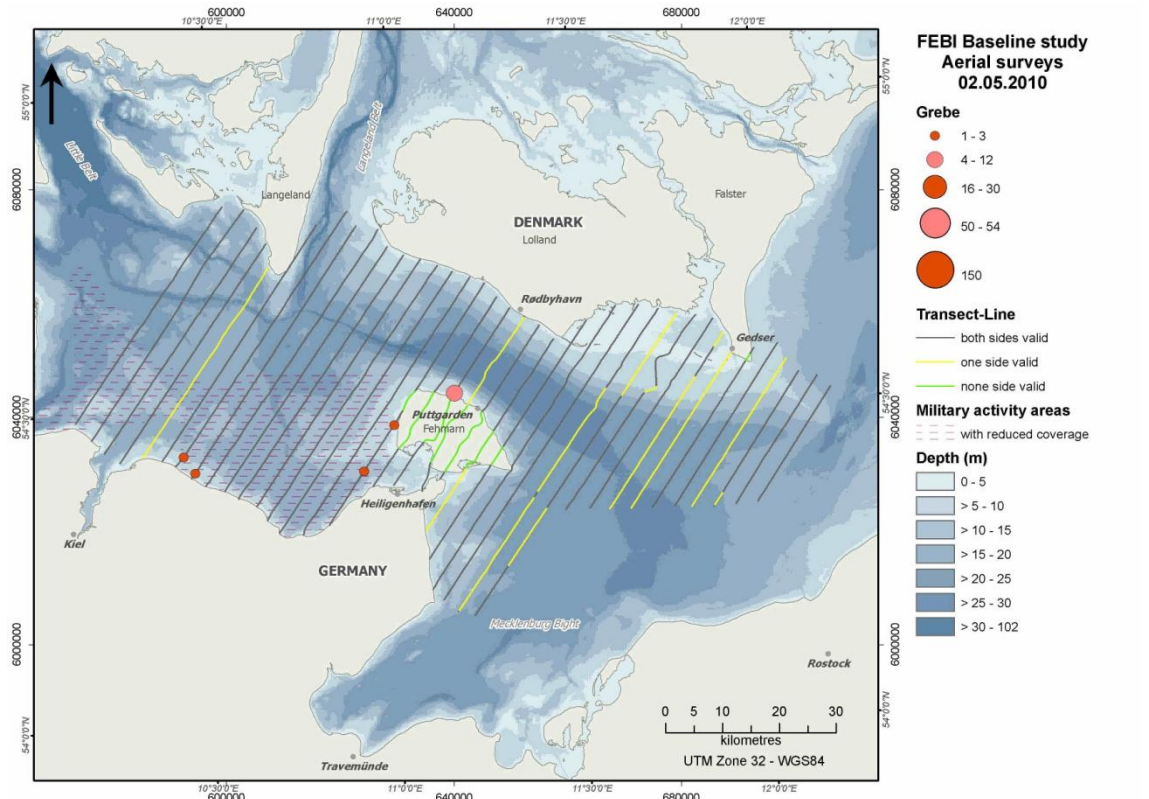


Figure 1.9 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (May 2010).

FEHMARNBELT BIRDS

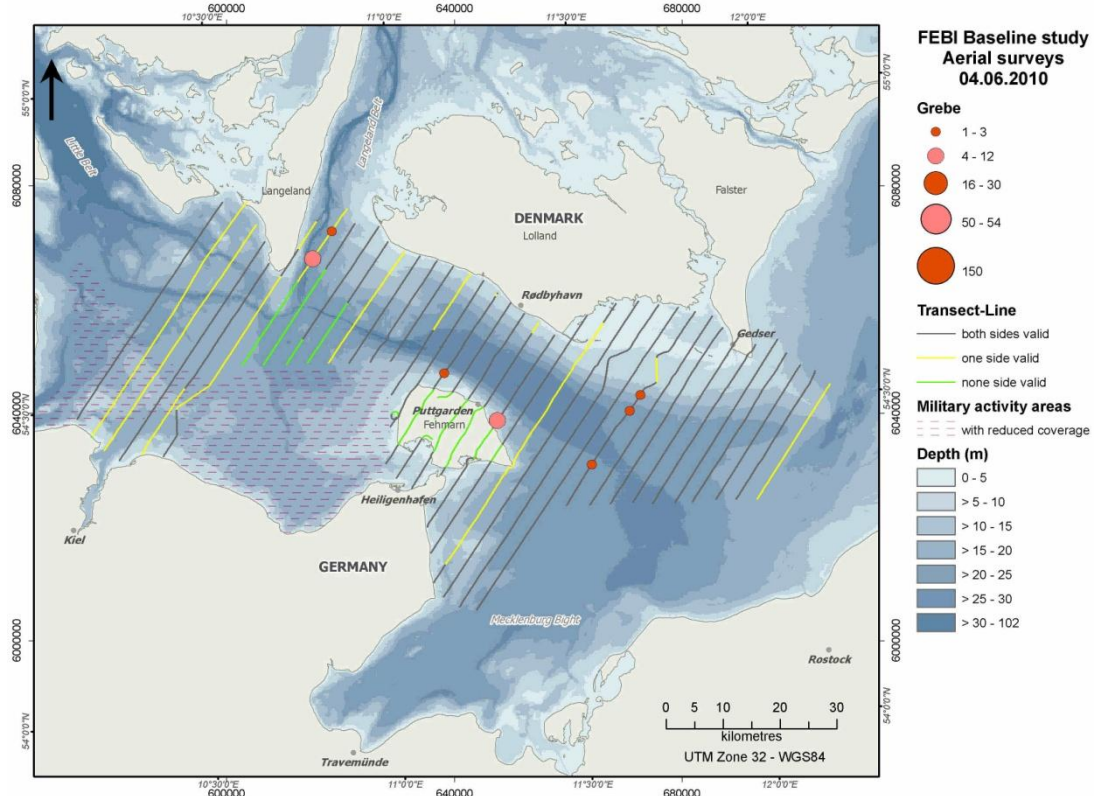


Figure 1.10 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (June 2010).

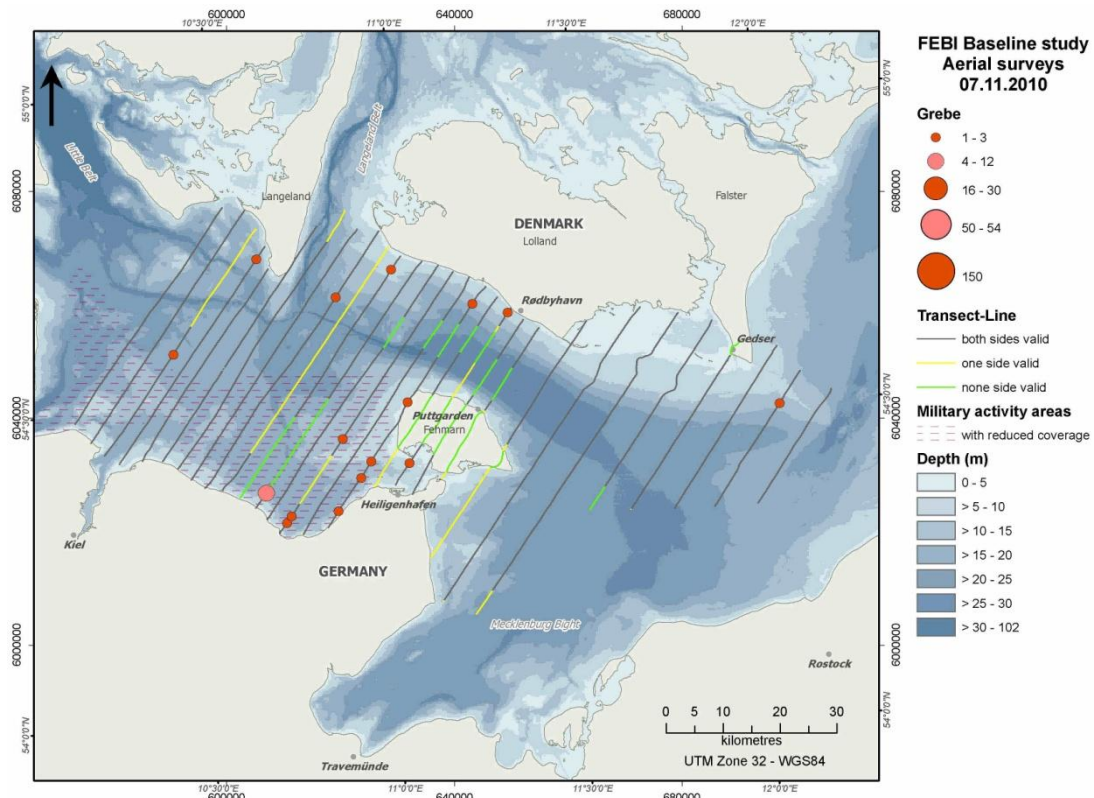


Figure 1.11 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (November 2010).

1.1.3 Great Cormorant – *Phalacrocorax carbo*

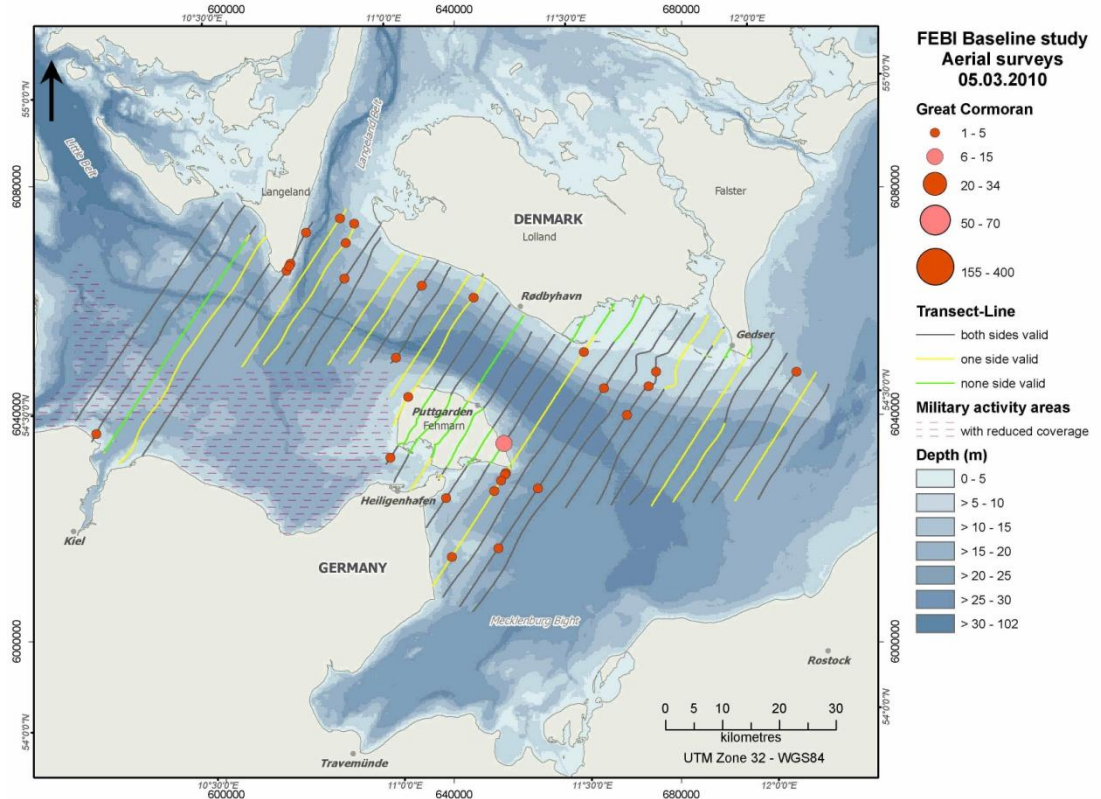


Figure 1.12 Great Cormorant distribution in the study area during aerial surveys (March 2010).

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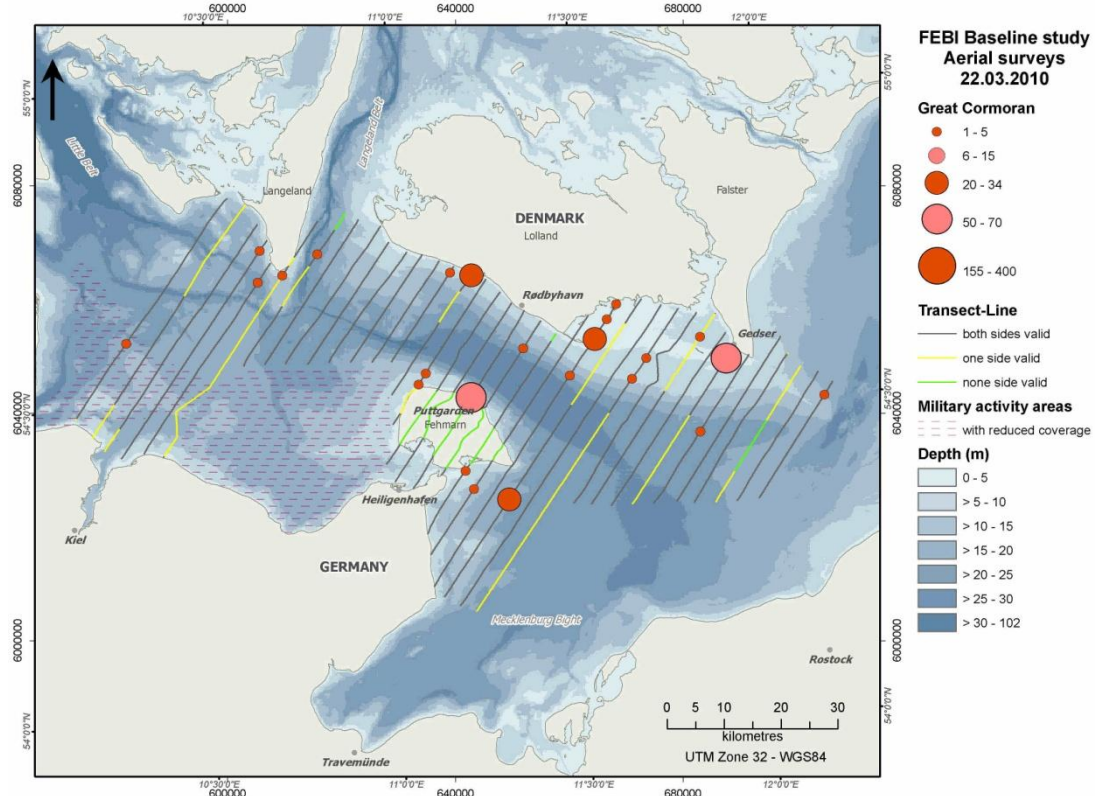


Figure 1.13 Great Cormorant distribution in the study area during aerial surveys (March 2010).

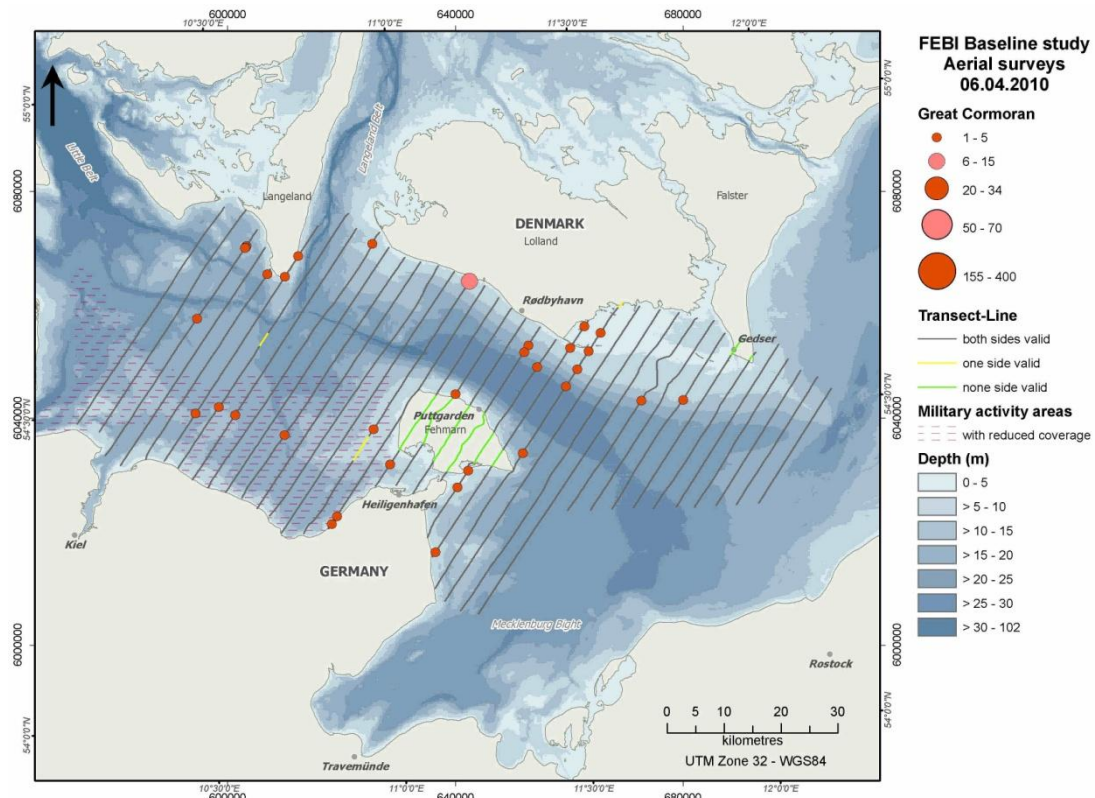


Figure 1.14 Great Cormorant distribution in the study area during aerial surveys (April 2010).

FEHMARNBELT BIRDS

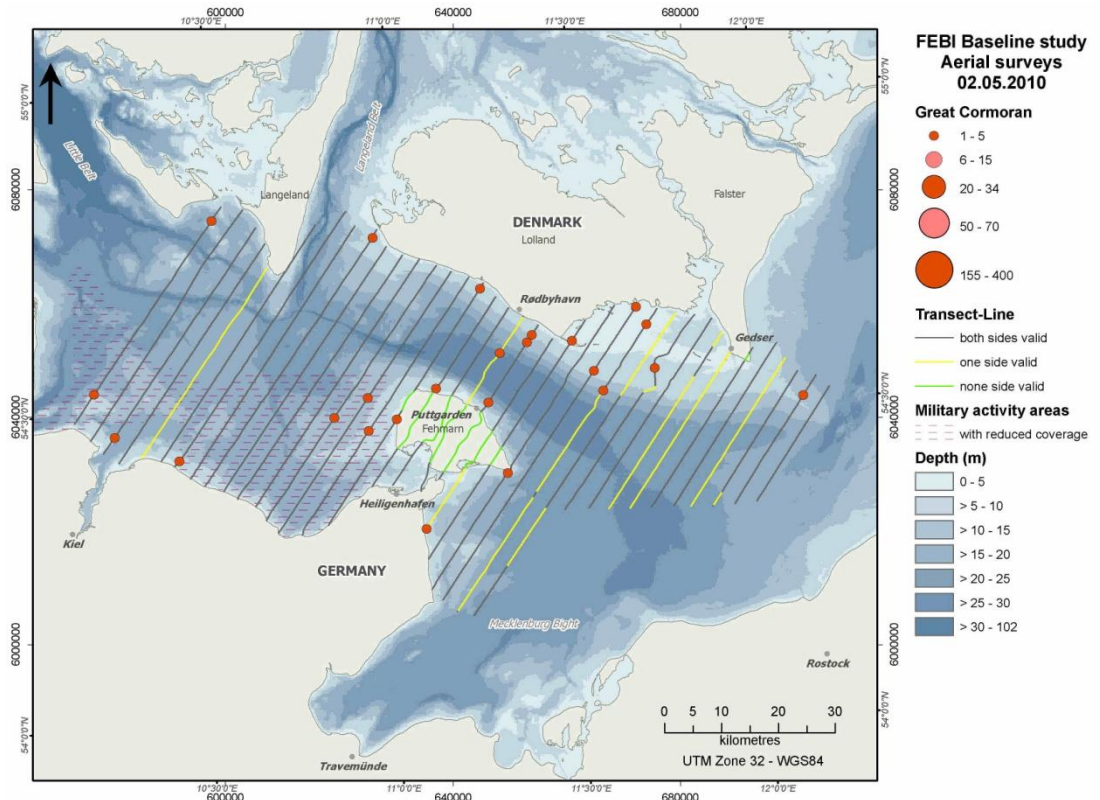


Figure 1.15 Great Cormorant distribution in the study area during aerial surveys (May 2010).

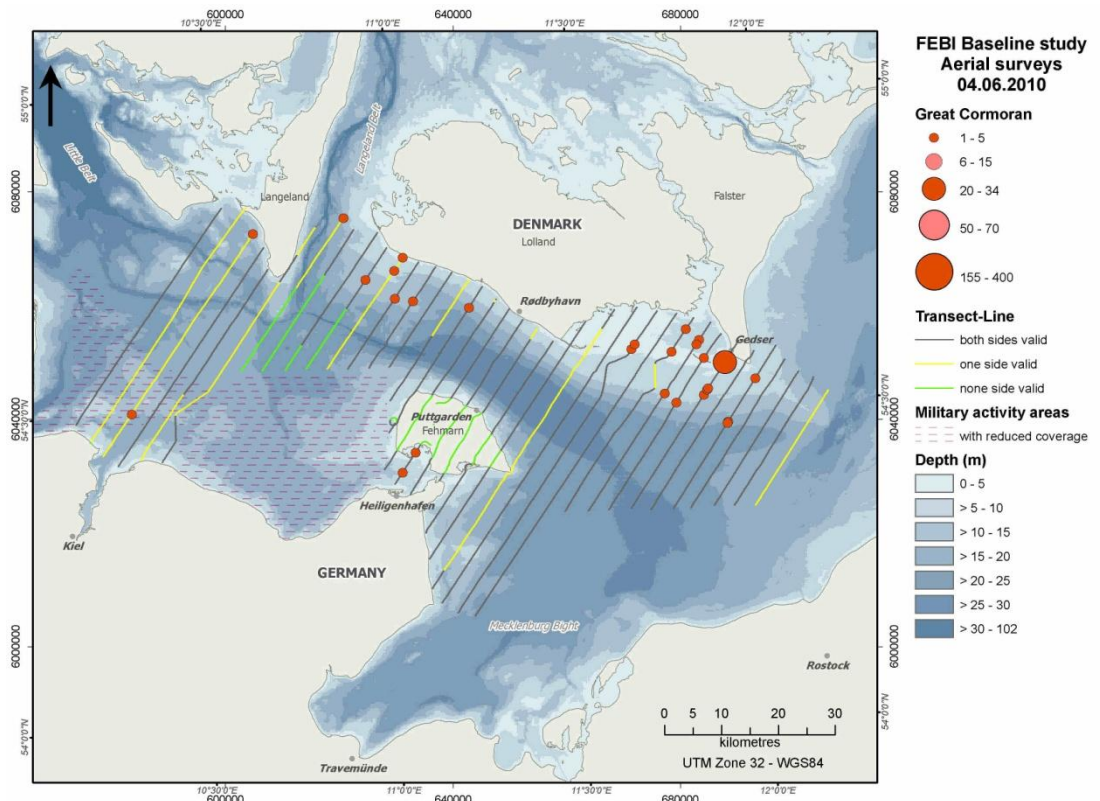


Figure 1.16 Great Cormorant distribution in the study area during aerial surveys (June 2010).

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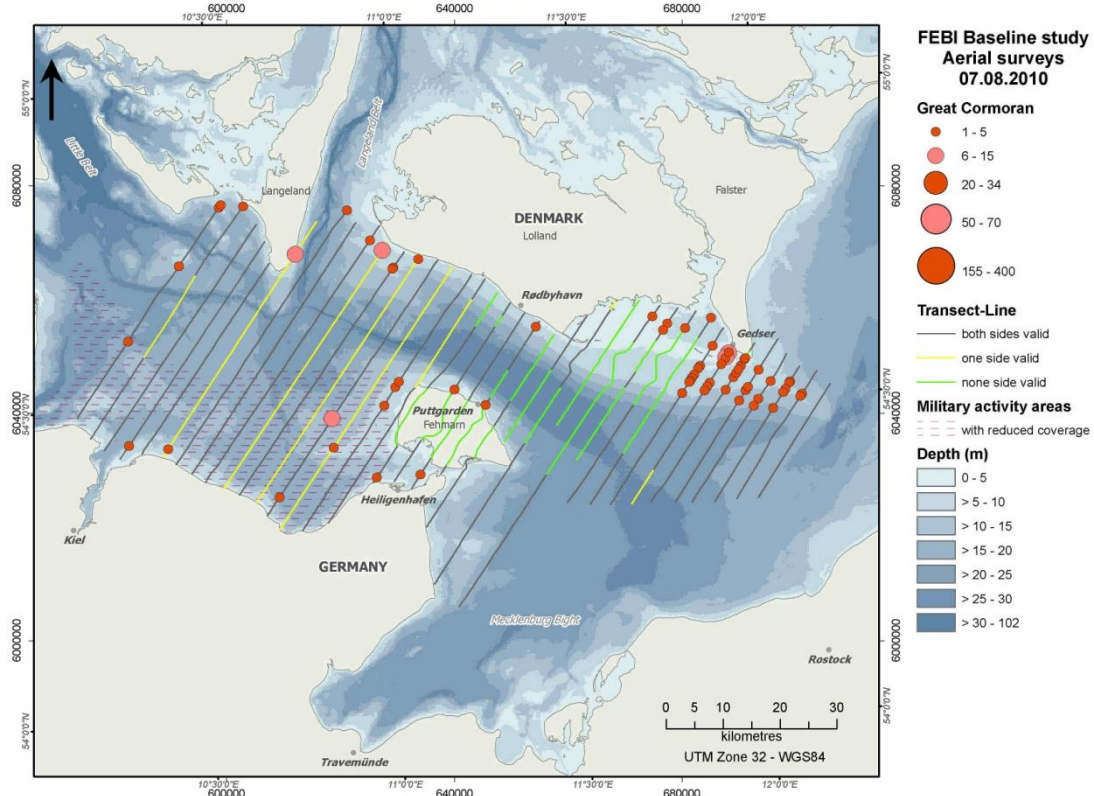


Figure 1.17 Great Cormorant distribution in the study area during aerial surveys (August 2010).

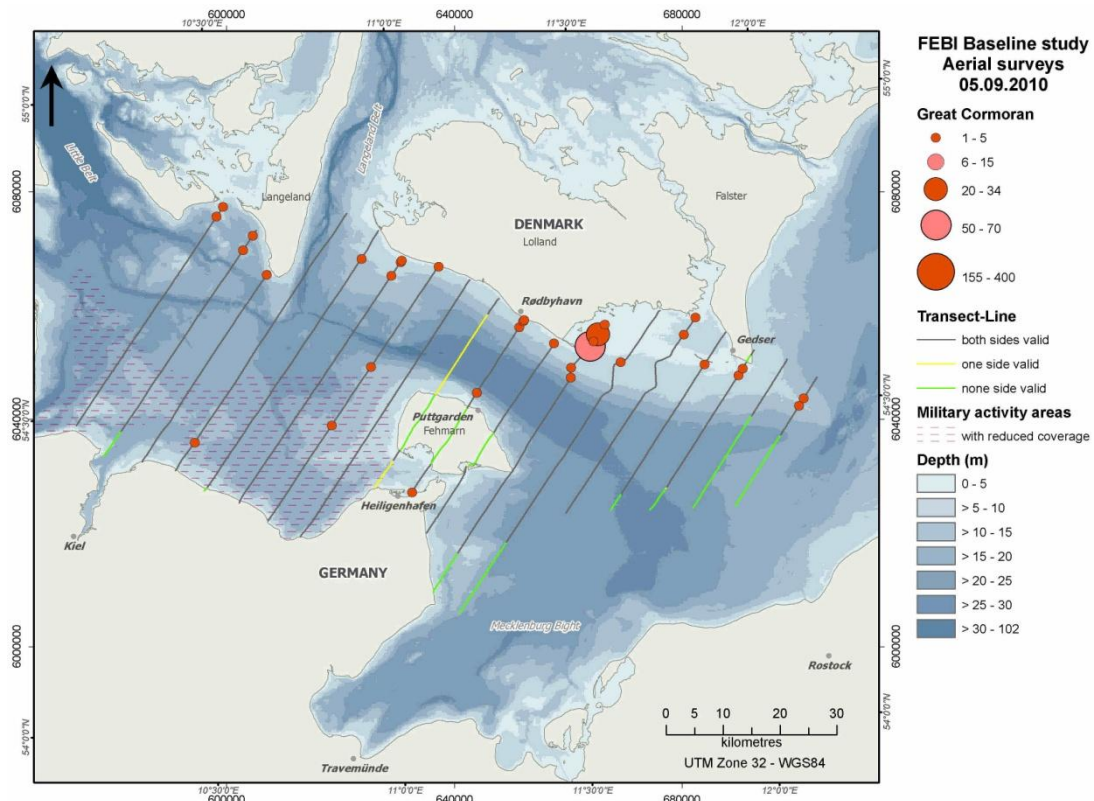


Figure 1.18 Great Cormorant distribution in the study area during aerial surveys (September 2010).

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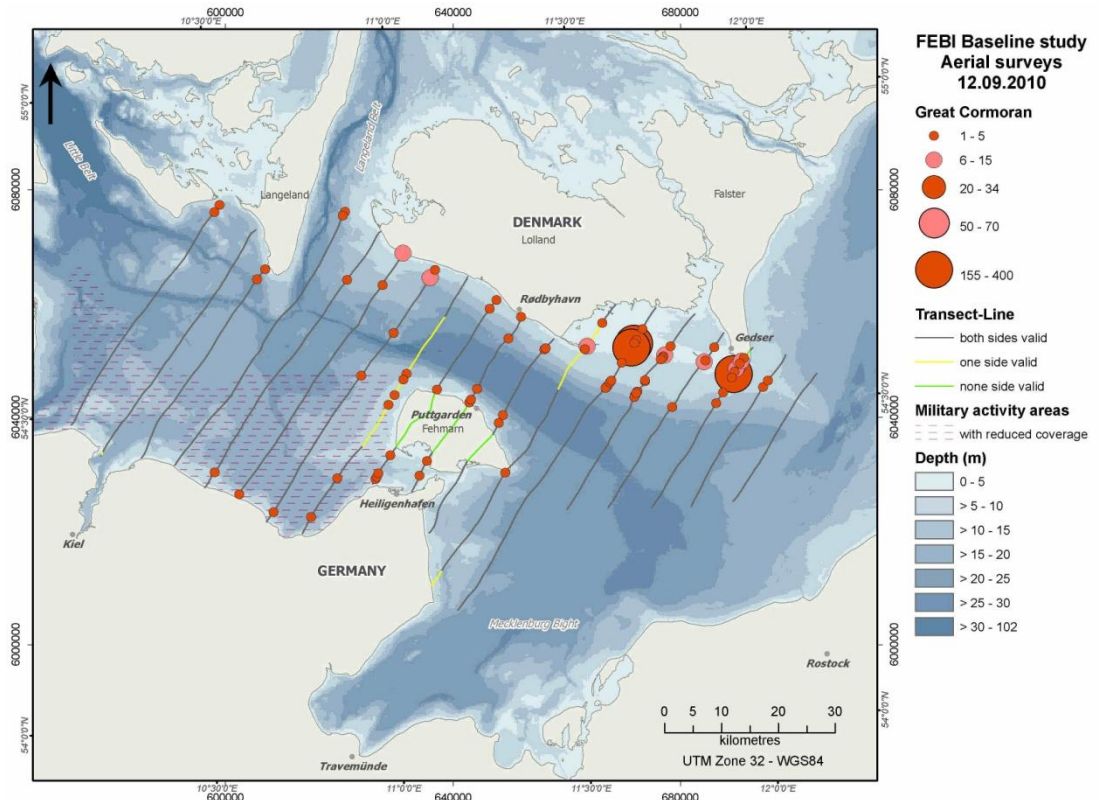


Figure 1.19 Great Cormorant distribution in the study area during aerial surveys (September 2010).

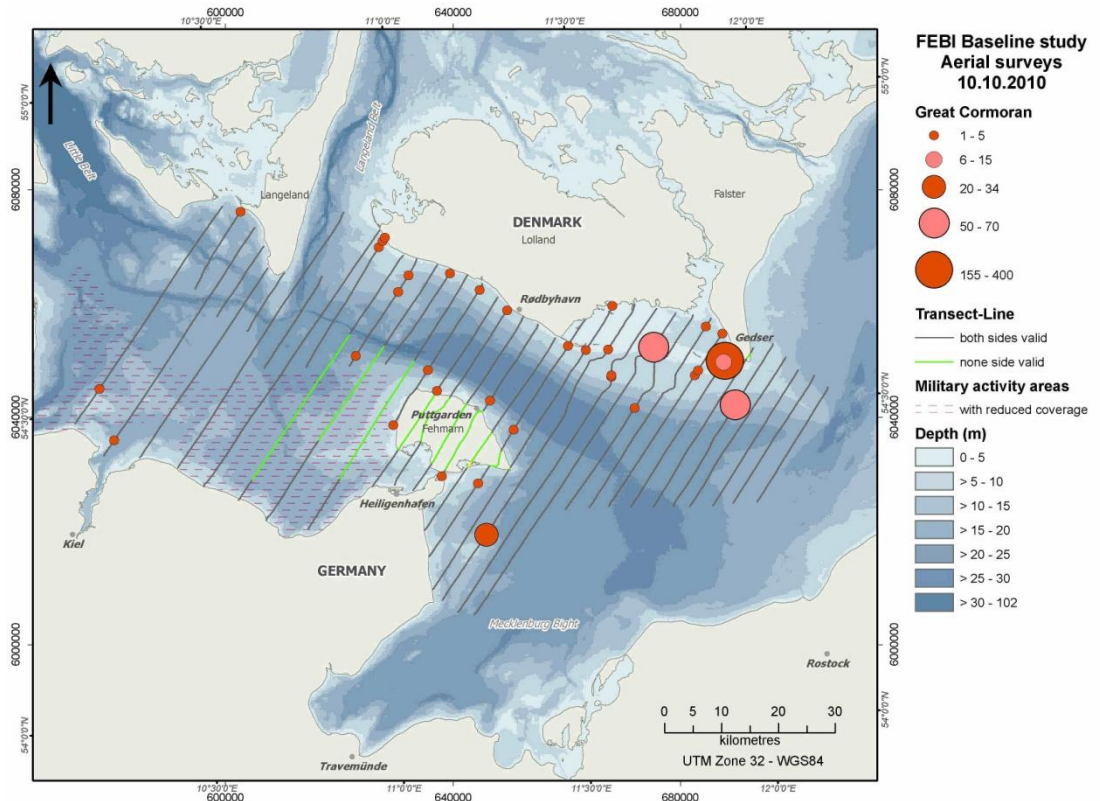


Figure 1.20 Great Cormorant distribution in the study area during aerial surveys (October 2010).

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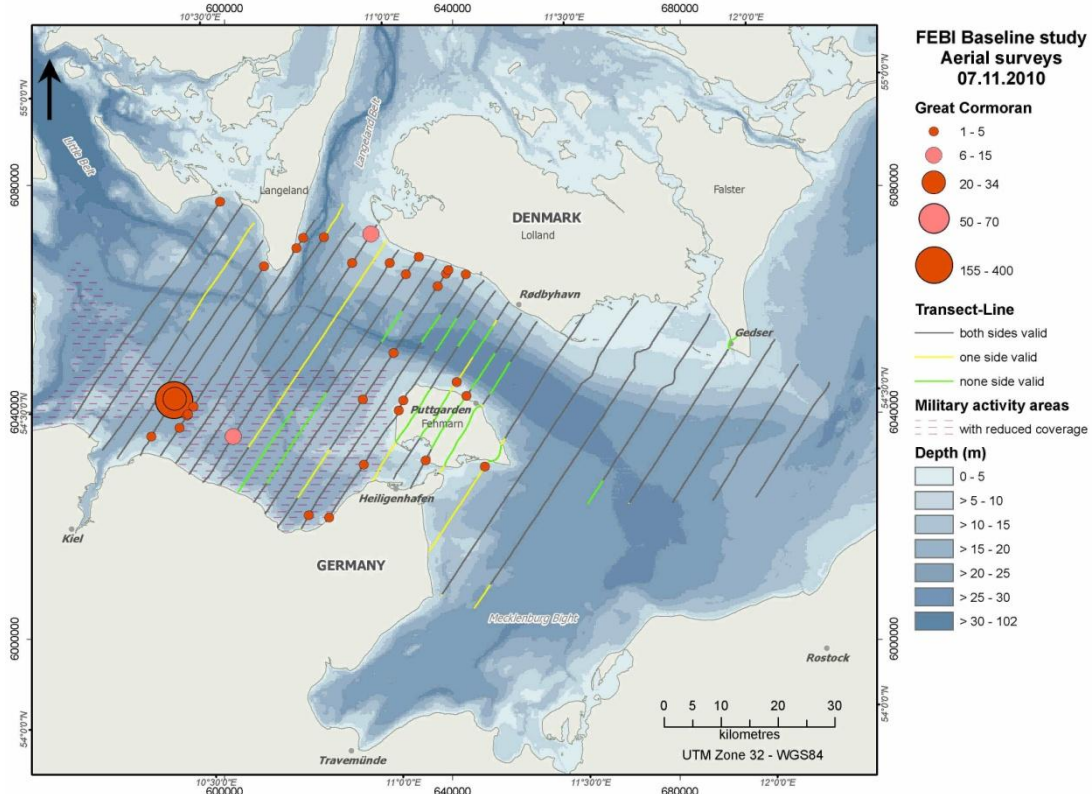


Figure 1.21 Great Cormorant distribution in the study area during aerial surveys (November 2010).

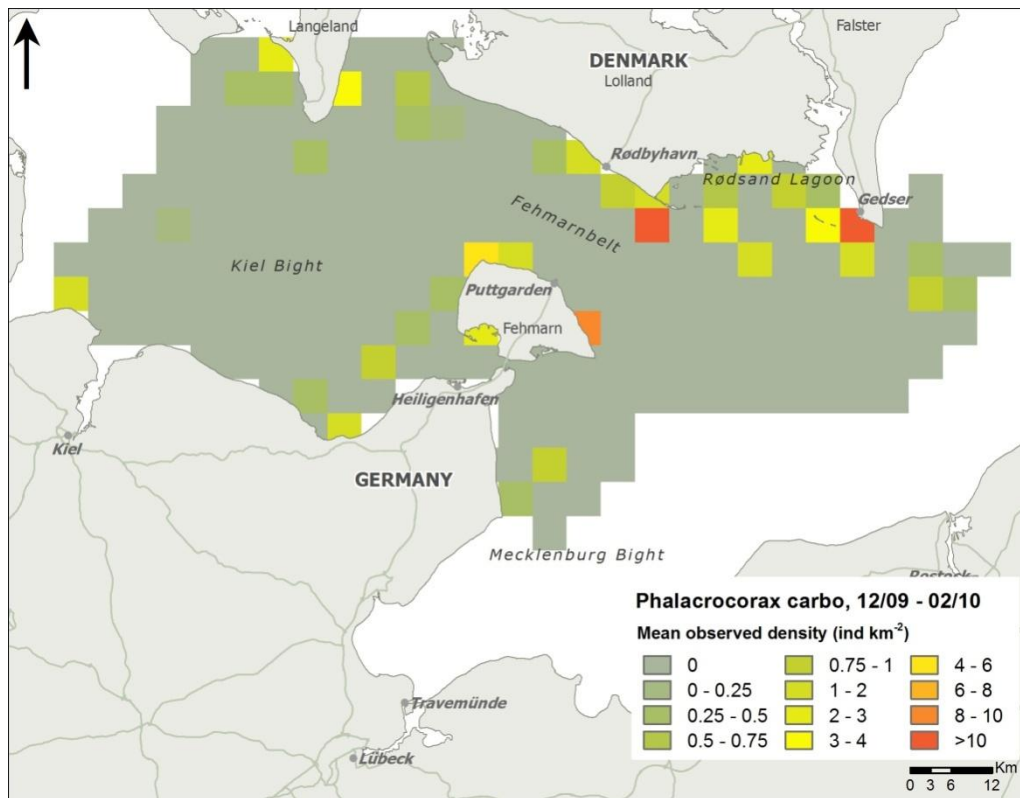


Figure 1.22 Mean densities of Great Cormorant sampled during December-February 2009/2010 by aerial surveys. The densities are shown for 5 km squares.

FEHMARNBELT BIRDS

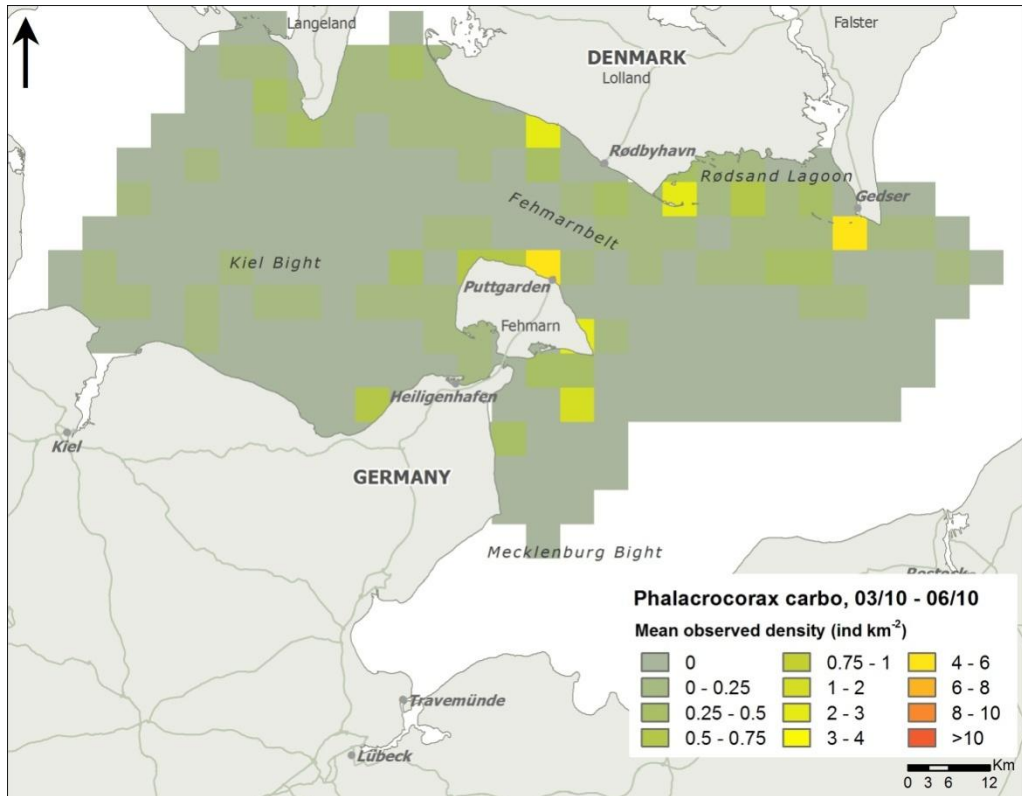


Figure 1.23 Mean densities of Great Cormorant sampled during March-June 2010 by aerial surveys. The densities are shown for 5 km squares.

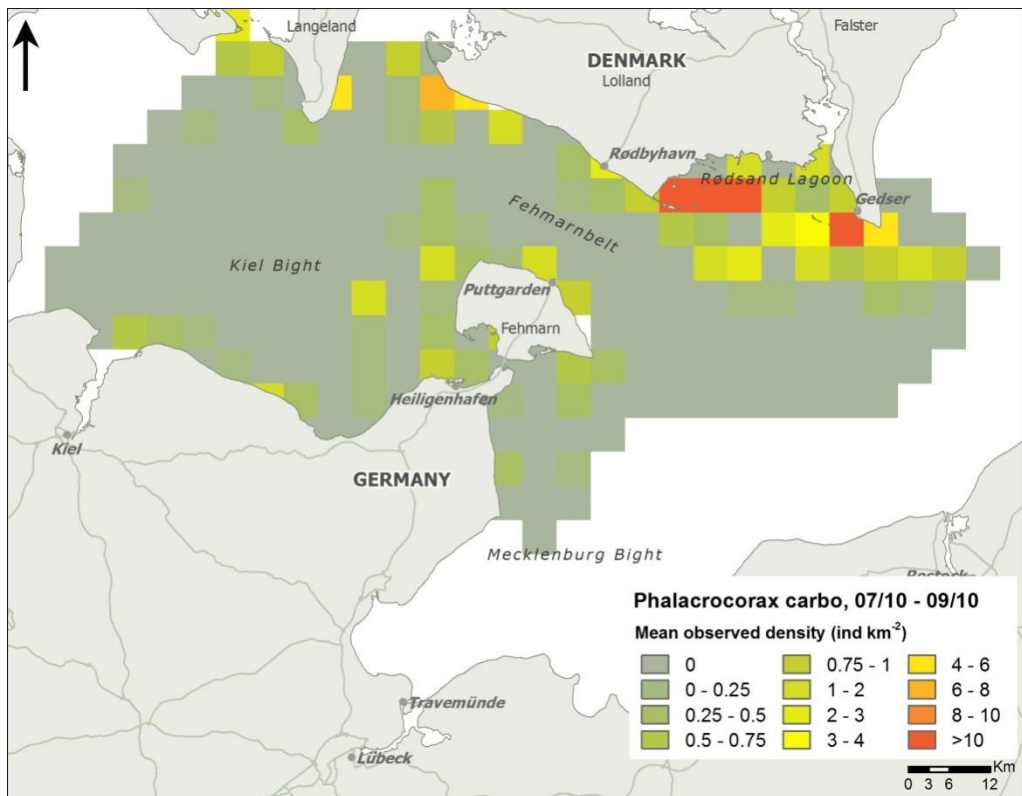


Figure 1.24 Mean densities of Great Cormorant sampled during July-September 2010 by aerial surveys. The densities are shown for 5 km squares.

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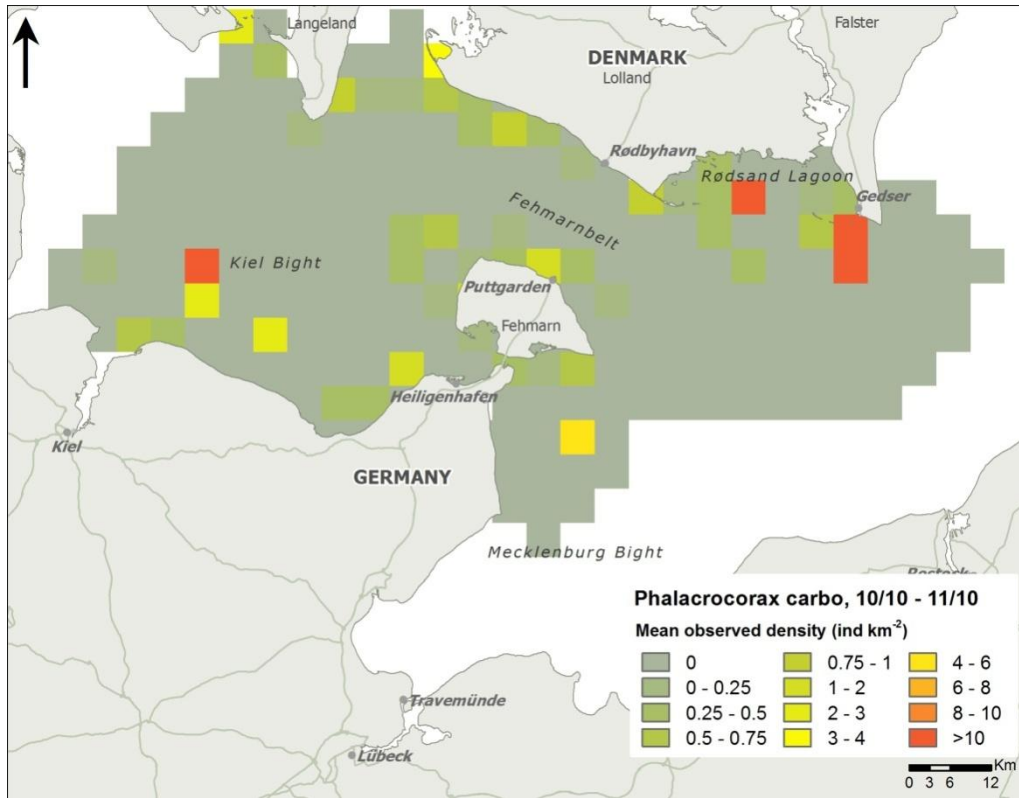


Figure 1.25 Mean densities of Great Cormorant sampled during October-November 2010 by aerial surveys. The densities are shown for 5 km squares.

1.1.4 Mute Swan / Swan unidentified – *Cygnus olor* / *Cygnus* sp.

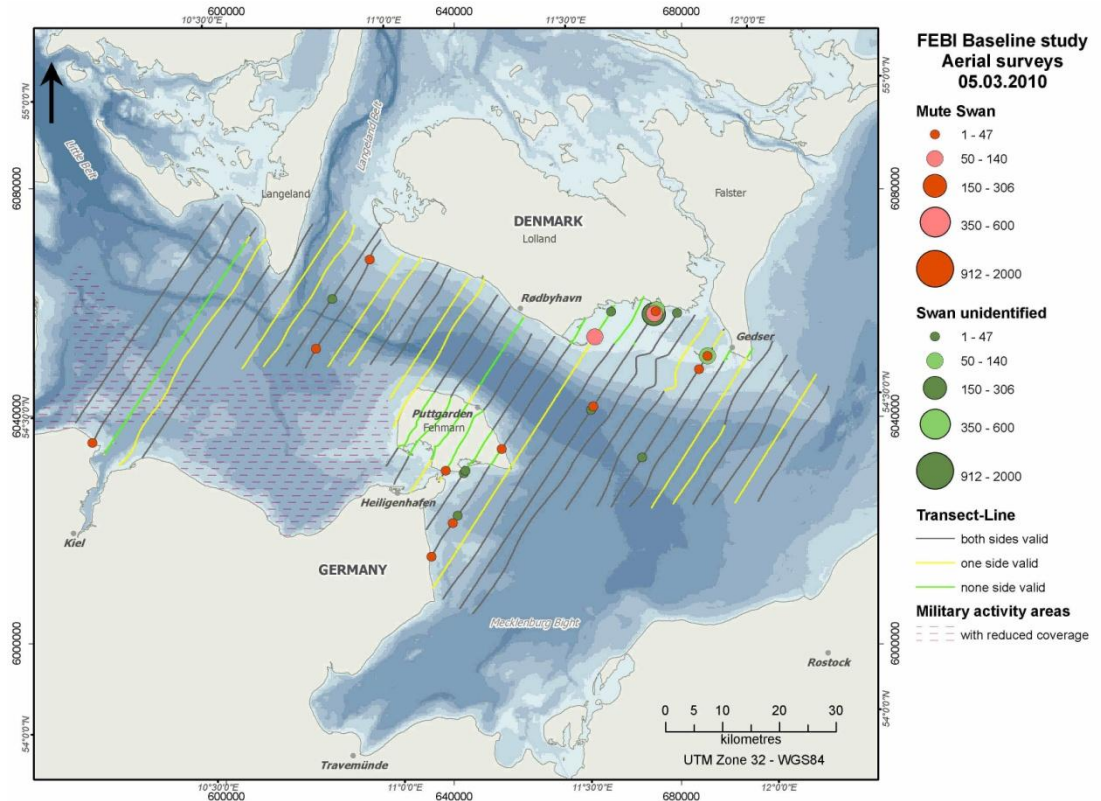


Figure 1.26 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (March 2010).

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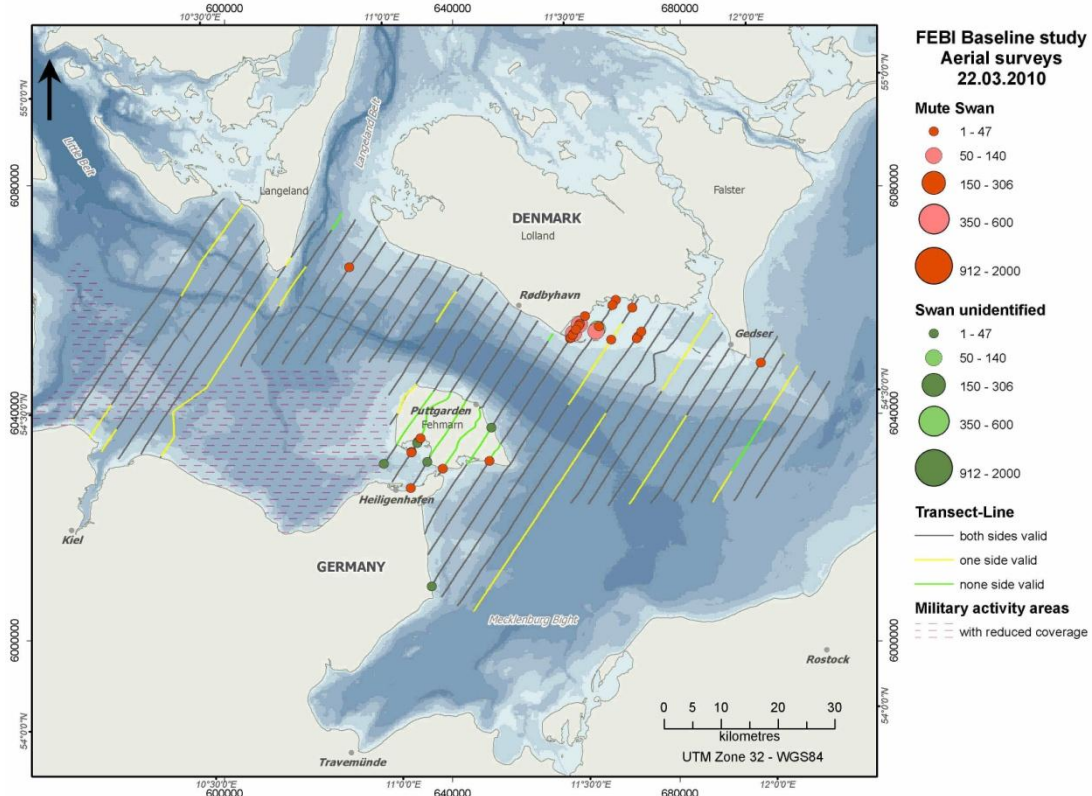


Figure 1.27 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (March 2010).

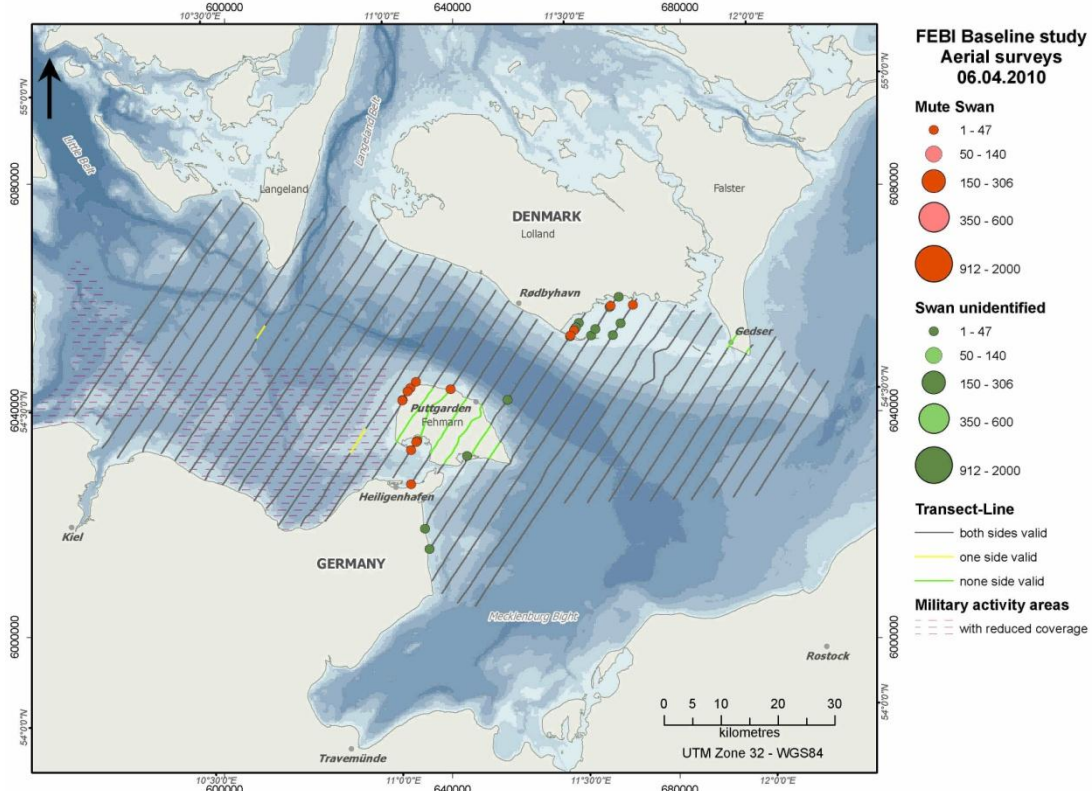


Figure 1.28 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (April 2010).

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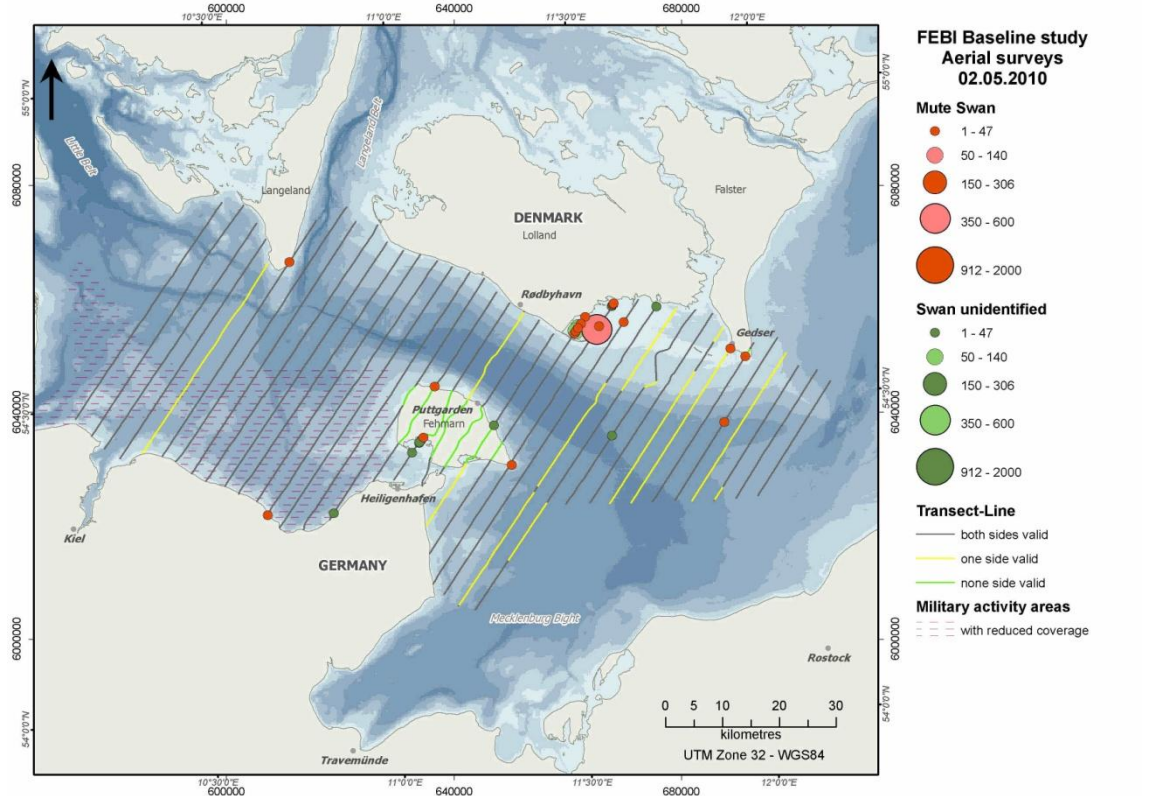


Figure 1.29 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (May 2010).

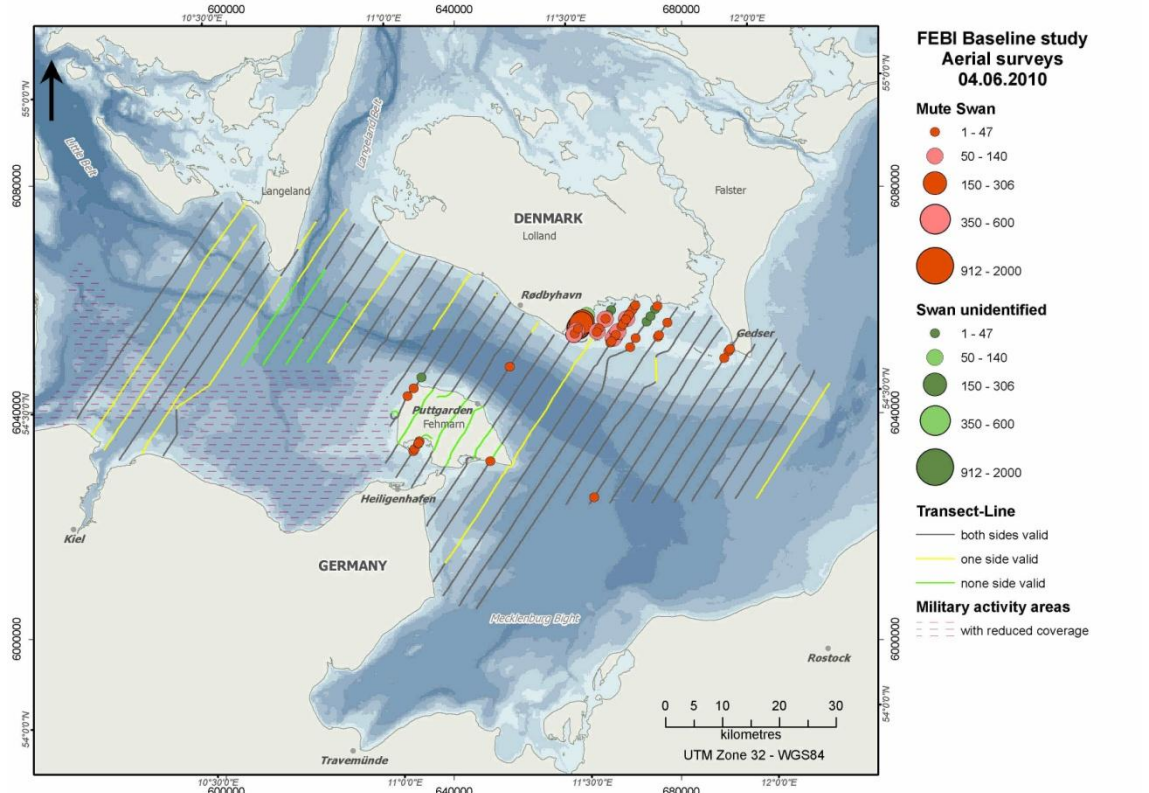


Figure 1.30 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (June 2010).

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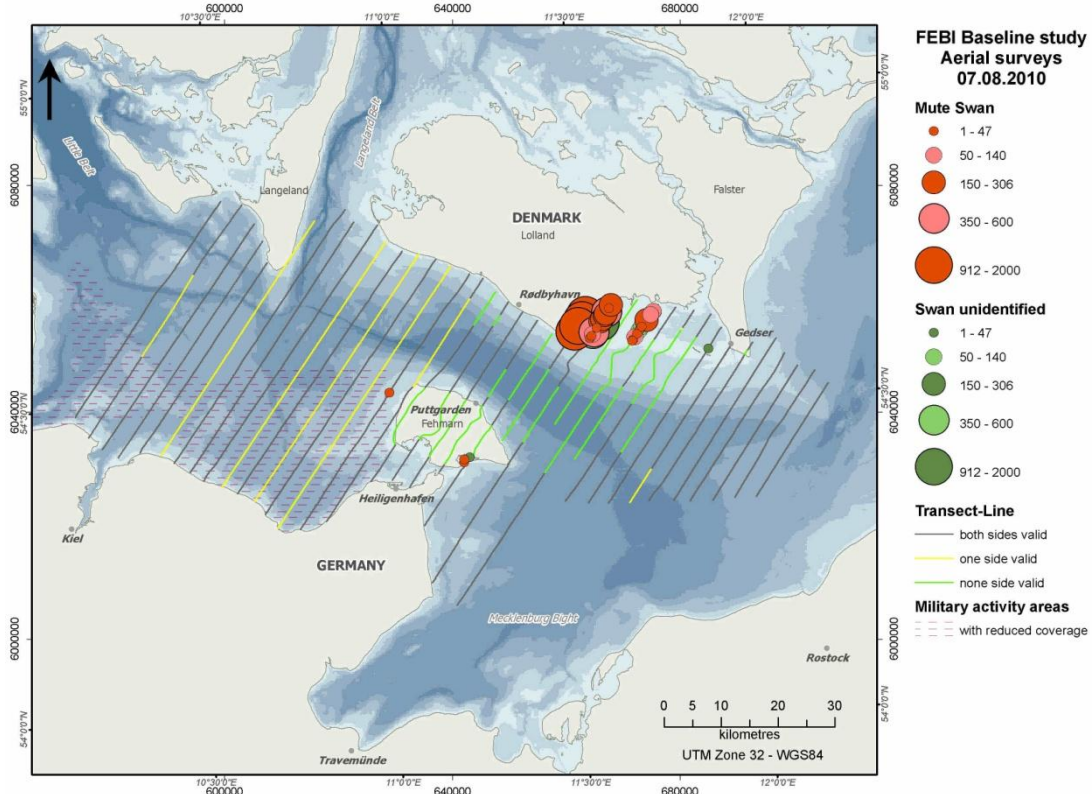


Figure 1.31 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (August 2010).

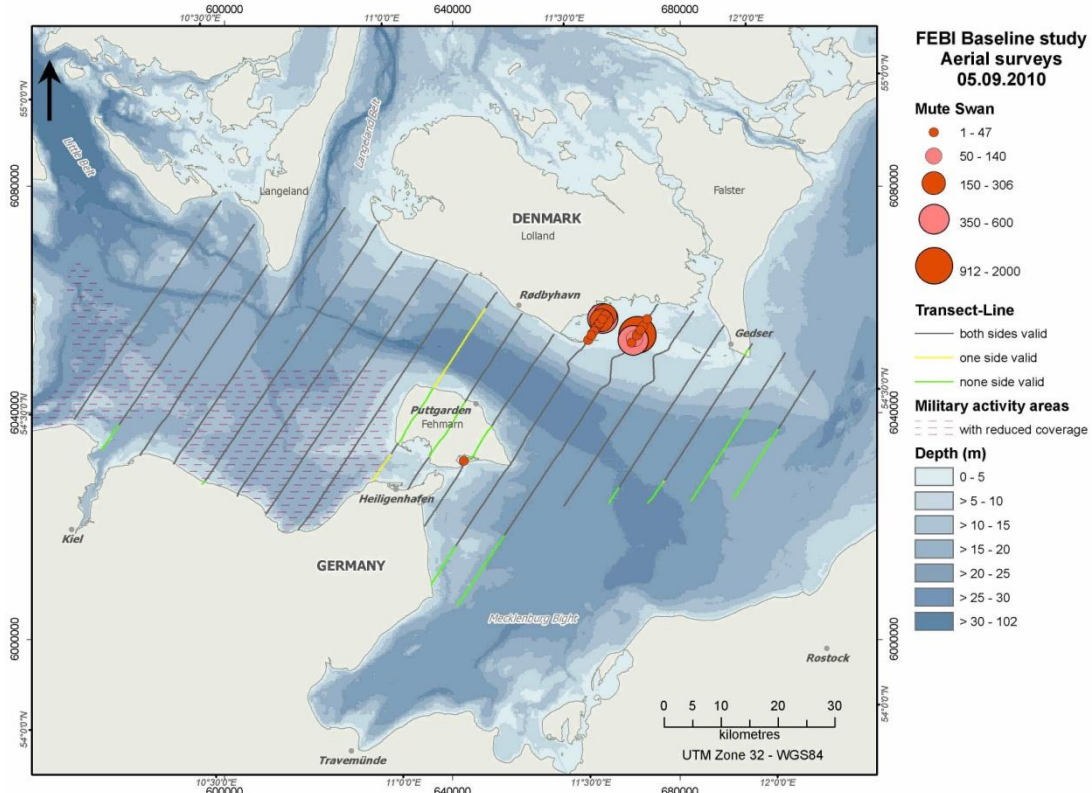


Figure 1.32 Mute Swan distribution in the study area during aerial surveys (September 2010).

FEHMARNBELT BIRDS

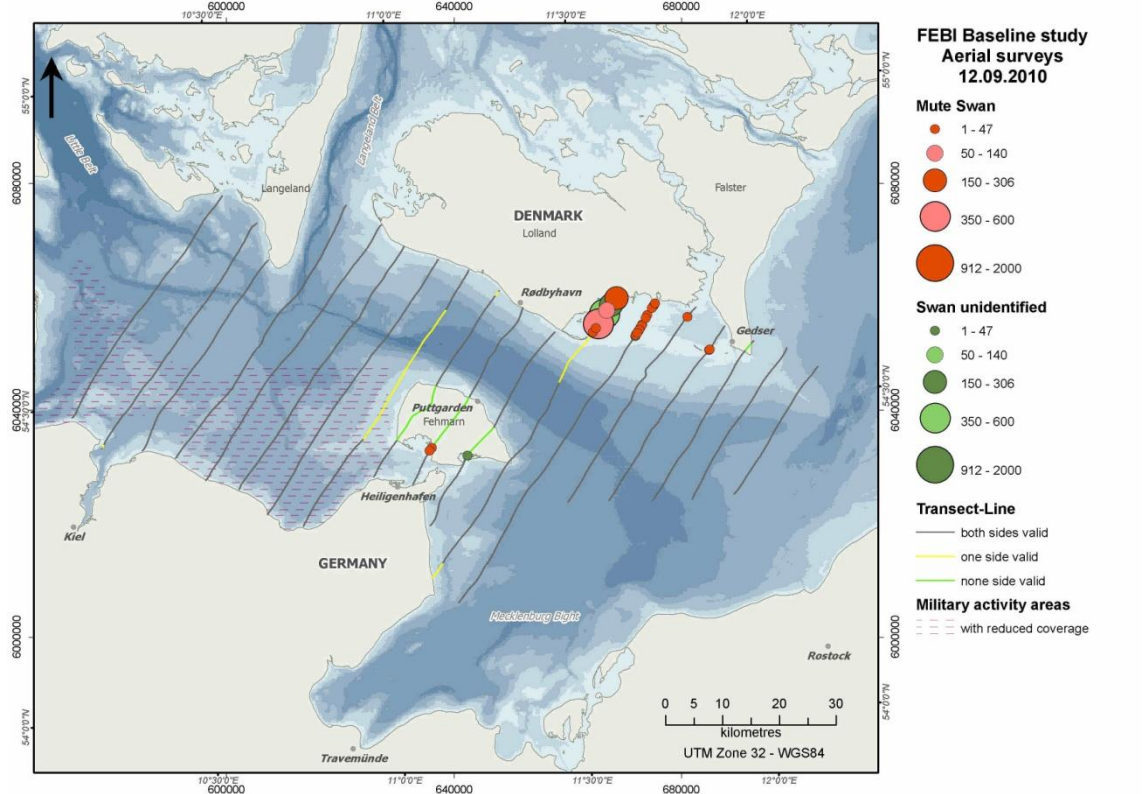


Figure 1.33 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (September 2010).

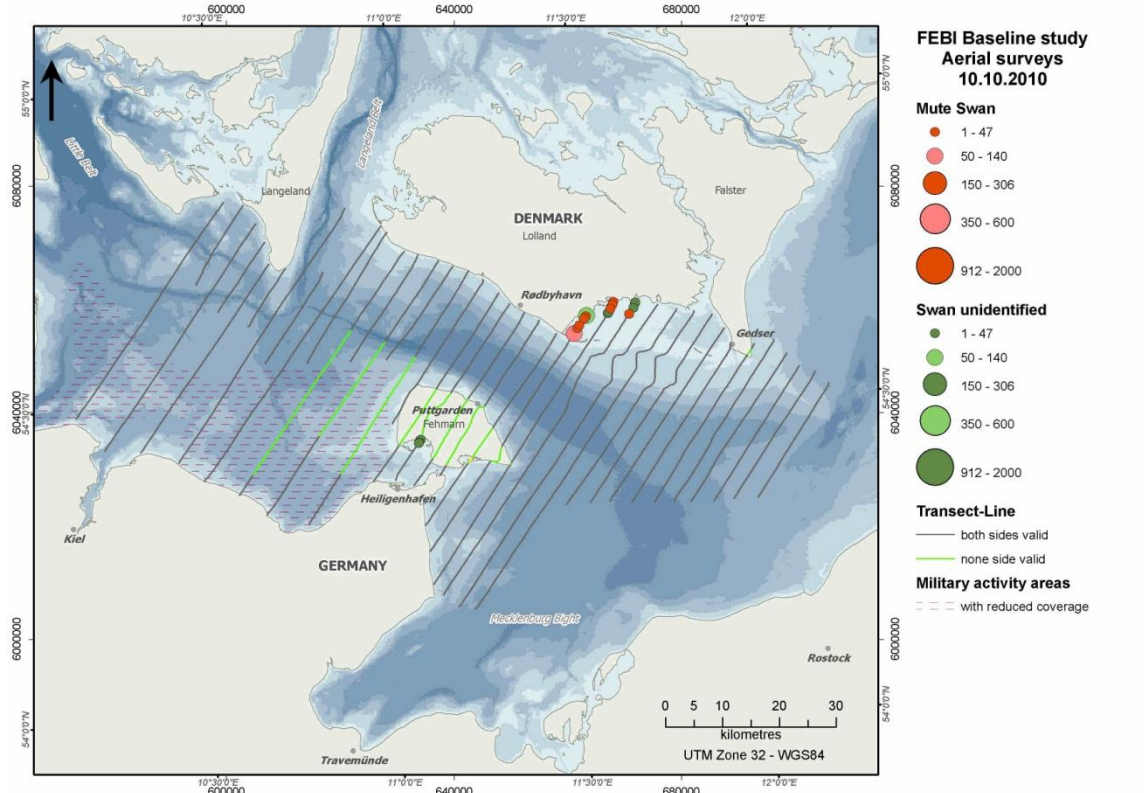


Figure 1.34 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (October 2010).

FEHMARNBELT BIRDS

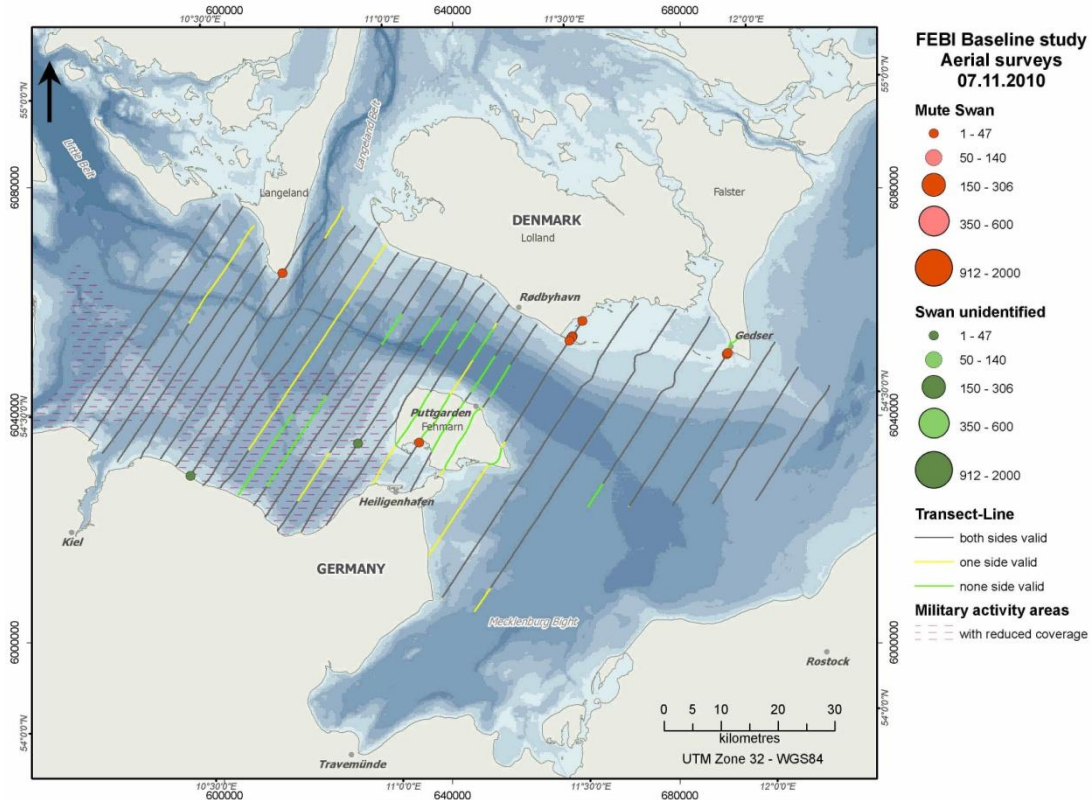


Figure 1.35 Swan (*Cygnus olor* / *Cygnus* sp.) distribution in the study area during aerial surveys (November 2010).

1.1.5 **Brent Goose / Greylag Goose / Goose unidentified – Branta bernicla / Anser anser / Anser sp.**

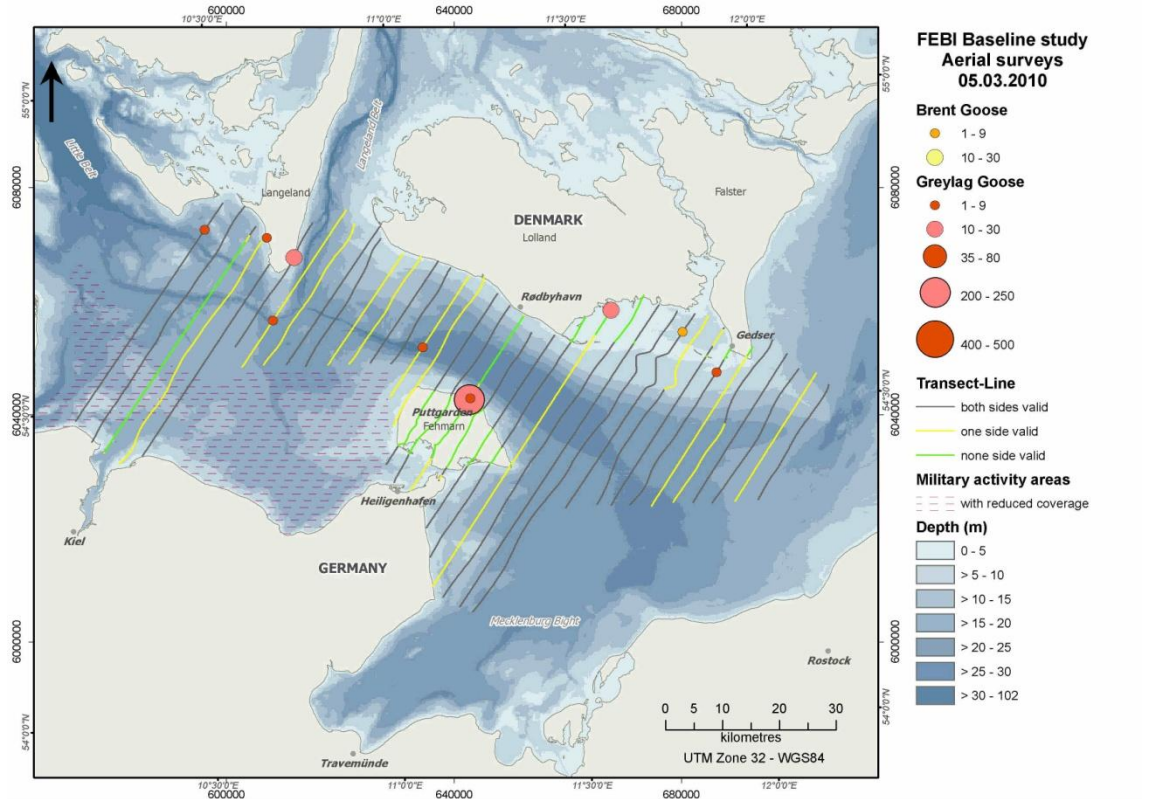


Figure 1.36 Brent Goose and Greylag Goose distribution in the study area during aerial surveys (March 2010).

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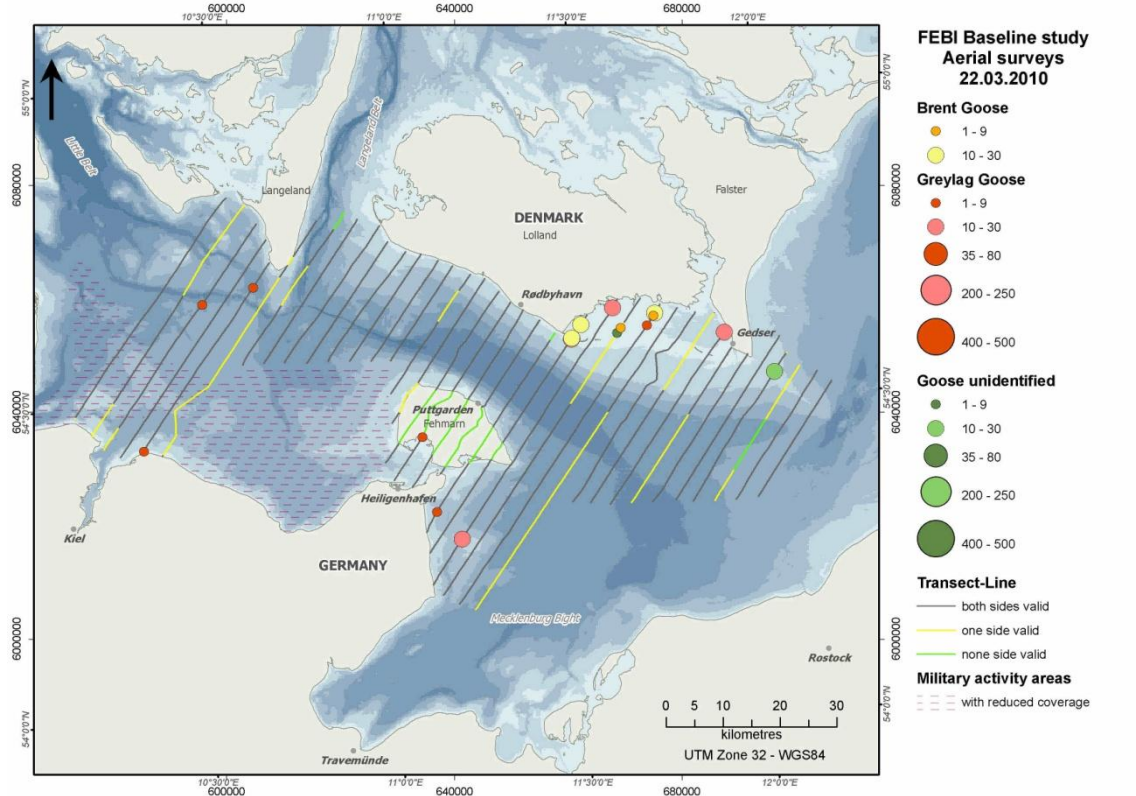


Figure 1.37 Brent Goose, Greylag Goose and Goose unidentified (*Anser* sp.) distribution in the study area during aerial surveys (March 2010).

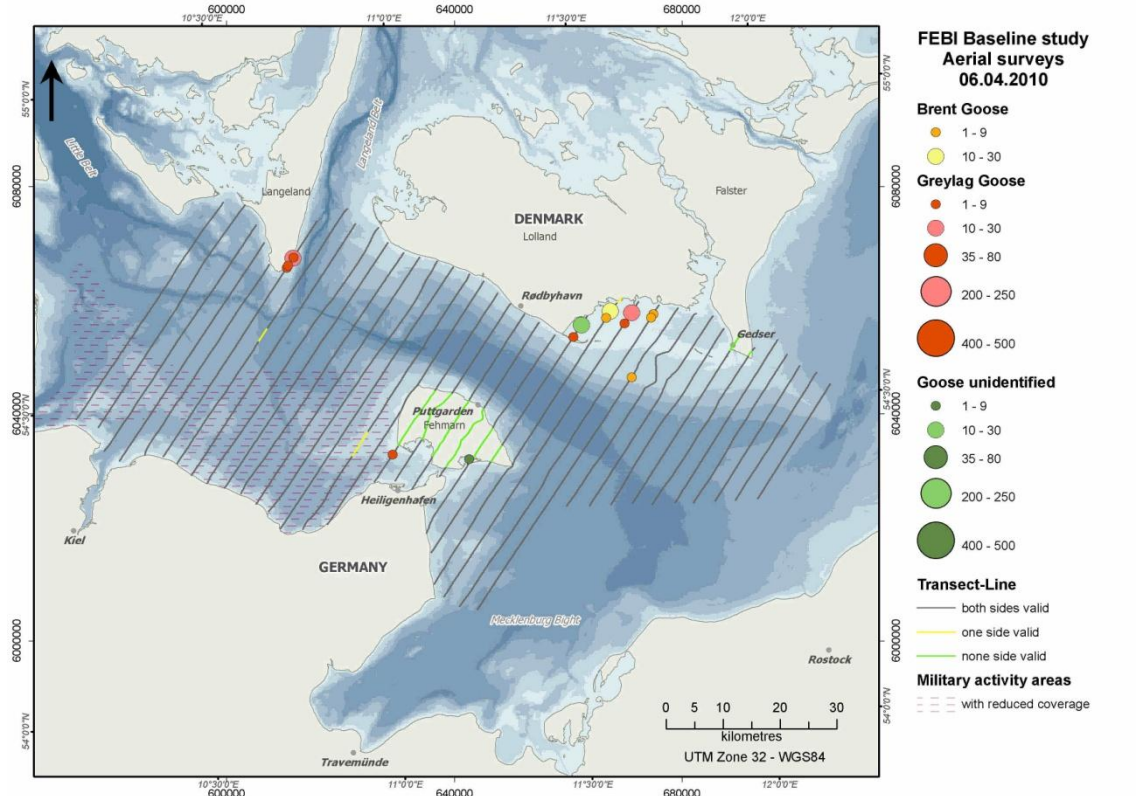


Figure 1.38 Brent Goose, Greylag Goose and Goose unidentified (*Anser* sp.) distribution in the study area during aerial surveys (April 2010).

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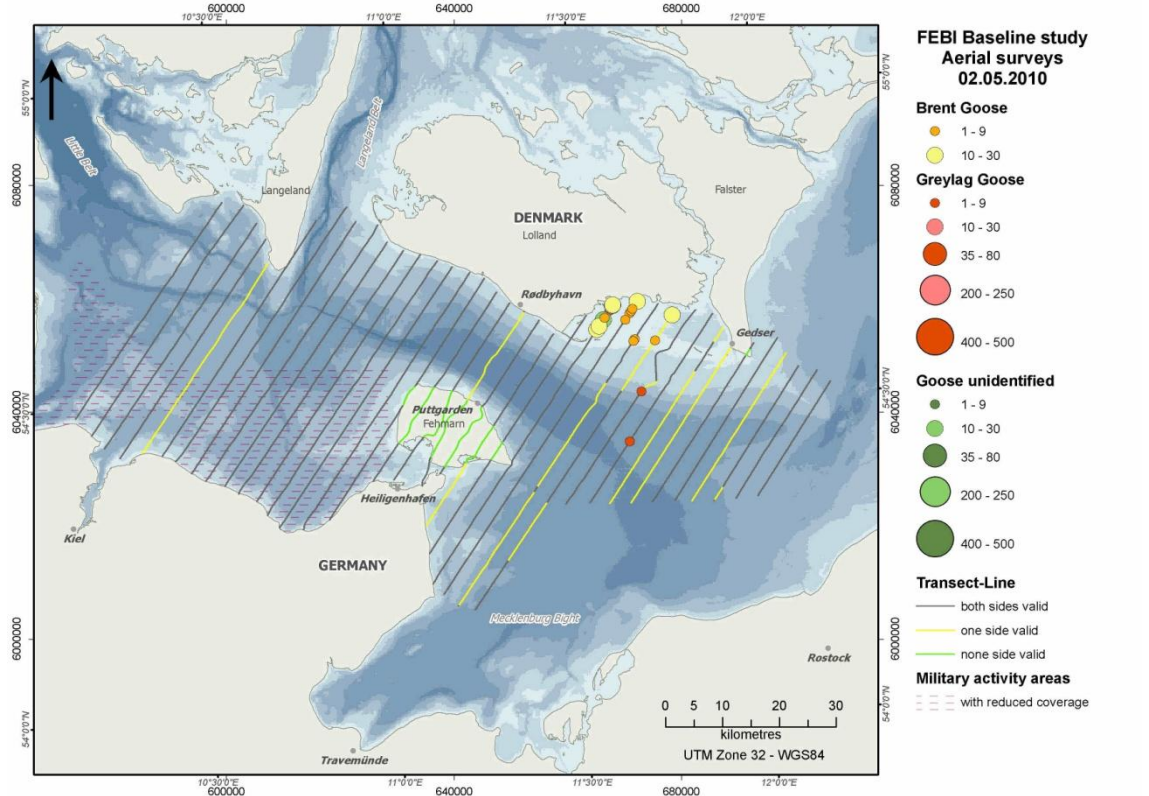


Figure 1.39 Brent Goose, Greylag Goose and Goose unidentified (*Anser* sp.) distribution in the study area during aerial surveys (May 2010).

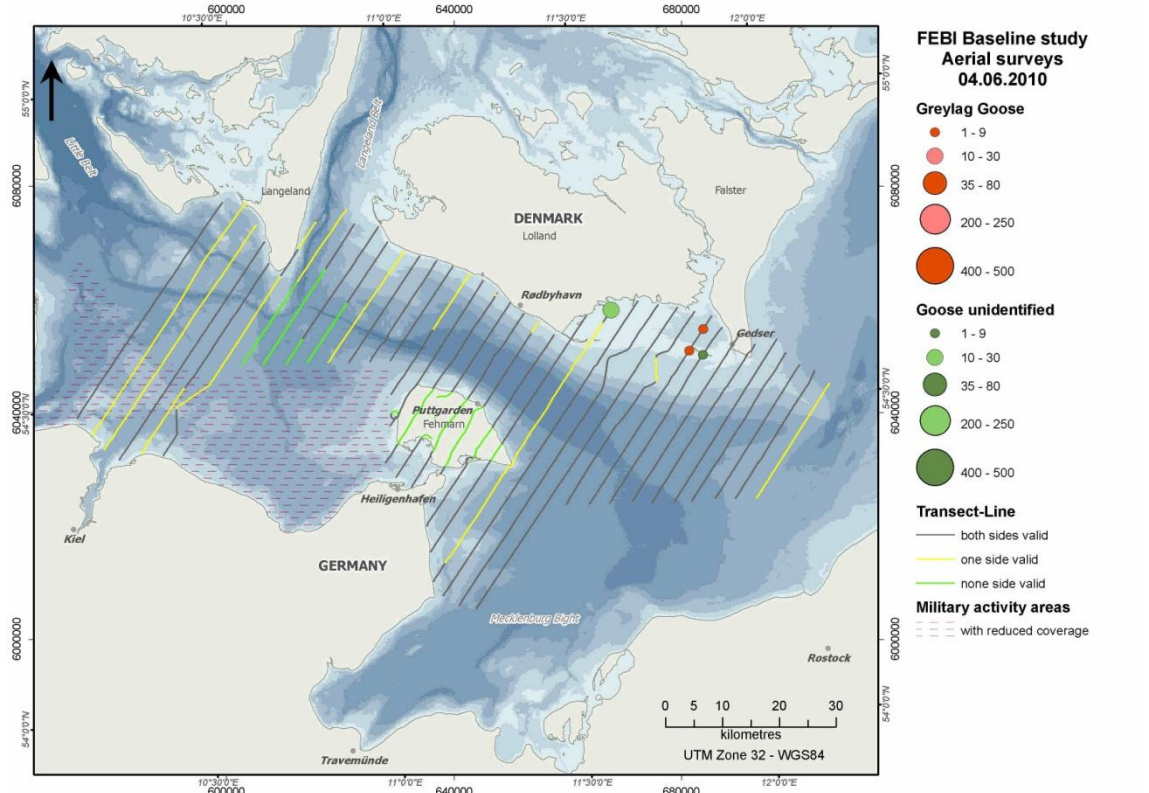


Figure 1.40 Greylag Goose and Goose unidentified (*Anser* sp.) distribution in the study area during aerial surveys (June 2010).

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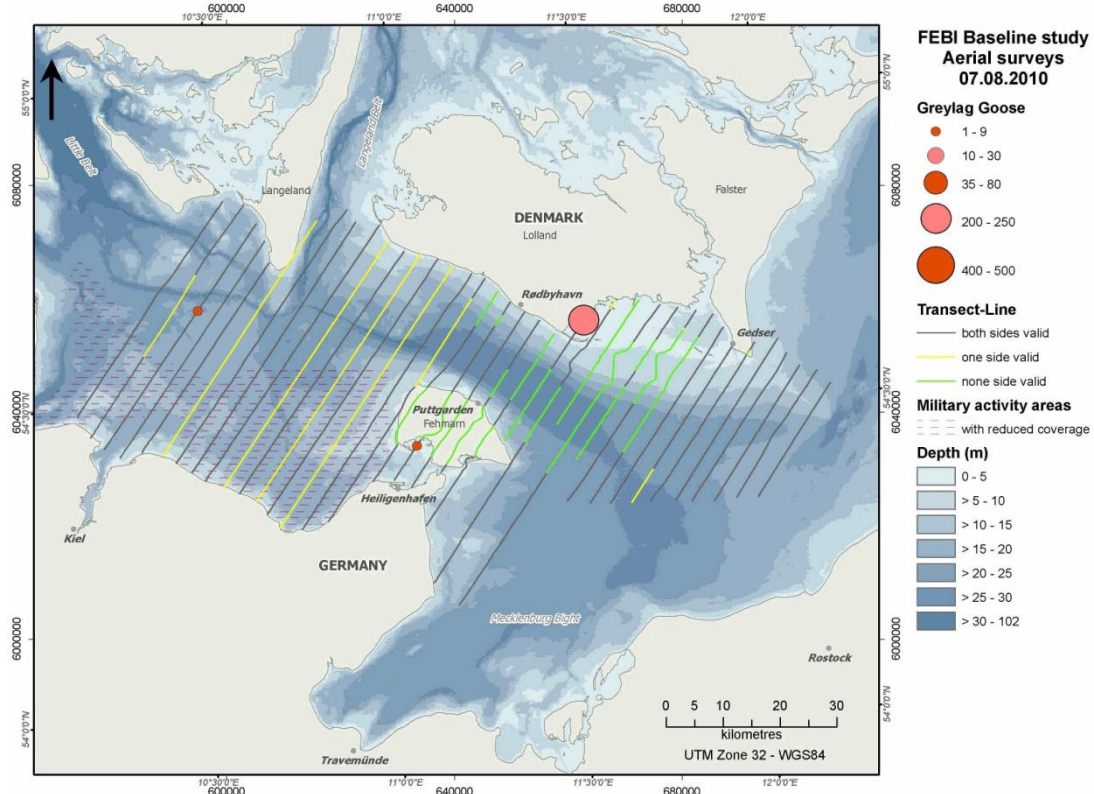


Figure 1.41 Greylag Goose distribution in the study area during aerial surveys (August 2010).

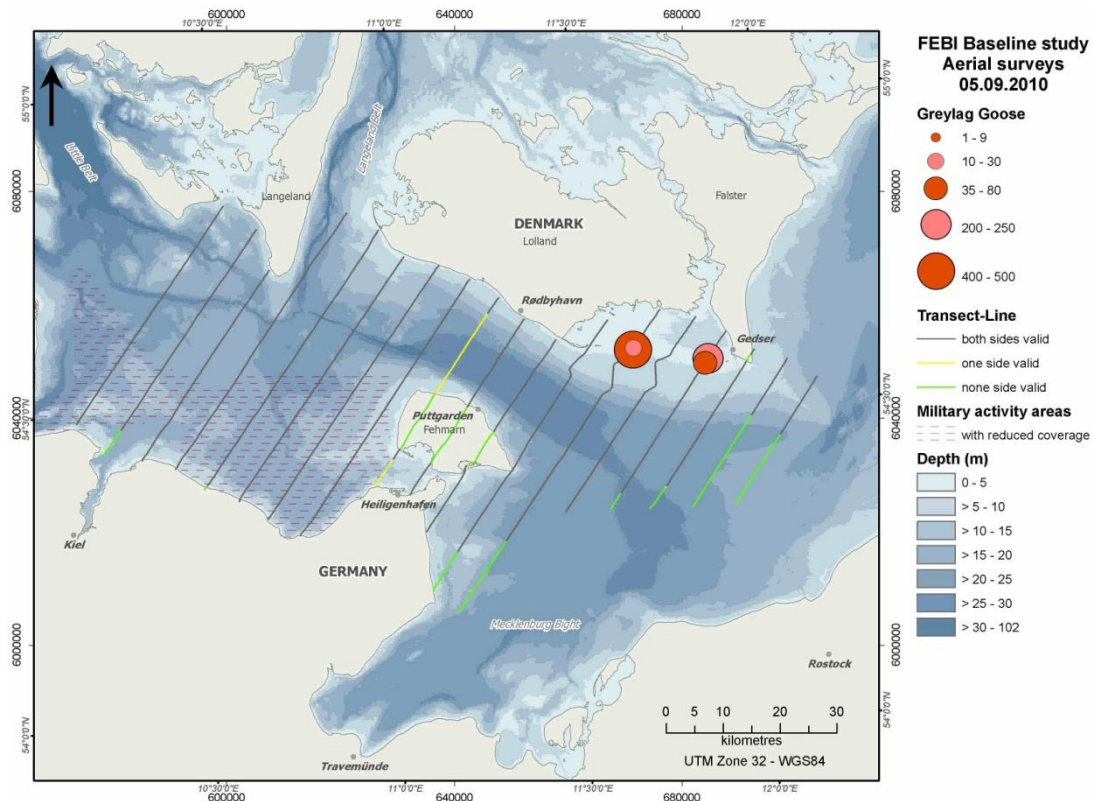


Figure 1.42 Greylag Goose distribution in the study area during aerial surveys (September 2010).

FEHMARNBELT BIRDS

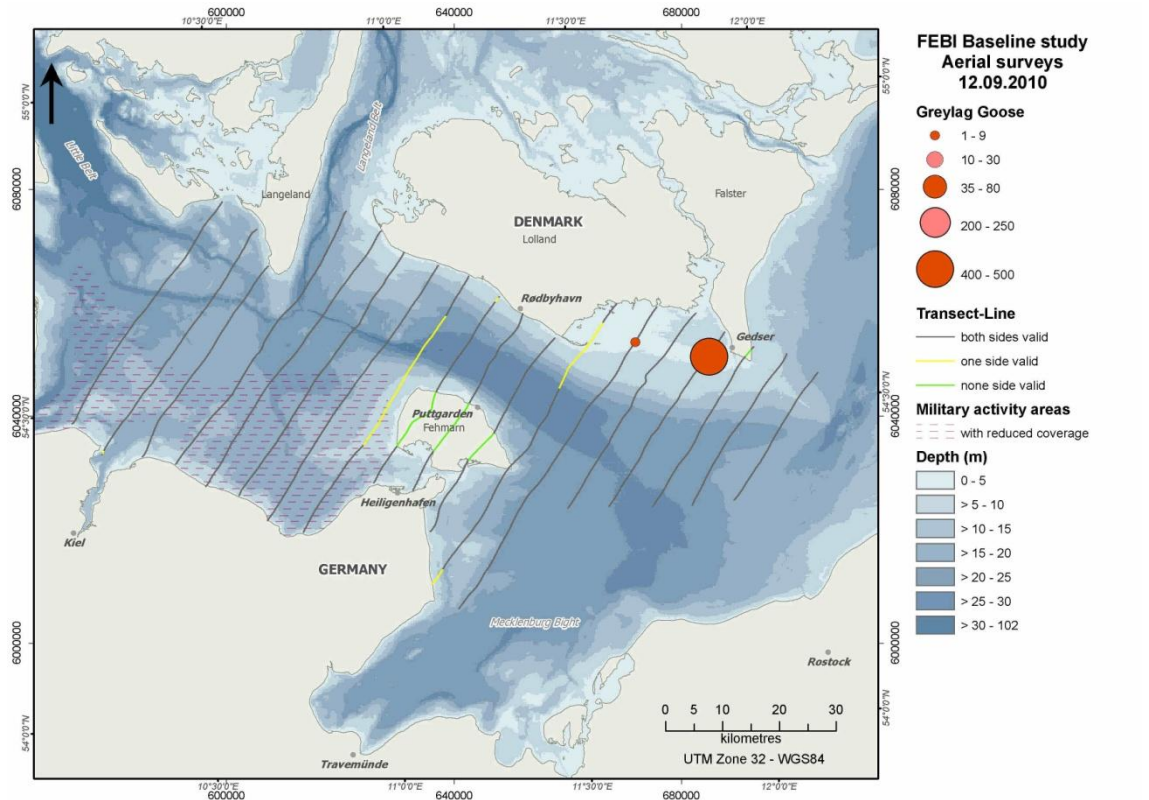


Figure 1.43 Greylag Goose distribution in the study area during aerial surveys (September 2010).

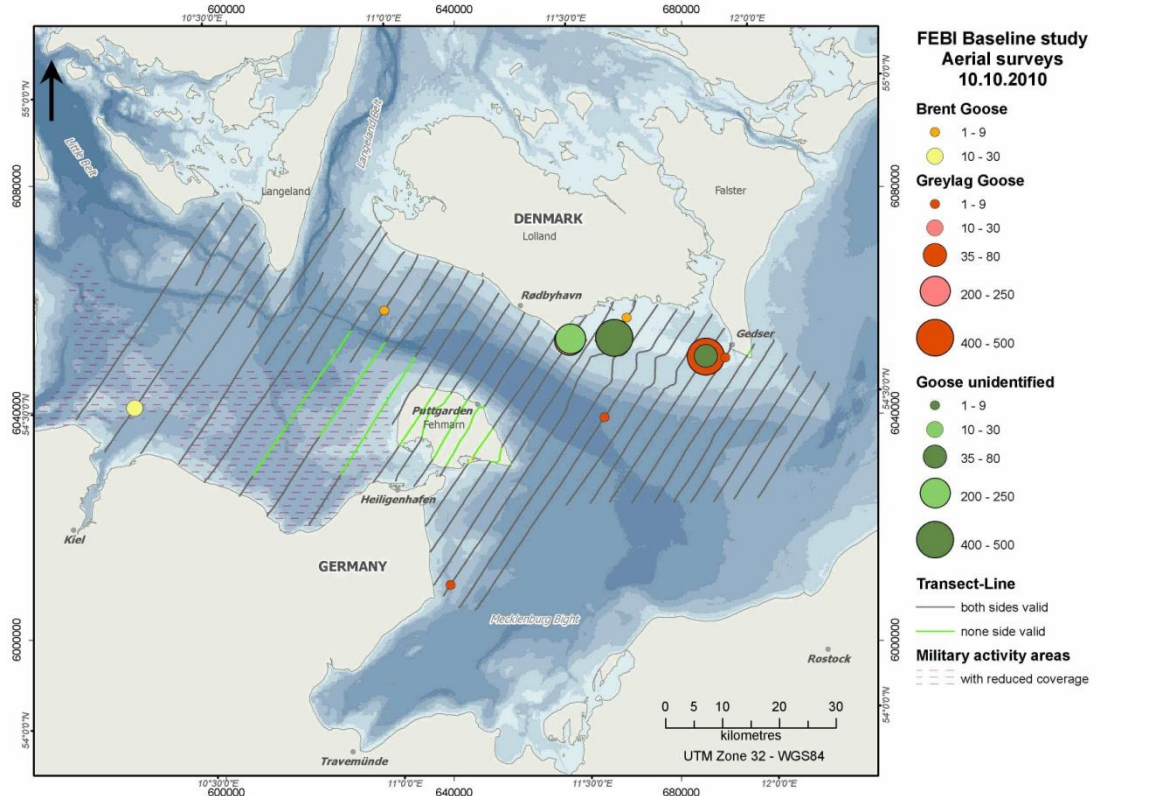


Figure 1.44 Brent Goose, Greylag Goose and Goose unidentified (Anser sp.) distribution in the study area during aerial surveys (October 2010).

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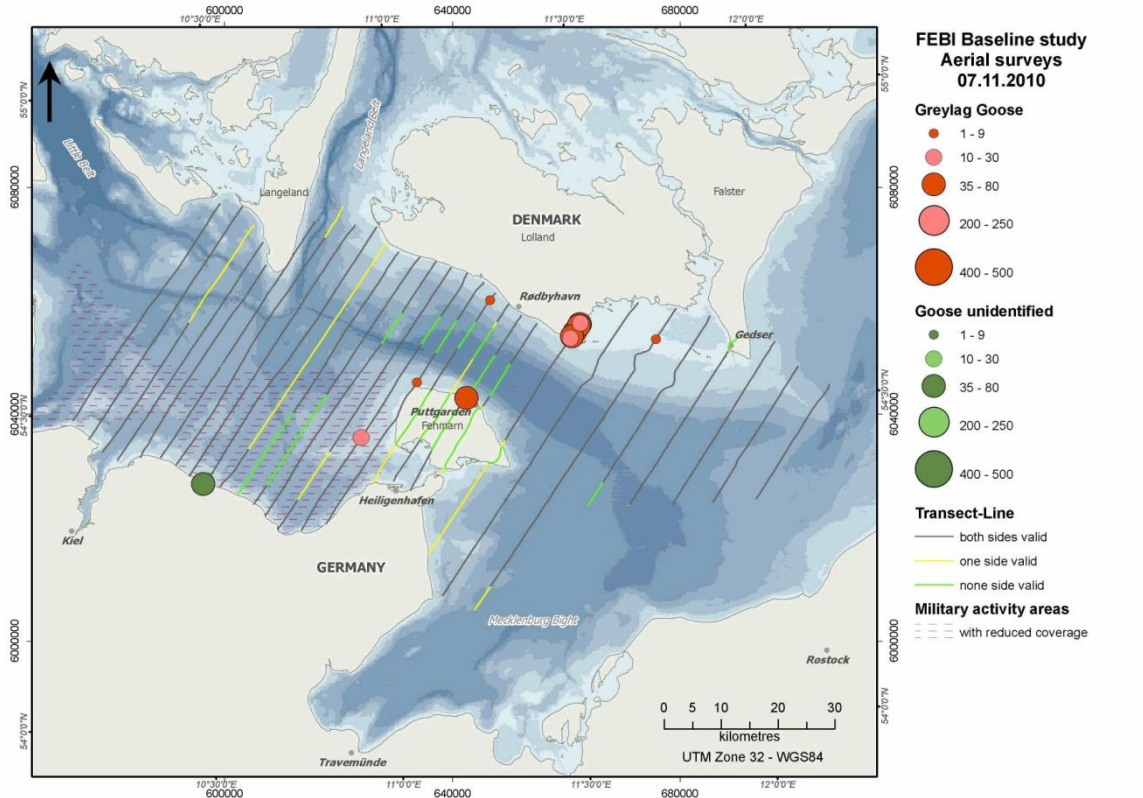


Figure 1.45 Greylag Goose and Goose unidentified (*Anser* sp.) distribution in the study area during aerial surveys (November 2010).

1.1.6 *Greater Scaup / Tufted Duck / Common Goldeneye – Aythya marila / Aythya fuligula / Bucephala clangula*

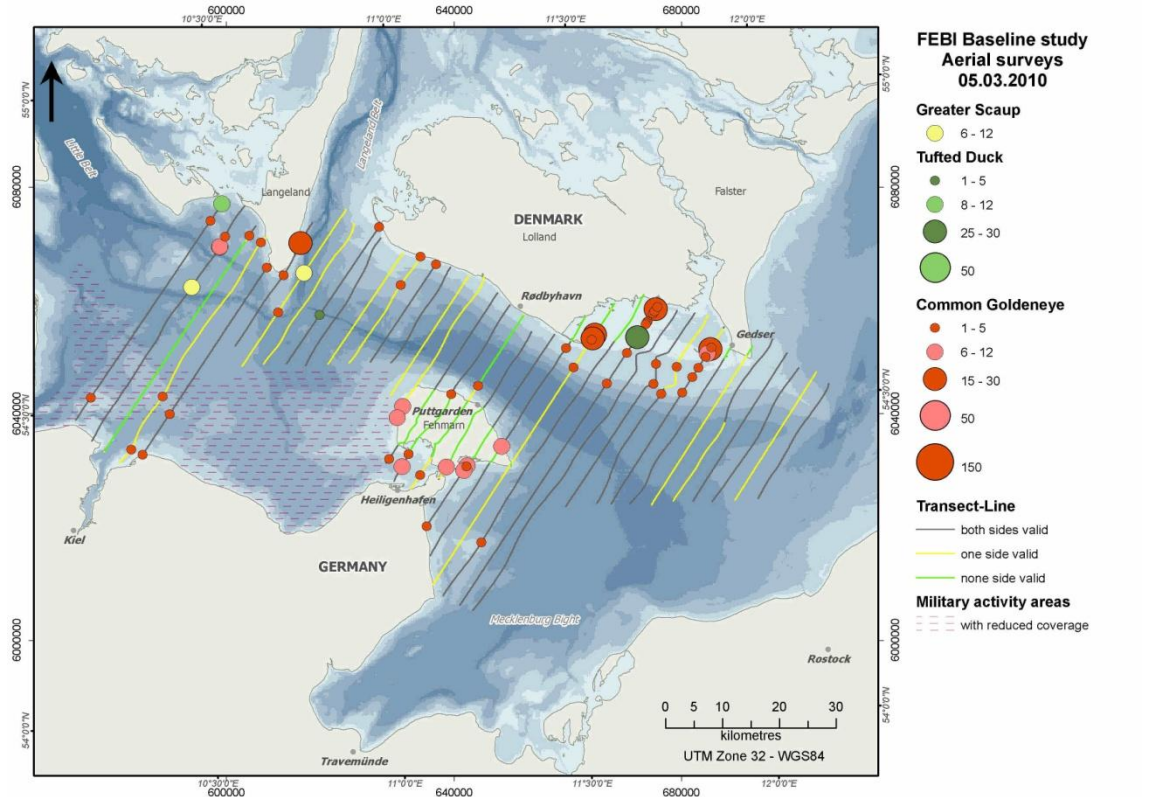


Figure 1.46 *Greater Scaup, Tufted Duck and Common Goldeneye distribution in the study area during aerial surveys (March 2010).*

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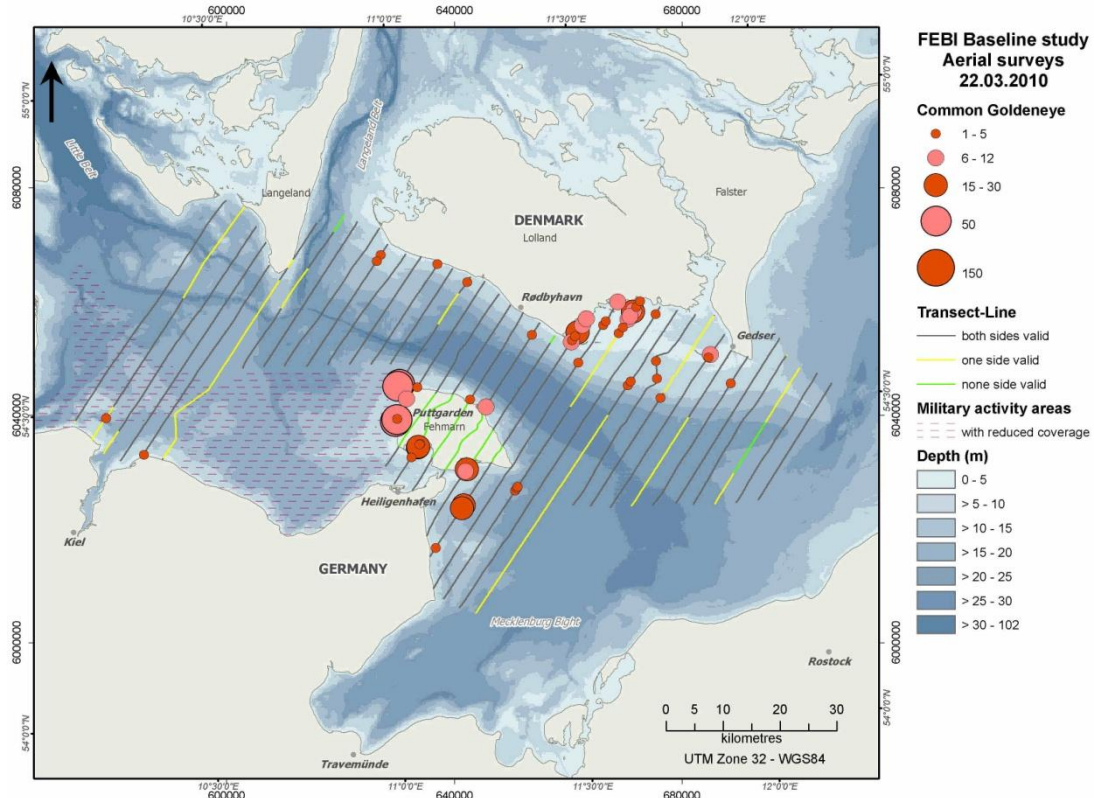


Figure 1.47 Common Goldeneye distribution in the study area during aerial surveys (March 2010).

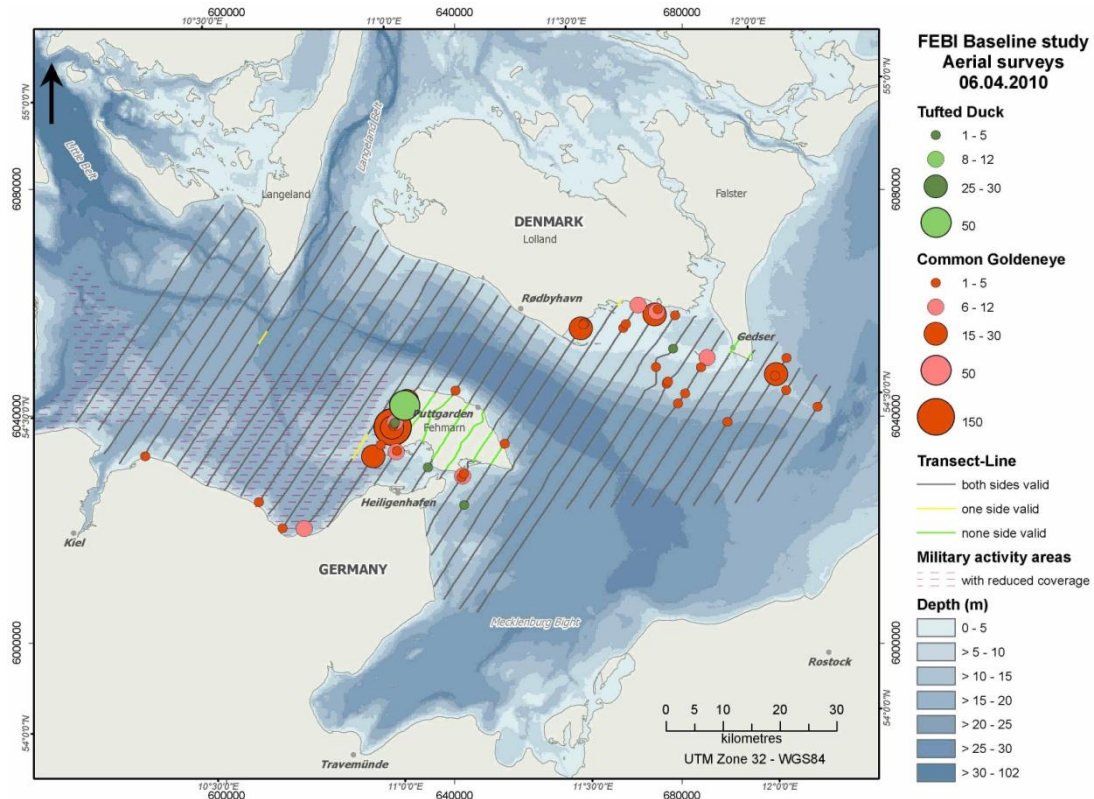


Figure 1.48 Tufted Duck and Common Goldeneye distribution in the study area during aerial surveys (April 2010).

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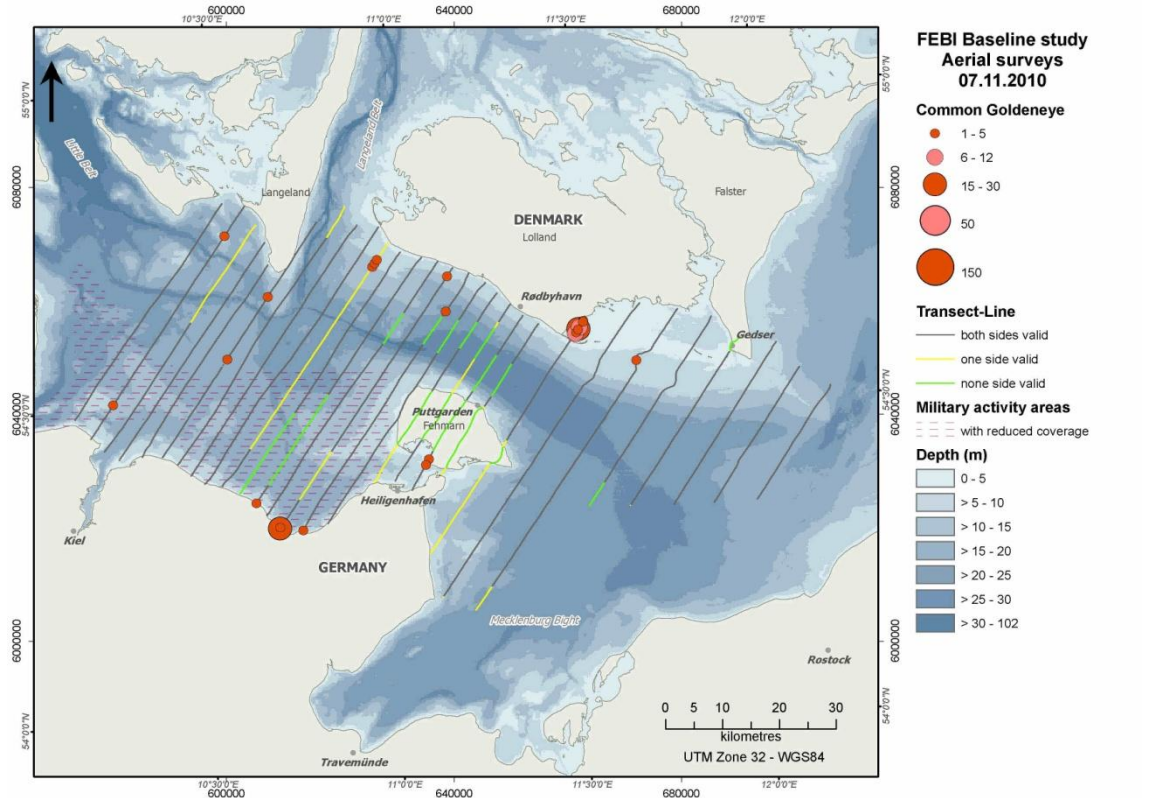


Figure 1.49 Common Goldeneye distribution in the study area during aerial surveys (November 2010).

1.1.7 Common Eider – *Somateria mollissima*

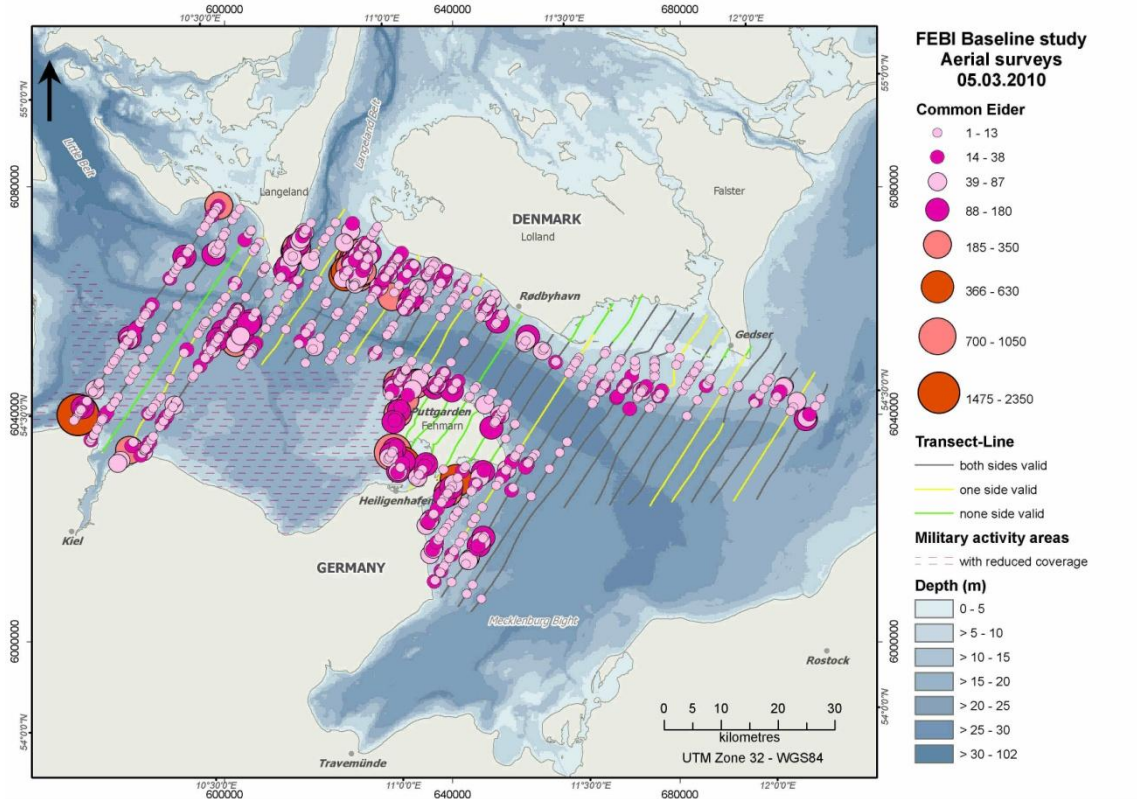


Figure 1.50 Common Eider distribution in the study area during aerial surveys (March 2010).

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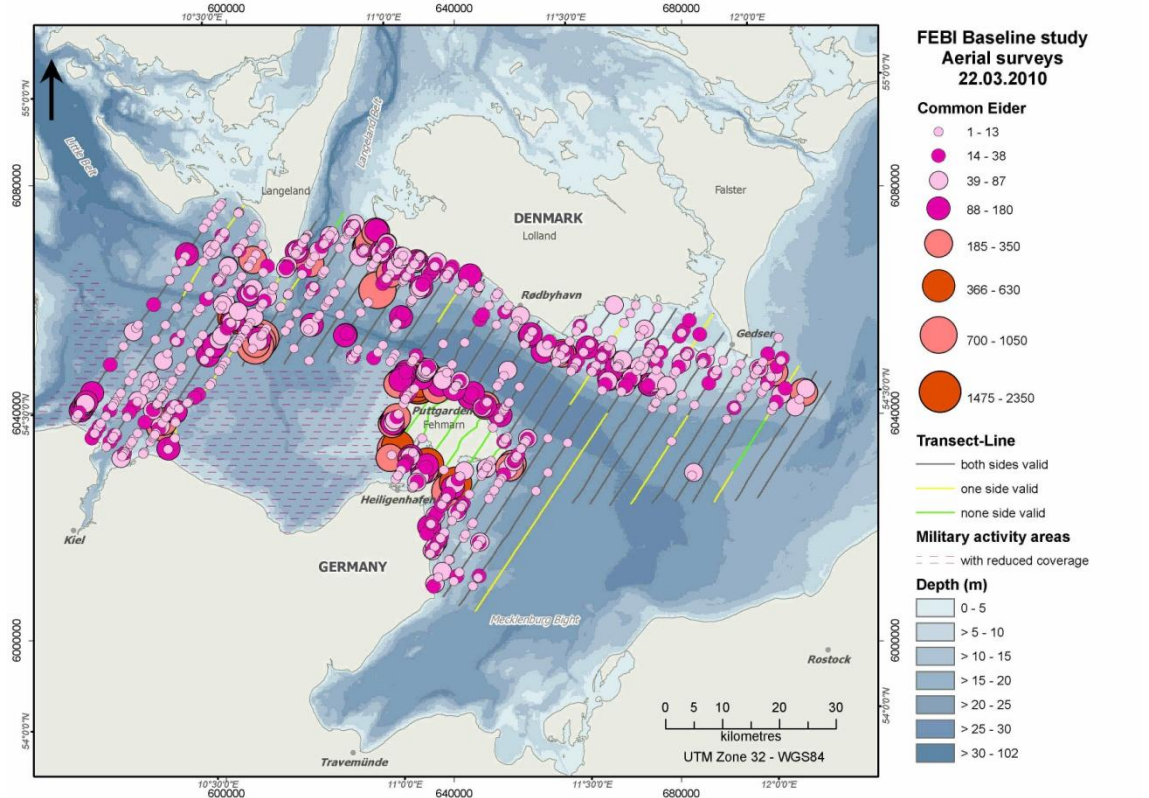


Figure 1.51 Common Eider distribution in the study area during aerial surveys (March 2010).

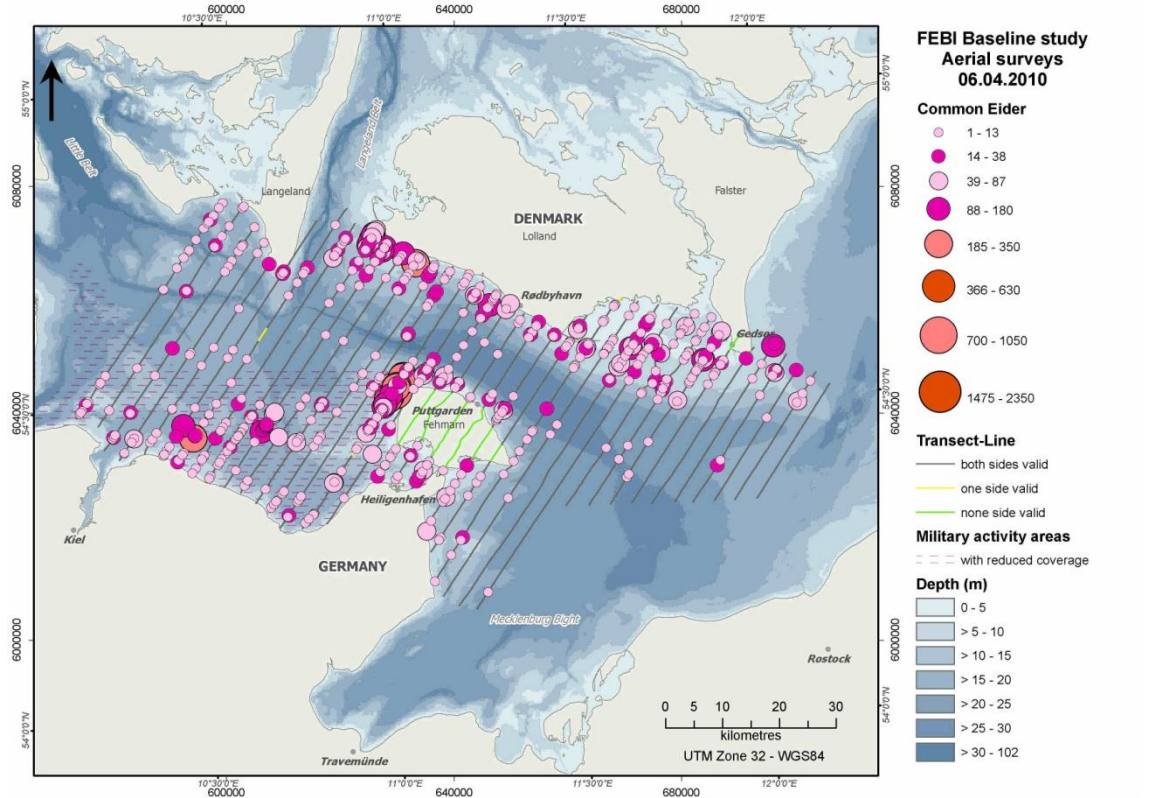


Figure 1.52 Common Eider distribution in the study area during aerial surveys (April 2010).

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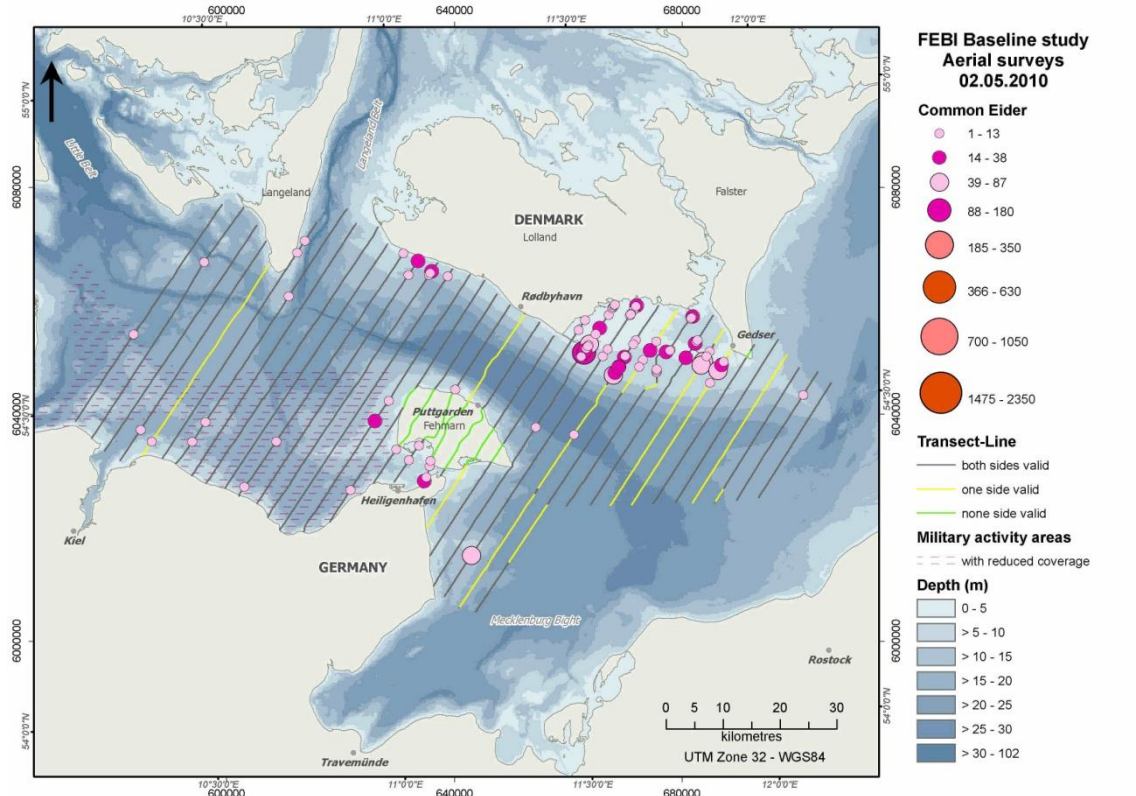


Figure 1.53 Common Eider distribution in the study area during aerial surveys (May 2010).

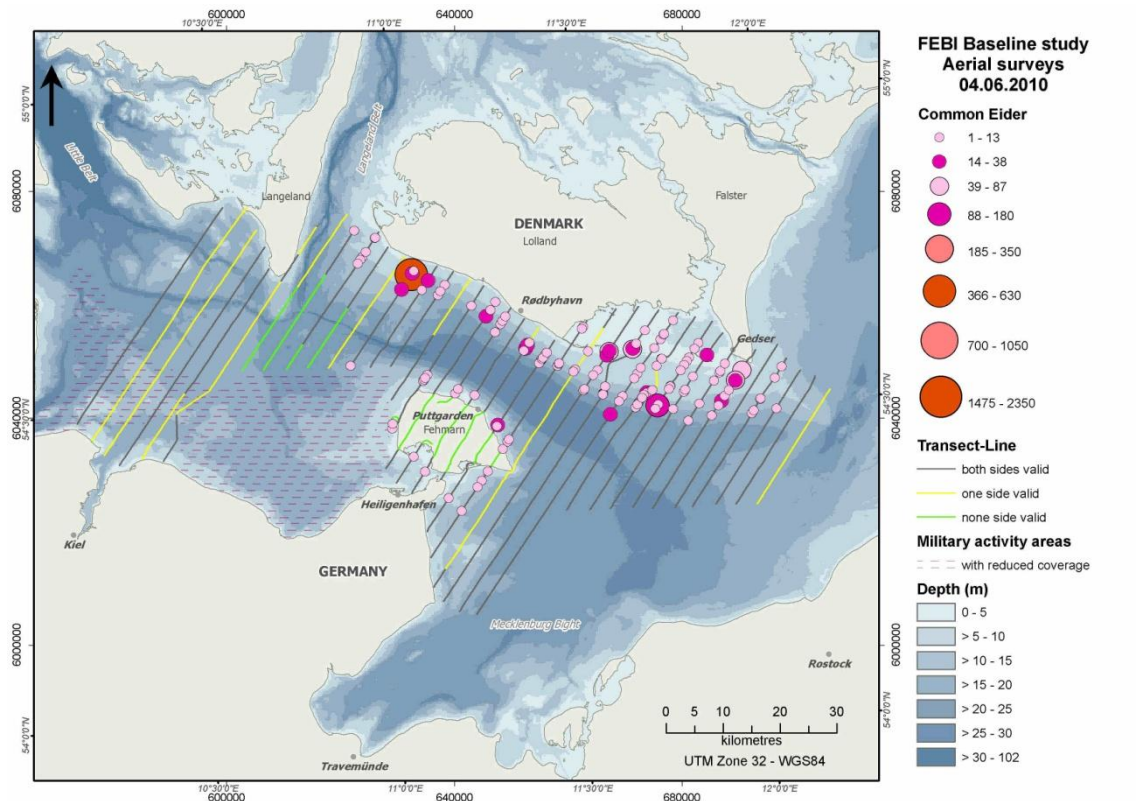


Figure 1.54 Common Eider distribution in the study area during aerial surveys (June 2010).

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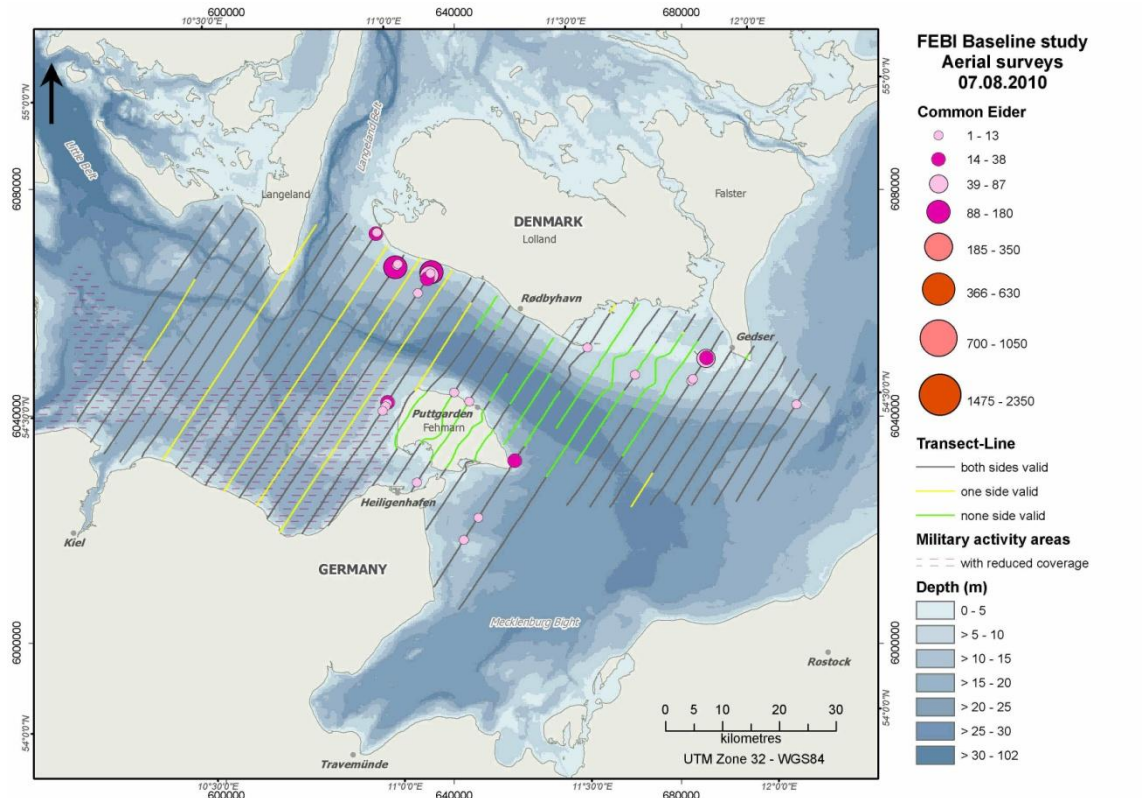


Figure 1.55 Common Eider distribution in the study area during aerial surveys (August 2010).

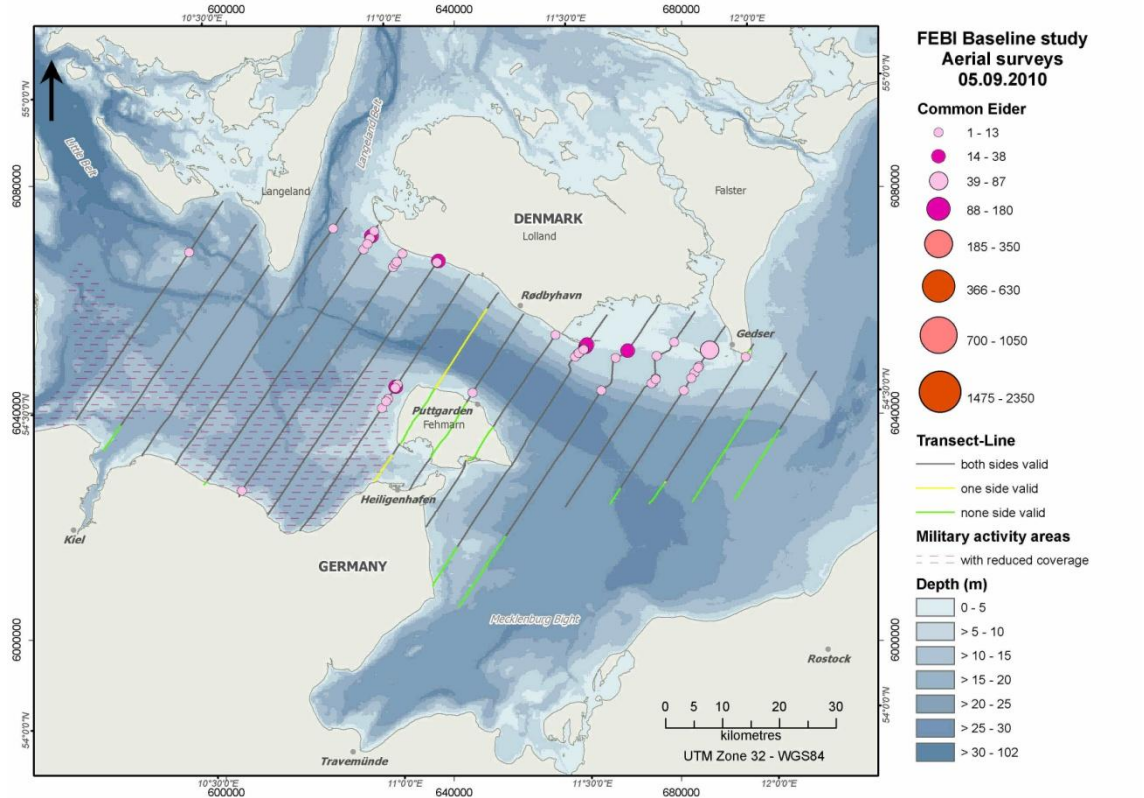


Figure 1.56 Common Eider distribution in the study area during aerial surveys (September 2010).

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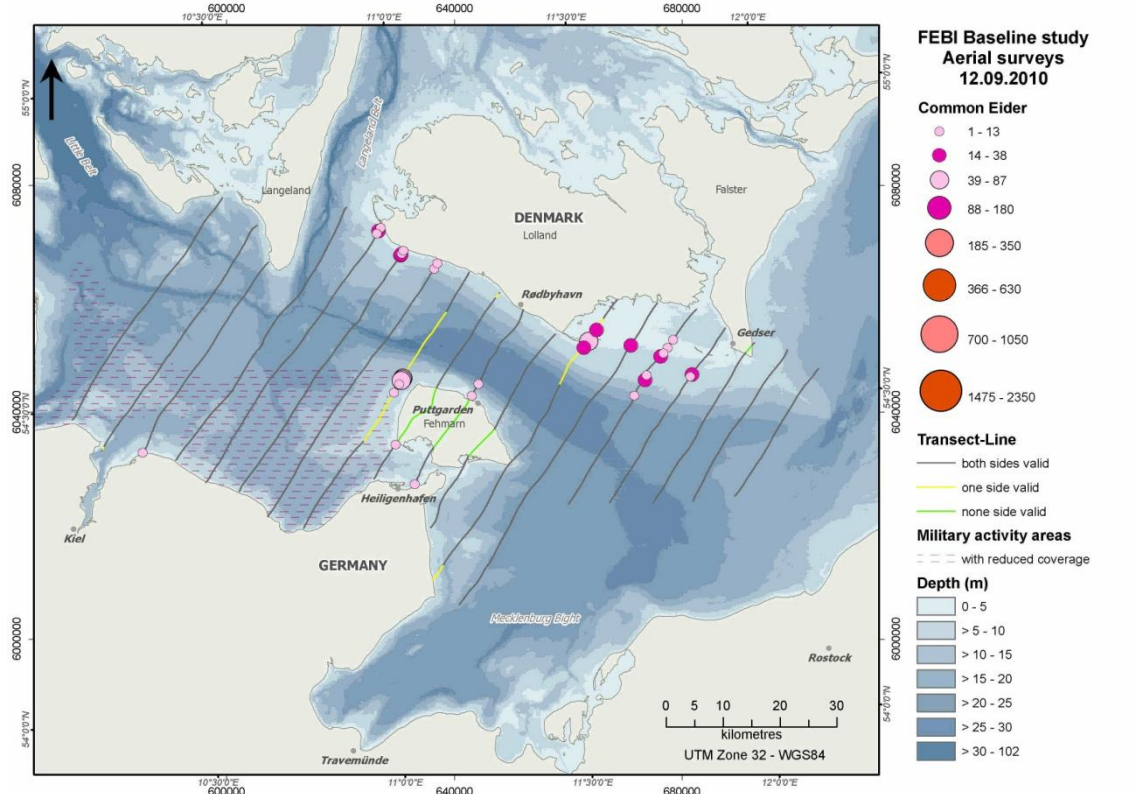


Figure 1.57 Common Eider distribution in the study area during aerial surveys (September 2010).

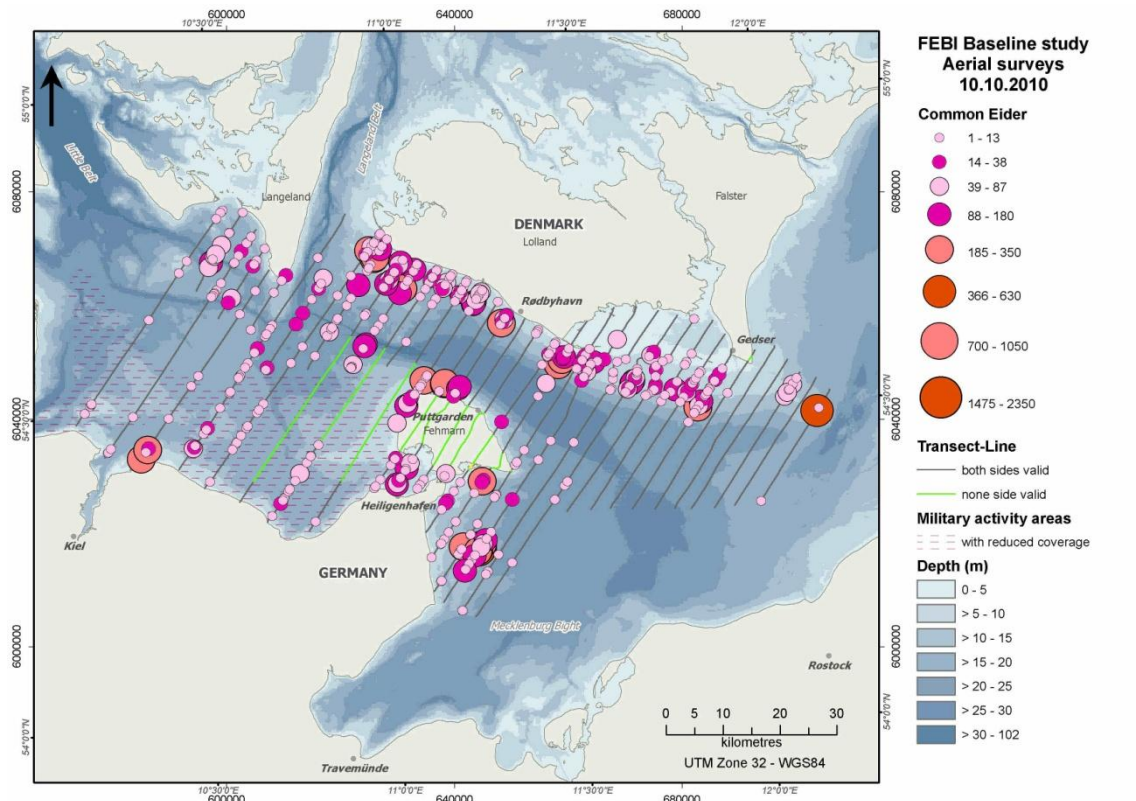


Figure 1.58 Common Eider distribution in the study area during aerial surveys (October 2010).

FEHMARNBELT BIRDS

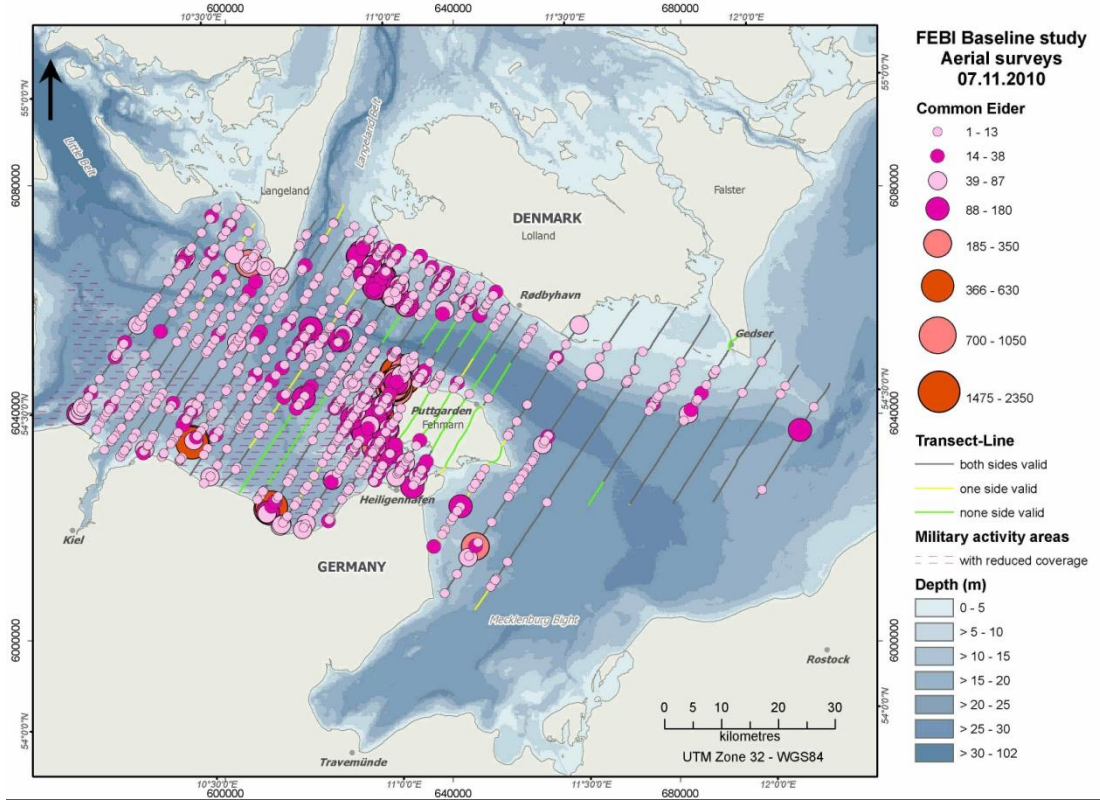


Figure 1.59 Common Eider distribution in the study area during aerial surveys (November 2010).

1.1.8 Long-tailed Duck – *Clangula hyemalis*

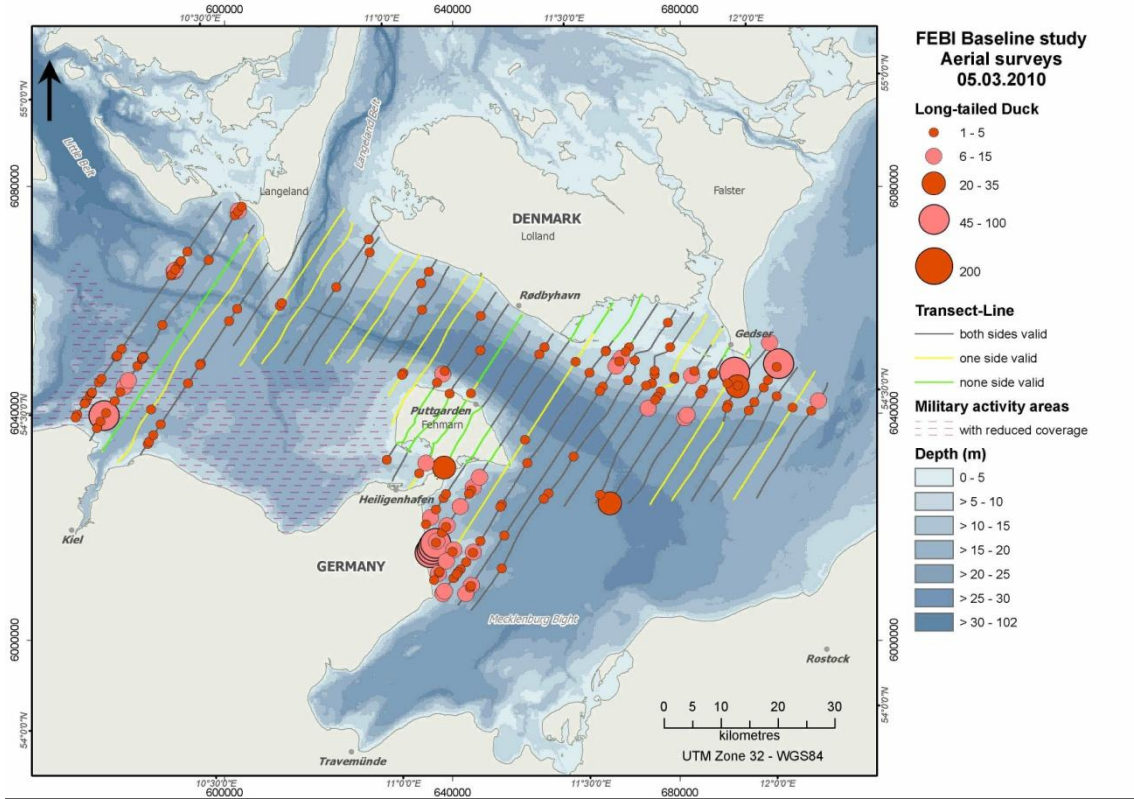


Figure 1.60 Long-tailed Duck distribution in the study area during aerial surveys (March 2010).

FEHMARNBELT BIRDS

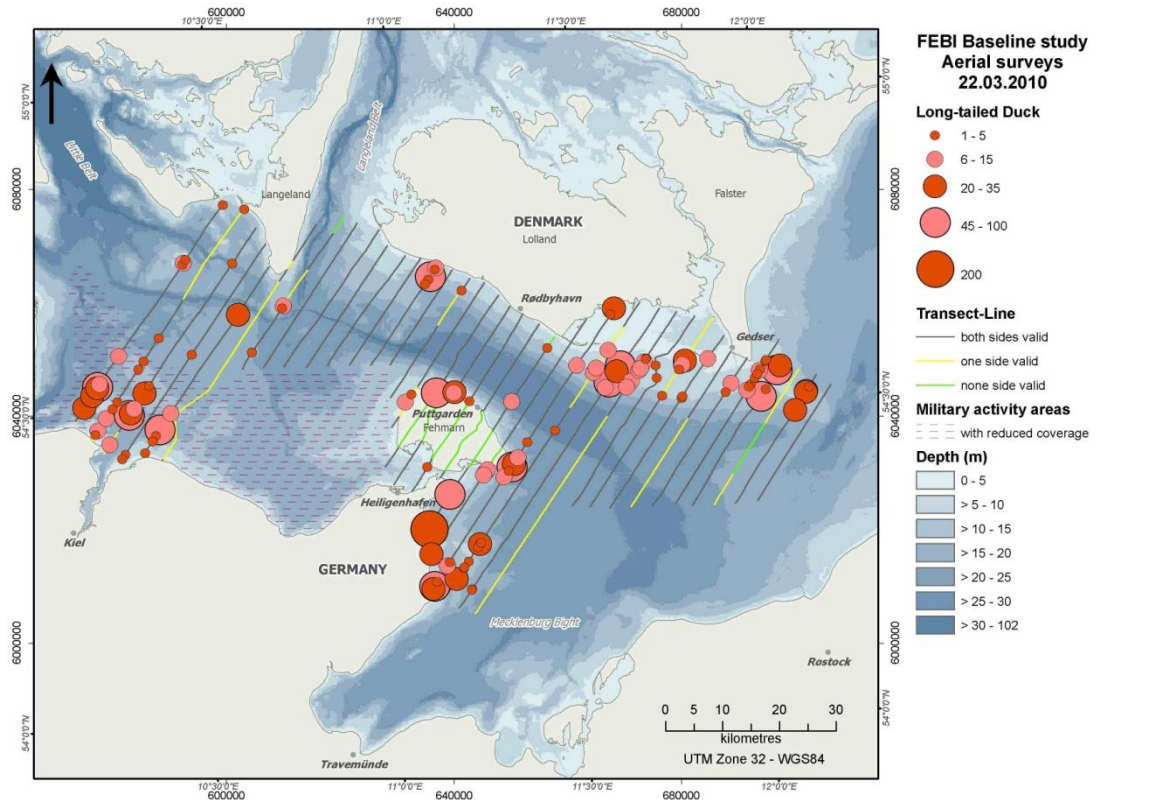


Figure 1.61 Long-tailed Duck distribution in the study area during aerial surveys (March 2010).

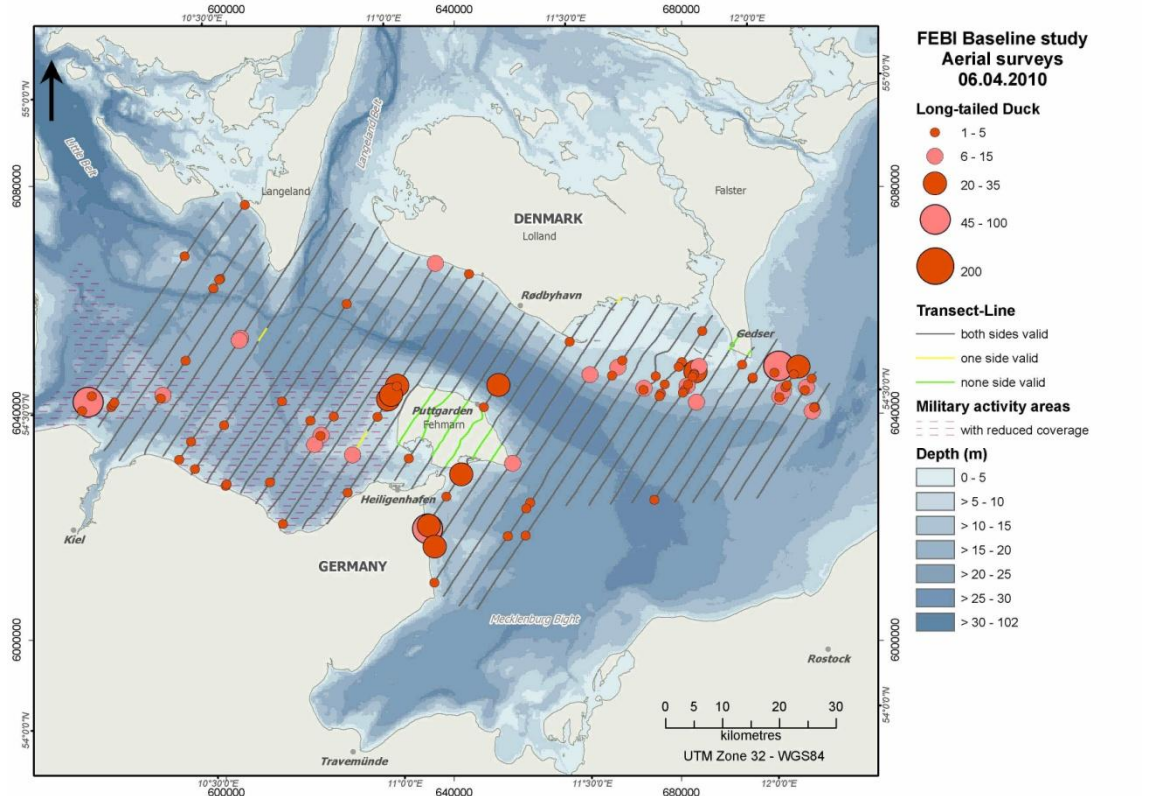


Figure 1.62 Long-tailed Duck distribution in the study area during aerial surveys (April 2010).

FEHMARNBELT BIRDS

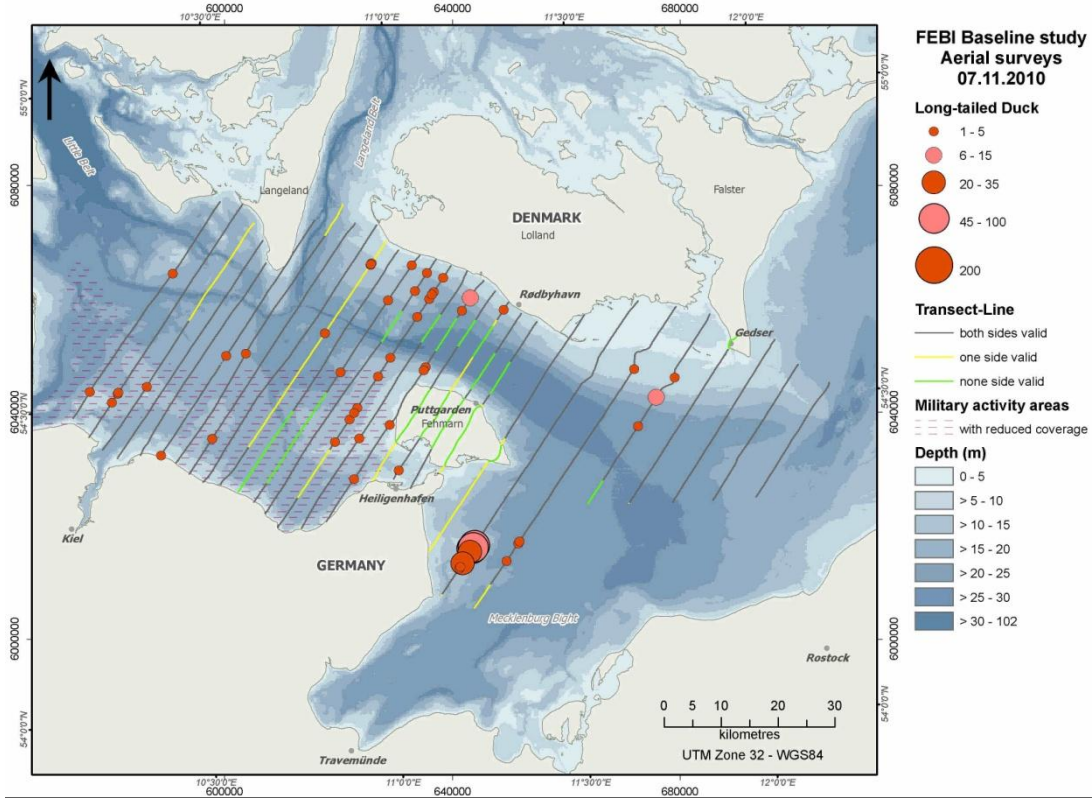


Figure 1.63 Long-tailed Duck distribution in the study area during aerial surveys (November 2010).

1.1.9 Velvet Scoter / Common Scoter – *Melanitta fusca* / *Melanitta nigra*

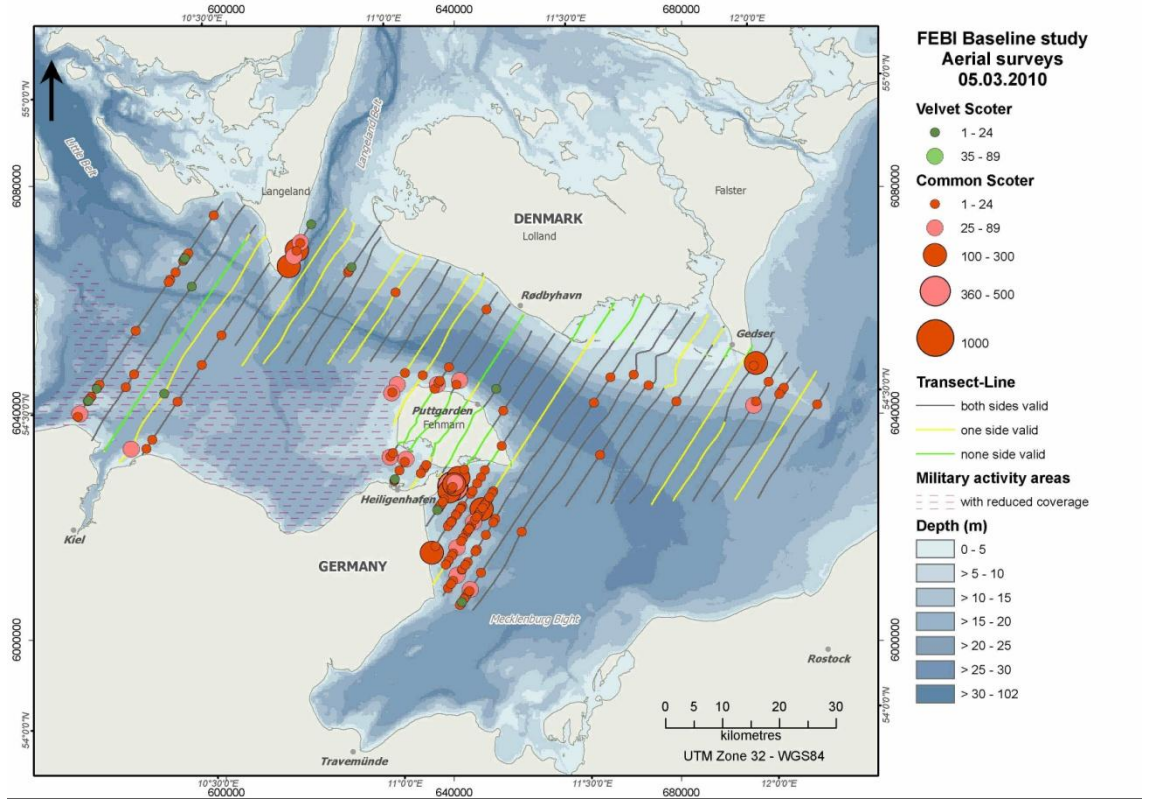


Figure 1.64 Velvet Scoter and Common Scoter distribution in the study area during aerial surveys (March 2010).

FEHMARNBELT BIRDS

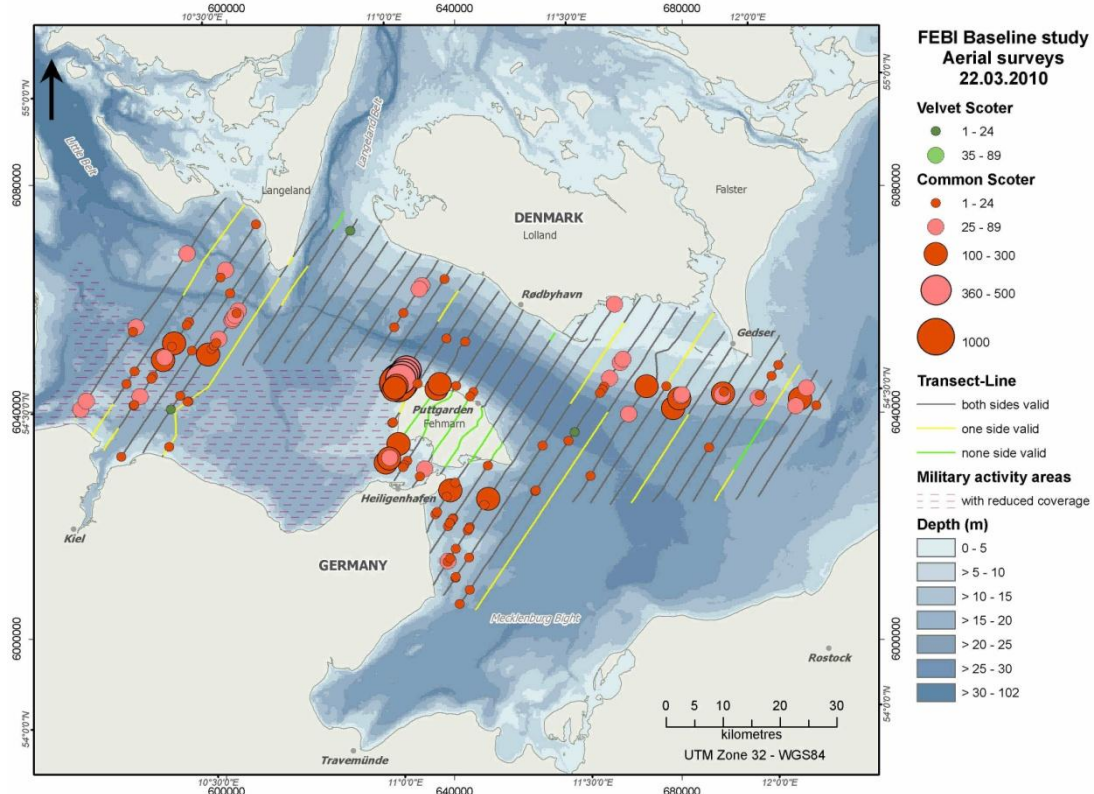


Figure 1.65 Velvet Scoter and Common Scoter distribution in the study area during aerial surveys (March 2010).

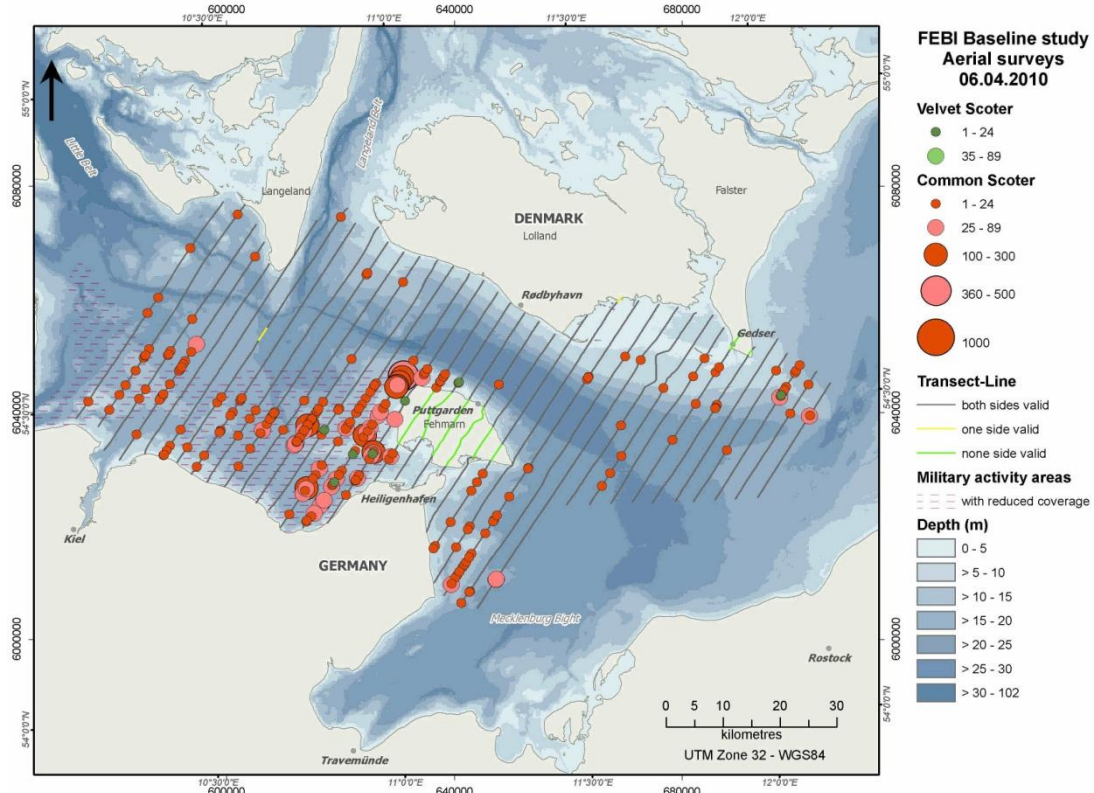


Figure 1.66 Velvet Scoter and Common Scoter distribution in the study area during aerial surveys (April 2010).

FEHMARNBELT BIRDS

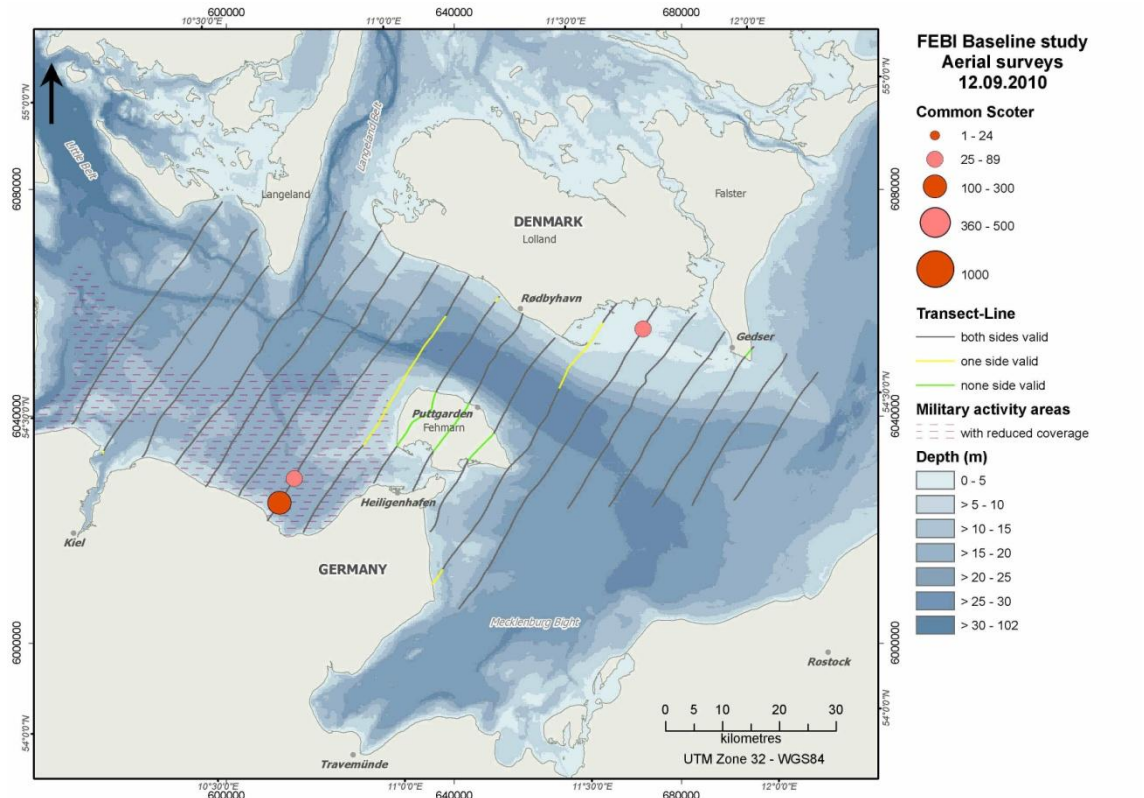


Figure 1.67 Common Scoter distribution in the study area during aerial surveys (September 2010).

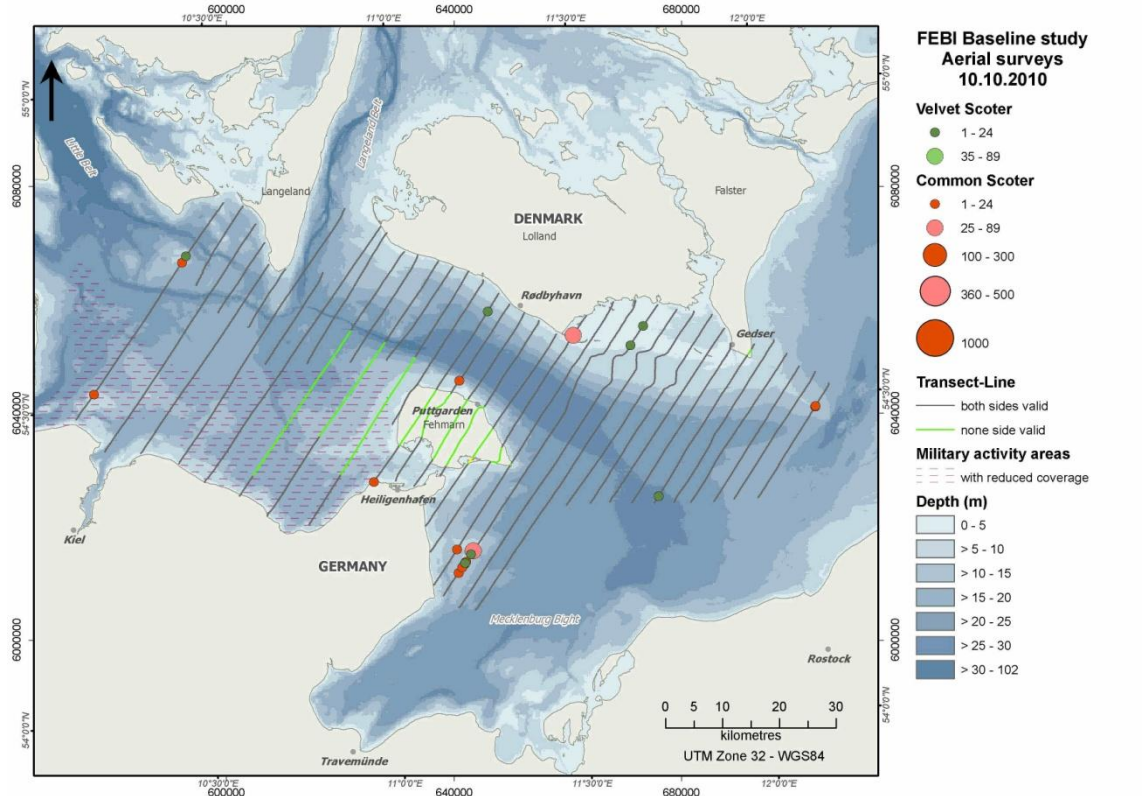


Figure 1.68 Velvet Scoter and Common Scoter distribution in the study area during aerial surveys (October 2010).

FEHMARNBELT BIRDS

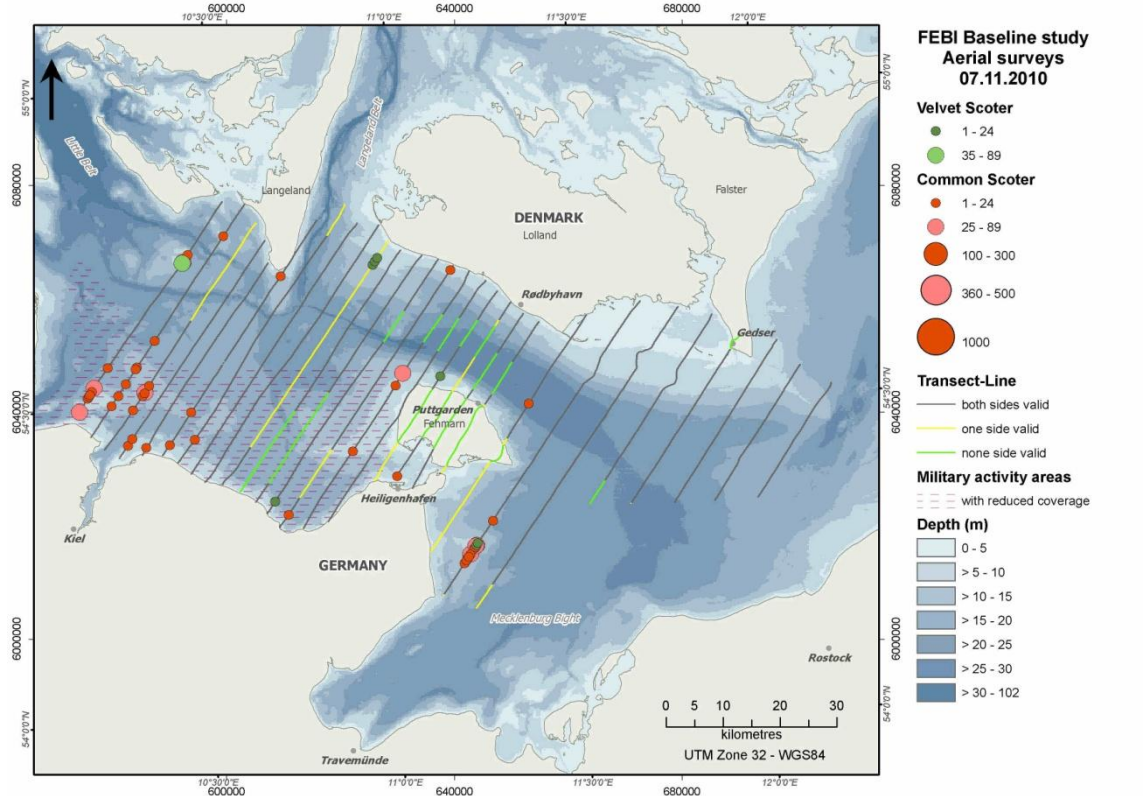


Figure 1.69 Velvet Scoter and Common Scoter distribution in the study area during aerial surveys (November 2010).

1.1.10 *Goosander / Smew / Red-breasted Merganser – Mergus merganser / Mergus albellus / Mergus serrator*

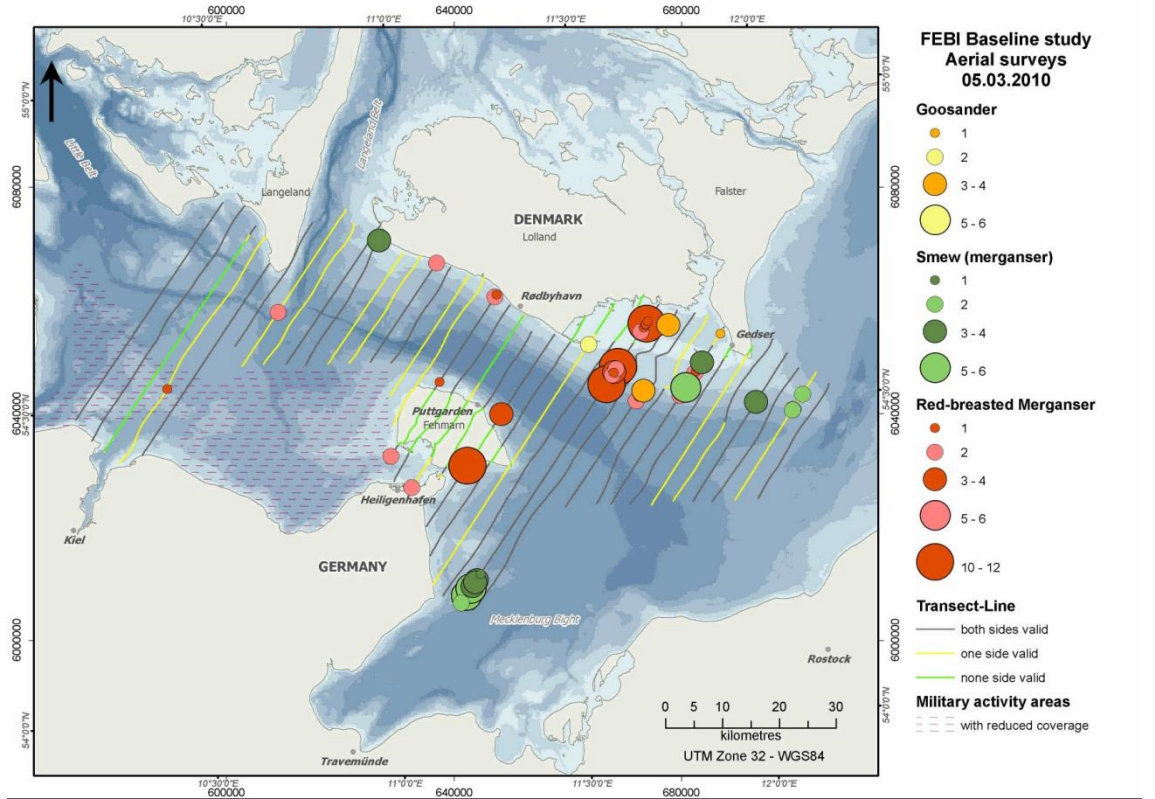


Figure 1.70 *Goosander, Smew and Red-breasted Merganser distribution in the study area during aerial surveys (March 2010).*

FEHMARNBELT BIRDS

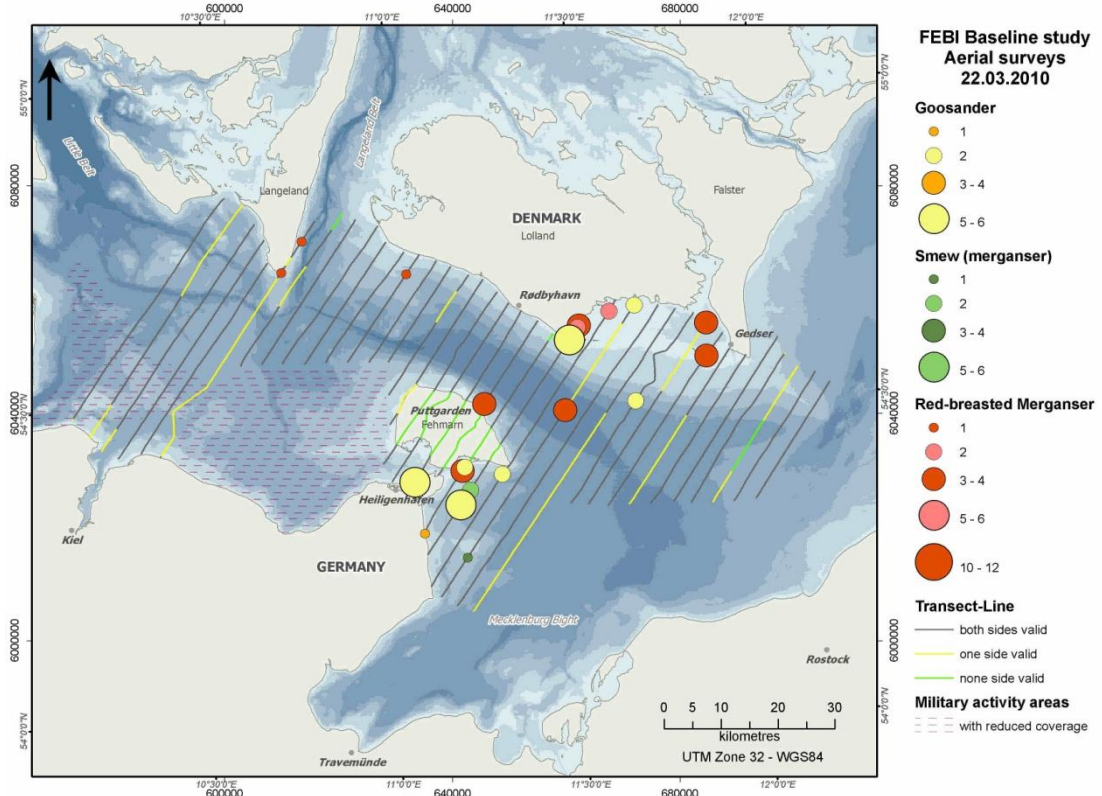


Figure 1.71 Goosander, Smew and Red-breasted Merganser distribution in the study area during aerial surveys (March 2010).

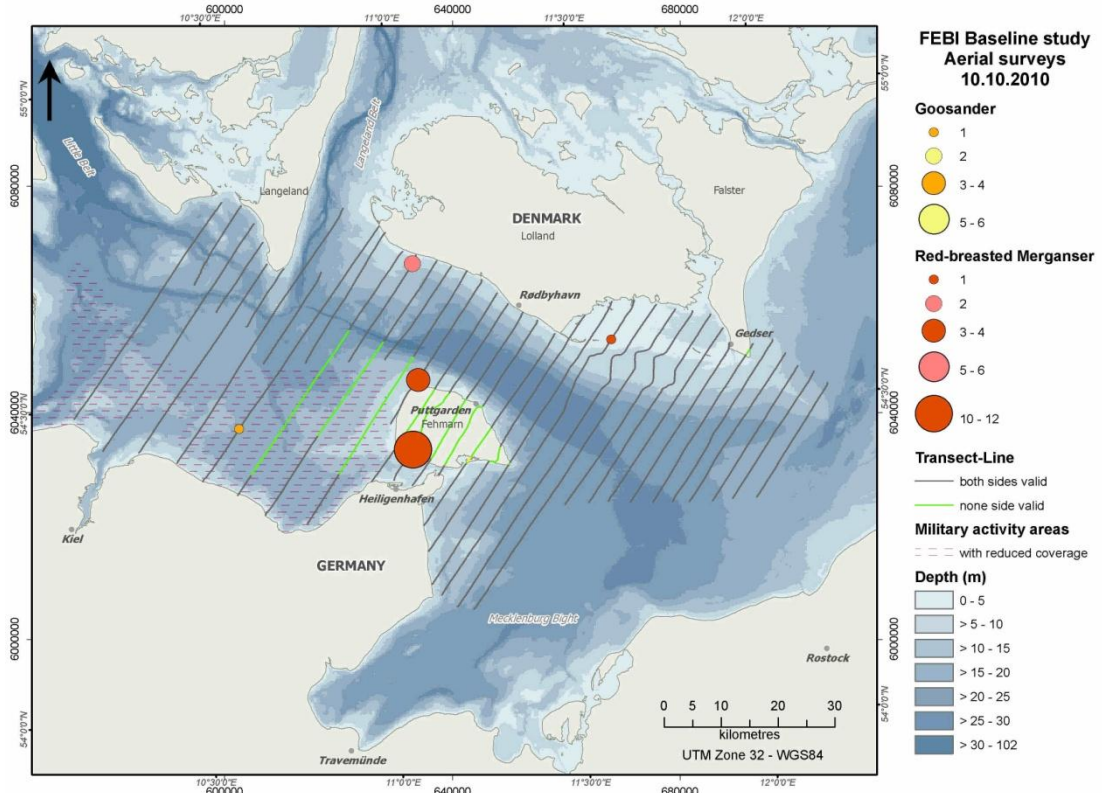


Figure 1.72 Goosander and Red-breasted Merganser distribution in the study area during aerial surveys (October 2010).

FEHMARNBELT BIRDS

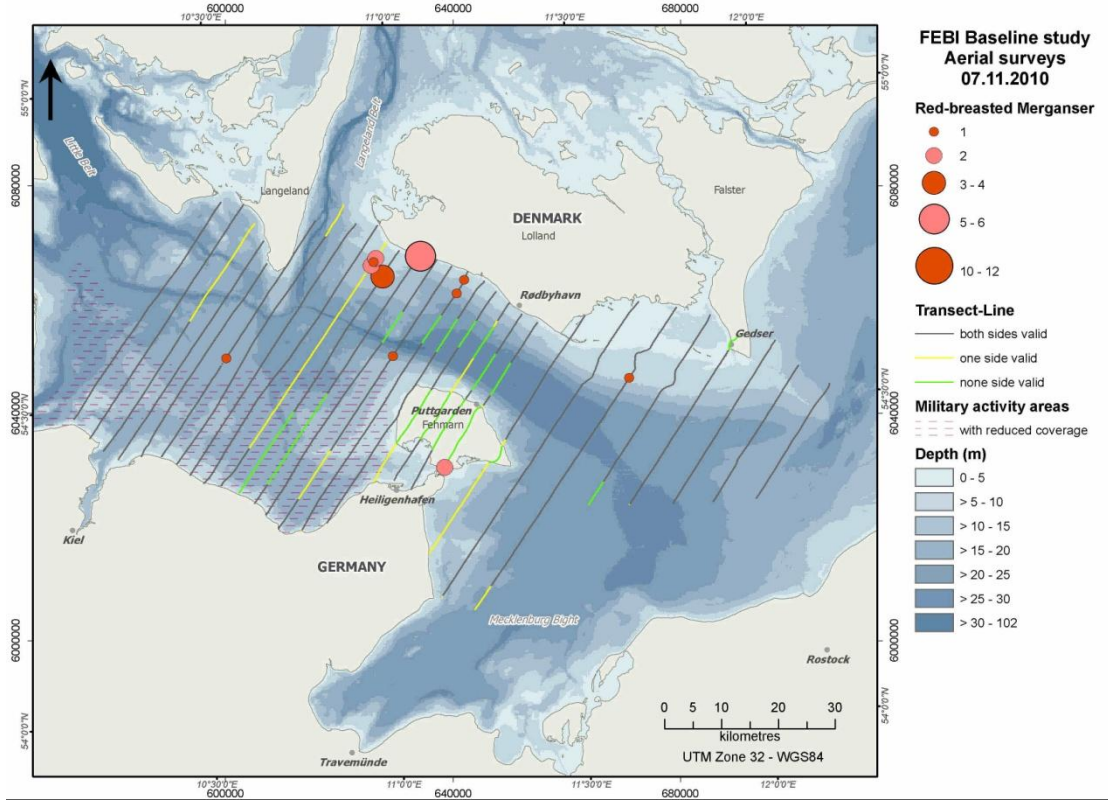


Figure 1.73 Red-breasted Merganser distribution in the study area during aerial surveys (November 2010).

1.1.11 Little Gull / Black-headed Gull - *Larus minutus* / *Larus ridibundus*

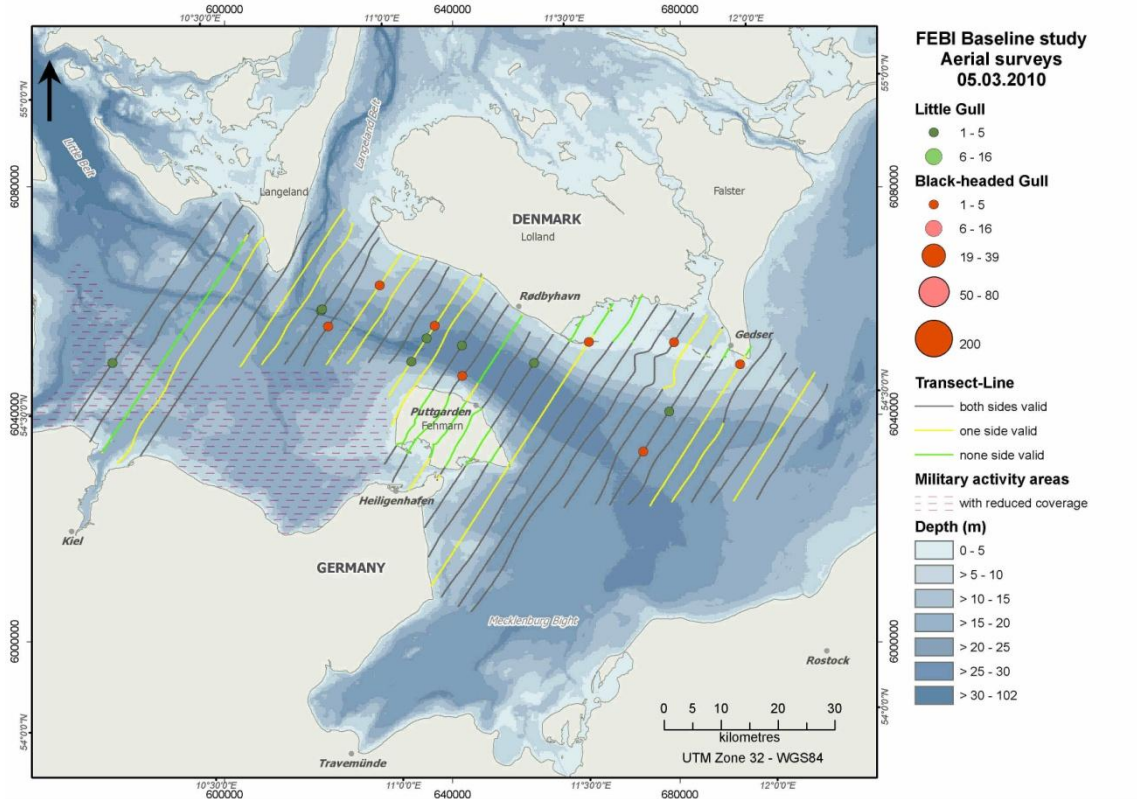


Figure 1.74 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (March 2010).

FEHMARNBELT BIRDS

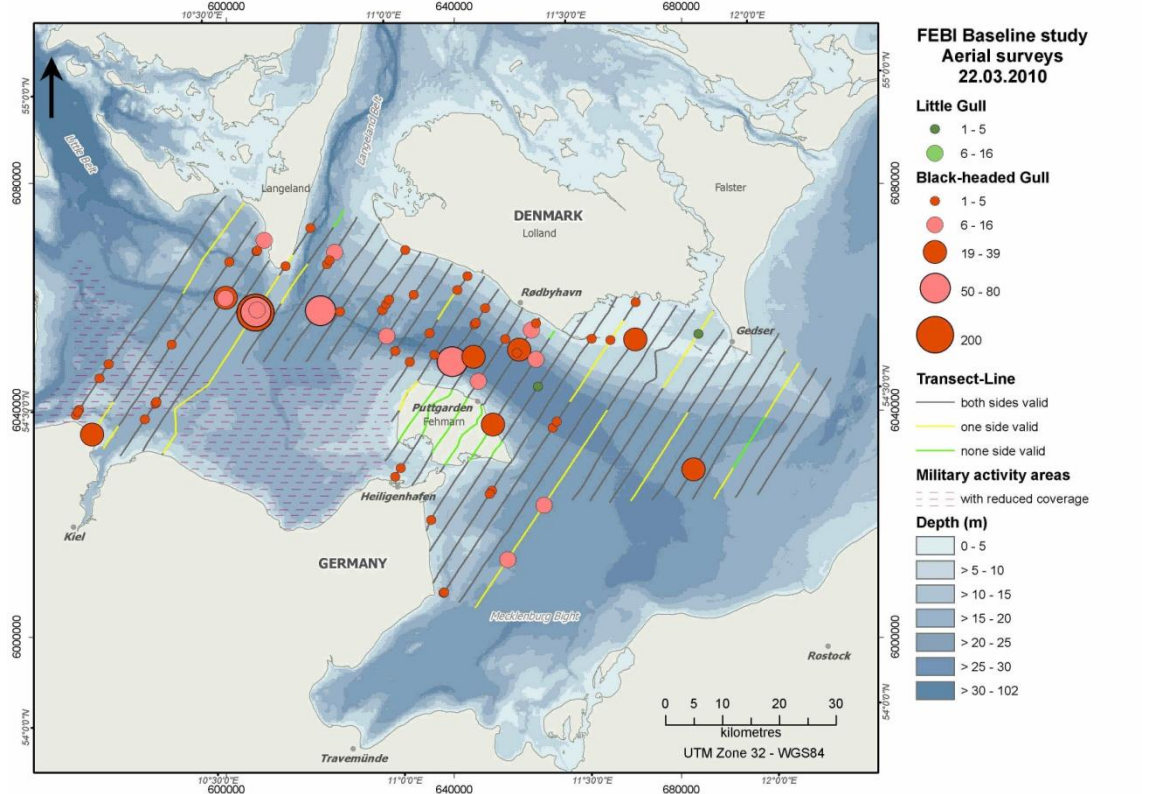


Figure 1.75 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (March 2010).

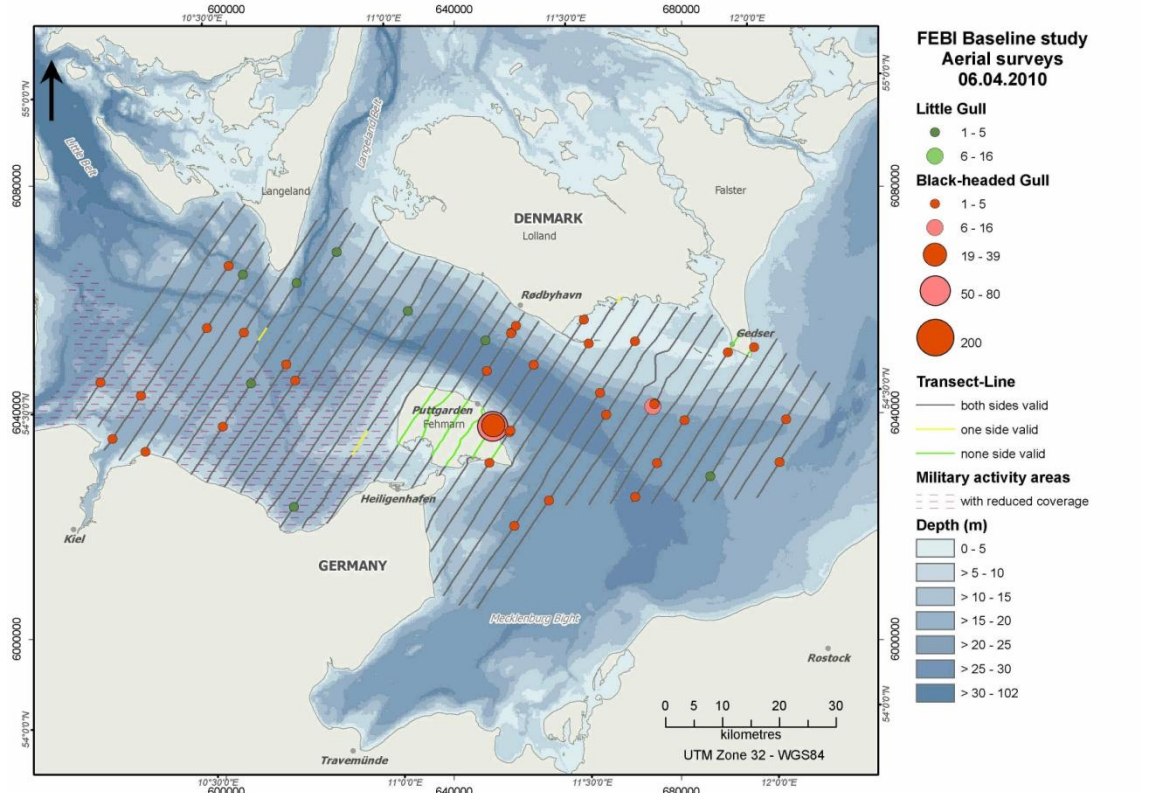


Figure 1.76 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (April 2010).

FEHMARNBELT BIRDS

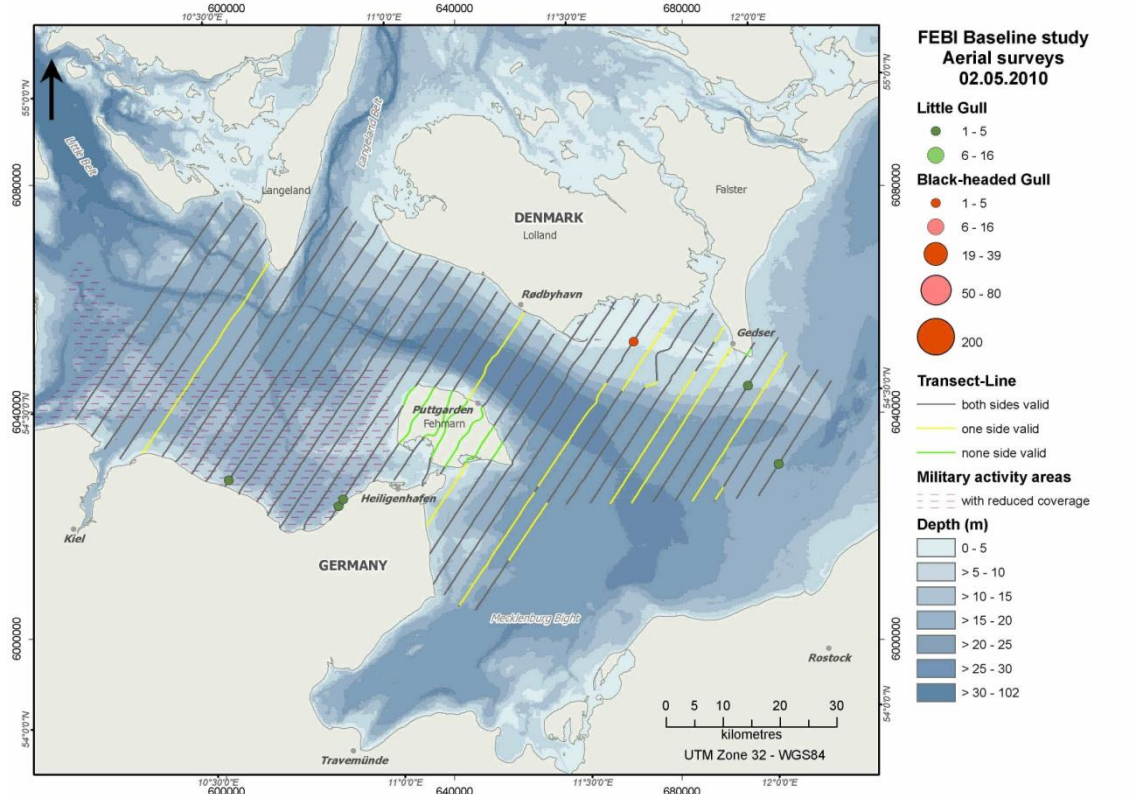


Figure 1.77 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (May 2010).

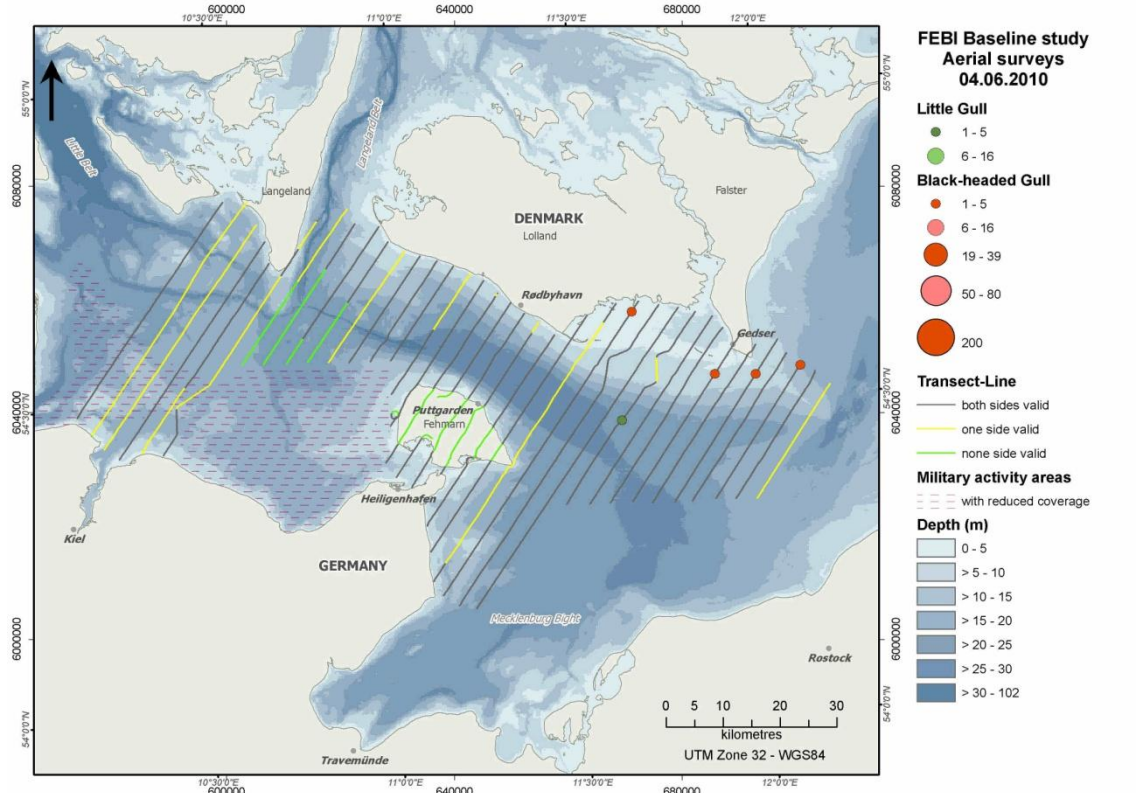


Figure 1.78 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (June 2010).

FEHMARNBELT BIRDS

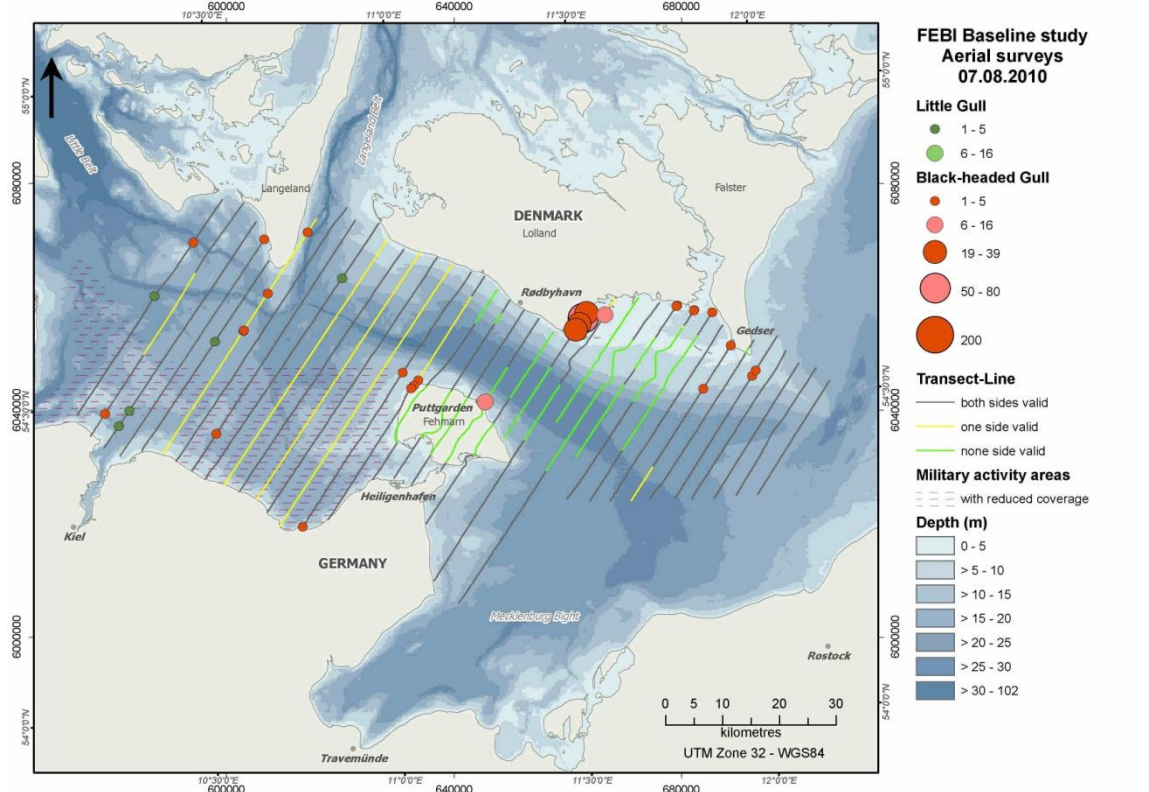


Figure 1.79 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (August 2010).

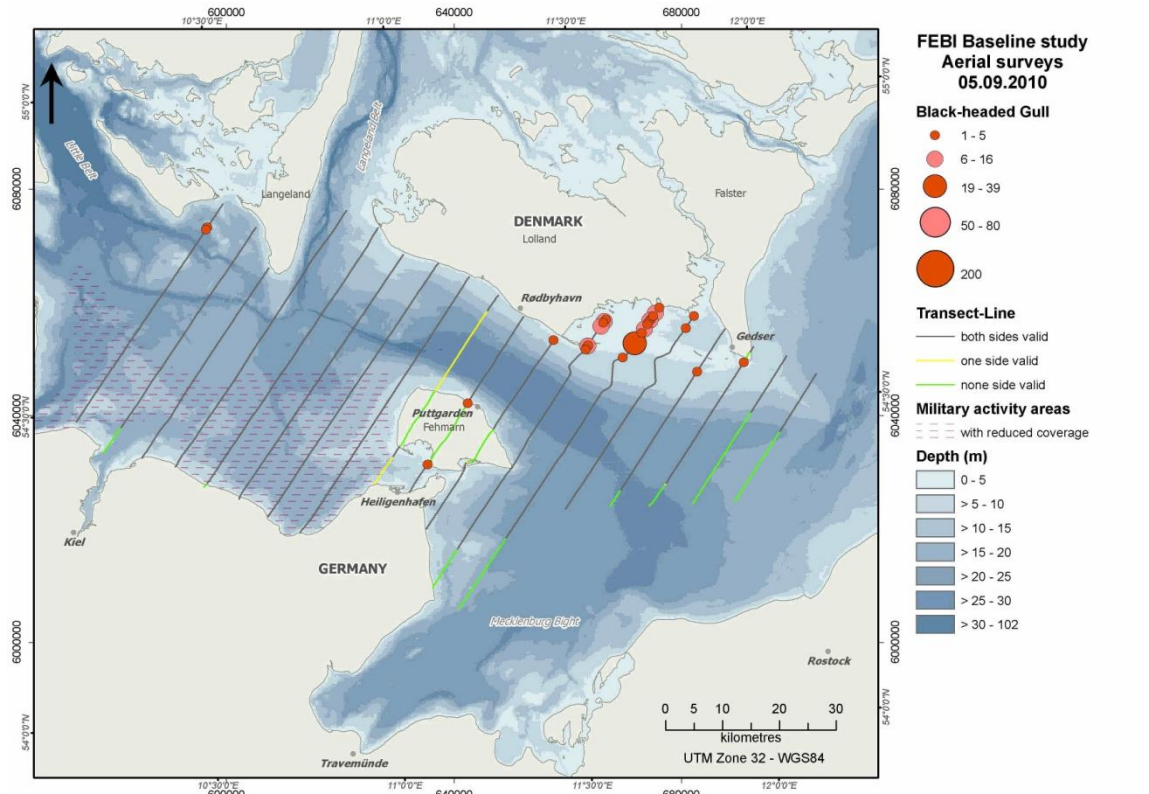


Figure 1.80 Black-headed Gull distribution in the study area during aerial surveys (September 2010).

FEHMARNBELT BIRDS

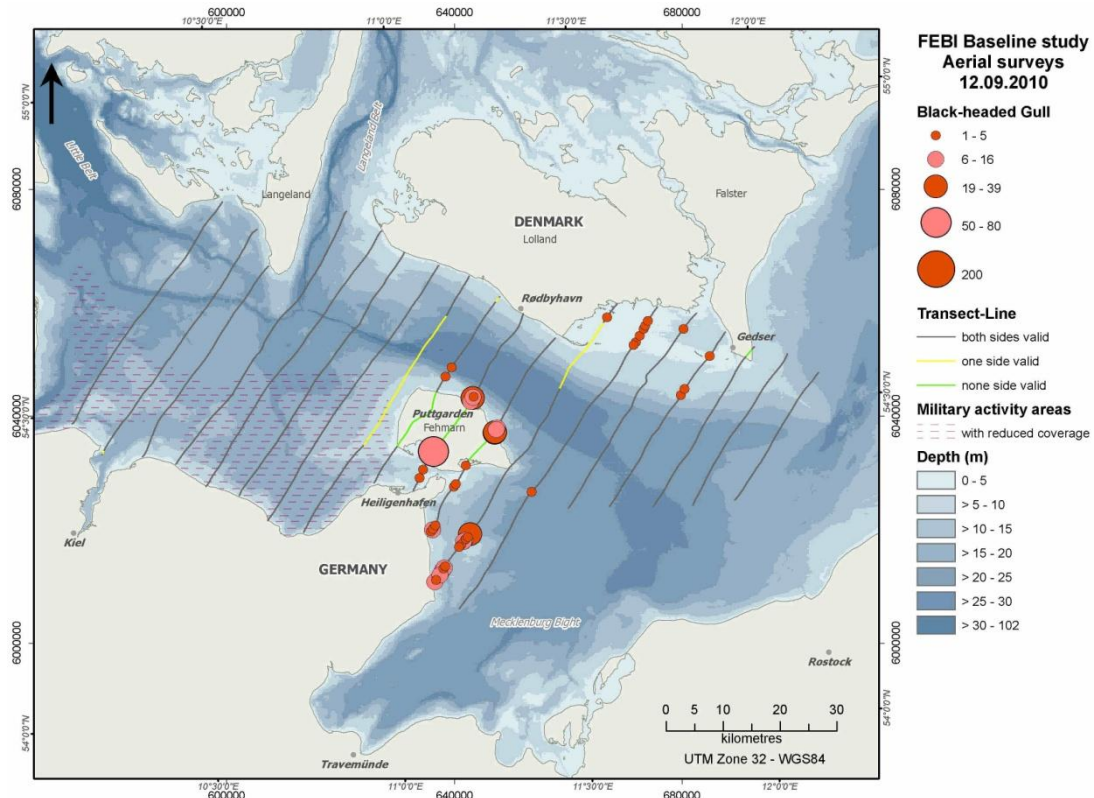


Figure 1.81 Black-headed Gull distribution in the study area during aerial surveys (September 2010).

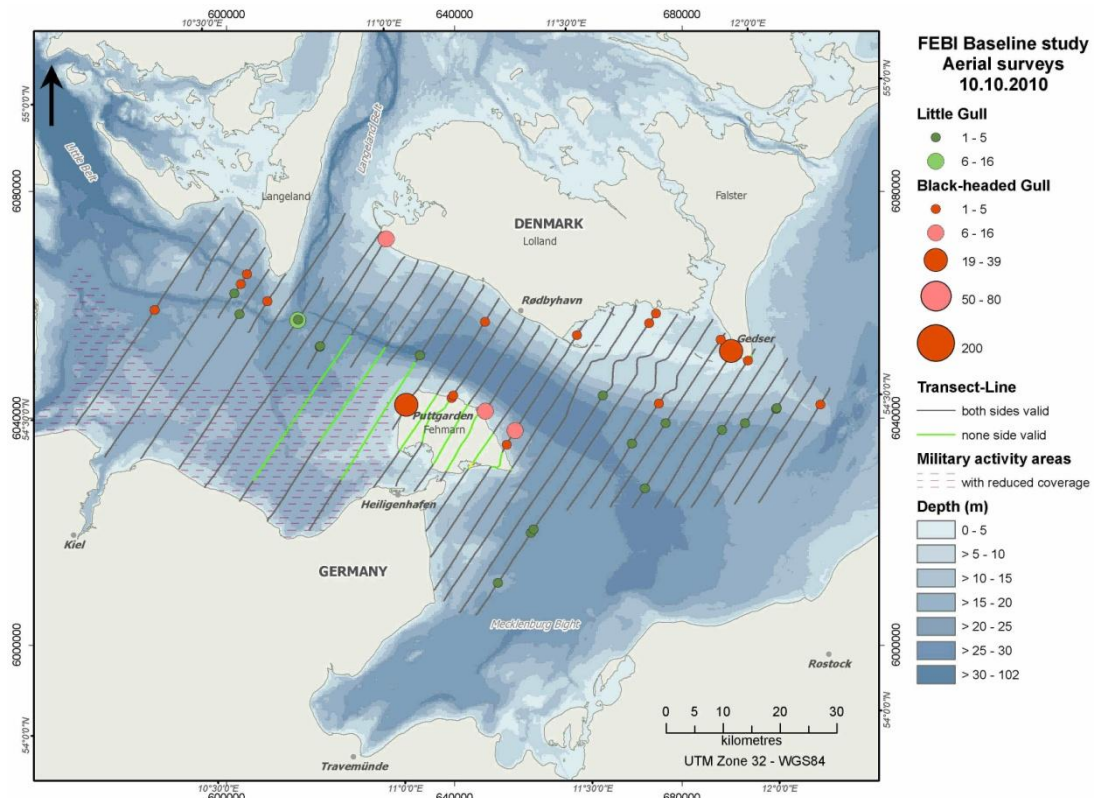


Figure 1.82 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (October 2010).

FEHMARNBELT BIRDS

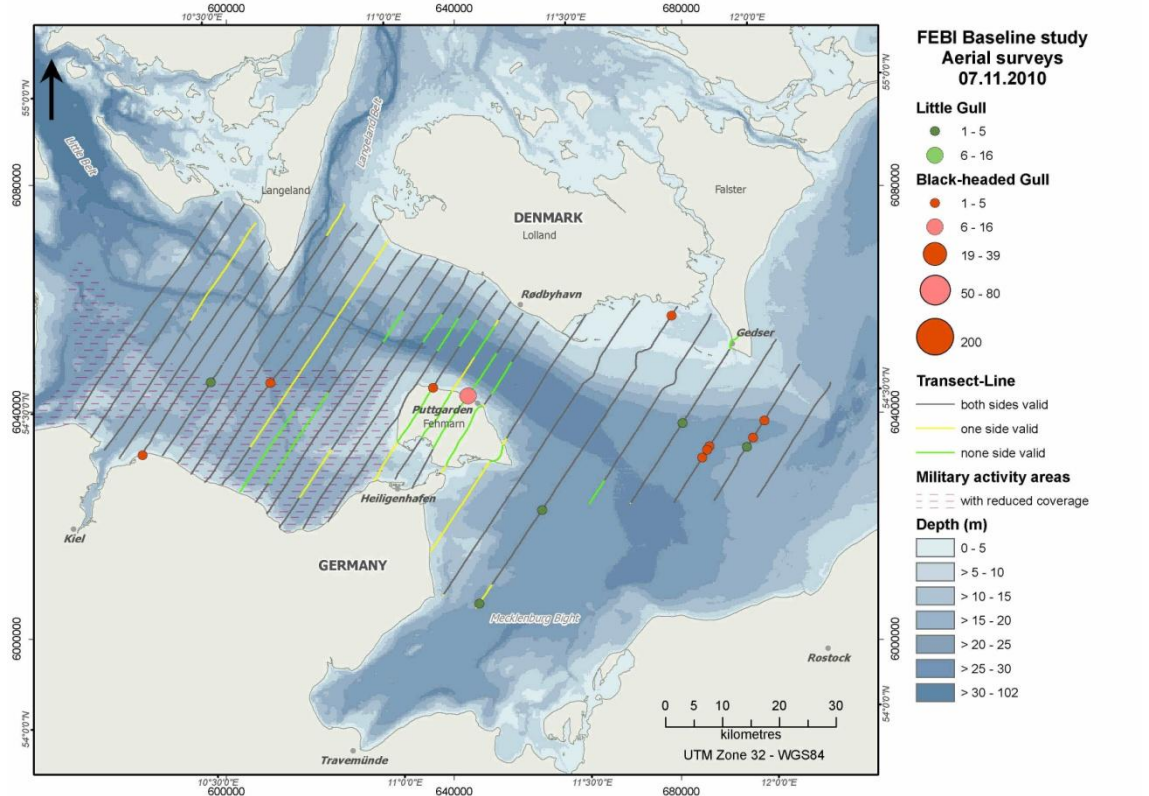


Figure 1.83 Little Gull and Black-headed Gull distribution in the study area during aerial surveys (November 2010).

1.1.12 *Great Black-backed Gull / Common Gull / Herring Gull – Larus marinus / Larus canus / Larus argentatus*

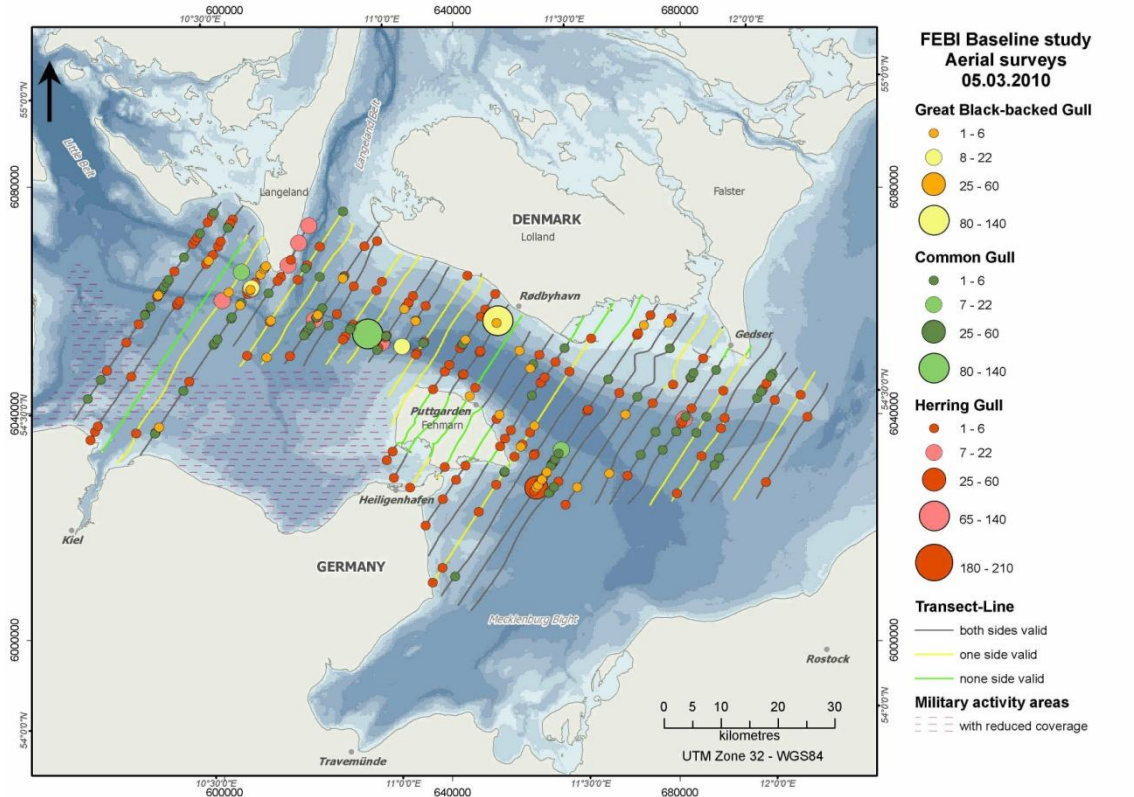


Figure 1.84 *Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (March 2010).*

FEHMARNBELT BIRDS

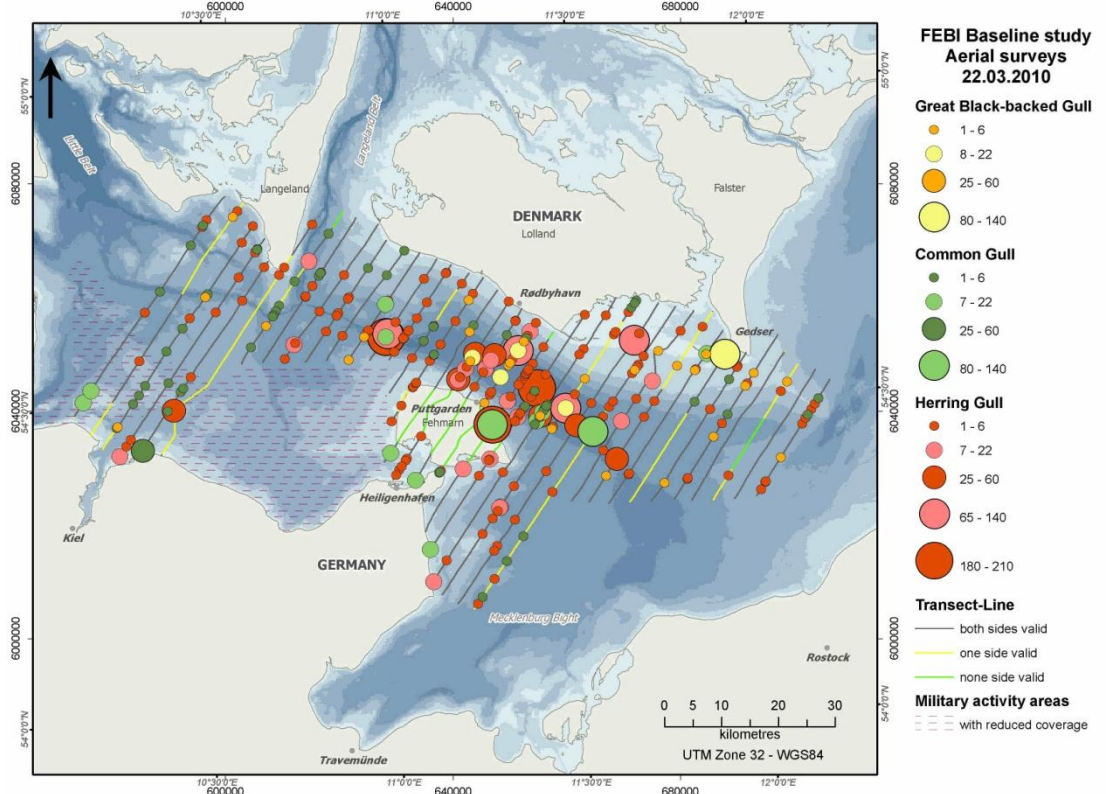


Figure 1.85 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (March 2010).

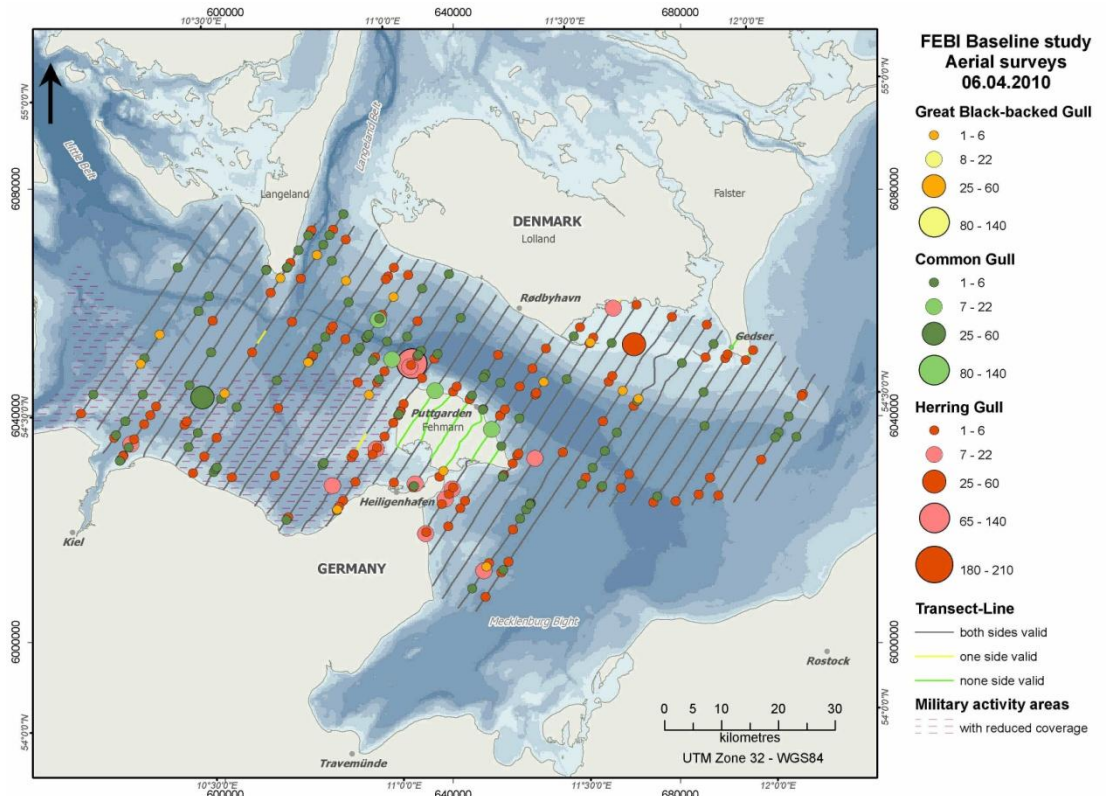


Figure 1.86 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (April 2010).

FEHMARNBELT BIRDS

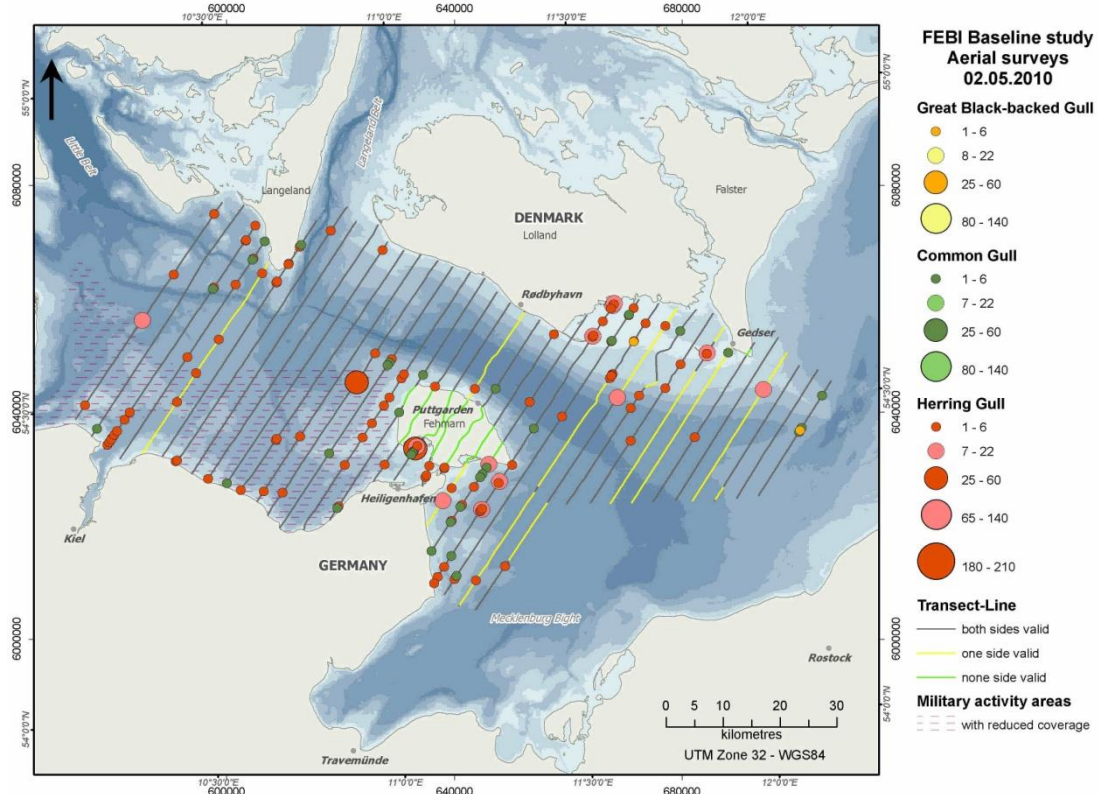


Figure 1.87 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (May 2010).

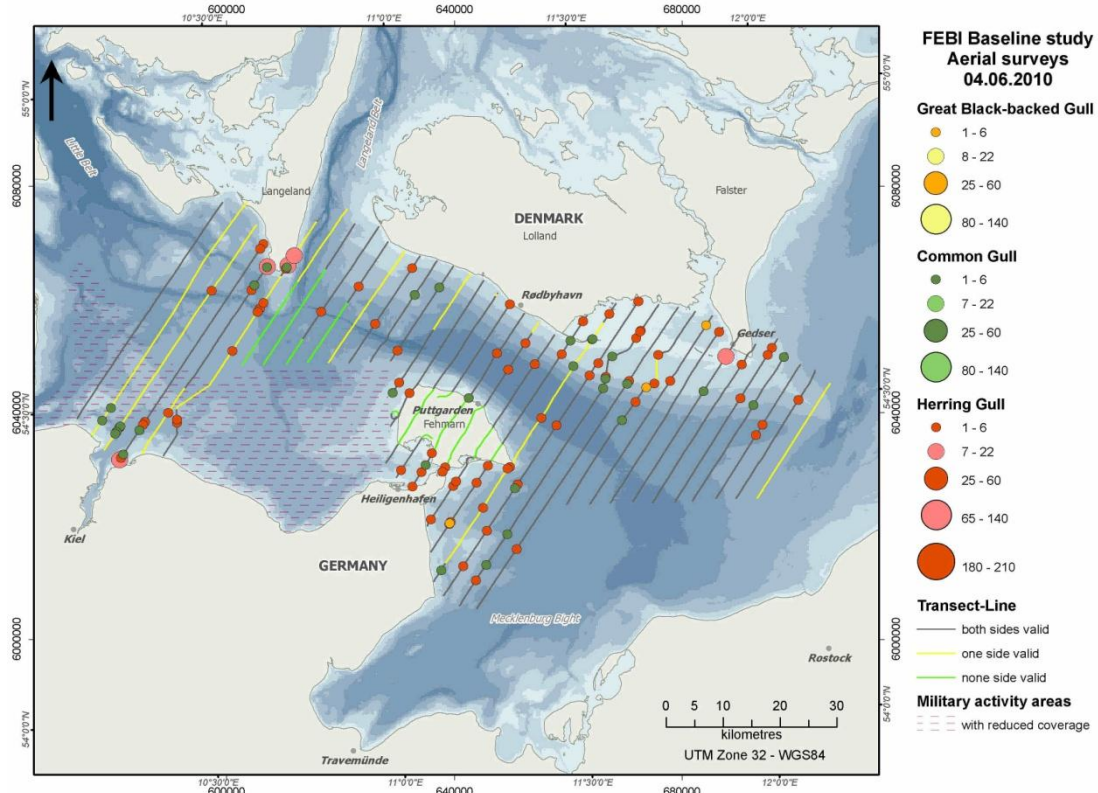


Figure 1.88 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (June 2010).

FEHMARNBELT BIRDS

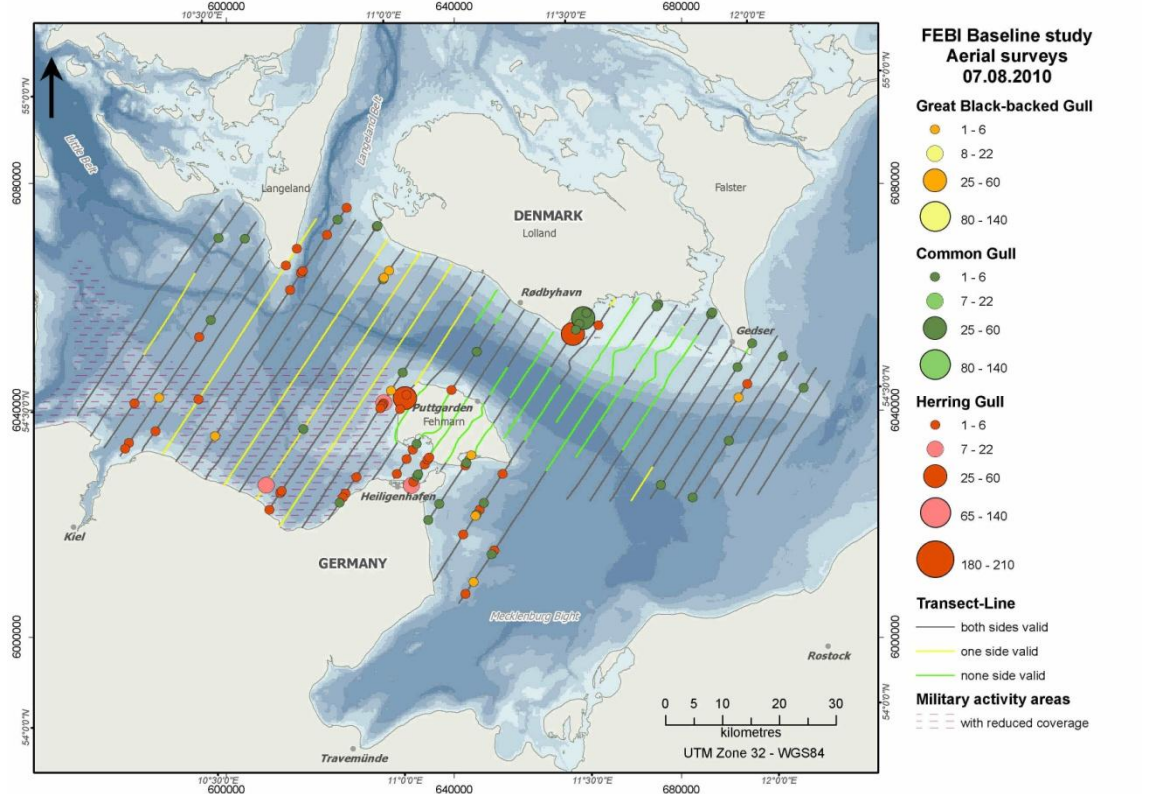


Figure 1.89 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (August 2010).

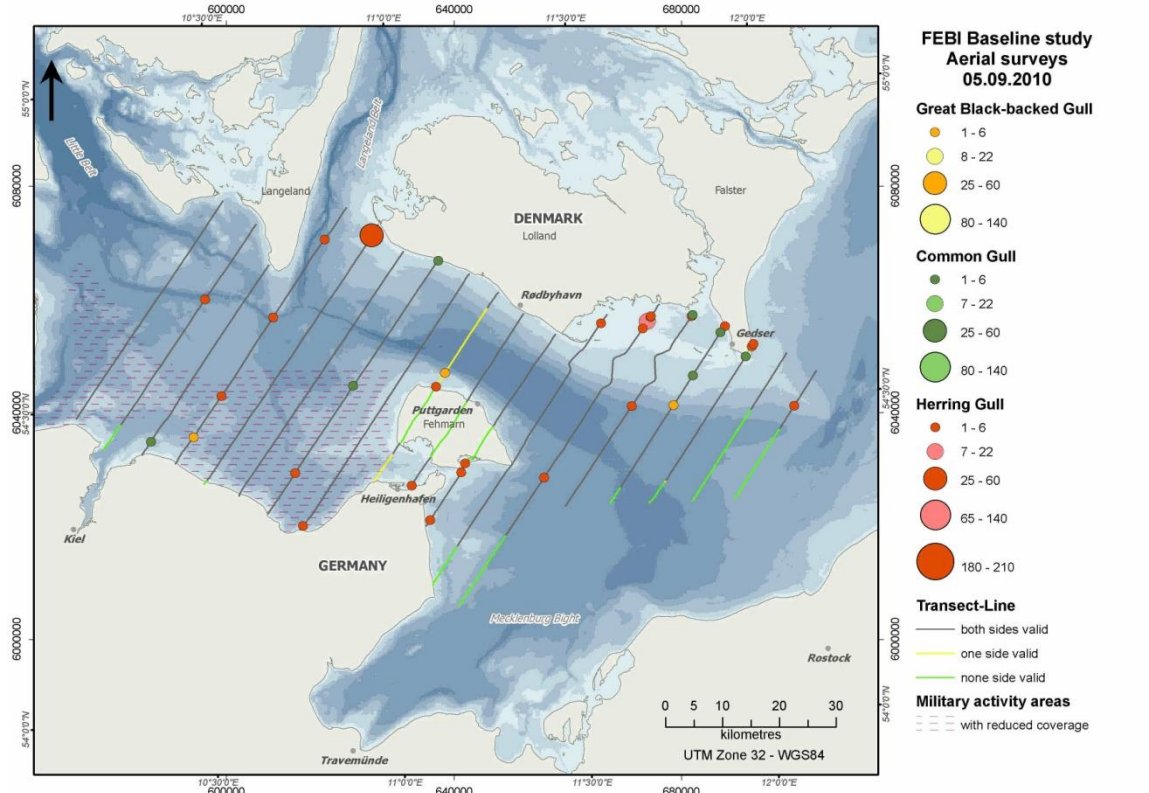


Figure 1.90 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (September 2010).

FEHMARNBELT BIRDS

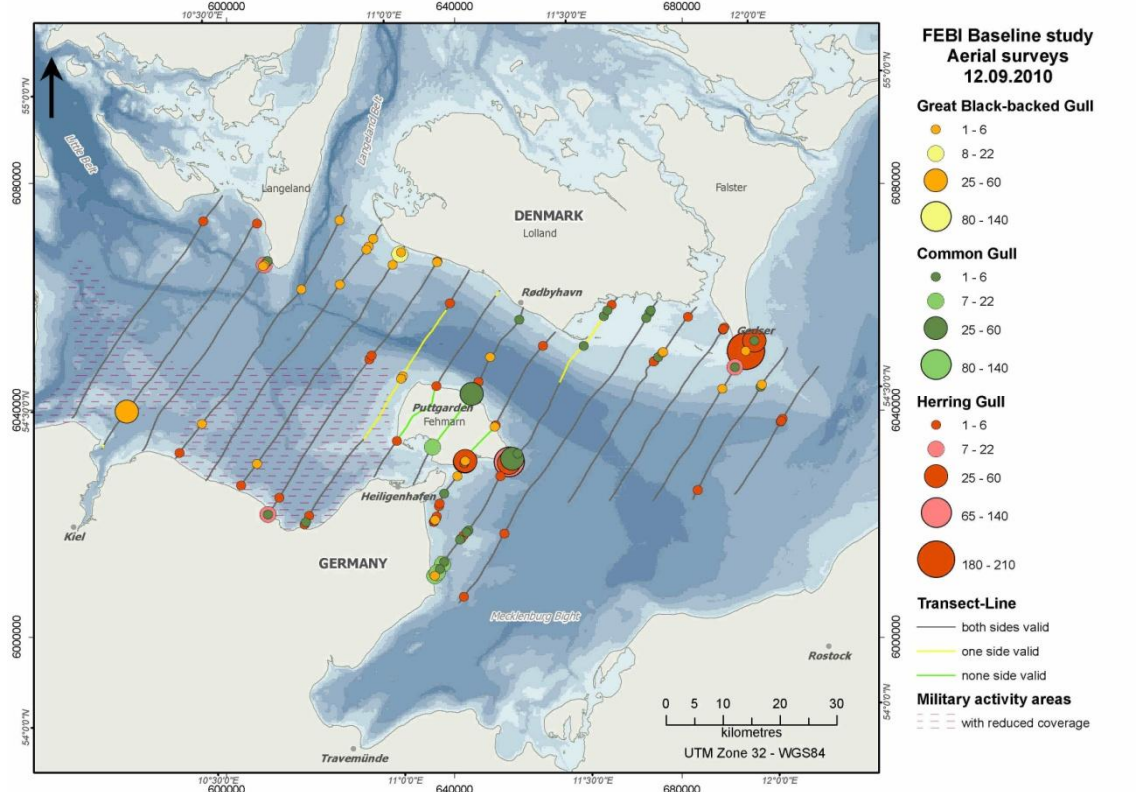


Figure 1.91 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (September 2010).

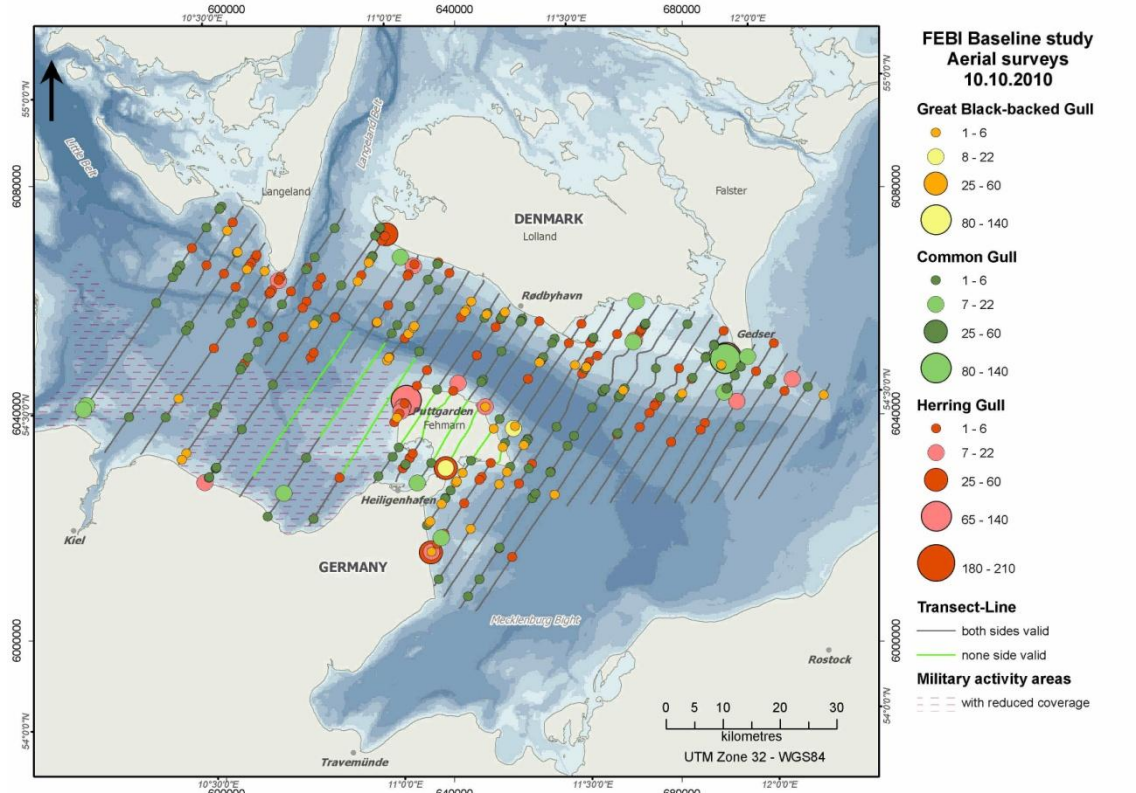


Figure 1.92 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (October 2010).

FEHMARNBELT BIRDS

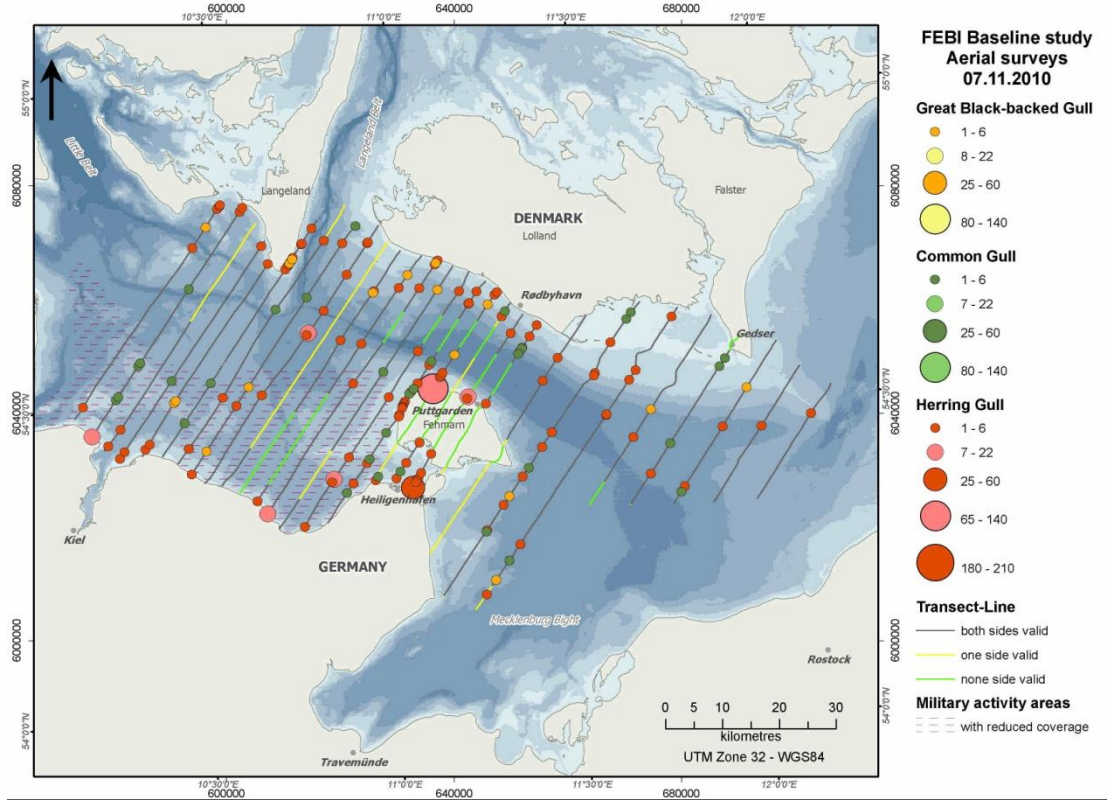


Figure 1.93 Great Black-backed Gull, Common Gull and Herring Gull distribution in the study area during aerial surveys (November 2010).

1.1.13 Sandwich Tern / Common/Arctic Tern / Tern unidentified – Sterna sandvicensis / Sterna hirundo/paradisaea / Sterna sp.

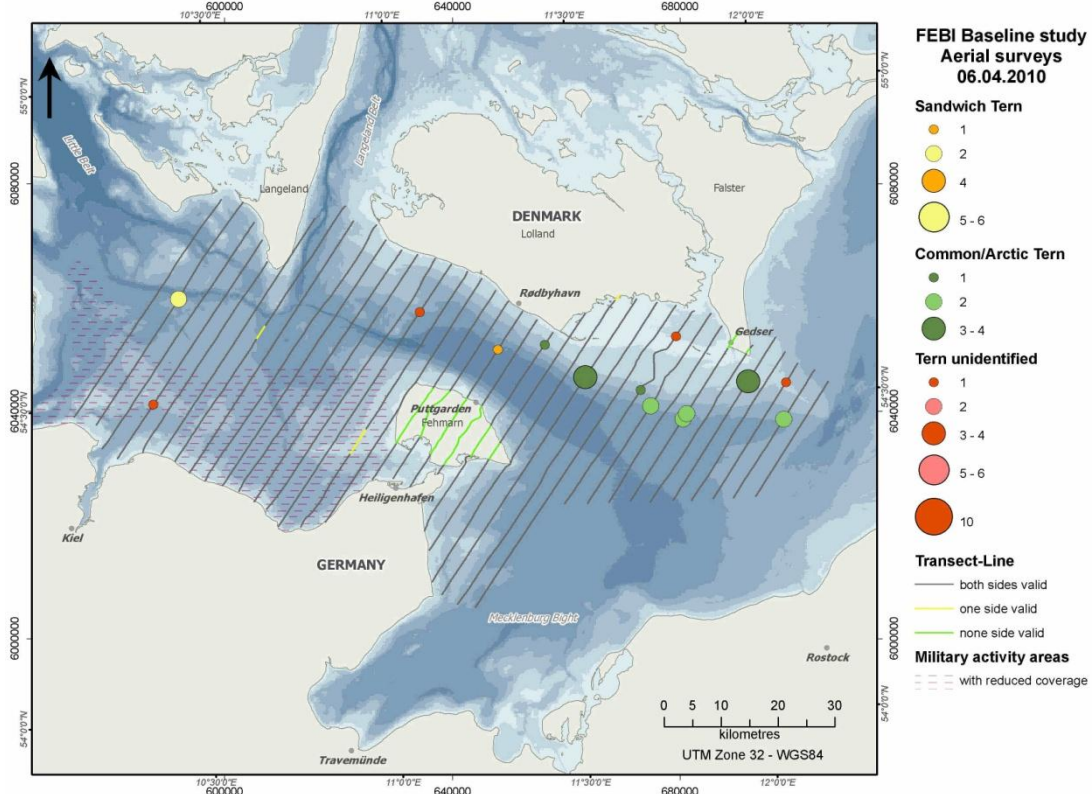


Figure 1.94 Sandwich Tern, Common/Arctic Tern and Tern unidentified (Sterna sp.) distribution in the study area during aerial surveys (April 2010).

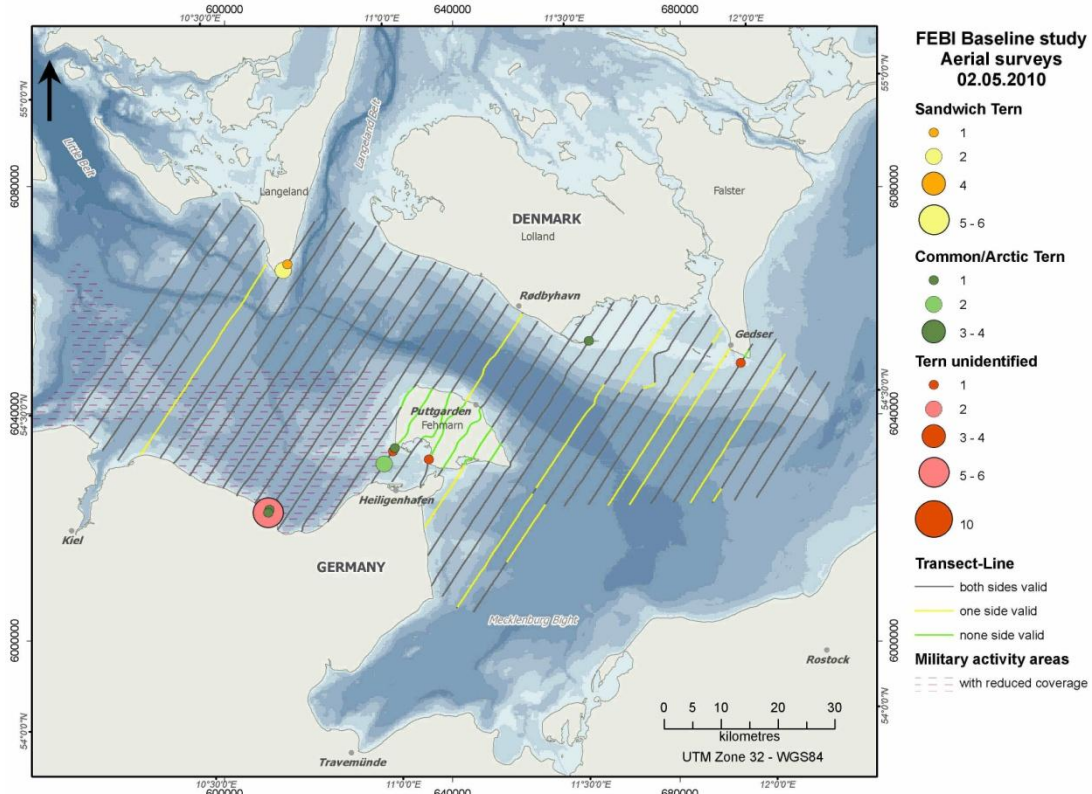


Figure 1.95 Sandwich Tern, Common/Arctic Tern and Tern unidentified (Sterna sp.) distribution in the study area during aerial surveys (May 2010).

FEHMARNBELT BIRDS

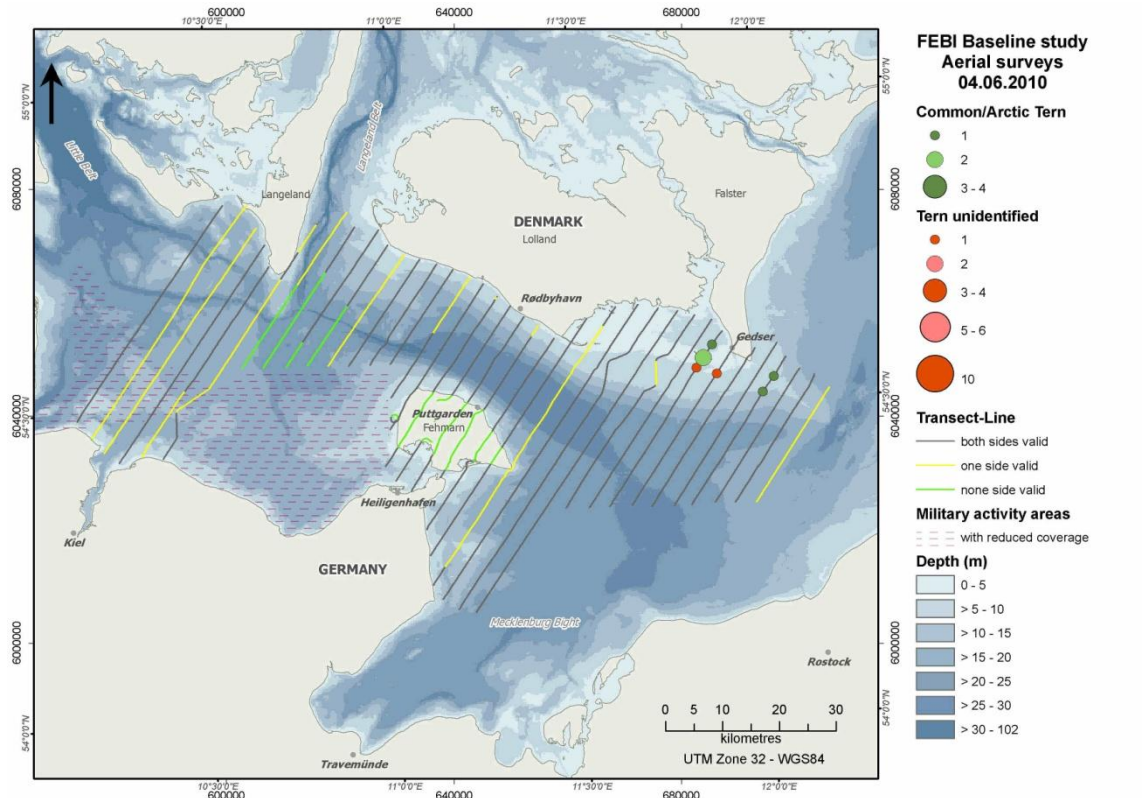


Figure 1.96 Sandwich Tern, Common/Arctic Tern and Tern unidentified (*Sterna* sp.) distribution in the study area during aerial surveys (June 2010).

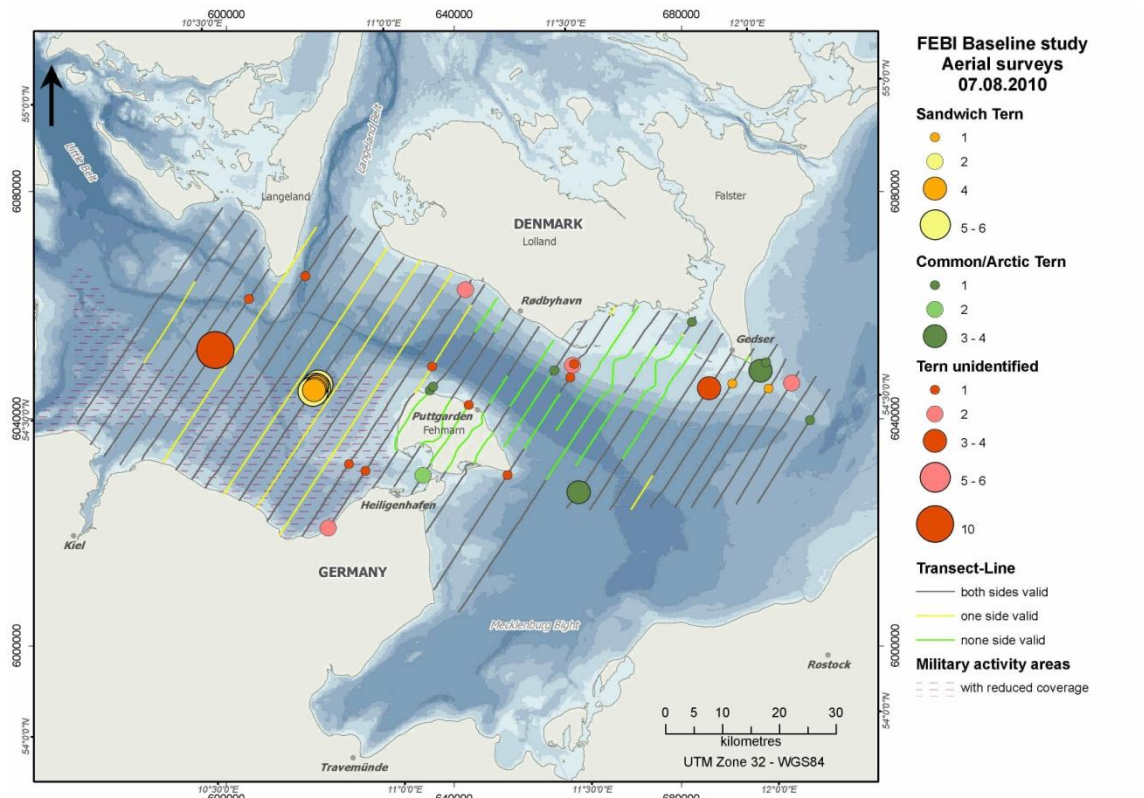


Figure 1.97 Sandwich Tern, Common/Arctic Tern and Tern unidentified (*Sterna* sp.) distribution in the study area during aerial surveys (August 2010).

1.1.14 Common Guillemot/Razorbill – *Uria aalge/Alca torda*

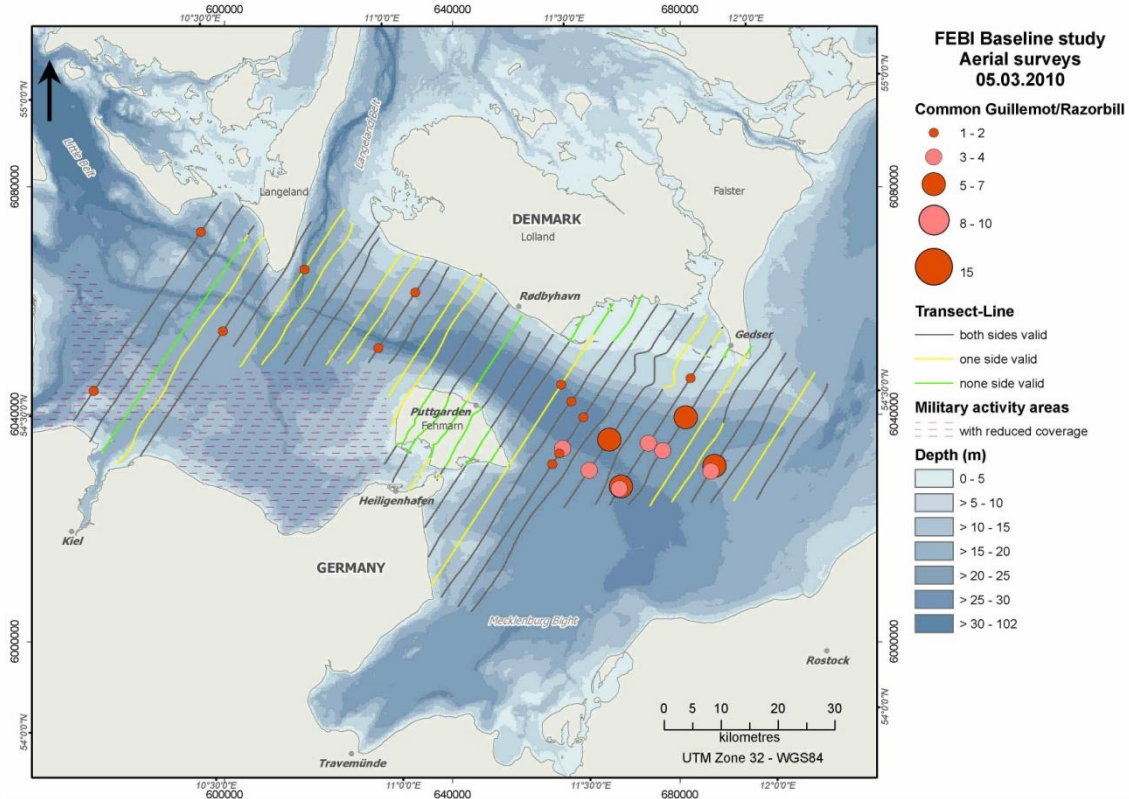


Figure 1.98 Common Guillemot/Razorbill distribution in the study area during aerial surveys (March 2010).

FEHMARNBELT BIRDS

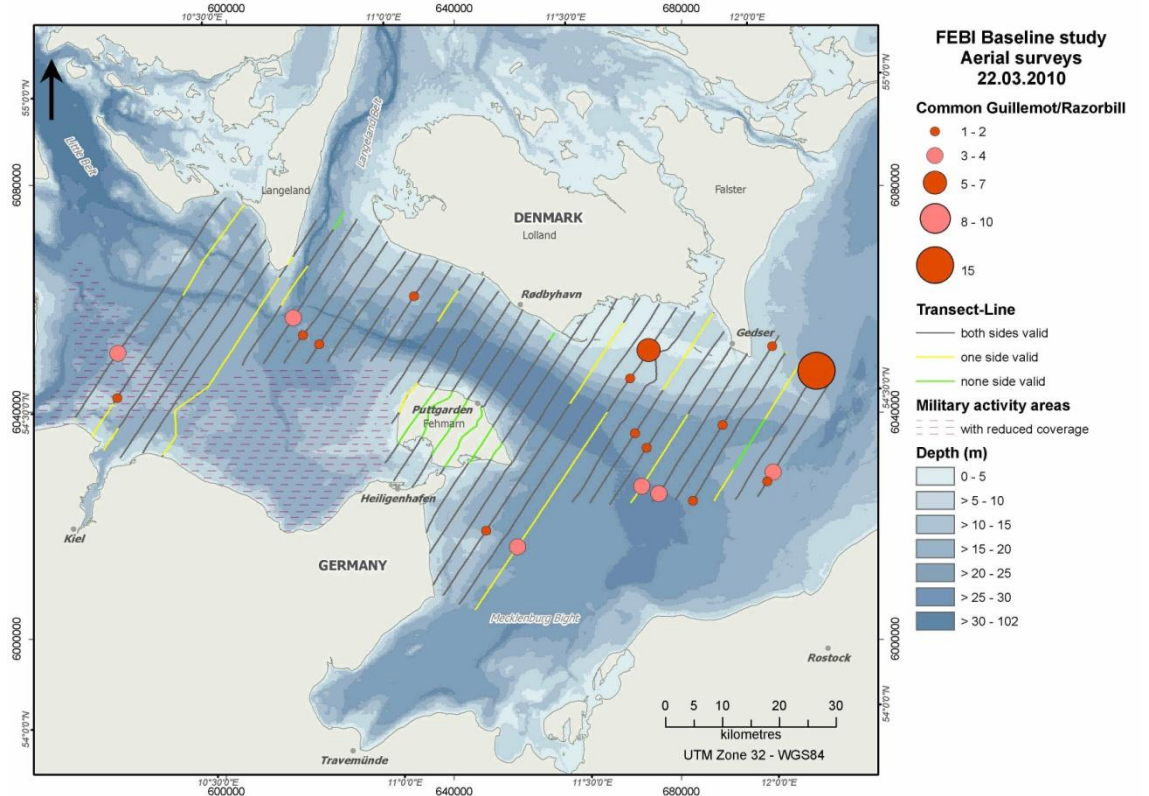


Figure 1.99 Common Guillemot/Razorbill distribution in the study area during aerial surveys (March 2010).

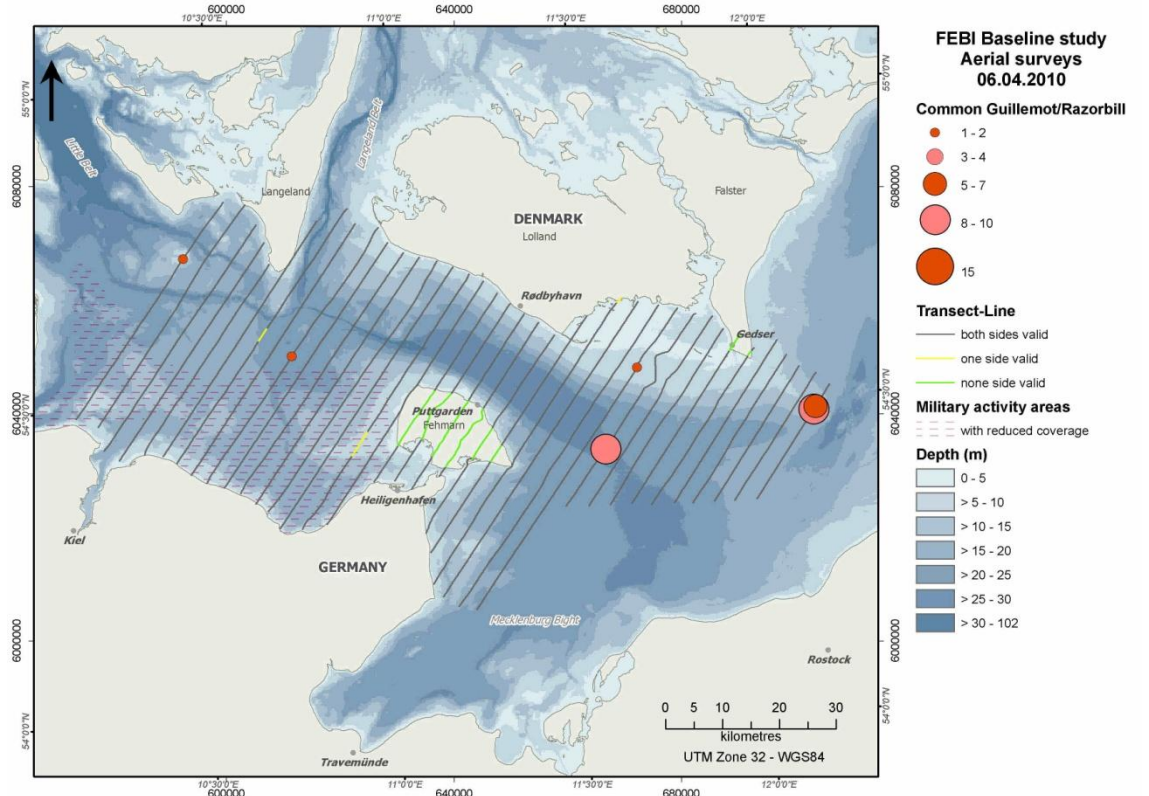


Figure 1.100 Common Guillemot/Razorbill distribution in the study area during aerial surveys (April 2010).

1.2 Maps of dedicated swan search flights in Rødsand Lagoon

In the following maps of swan distribution in Rødsand Lagoon are listed. Data were obtained during dedicated search flights in Rødsand Lagoon between January 2009 and October 2010.

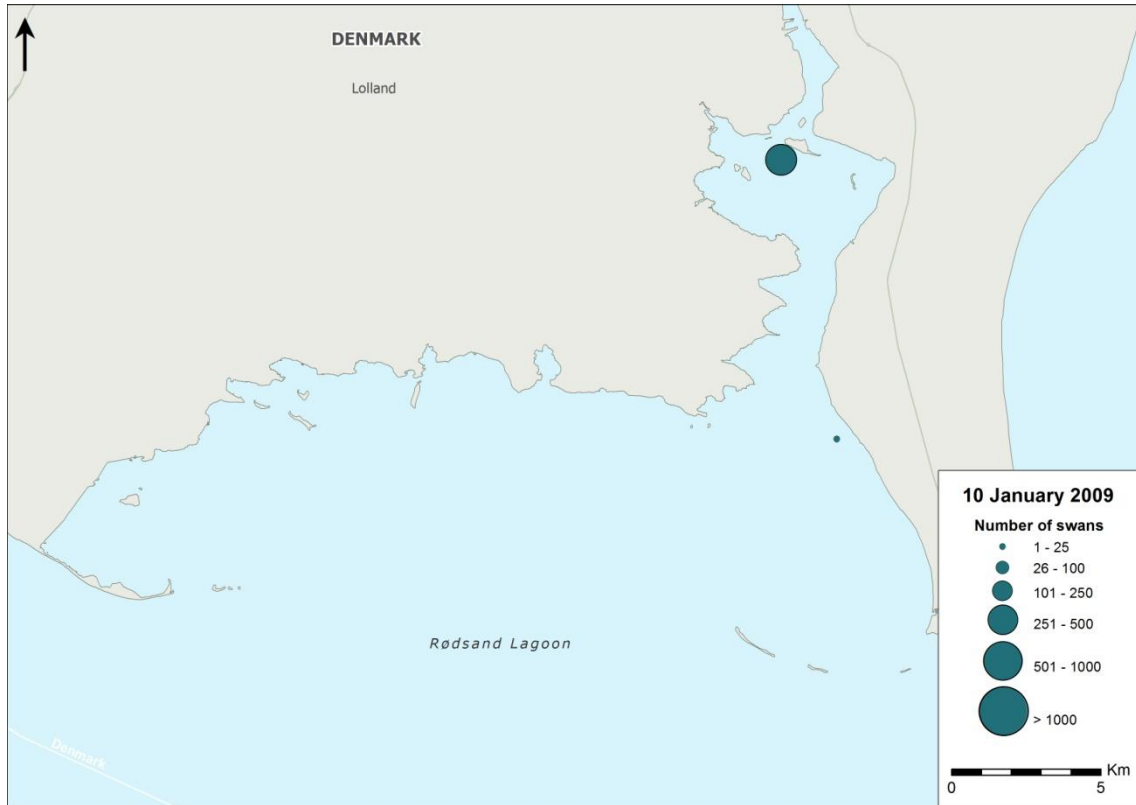


Figure 1.101 Swan distribution in Rødsand Lagoon during dedicated search flight in January 2009. Swans of genus *Cygnus* were not identified to species level.

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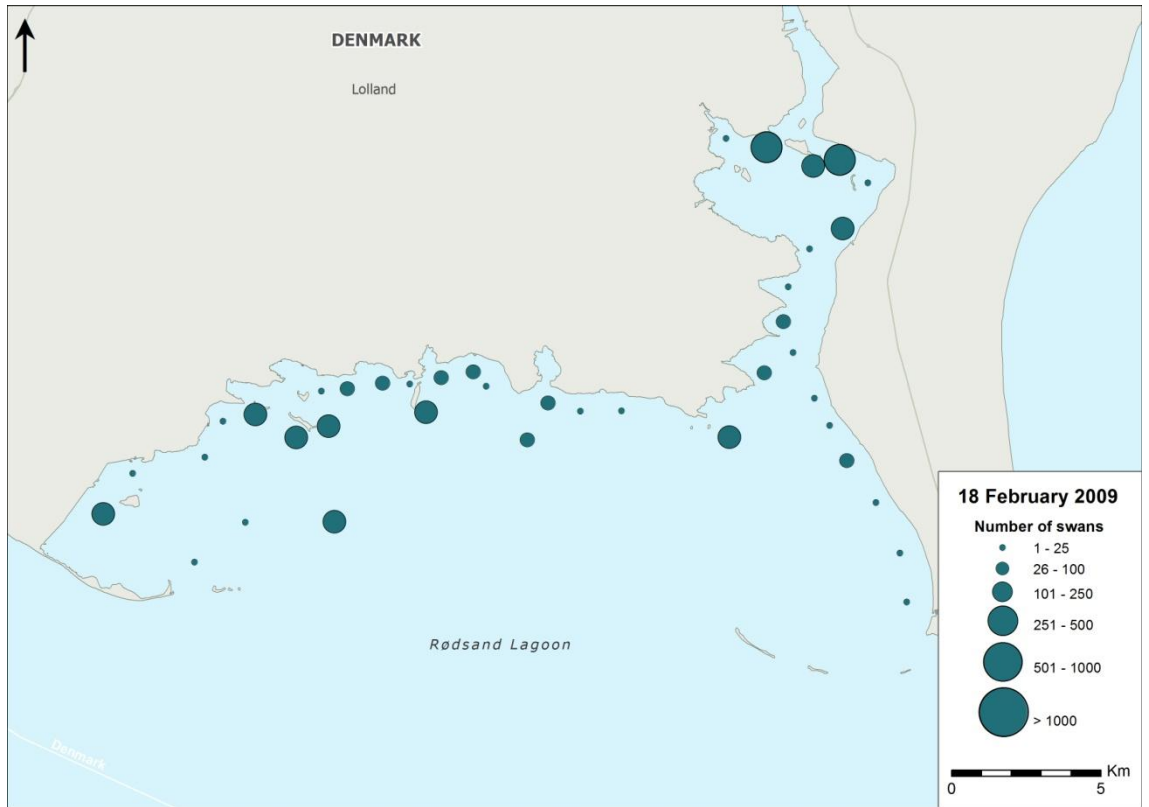


Figure 1.102 Swan distribution in Rødsand Lagoon during dedicated search flight in February 2009. Swans of genus *Cygnus* were not identified to species level.

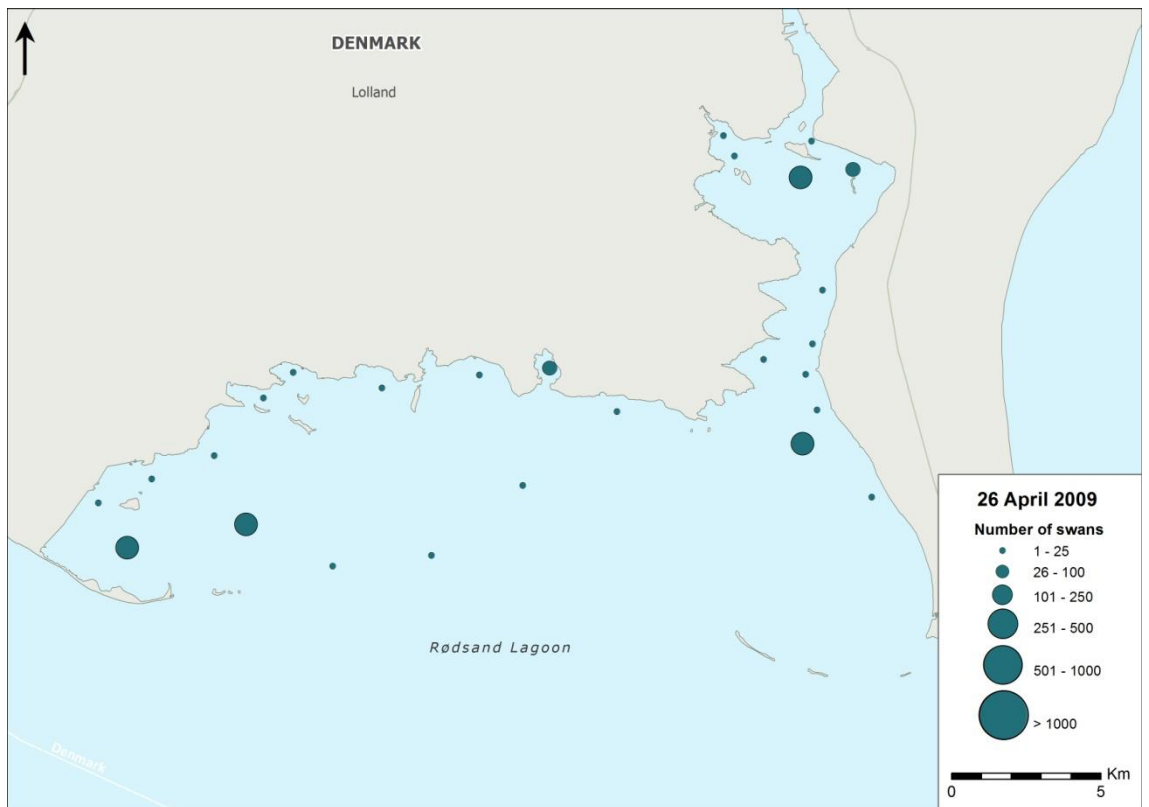


Figure 1.103 Swan distribution in Rødsand Lagoon during dedicated search flight in April 2009. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

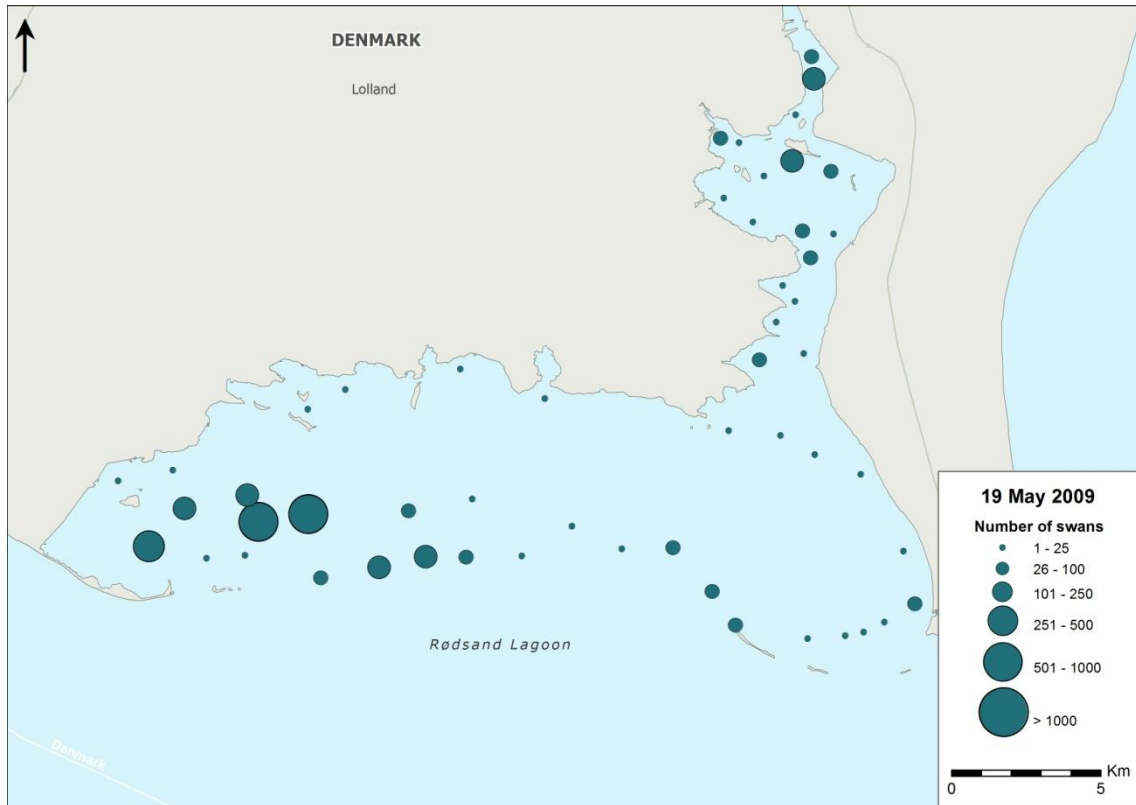


Figure 1.104 Swan distribution in Rødsand Lagoon during dedicated search flight in May 2009. Swans of genus *Cygnus* were not identified to species level.

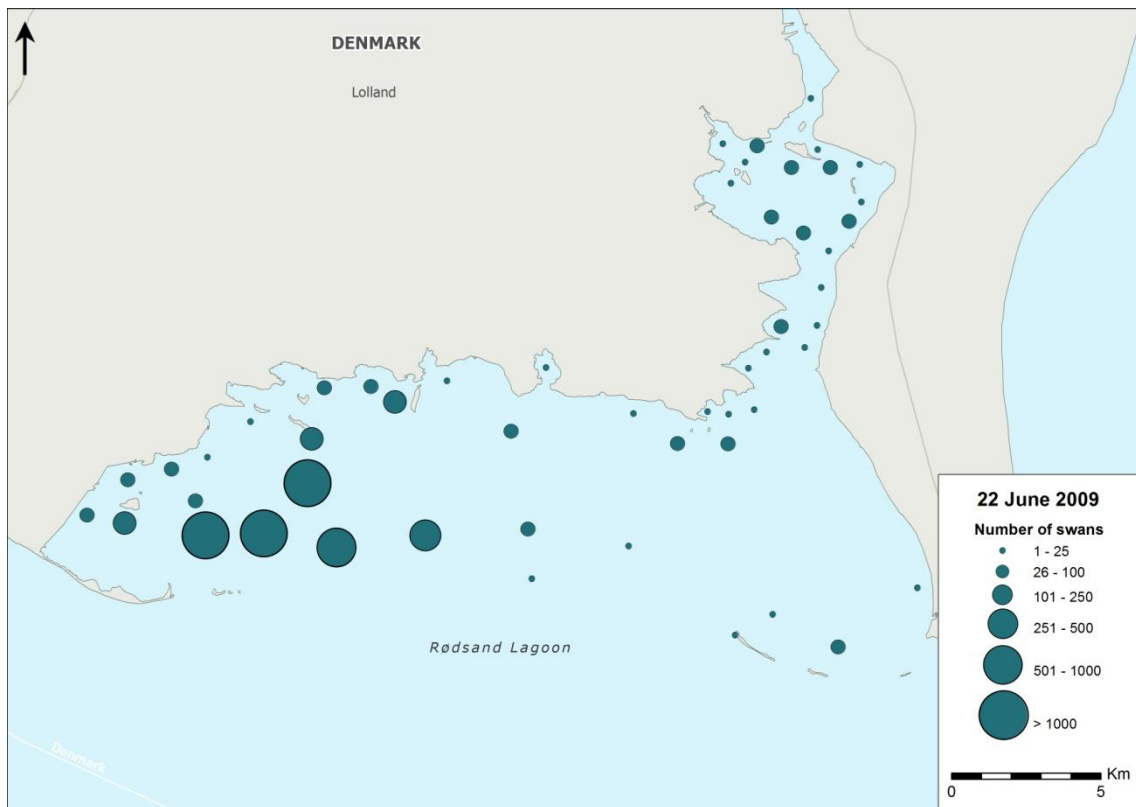


Figure 1.105 Swan distribution in Rødsand Lagoon during dedicated search flight in June 2009. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

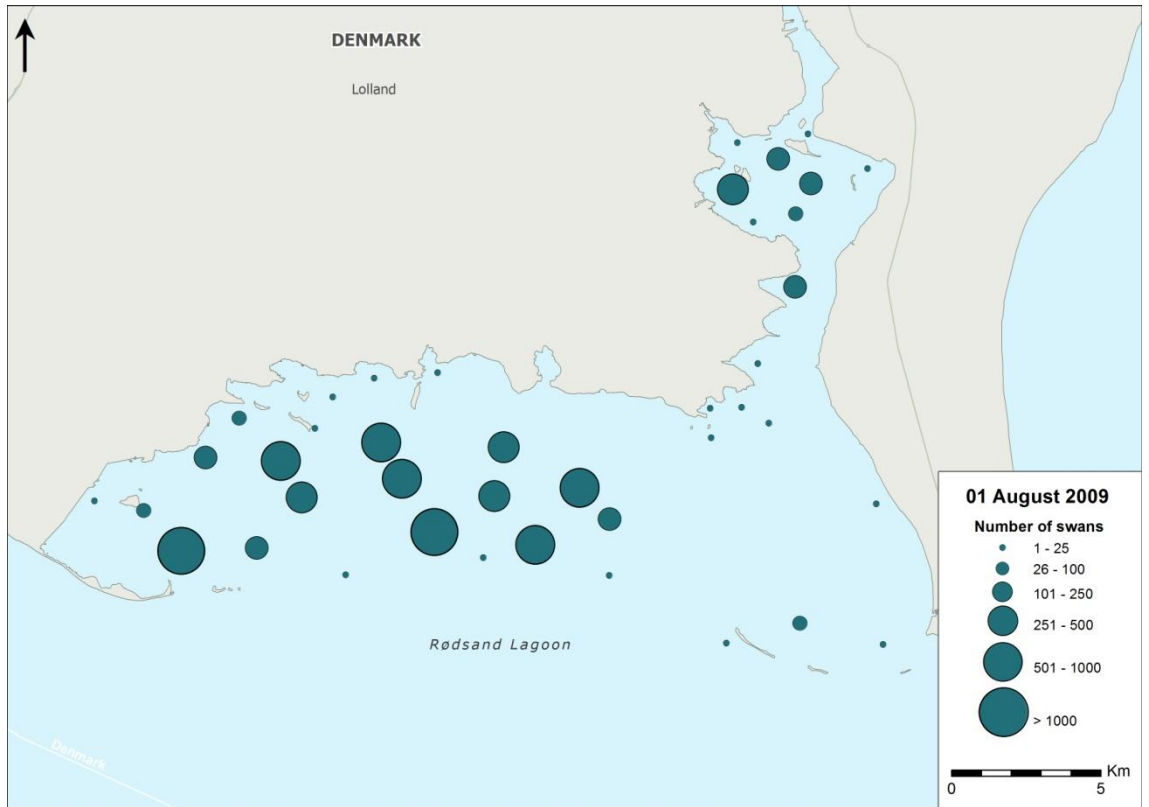


Figure 1.106 Swan distribution in Rødsand Lagoon during dedicated search flight in August 2009. Swans of genus *Cygnus* were not identified to species level.

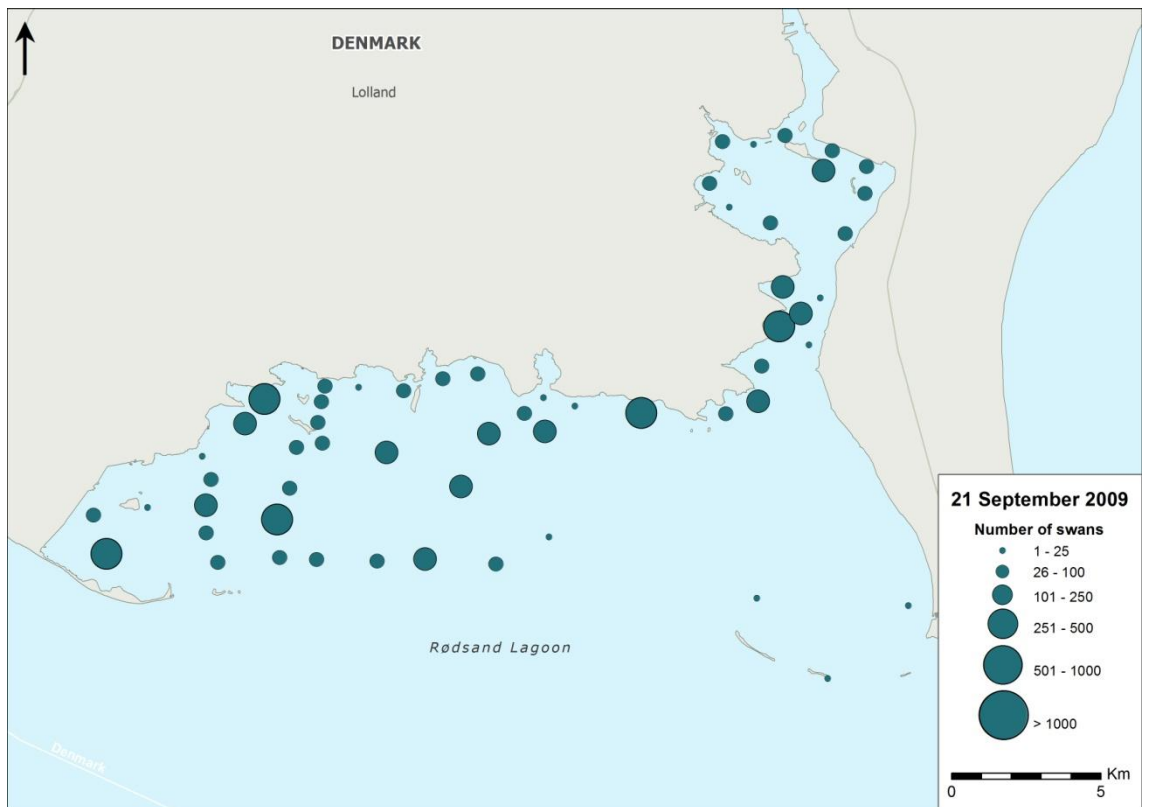


Figure 1.107 Swan distribution in Rødsand Lagoon during dedicated search flight in September 2009. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

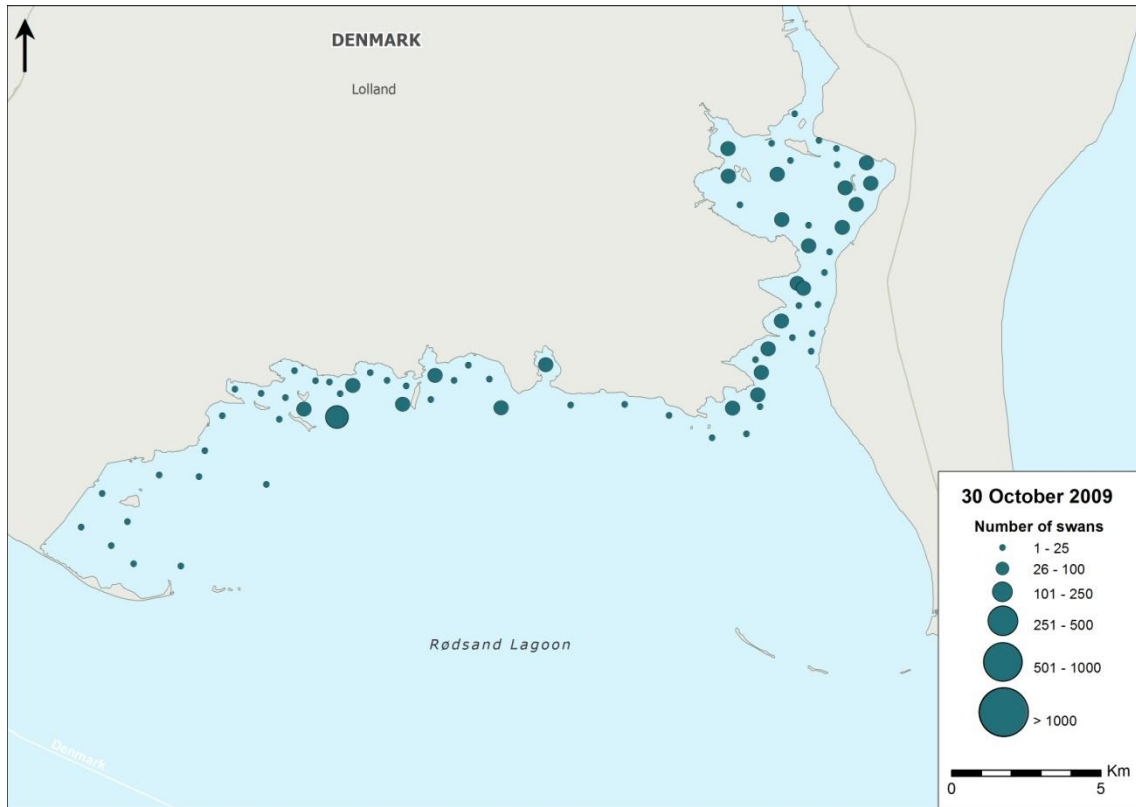


Figure 1.108 Swan distribution in Rødsand Lagoon during dedicated search flight in October 2009. Swans of genus *Cygnus* were not identified to species level.

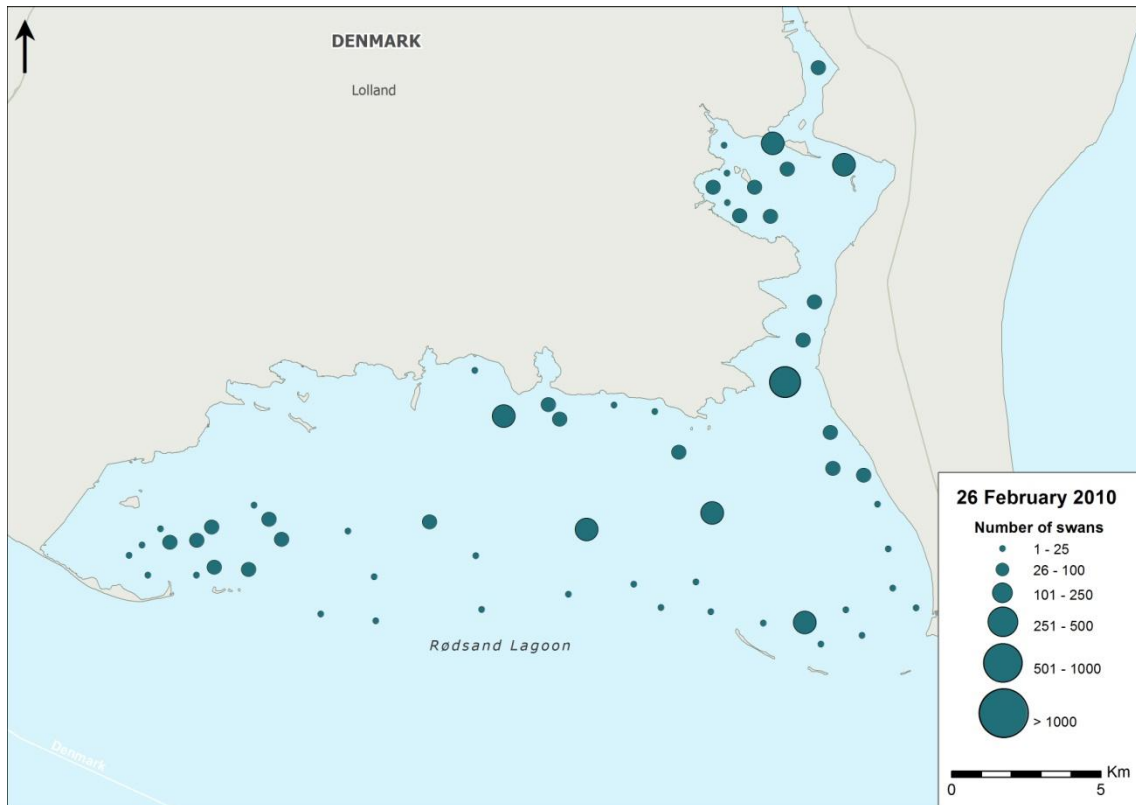


Figure 1.109 Swan distribution in Rødsand Lagoon during dedicated search flight in February 2010. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

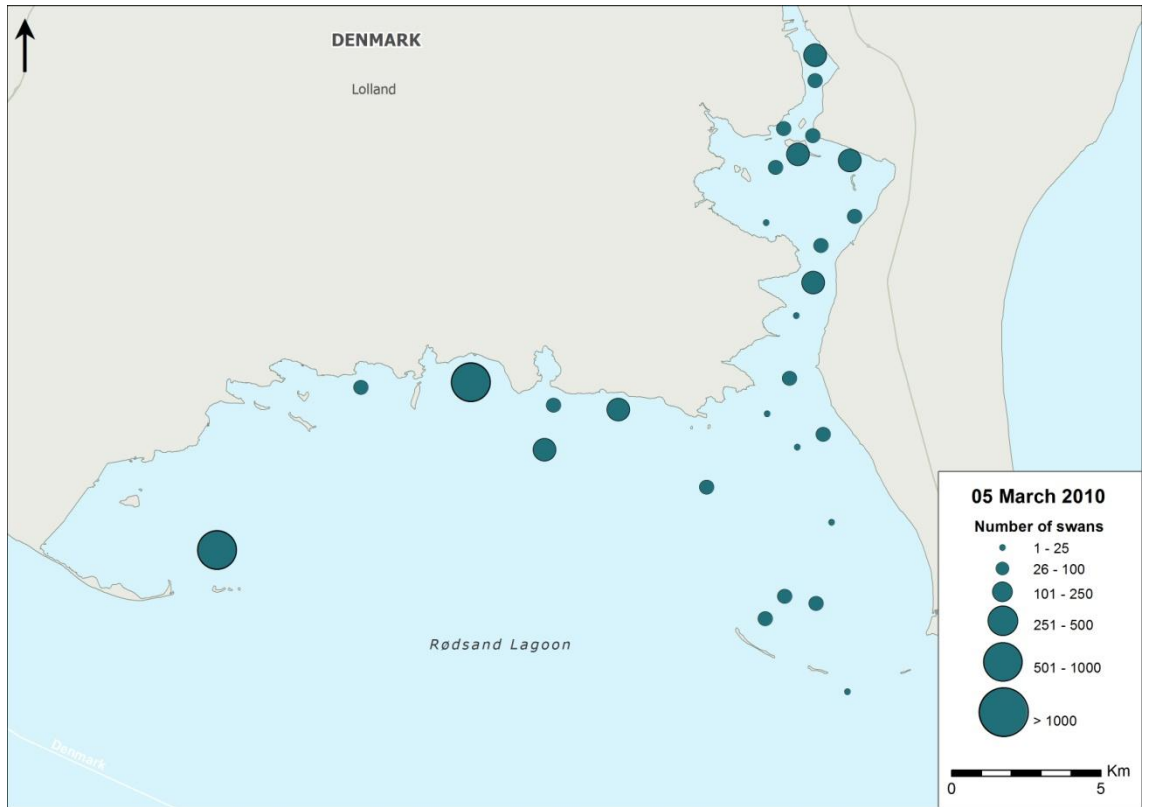


Figure 1.110 Swan distribution in Rødsand Lagoon during dedicated search flight in March 2010. Swans of genus *Cygnus* were not identified to species level.

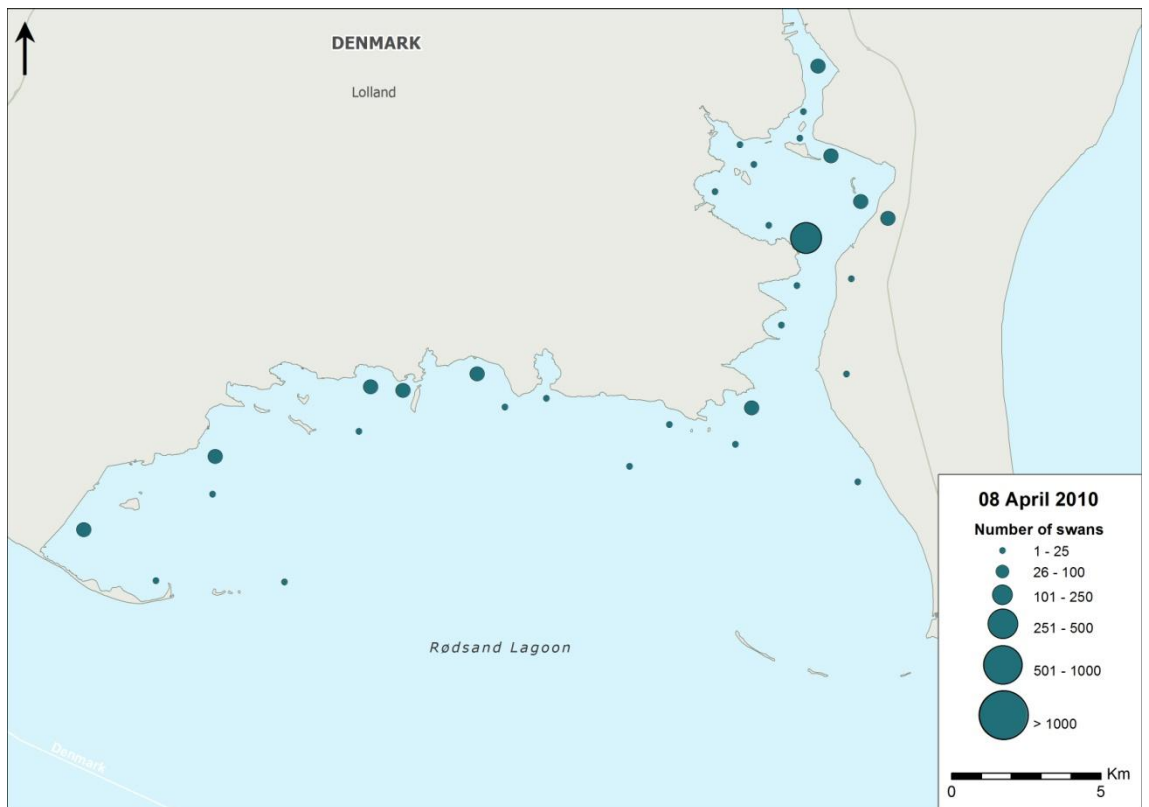


Figure 1.111 Swan distribution in Rødsand Lagoon during dedicated search flight in April 2010. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

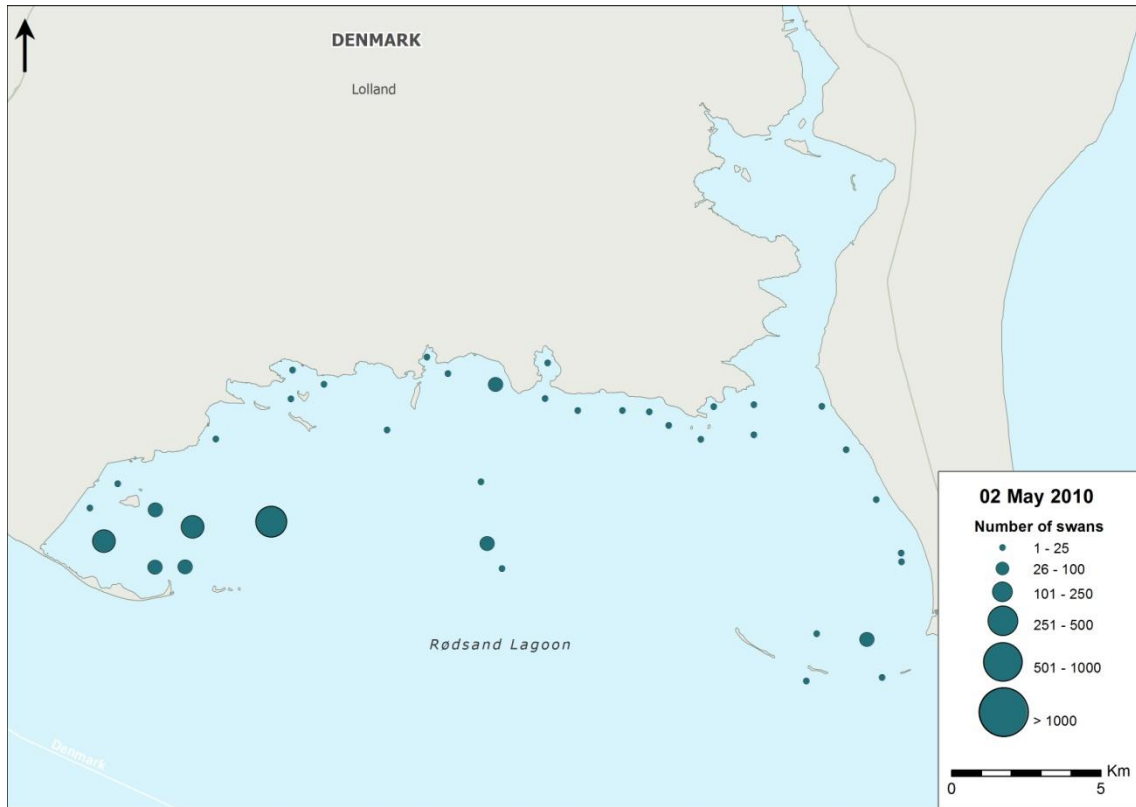


Figure 1.112 Swan distribution in Rødsand Lagoon during dedicated search flight in May 2010. Swans of genus *Cygnus* were not identified to species level.

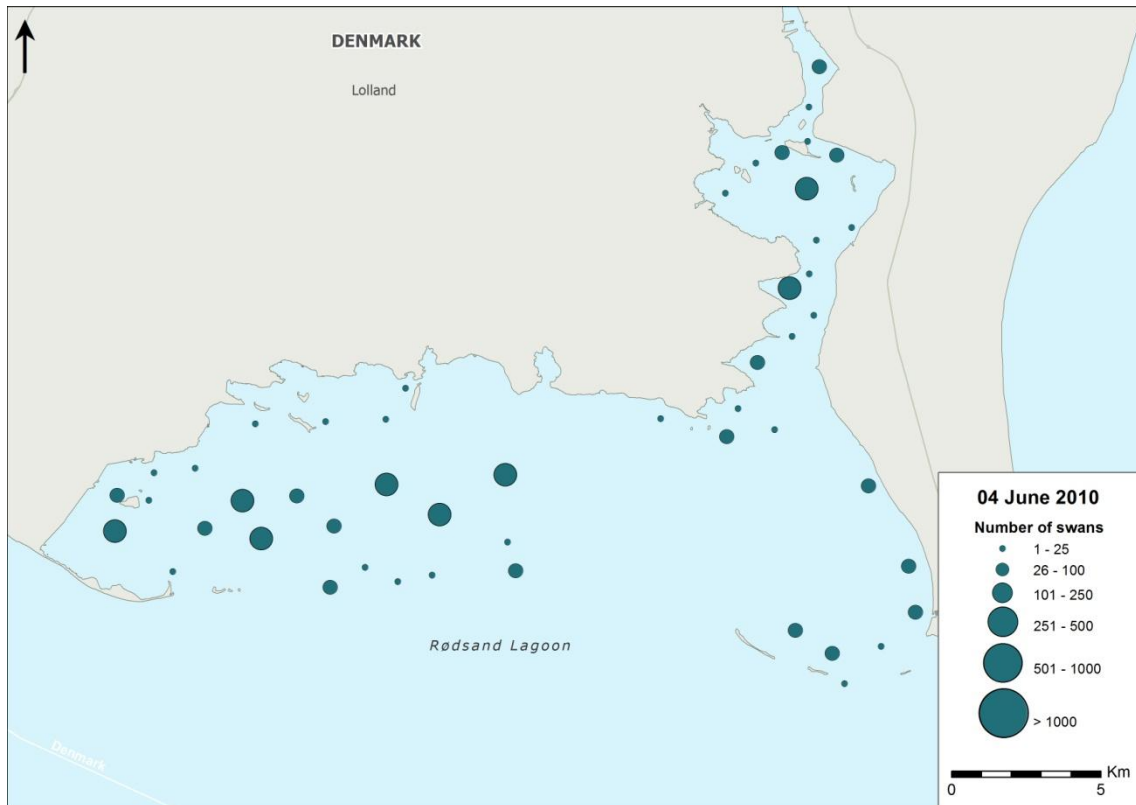


Figure 1.113 Swan distribution in Rødsand Lagoon during dedicated search flight in June 2010. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

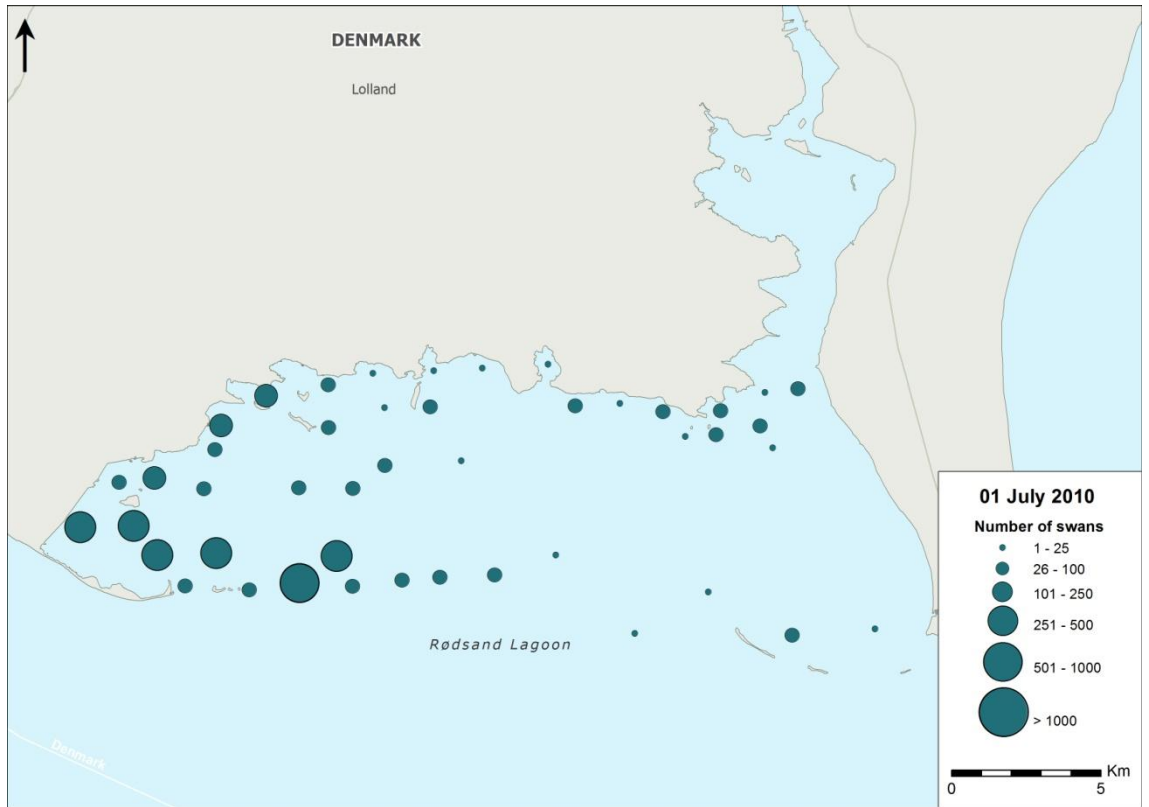


Figure 1.114 Swan distribution in Rødsand Lagoon during dedicated search flight in July 2010. Swans of genus *Cygnus* were not identified to species level.

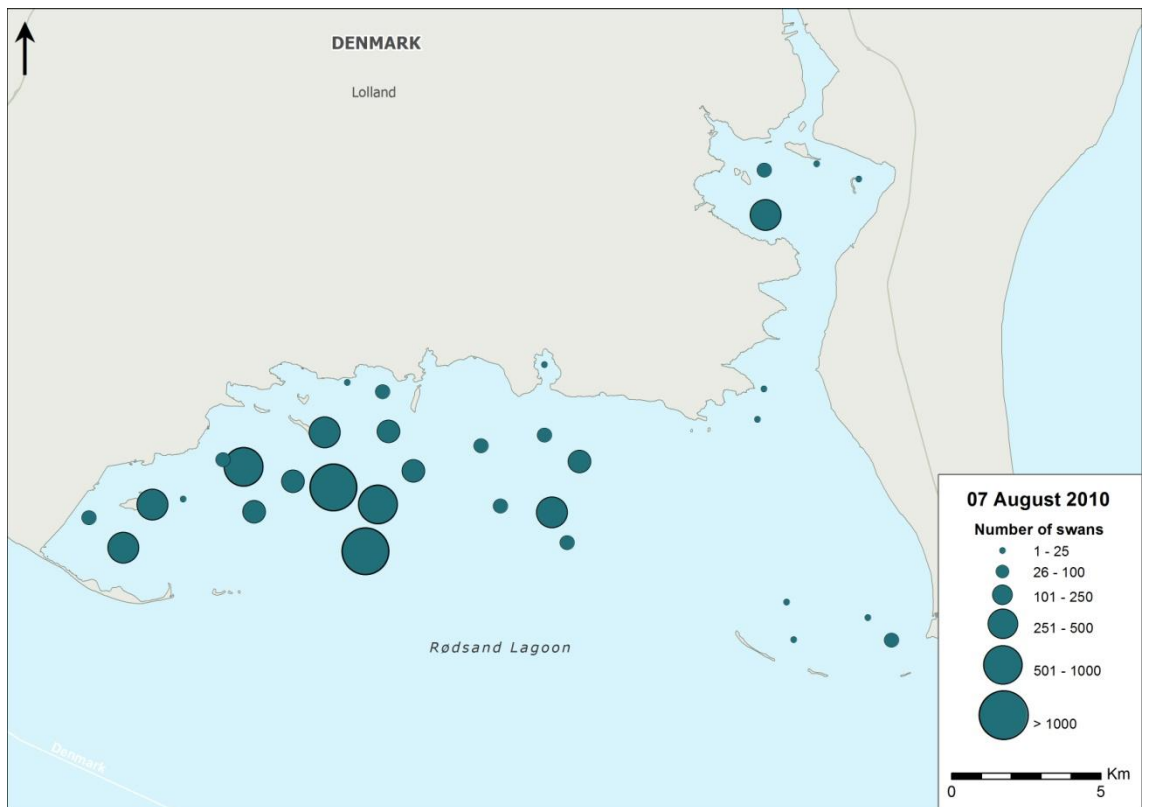


Figure 1.115 Swan distribution in Rødsand Lagoon during dedicated search flight in early August 2010. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

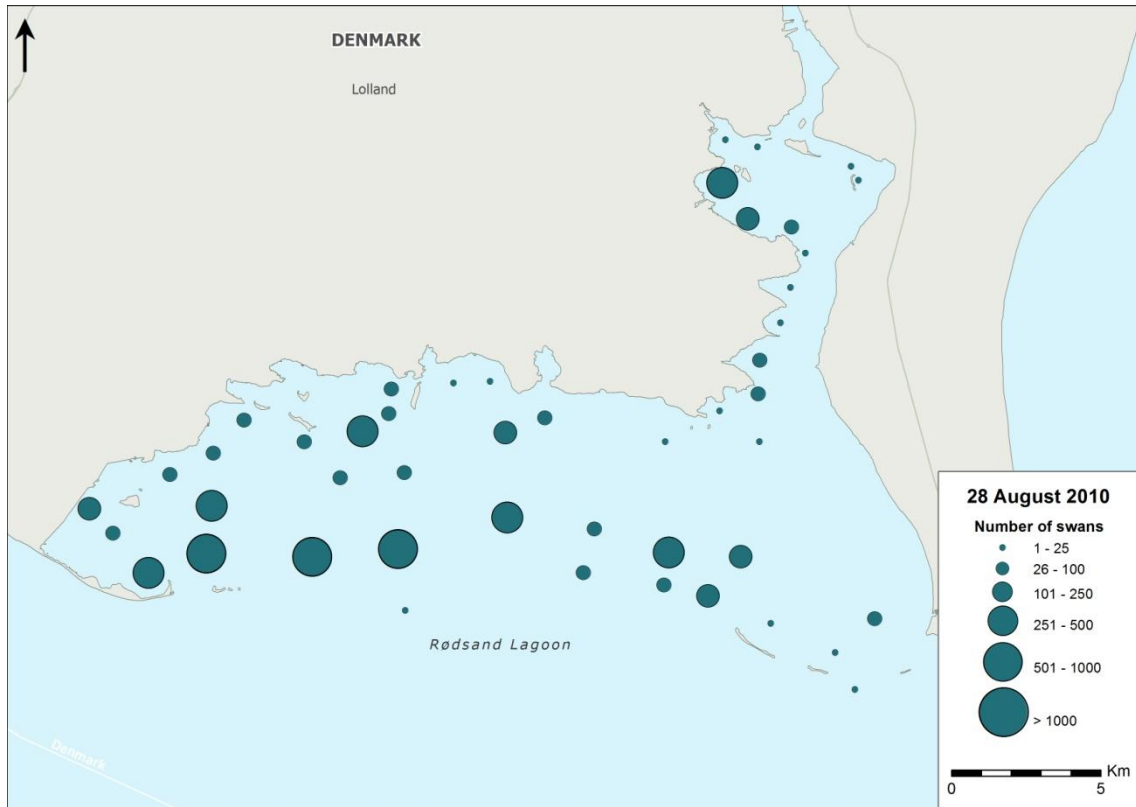


Figure 1.116 Swan distribution in Rødsand Lagoon during dedicated search flight in late August 2010. Swans of genus *Cygnus* were not identified to species level.

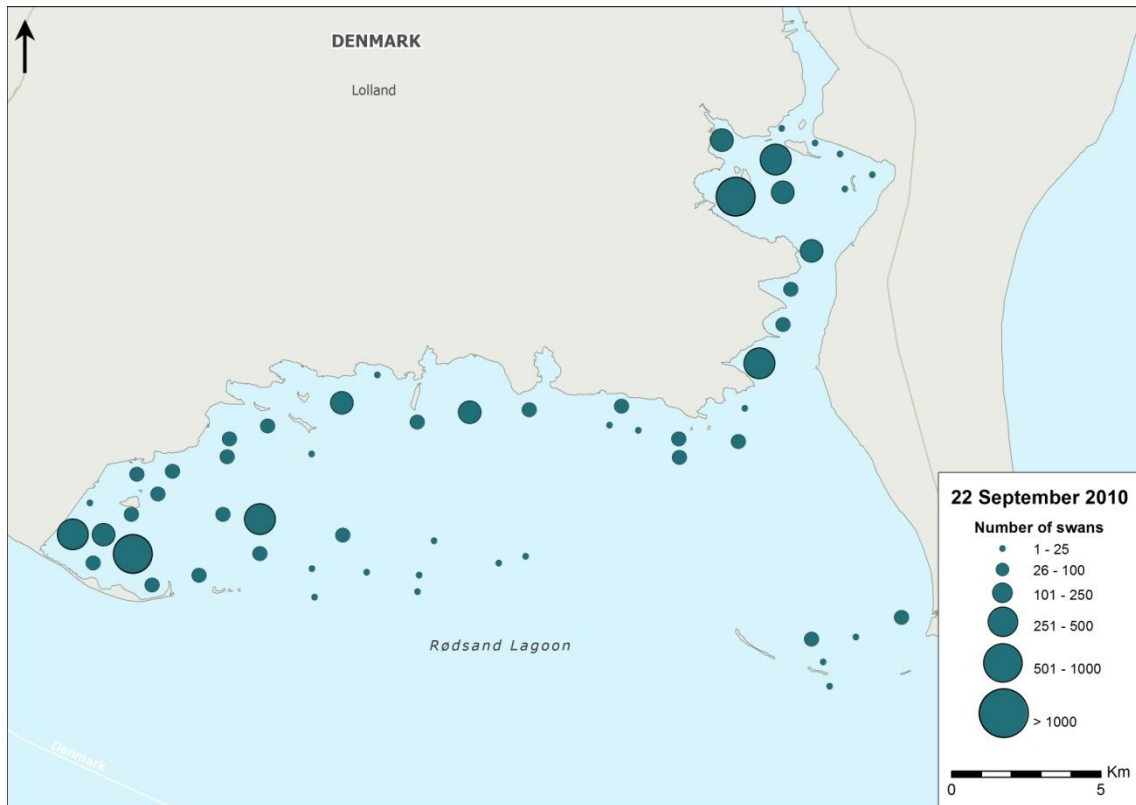


Figure 1.117 Swan distribution in Rødsand Lagoon during dedicated search flight in September 2010. Swans of genus *Cygnus* were not identified to species level.

FEHMARNBELT BIRDS

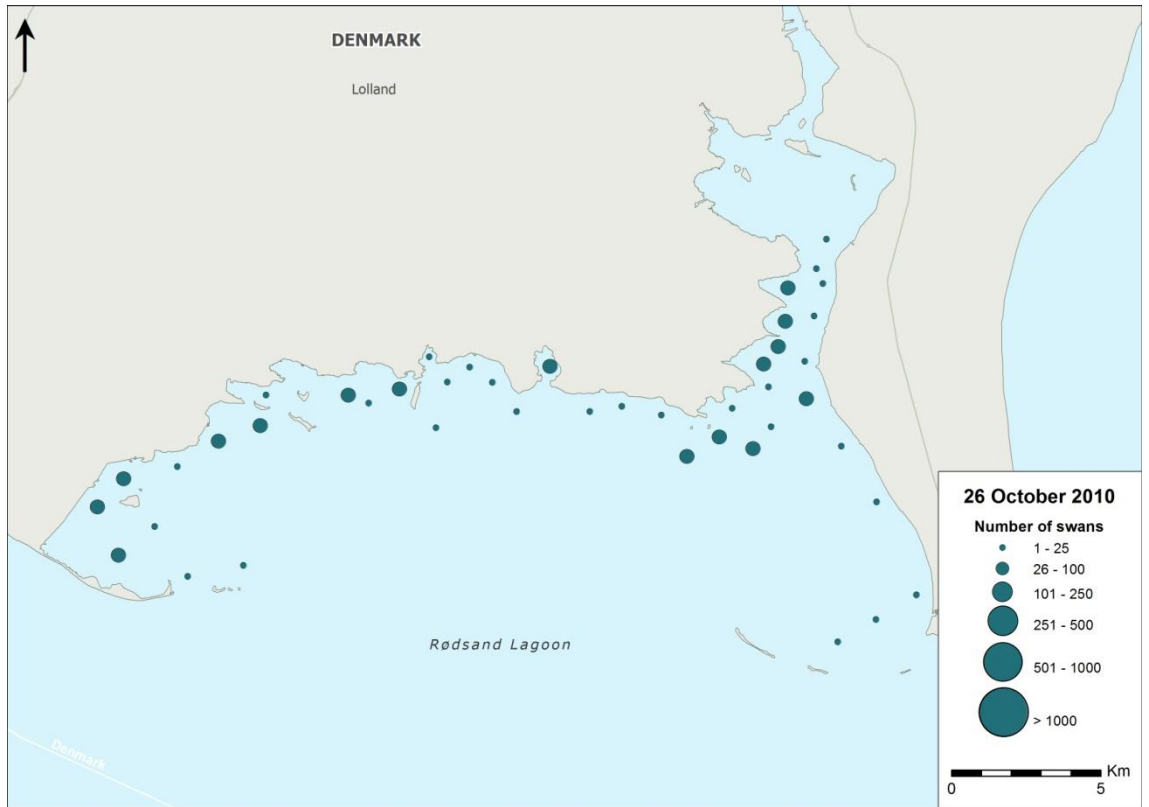


Figure 1.118 Swan distribution in Rødsand Lagoon during dedicated search flight in October 2010. Swans of genus *Cygnus* were not identified to species level.

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