

Final Report

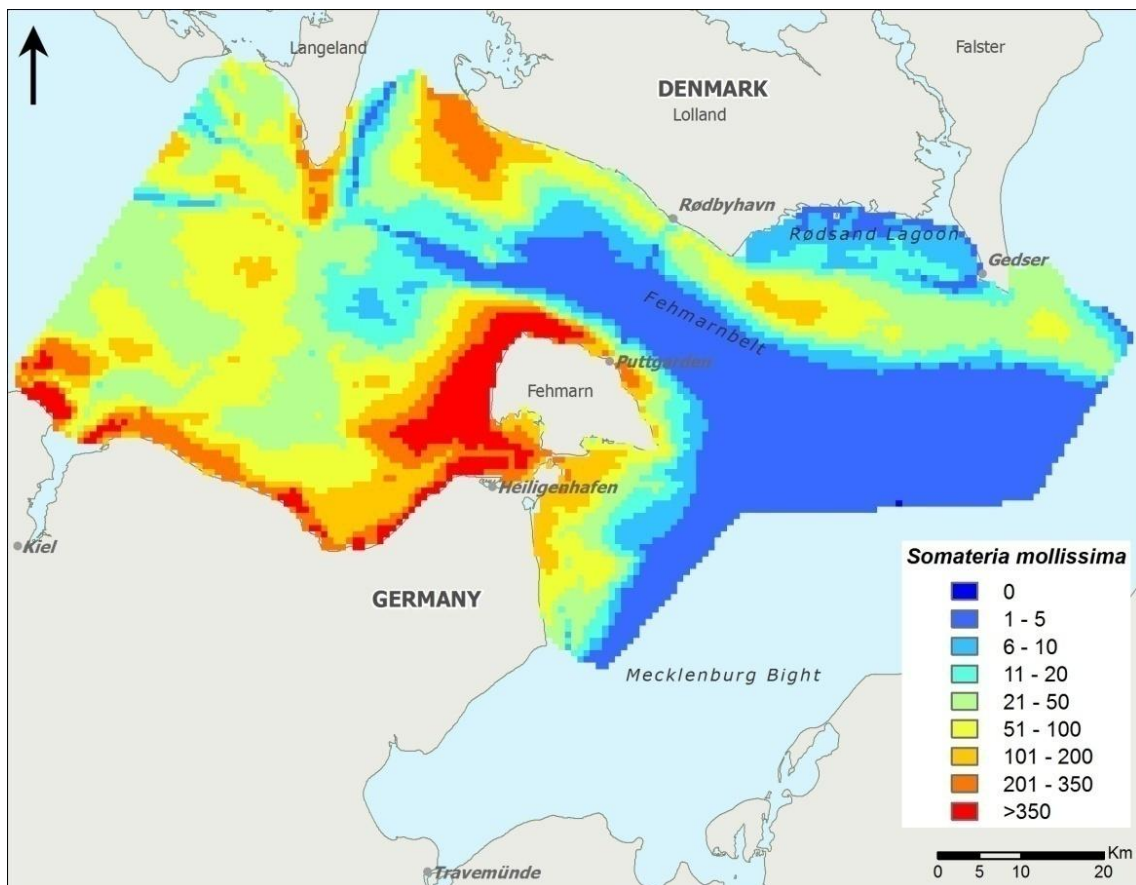
**FEHMARNBELT FIXED LINK
BIRD SERVICES (FEBI)**

Bird Investigations in Fehmarnbelt - Baseline

Waterbirds in Fehmarnbelt

E3TR0011 Volume II – Appendix II, Part I

Maps of aerial transect surveys in 2008/2009



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FEHMARNBELT BIRDS

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 - MAPS

1.1 Maps of aerial transect surveys in 2008/2009

1.1.1 Diver unidentified – *Gavia* spp.

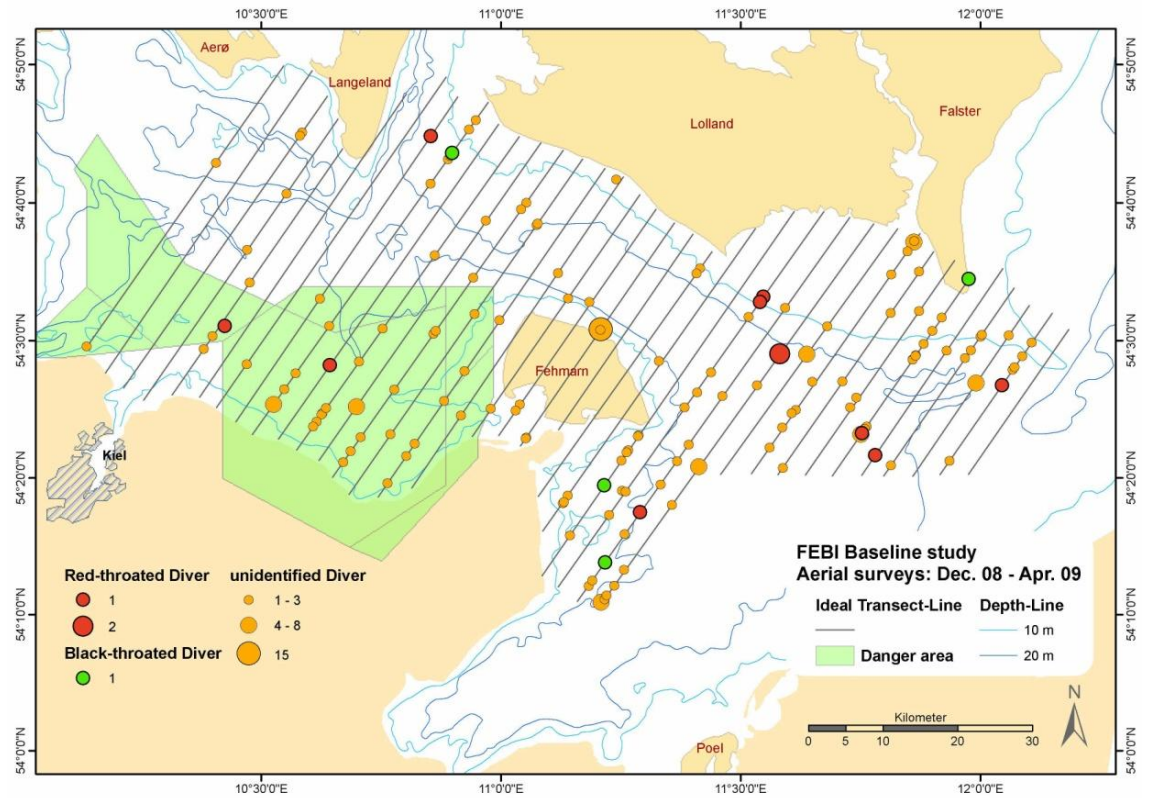


Figure 1.1 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (December 2008 - April 2009).

FEHMARNBELT BIRDS

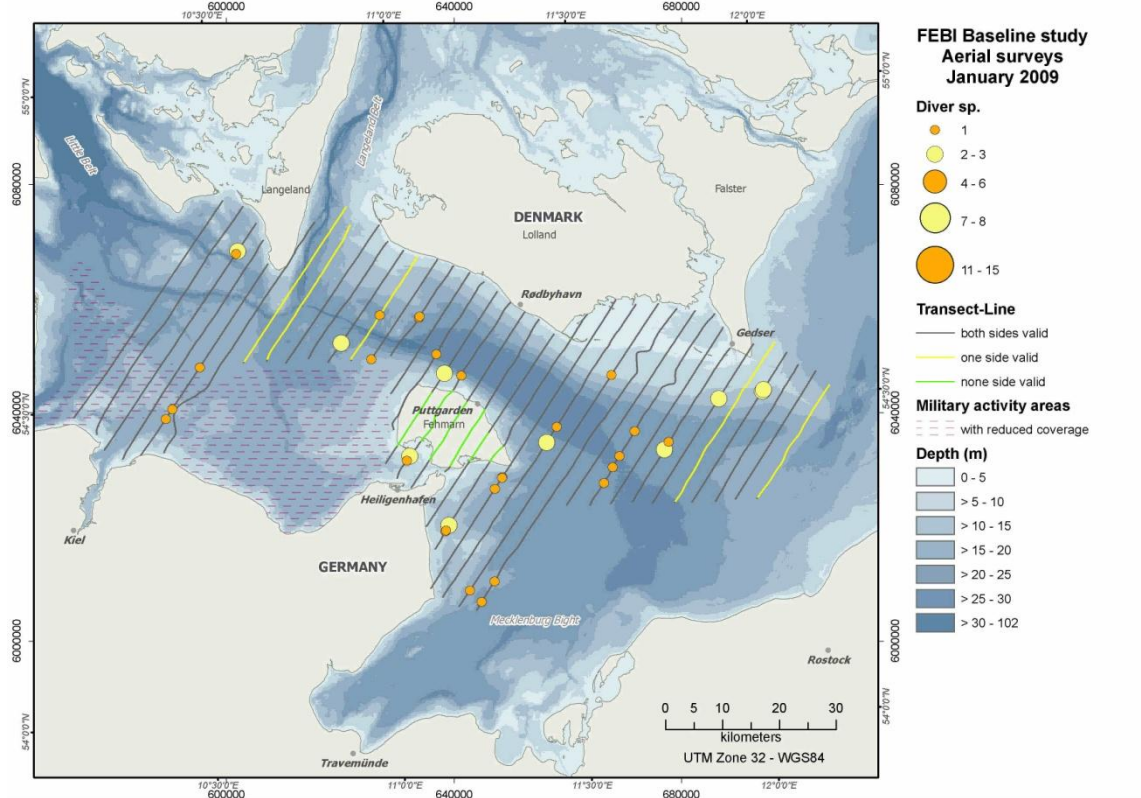


Figure 1.2 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (January 2009).

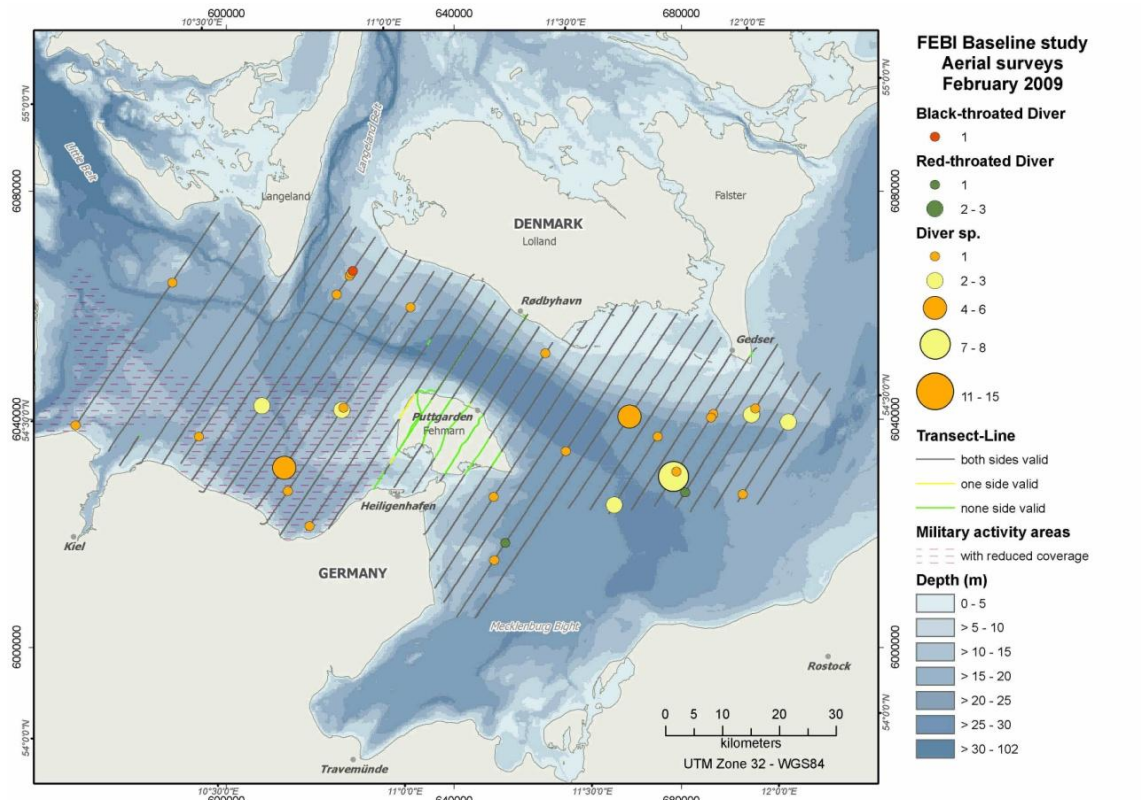


Figure 1.3 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

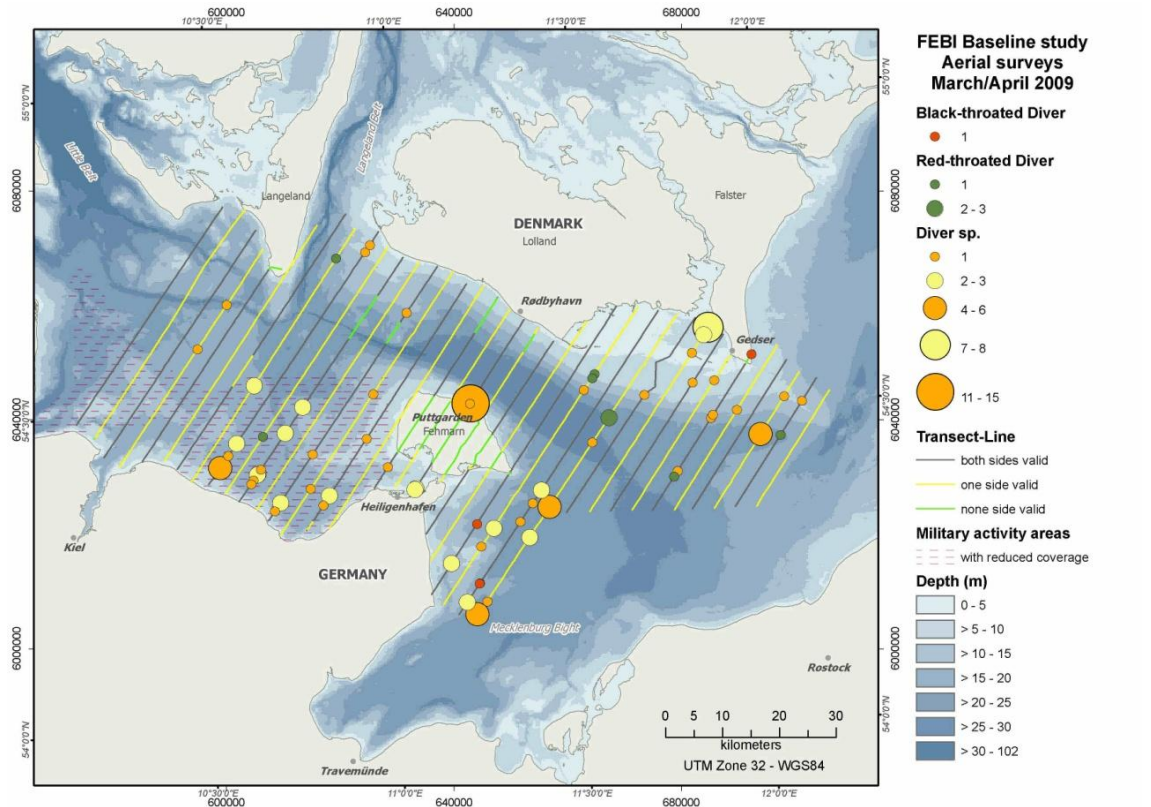


Figure 1.4 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (March/April 2009).

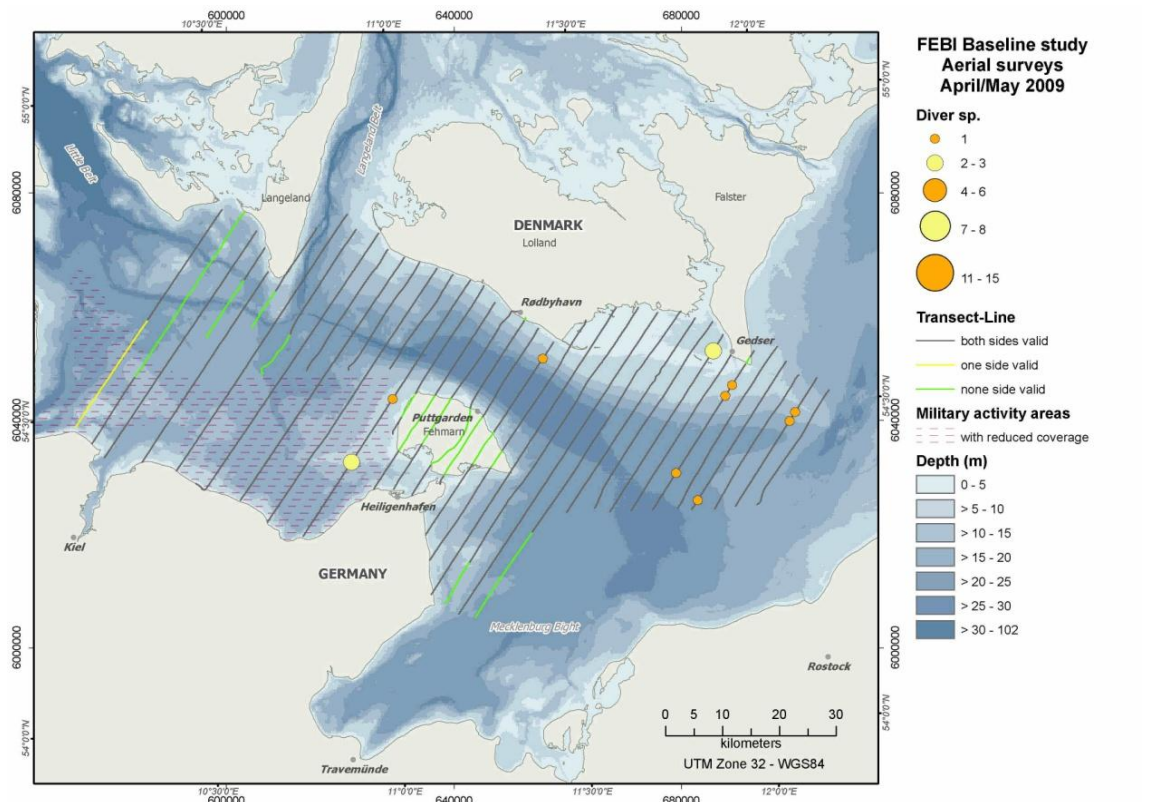


Figure 1.5 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (April/May 2009).

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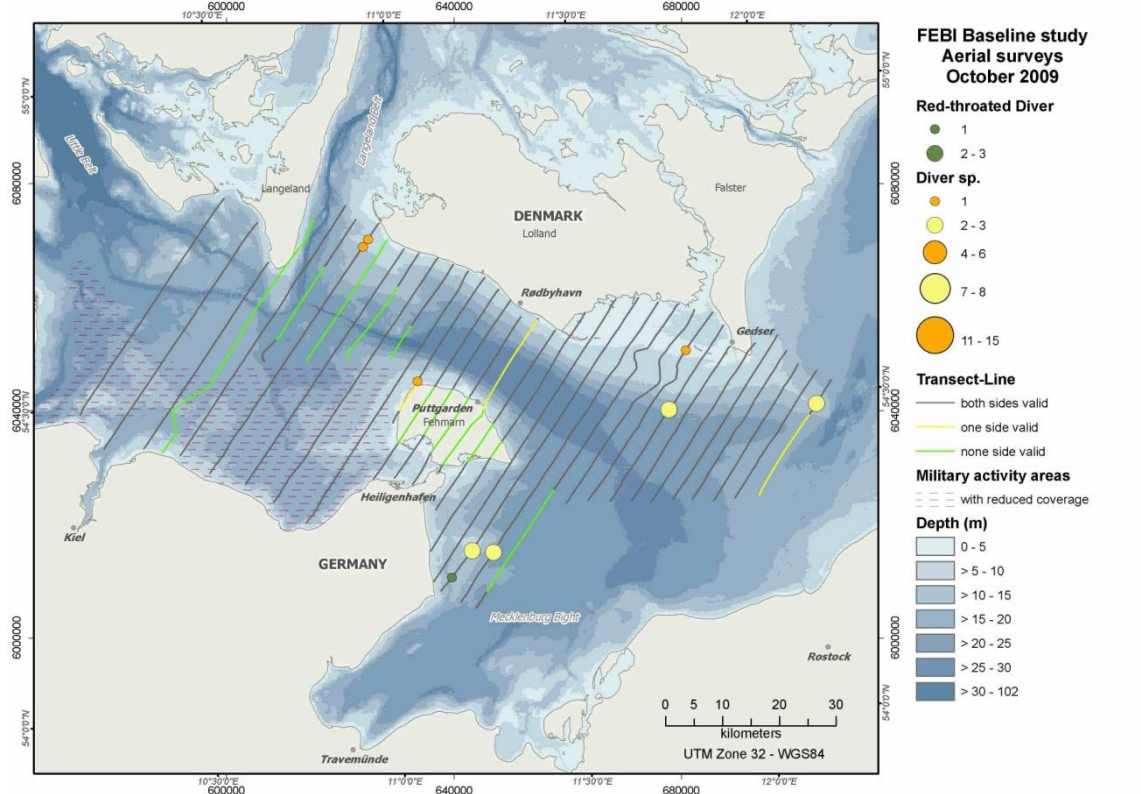


Figure 1.6 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (October 2009).

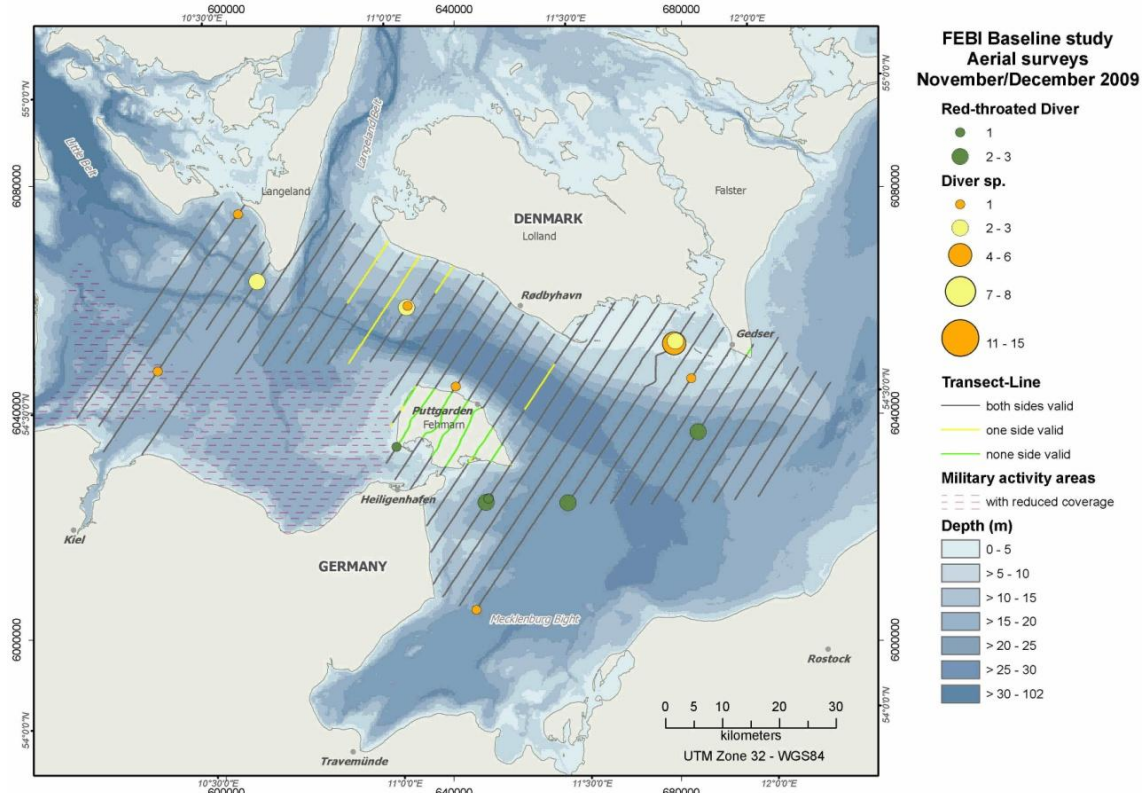


Figure 1.7 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (November/December 2009).

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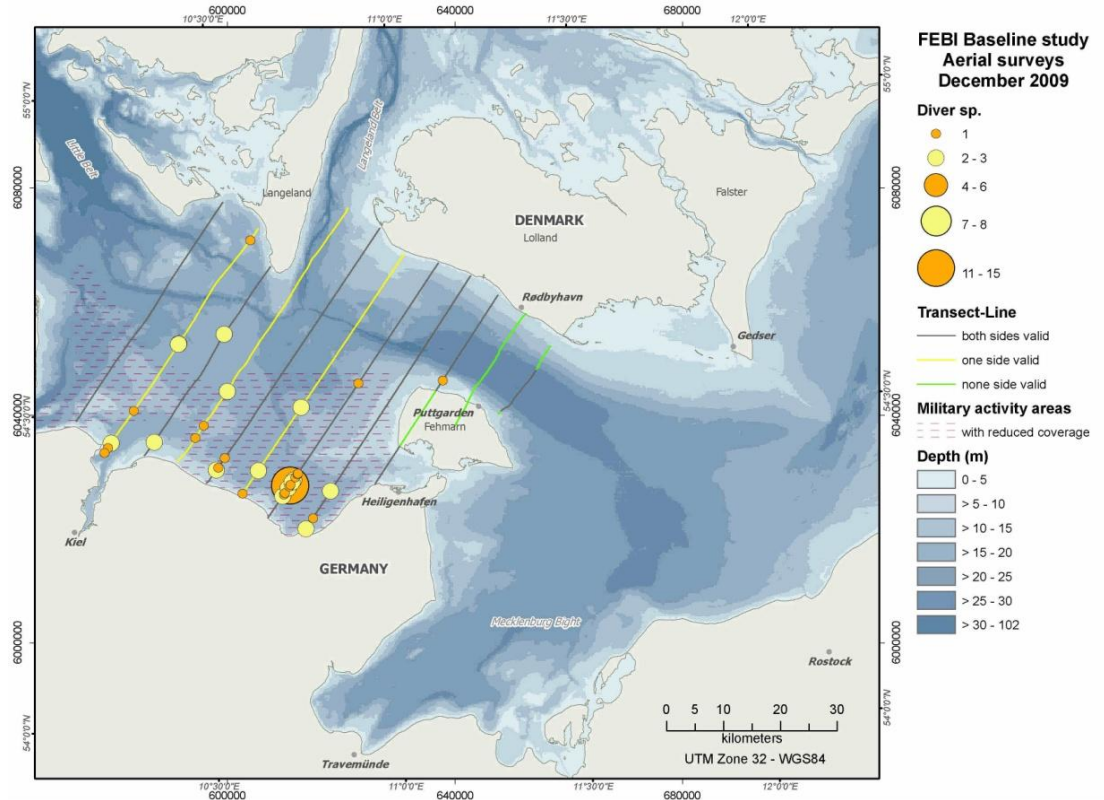


Figure 1.8 Diver (*Gavia* spp.) distribution in the study area during aerial surveys (December 2009).

1.1.2 Grebe unidentified – Podiceps spp.

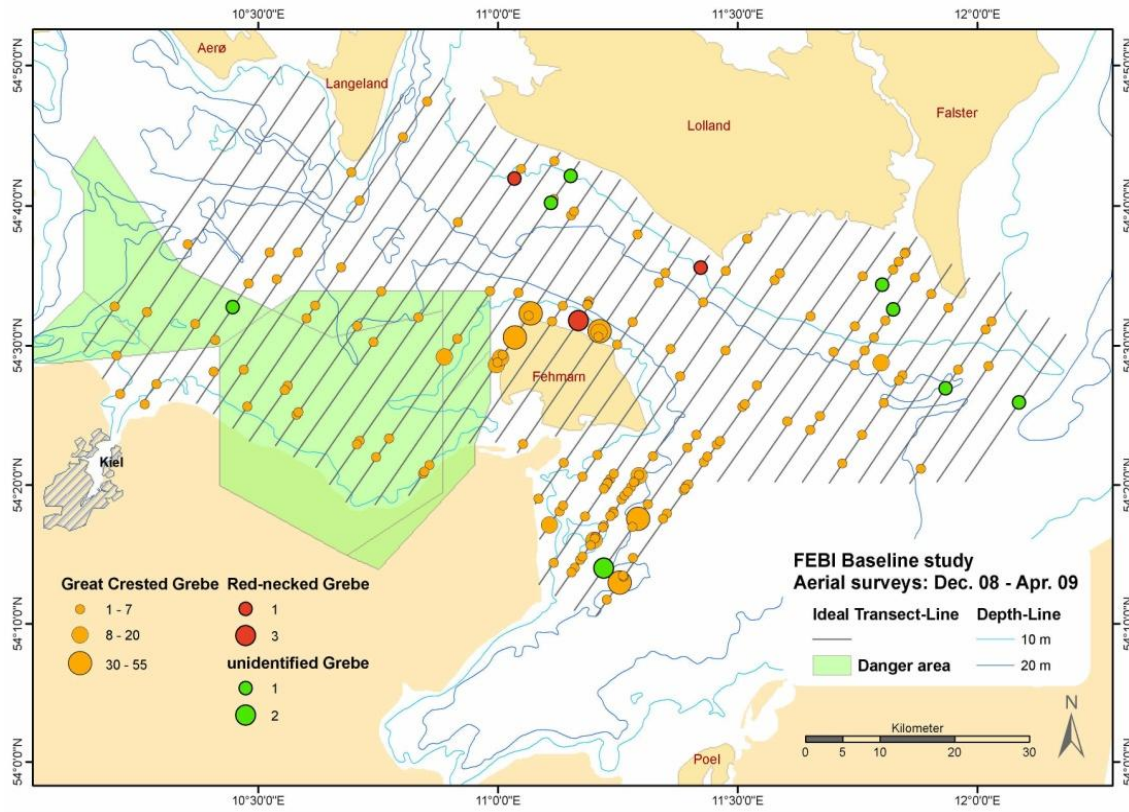


Figure 1.9 Grebe (Podiceps spp.) distribution in the study area during aerial surveys (December 2008 - April 2009).

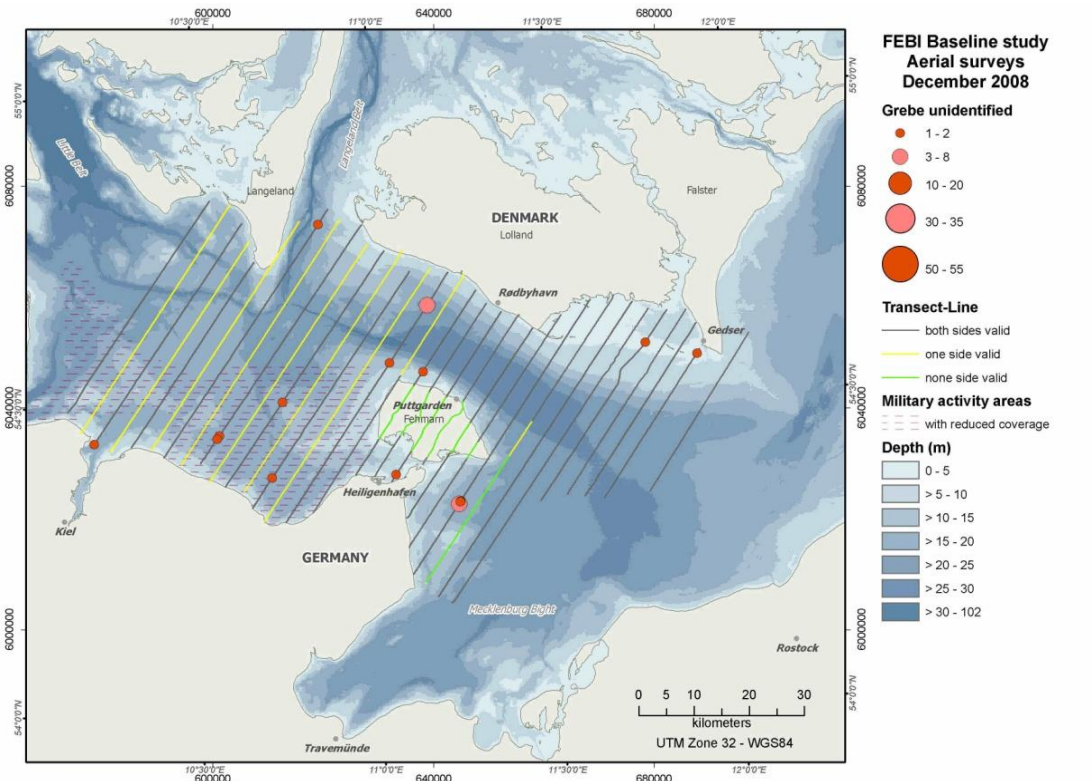


Figure 1.10 Grebe (Podiceps spp.) distribution in the study area during aerial surveys (December 2008).

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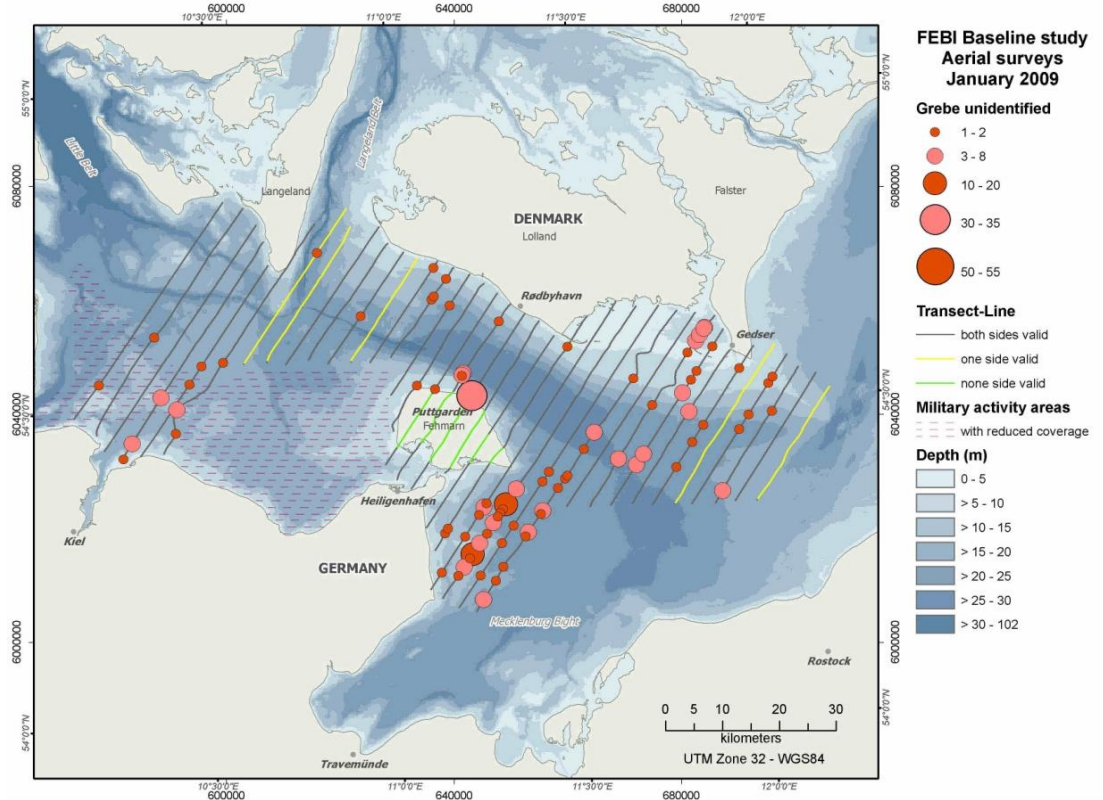


Figure 1.11 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (January 2009).

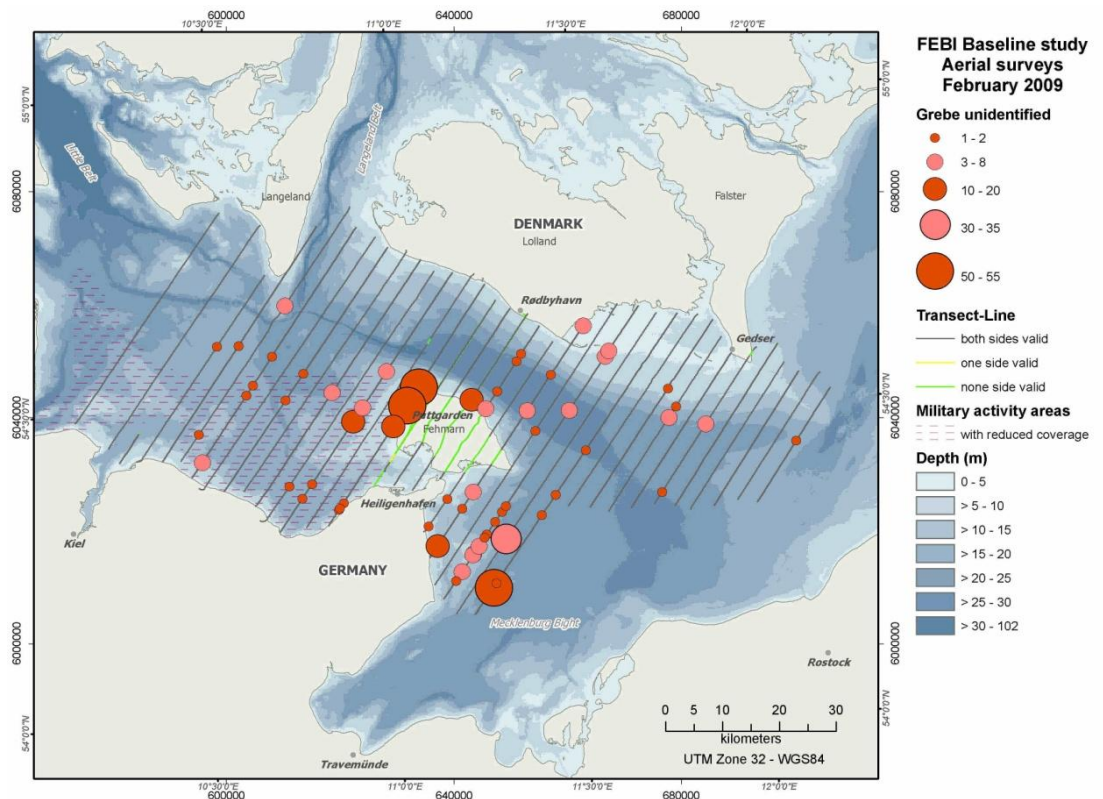


Figure 1.12 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (February 2009).

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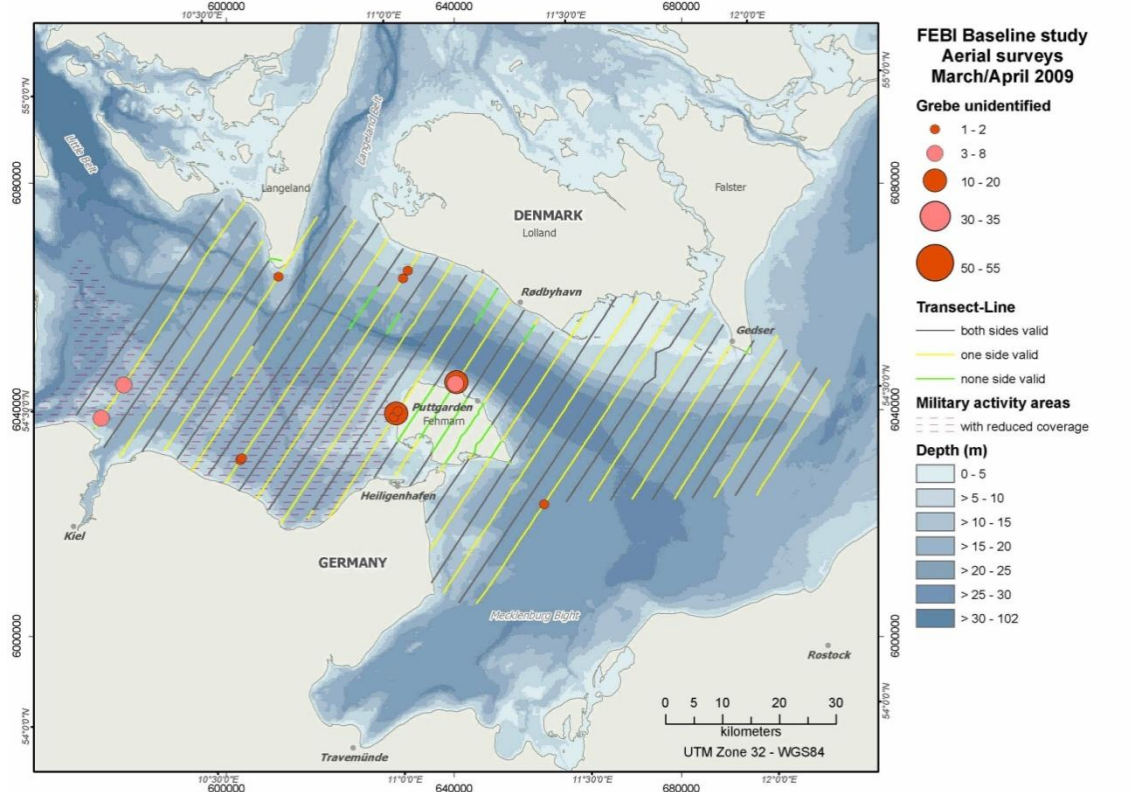


Figure 1.13 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (March/April 2009).

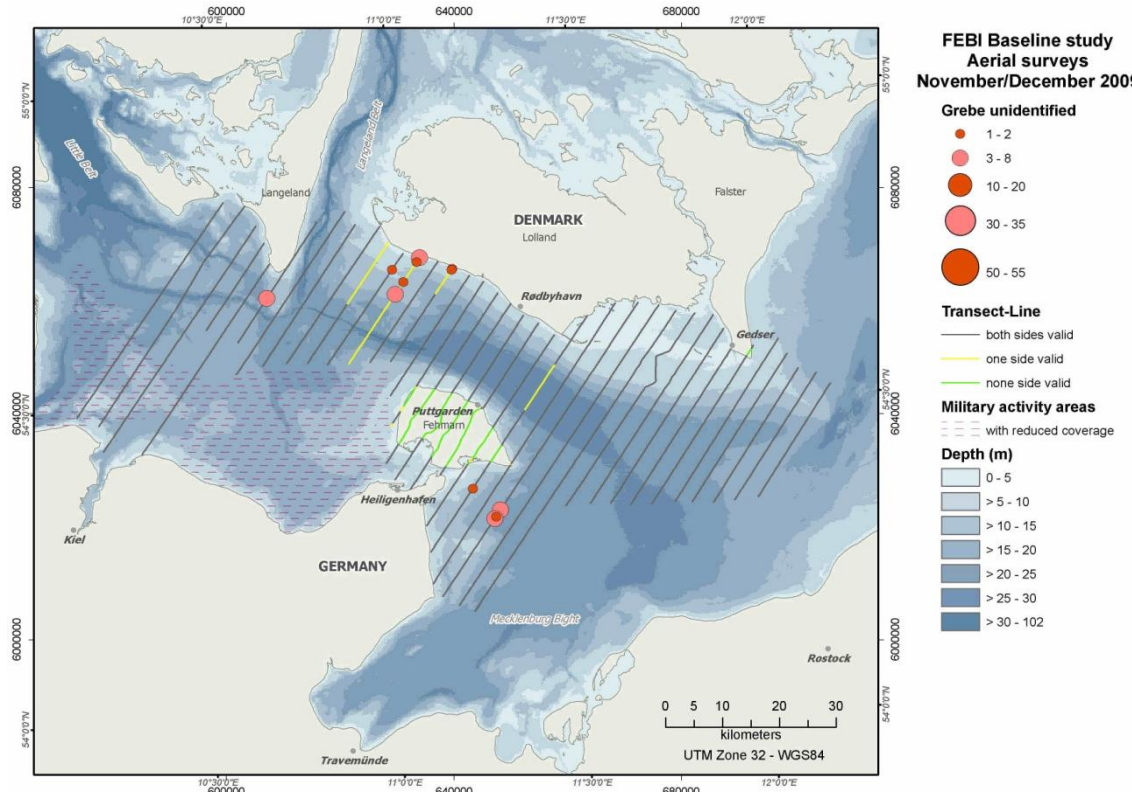


Figure 1.14 Grebe (*Podiceps* spp.) distribution in the study area during aerial surveys (November/December 2009).

1.1.3 Great Cormorant – *Phalacrocorax carbo*

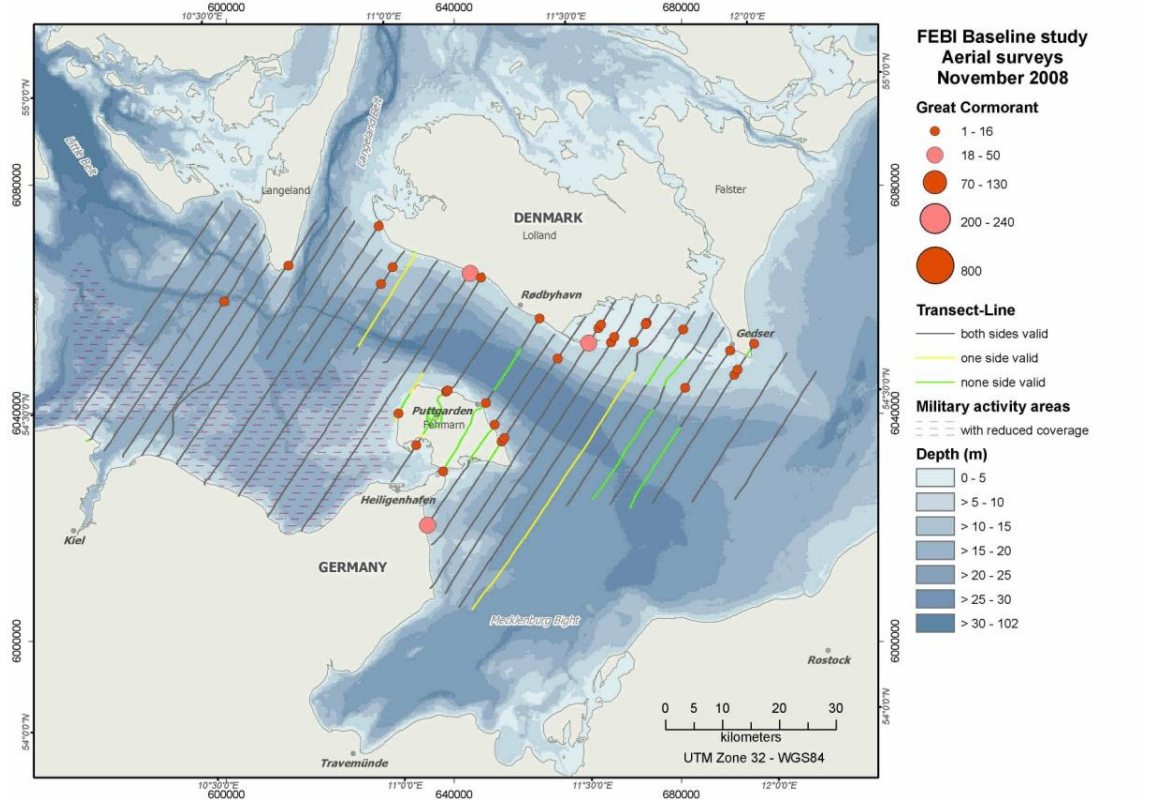


Figure 1.15 Great Cormorant distribution in the study area during aerial surveys (November 2008).

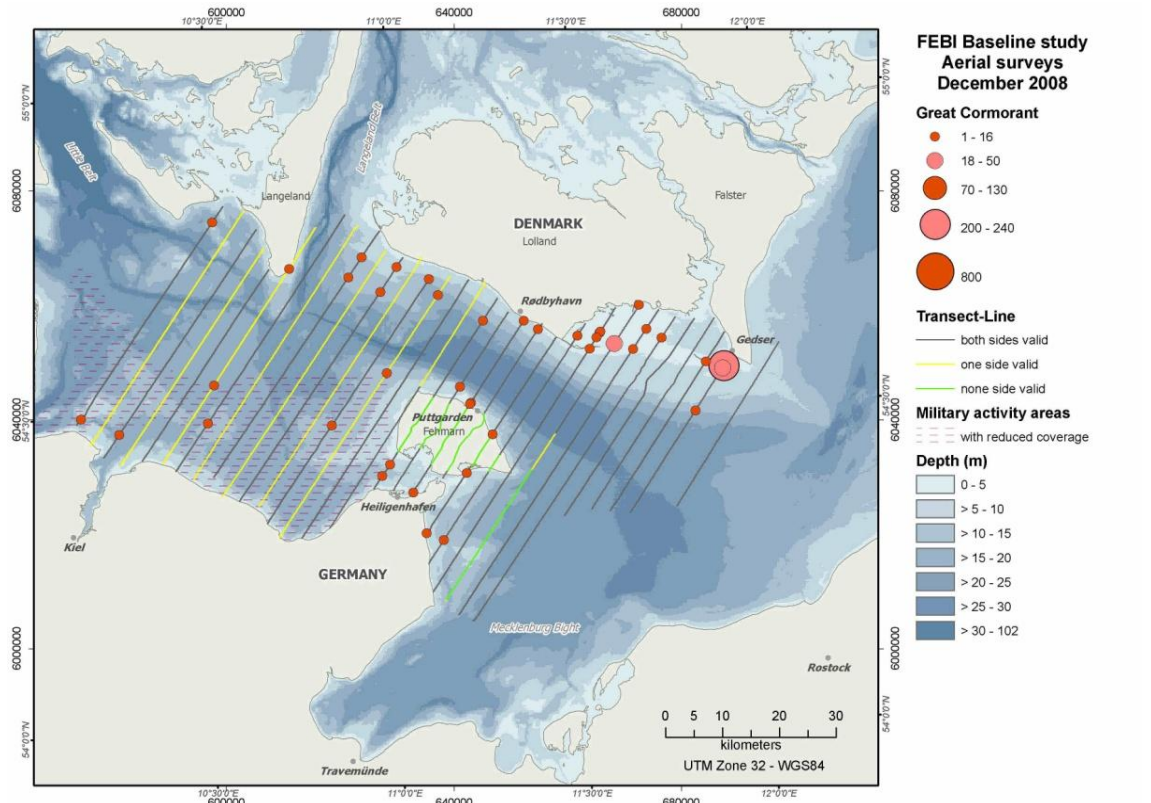


Figure 1.16 Great Cormorant distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

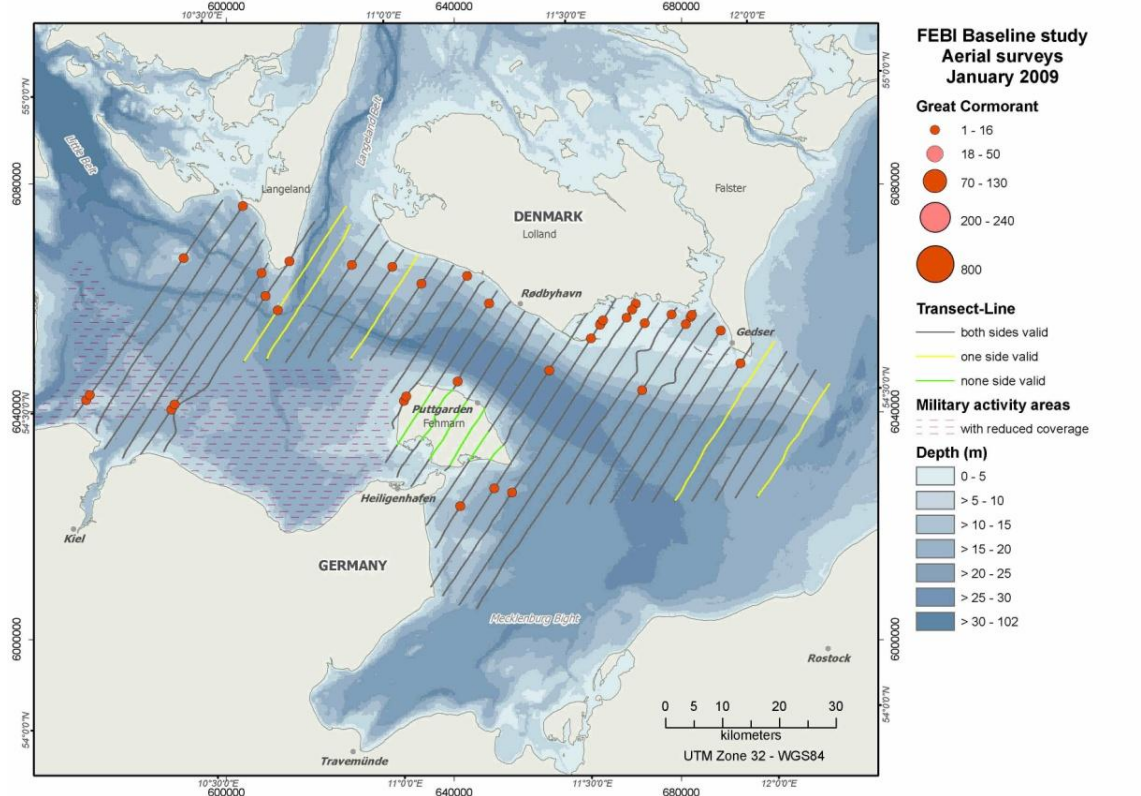


Figure 1.17 Great Cormorant distribution in the study area during aerial surveys (January 2009).

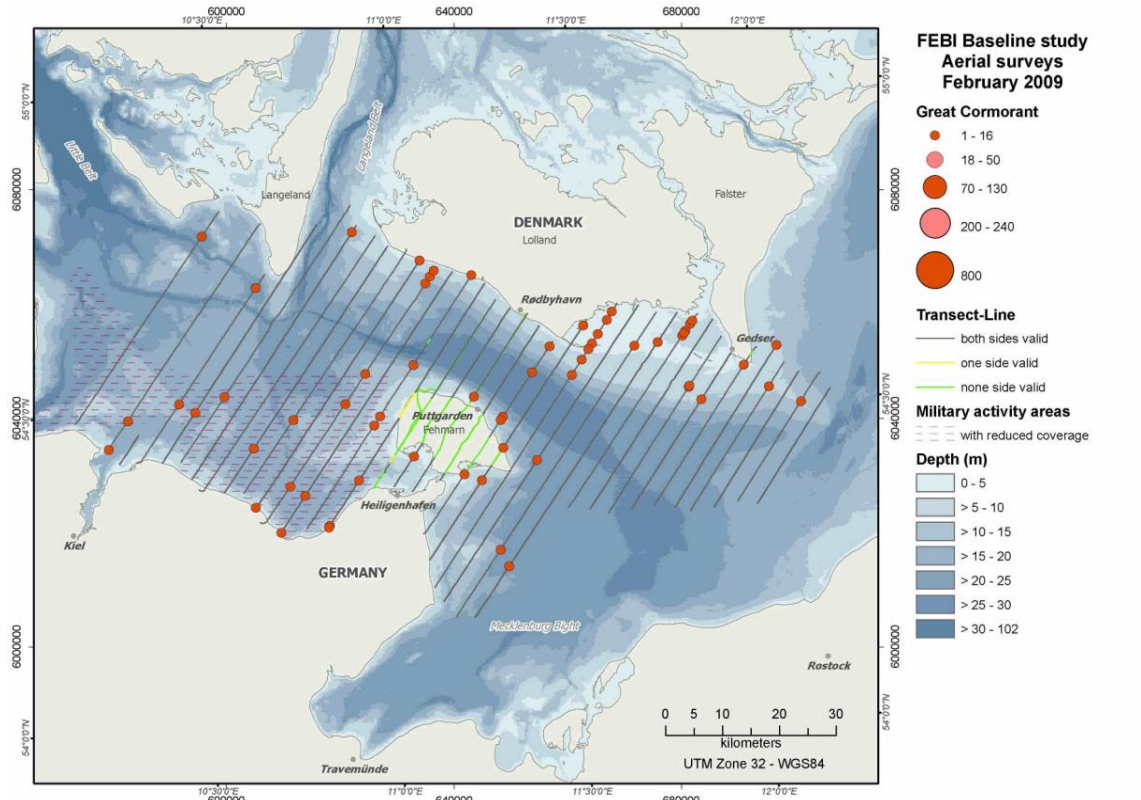


Figure 1.18 Great Cormorant distribution in the study area during aerial surveys (February 2009).

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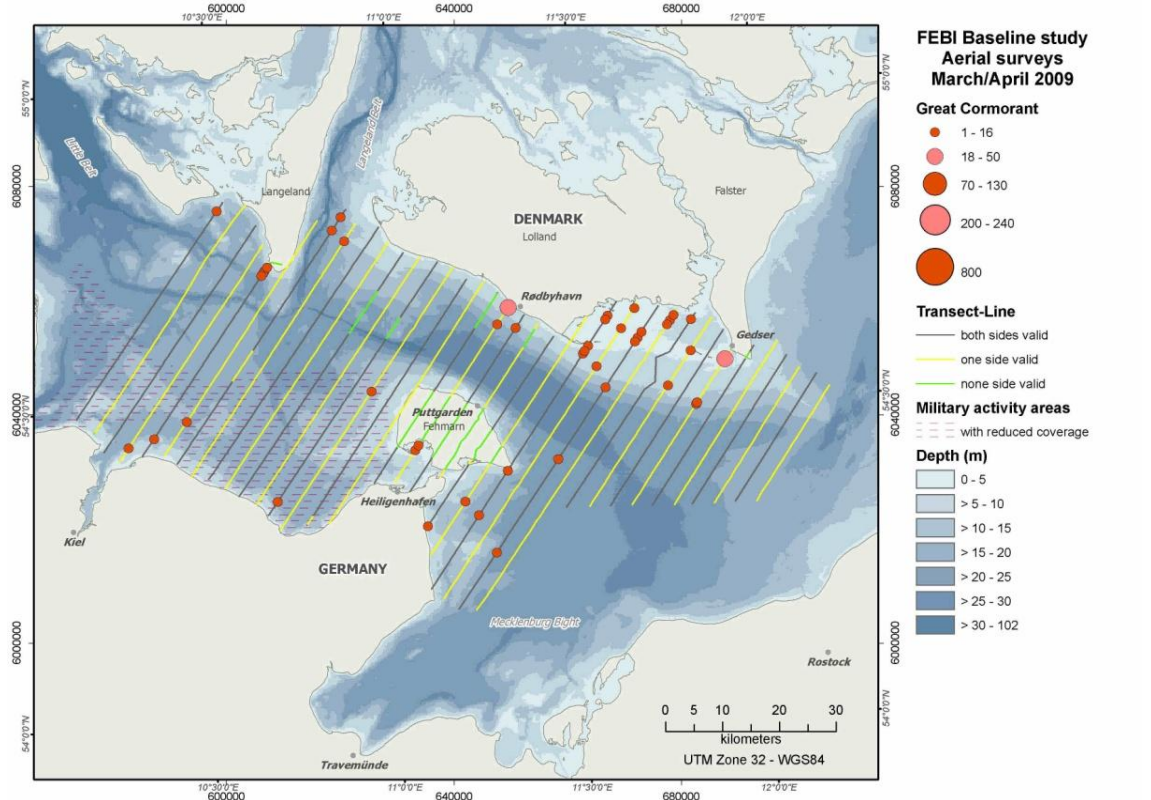


Figure 1.19 Great Cormorant distribution in the study area during aerial surveys (March/April 2009).

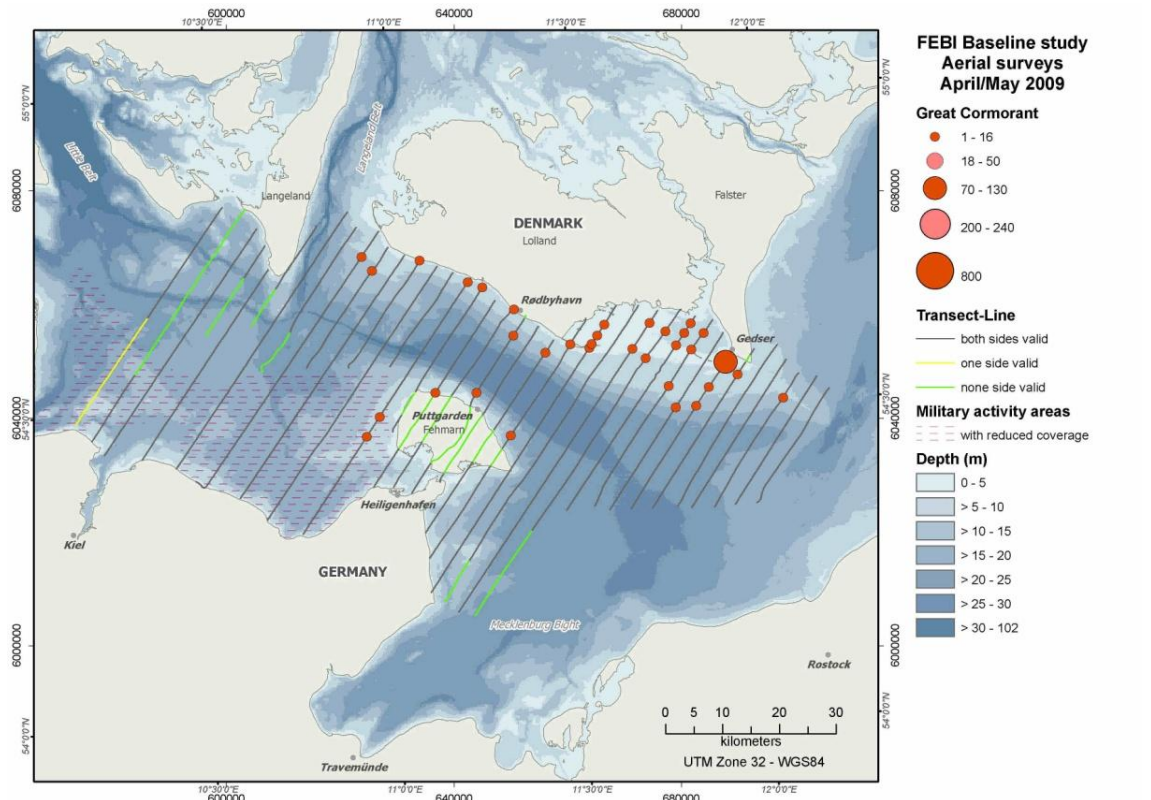


Figure 1.20 Great Cormorant distribution in the study area during aerial surveys (April/May 2009).

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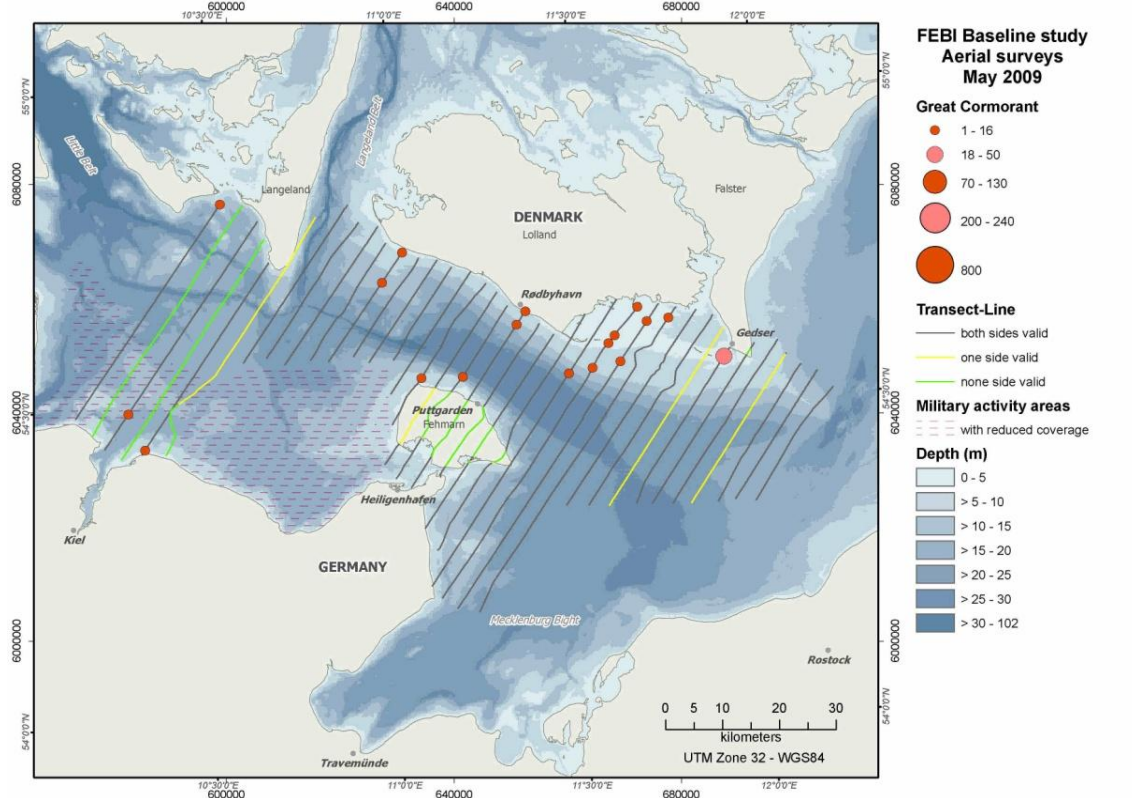


Figure 1.21 Great Cormorant distribution in the study area during aerial surveys (May 2009).

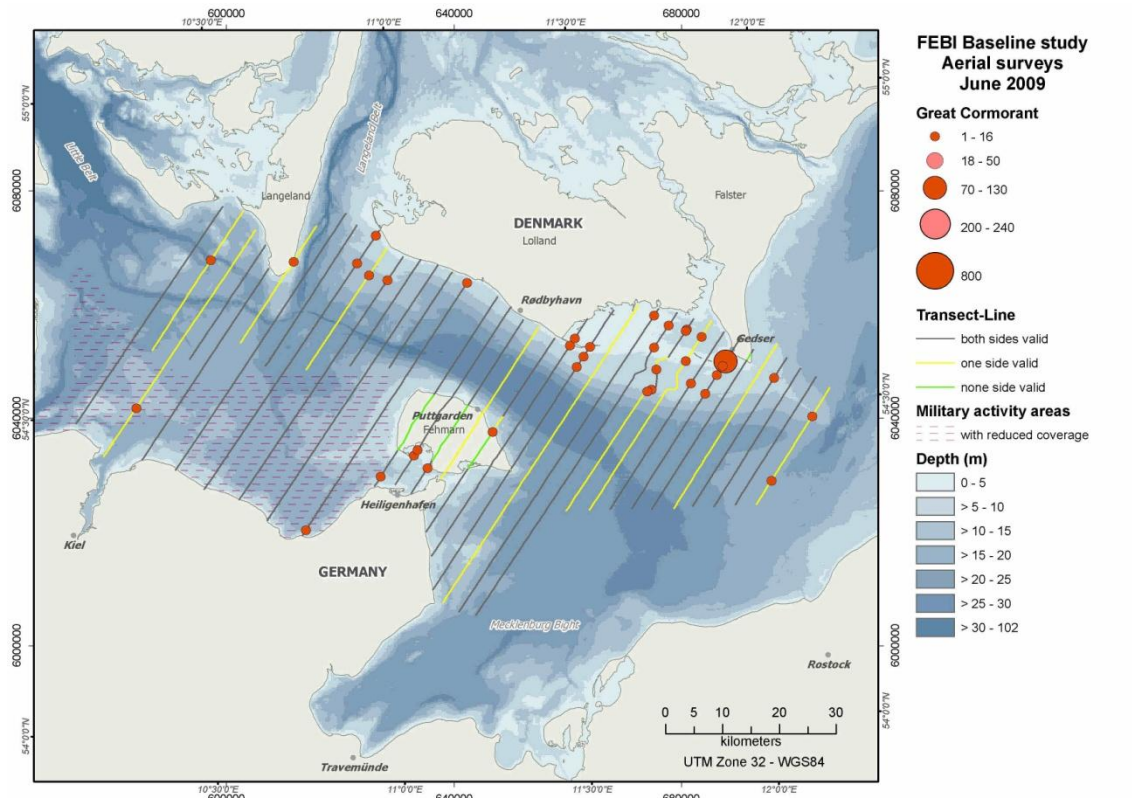


Figure 1.22 Great Cormorant distribution in the study area during aerial surveys (June 2009).

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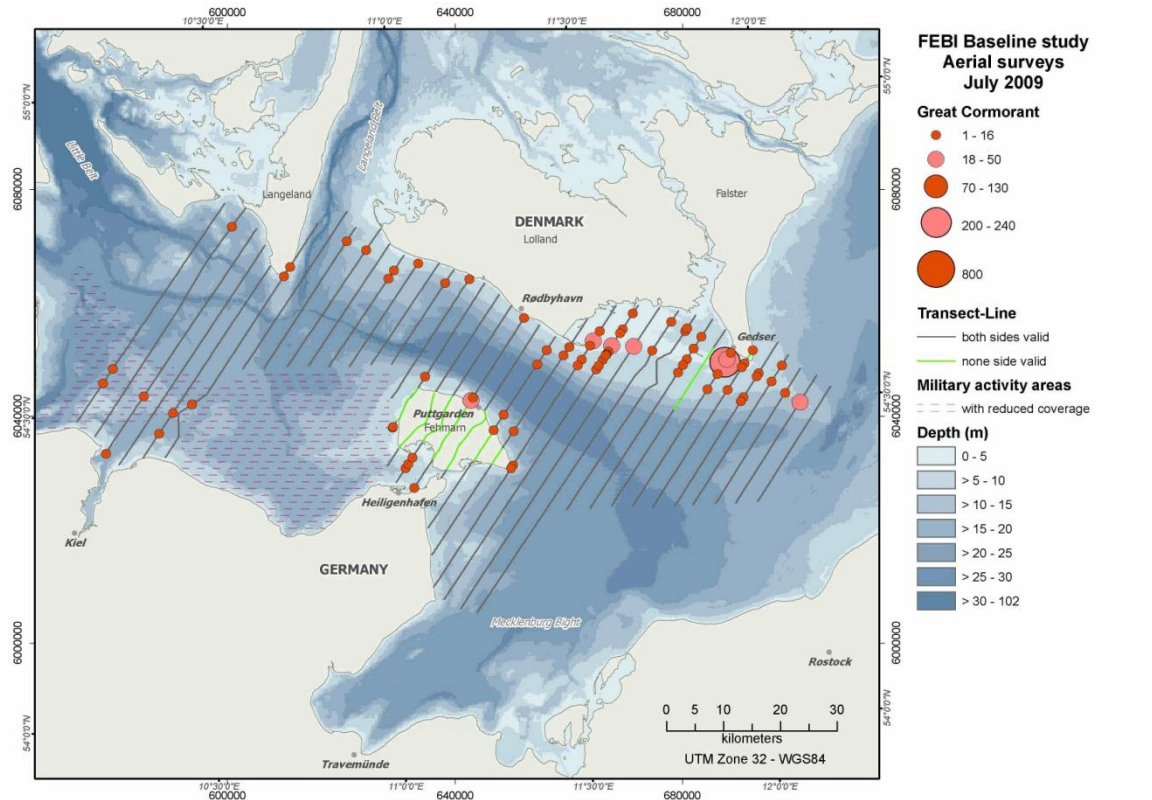


Figure 1.23 Great Cormorant distribution in the study area during aerial surveys (July 2009).

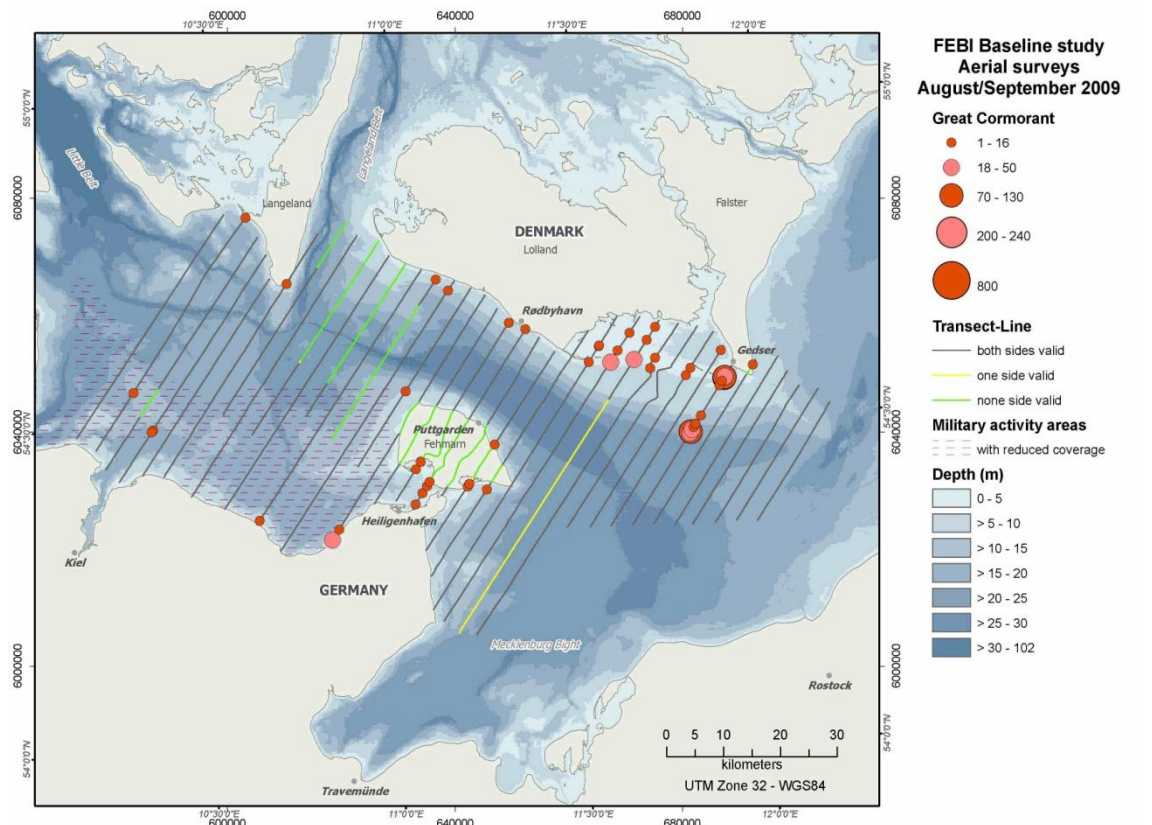


Figure 1.24 Great Cormorant distribution in the study area during aerial surveys (August/September 2009).

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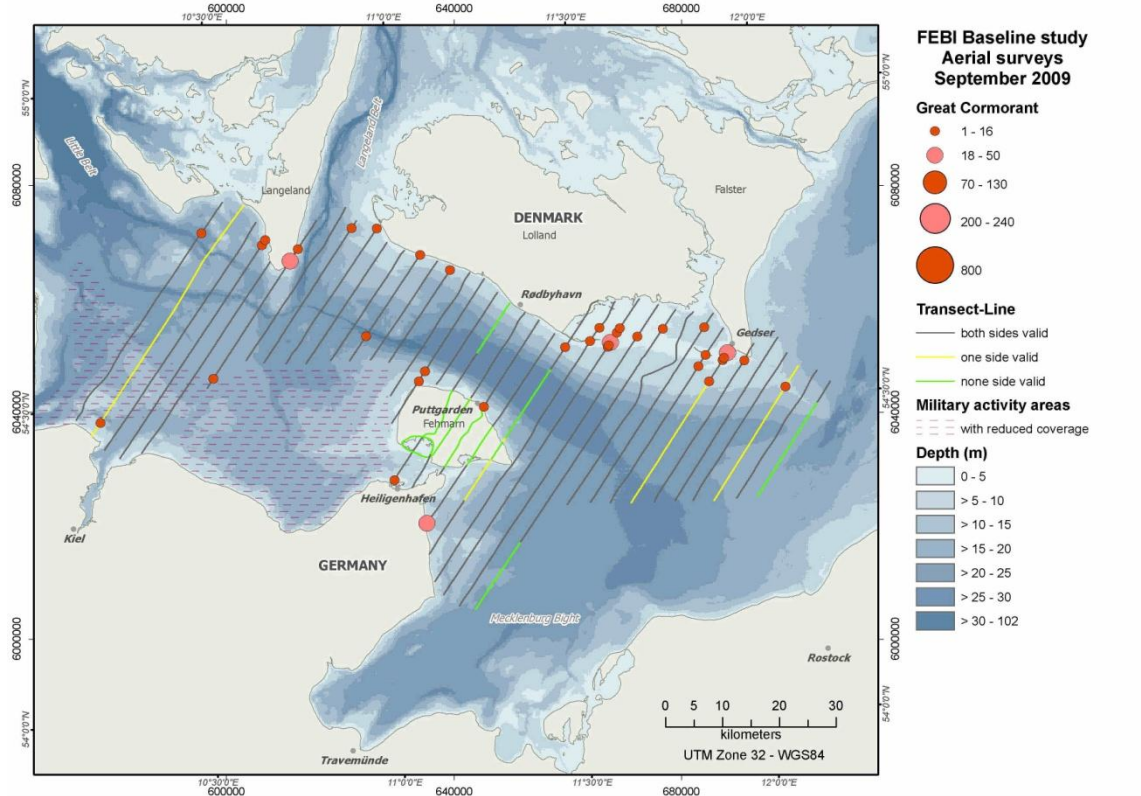


Figure 1.25 Great Cormorant distribution in the study area during aerial surveys (September 2009).

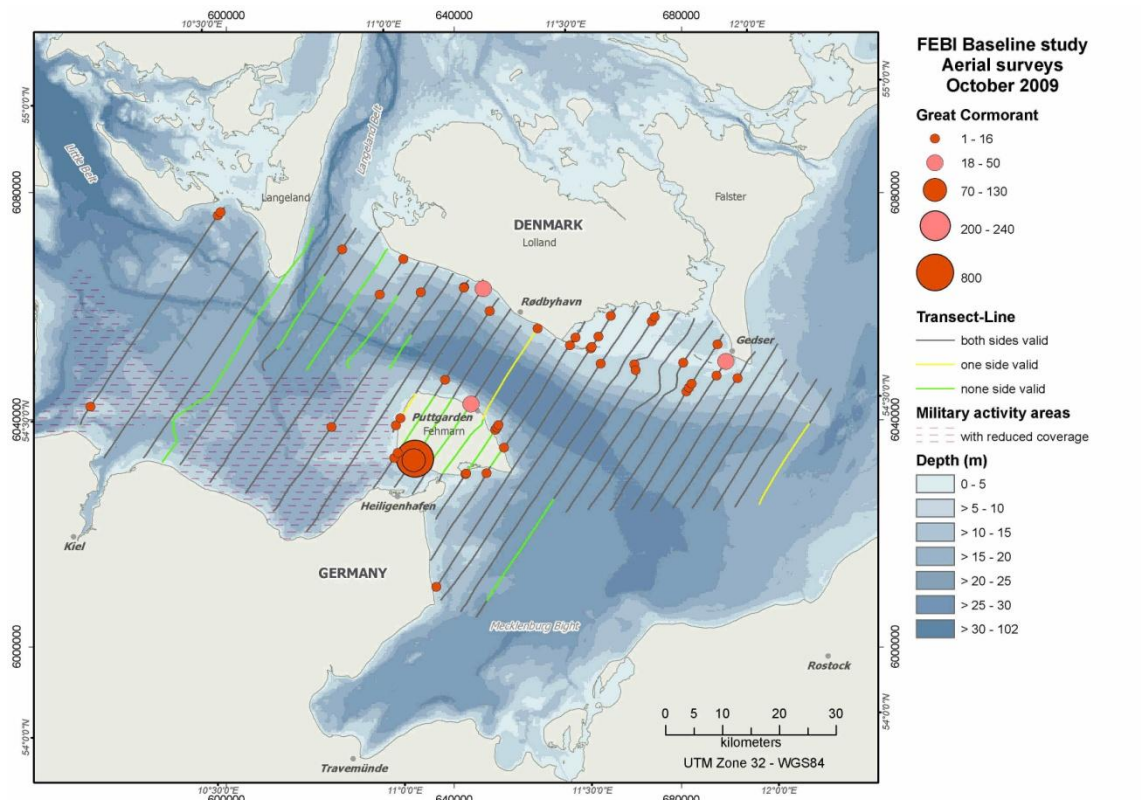


Figure 1.26 Great Cormorant distribution in the study area during aerial surveys (October 2009).

FEHMARNBELT BIRDS

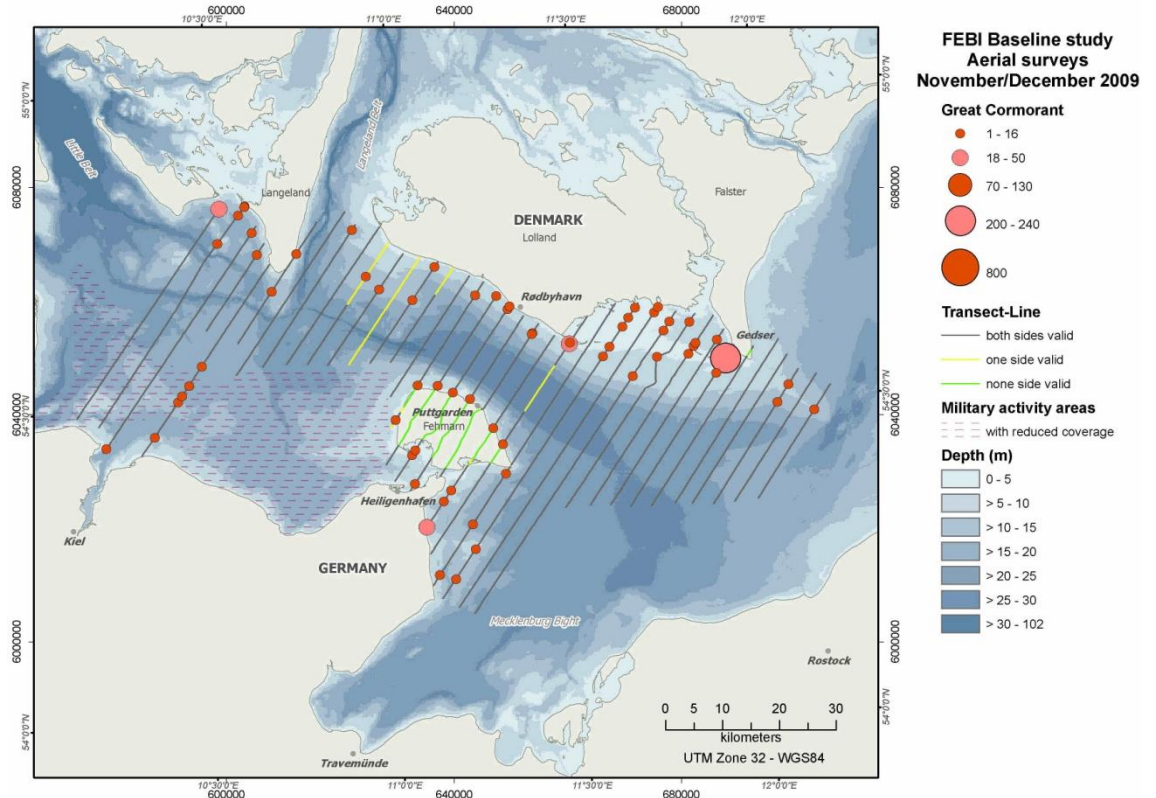


Figure 1.27 Great Cormorant distribution in the study area during aerial surveys (November/December 2009).

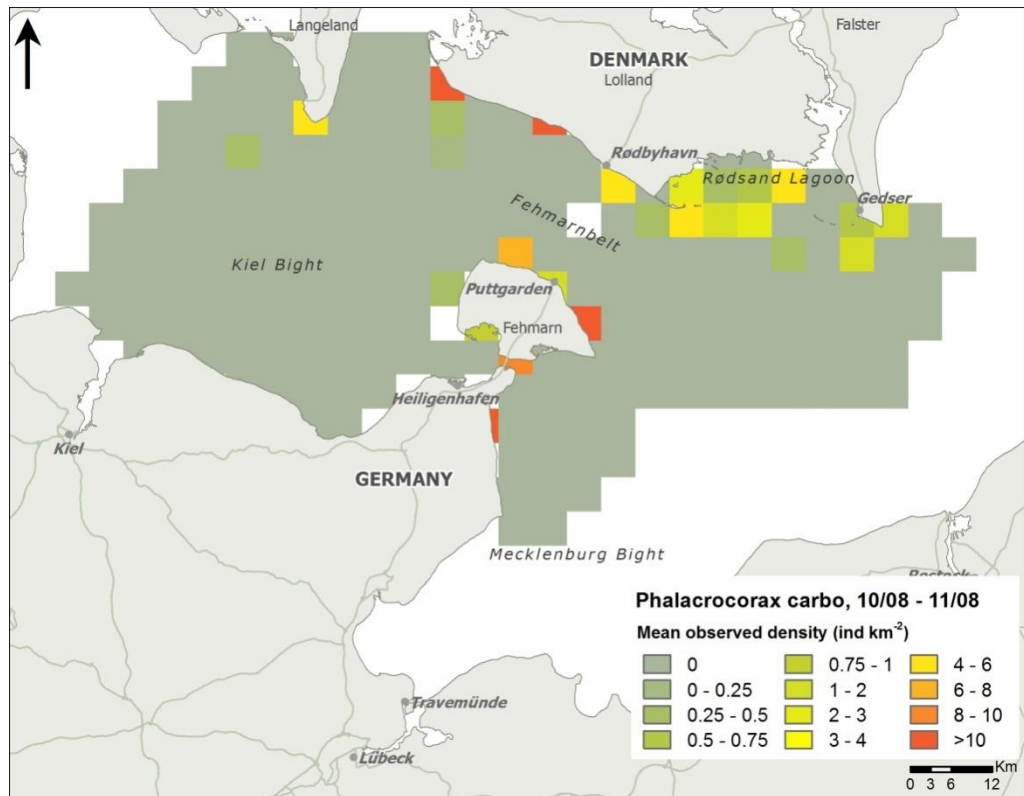


Figure 1.28 Mean densities of Great Cormorant sampled during October-November 2008 by aerial surveys. The densities are shown for 5 km squares.

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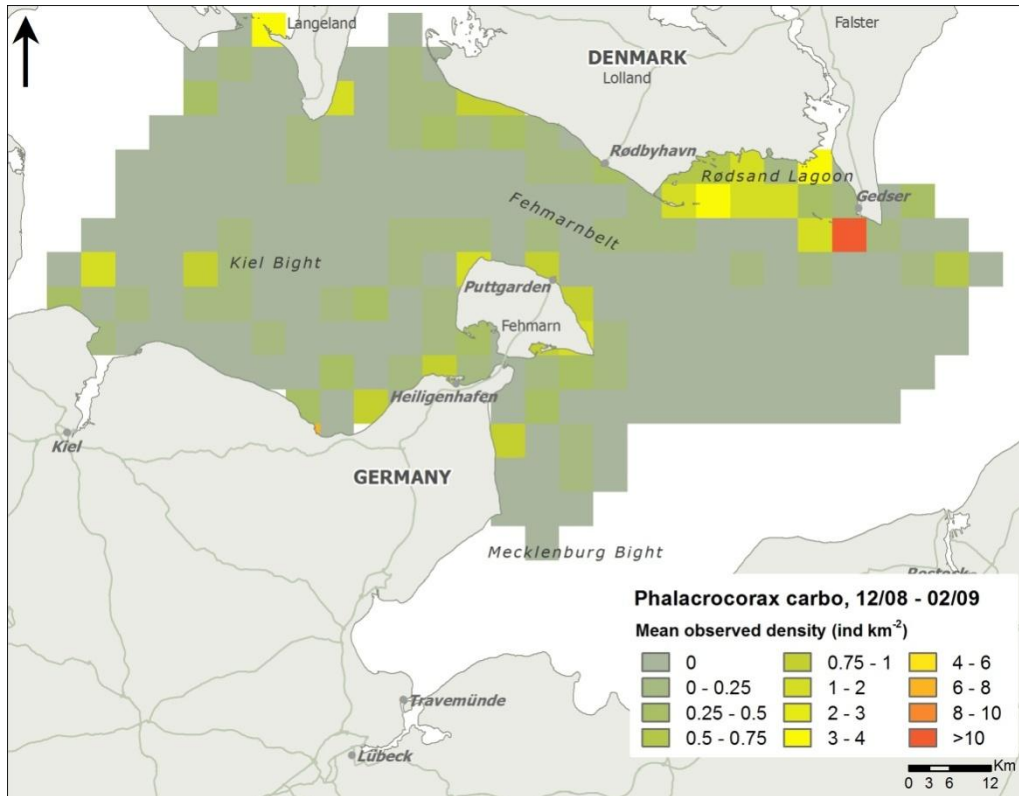


Figure 1.29 Mean densities of Great Cormorant sampled during December-February 2008/2009 by aerial surveys. The densities are shown for 5 km squares.

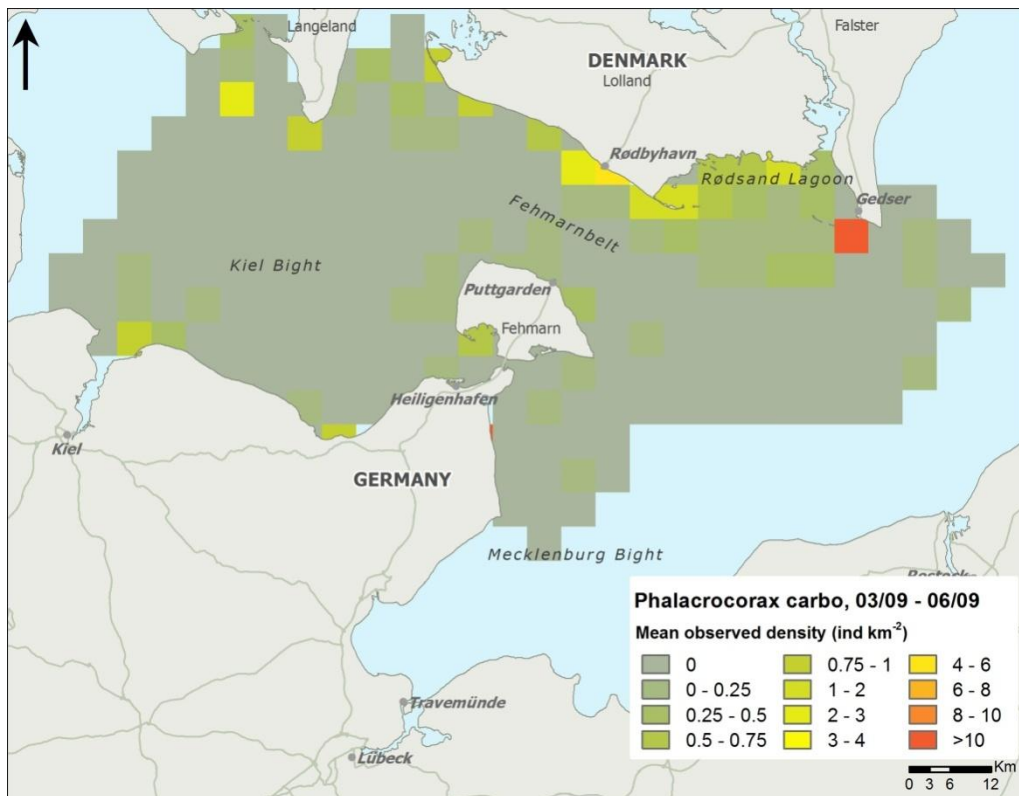


Figure 1.30 Mean densities of Great Cormorant sampled during March-June 2009 by aerial surveys. The densities are shown for 5 km squares.

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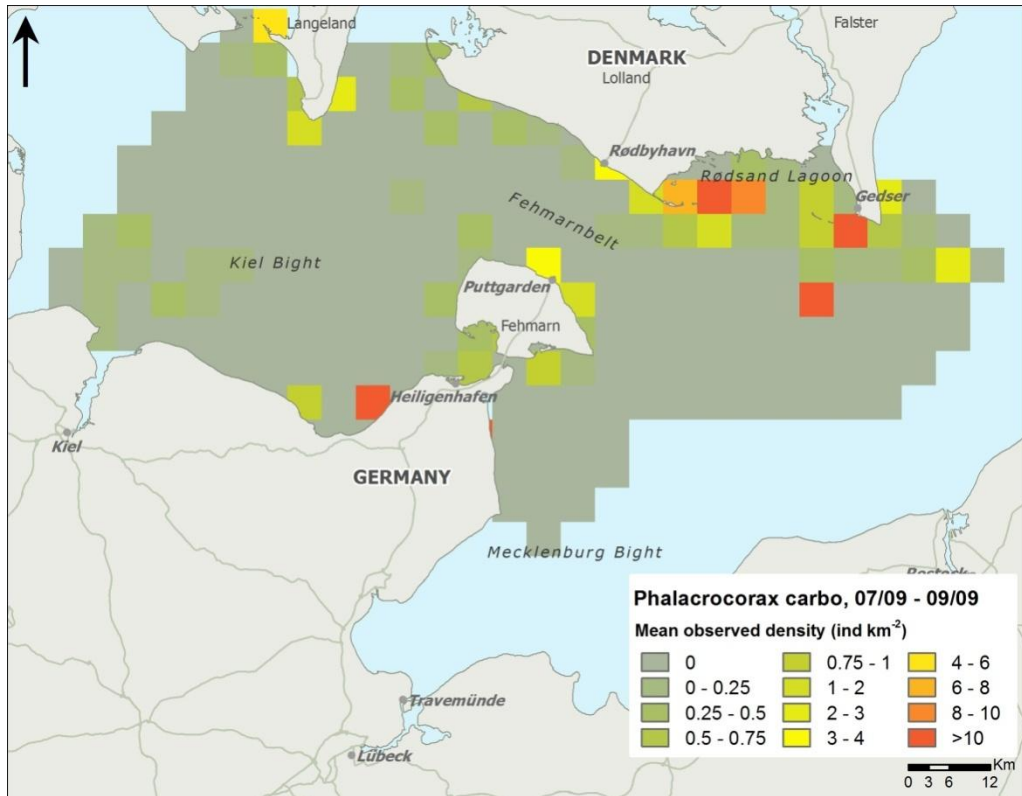


Figure 1.31 Mean densities of Great Cormorant sampled during July-September 2009 by aerial surveys. The densities are shown for 5 km squares.

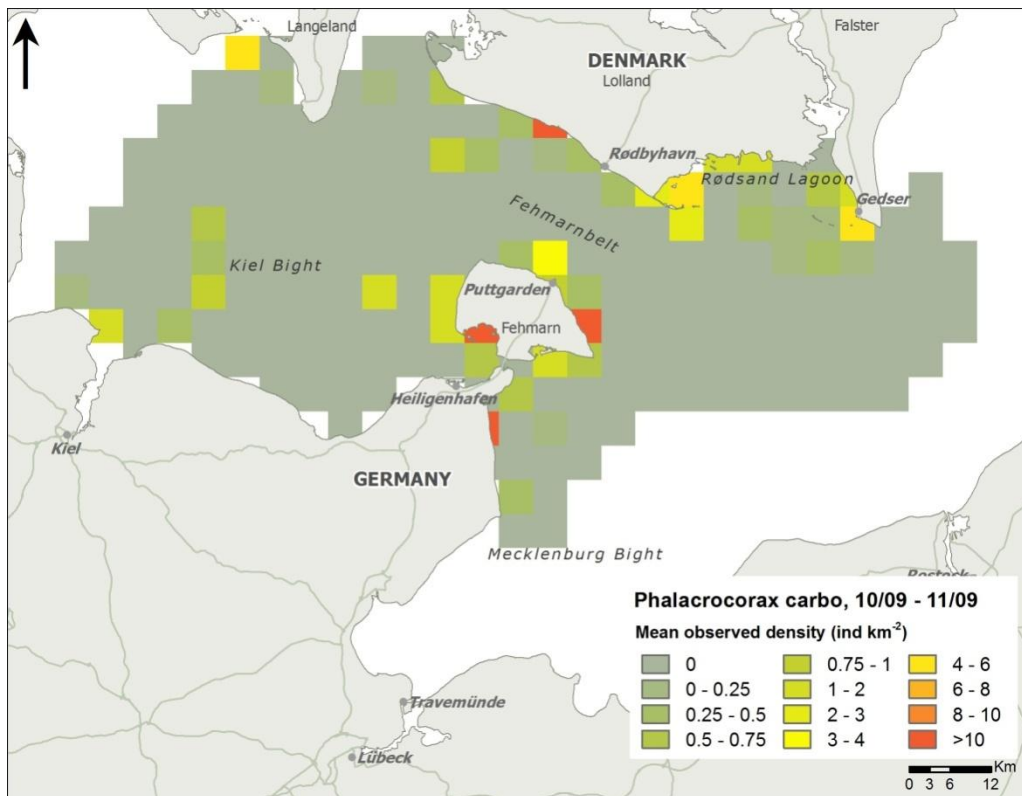


Figure 1.32 Mean densities of Great Cormorant sampled during October-November 2009 by aerial surveys. The densities are shown for 5 km squares.

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

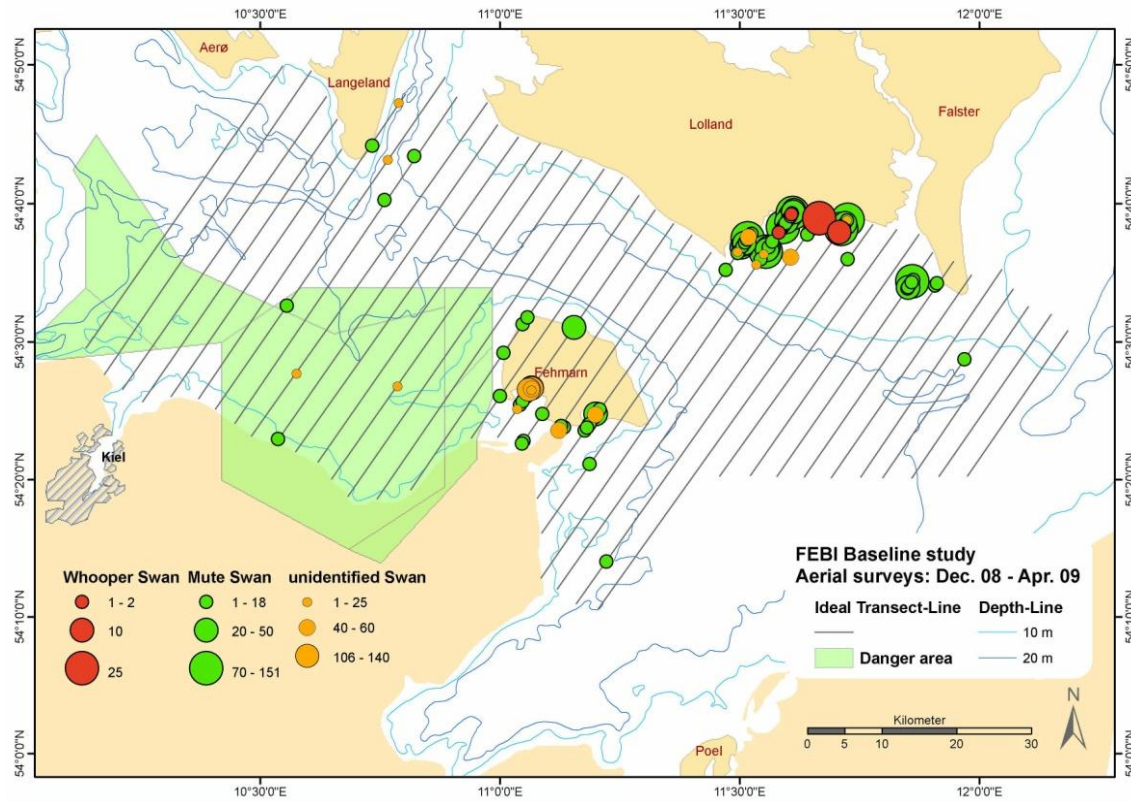


Figure 1.33 Swan distribution in the study area during aerial surveys (December 2008 - April 2009).

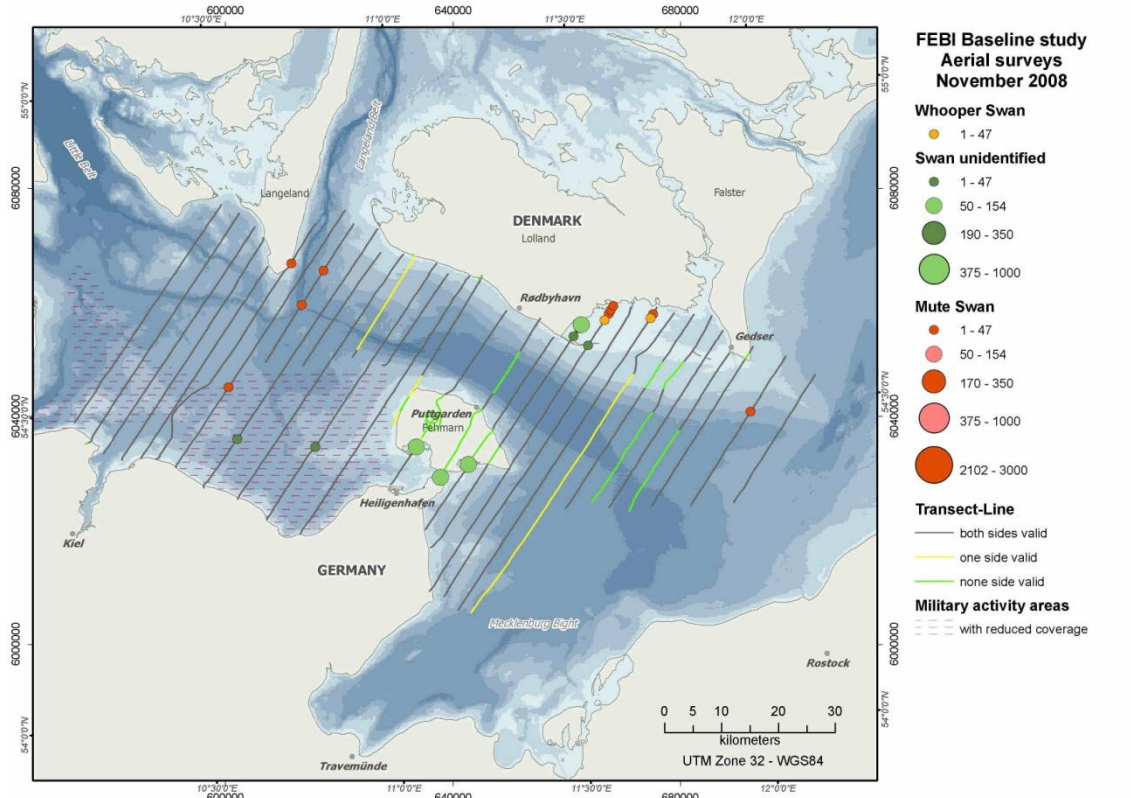


Figure 1.34 Swan distribution in the study area during aerial surveys (November 2008).

FEHMARNBELT BIRDS

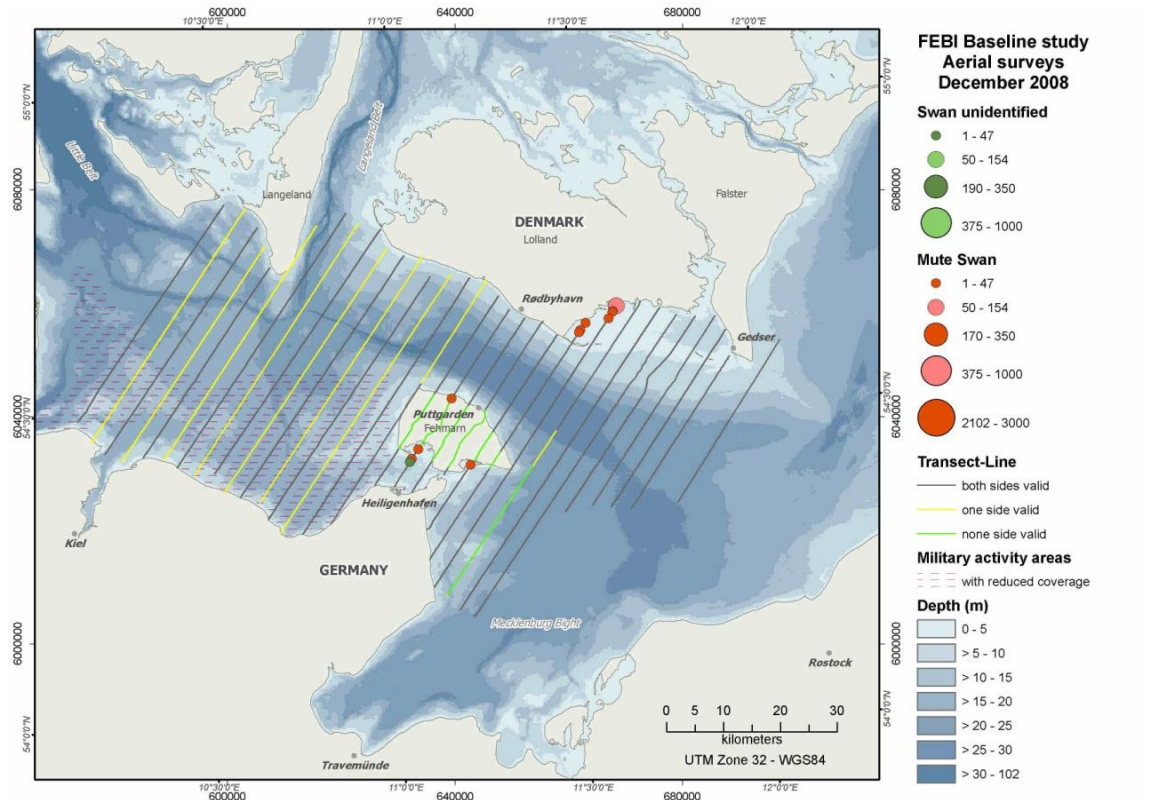


Figure 1.35 Swan distribution in the study area during aerial surveys (December 2008).

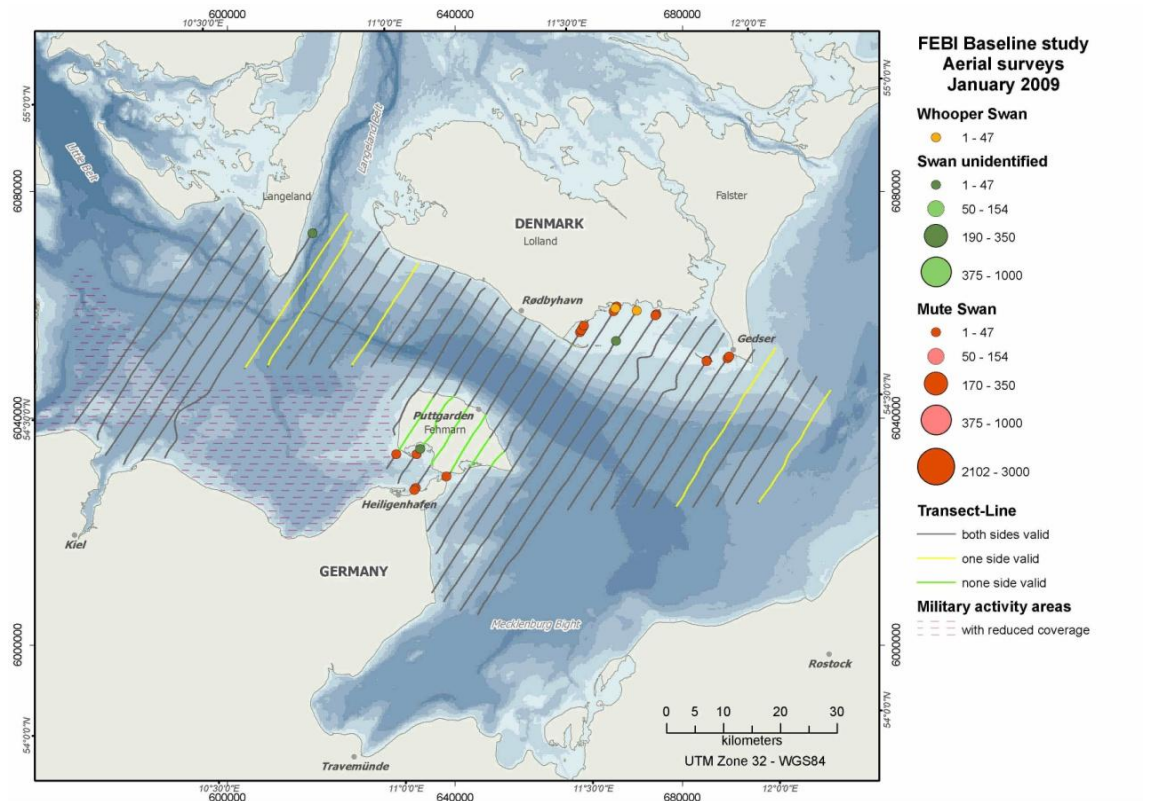


Figure 1.36 Swan distribution in the study area during aerial surveys (January 2009).

FEHMARNBELT BIRDS

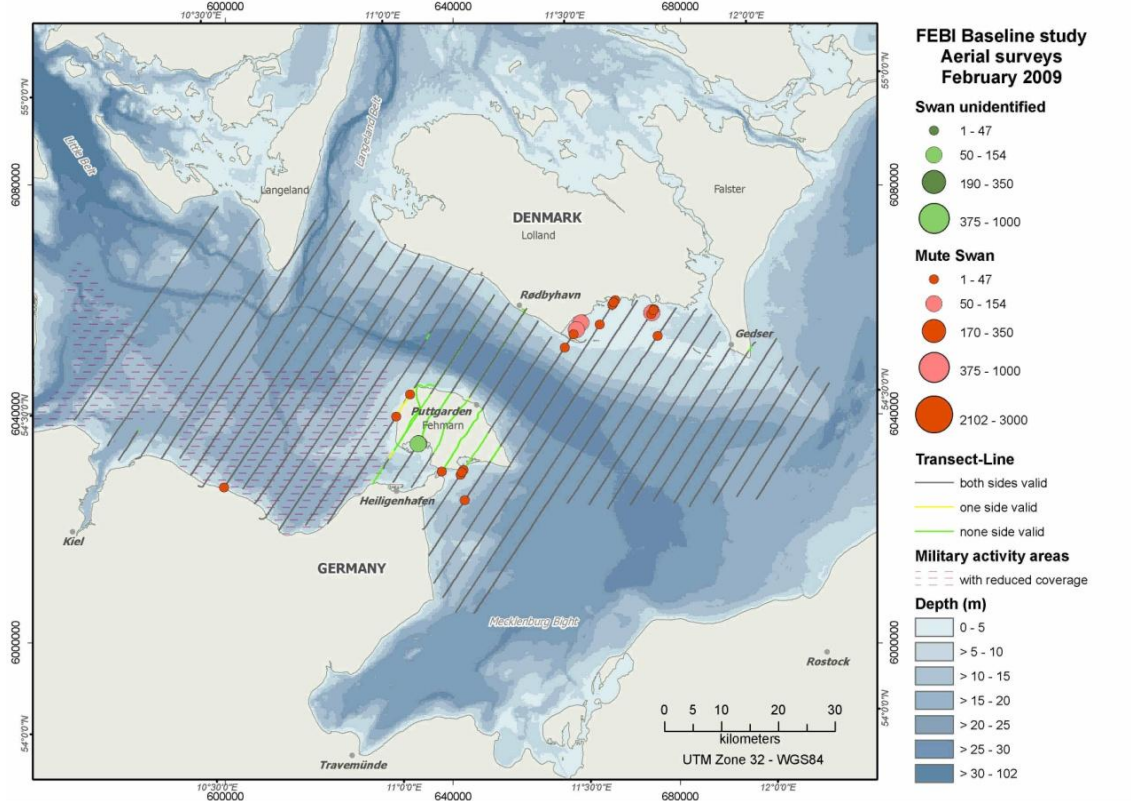


Figure 1.37 Swan distribution in the study area during aerial surveys (February 2009).

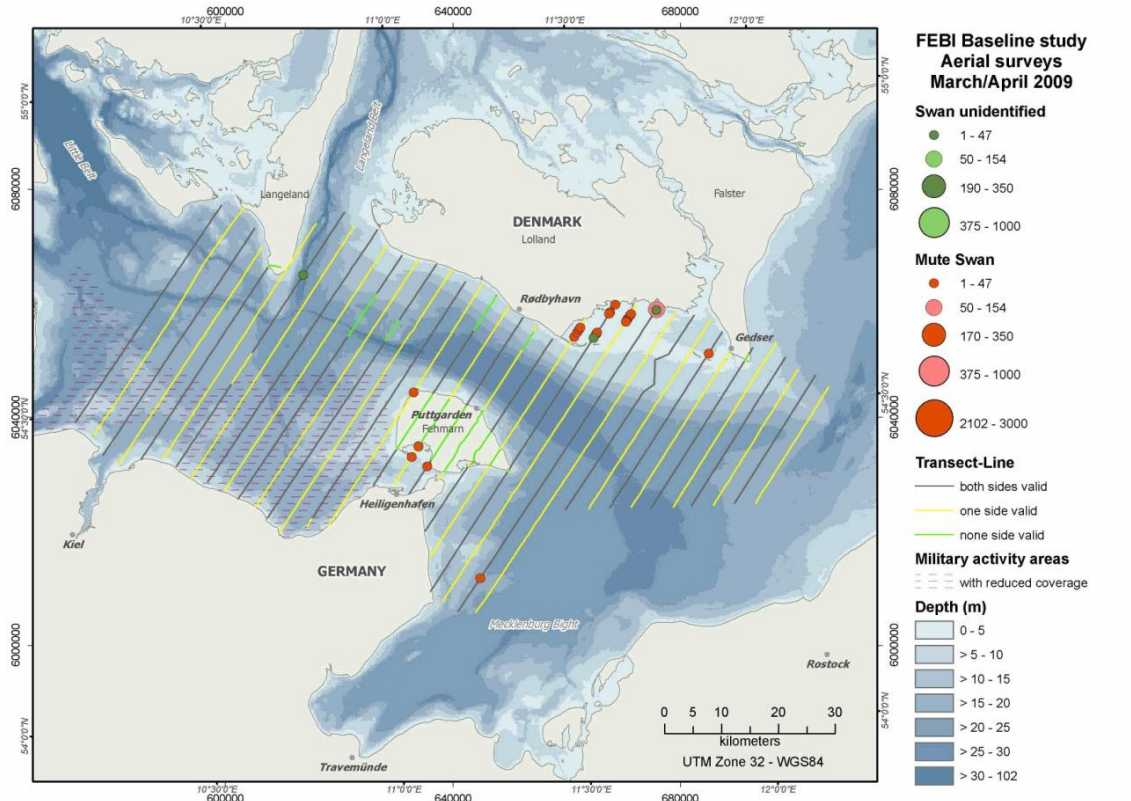


Figure 1.38 Swan distribution in the study area during aerial surveys (March/April 2009).

FEHMARNBELT BIRDS

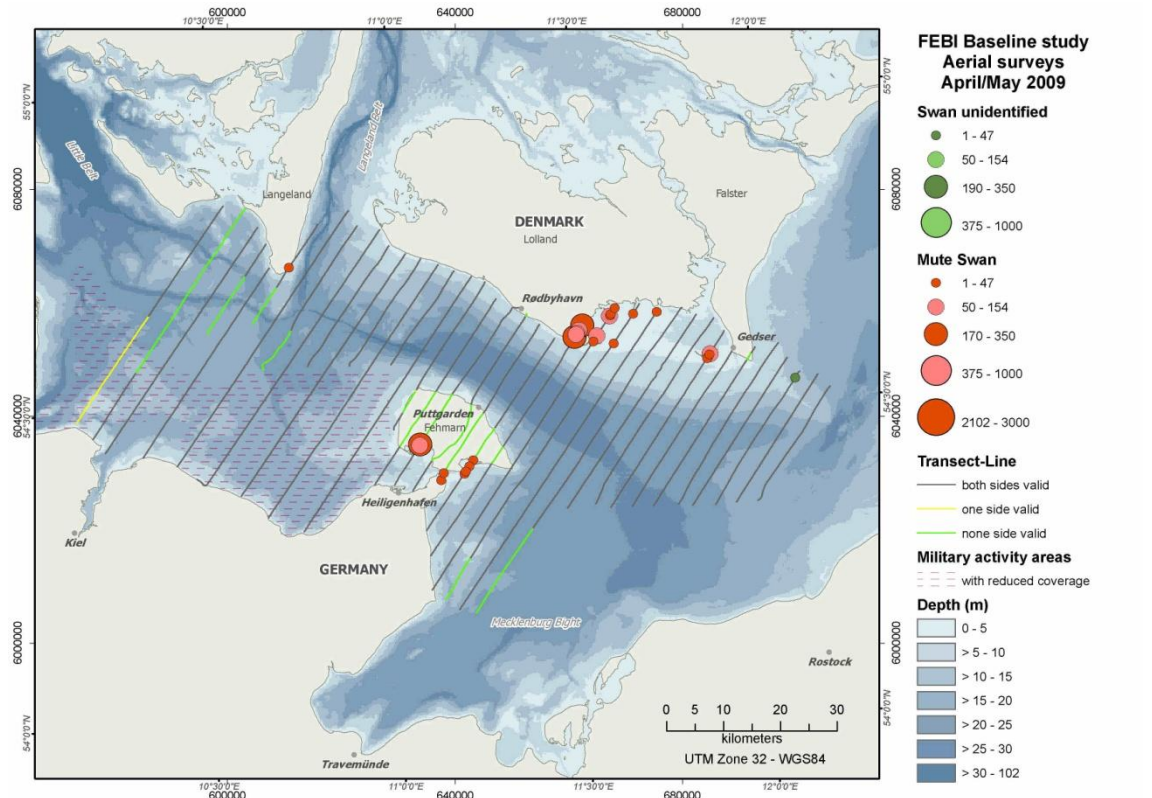


Figure 1.39 Swan distribution in the study area during aerial surveys (April/May 2009).

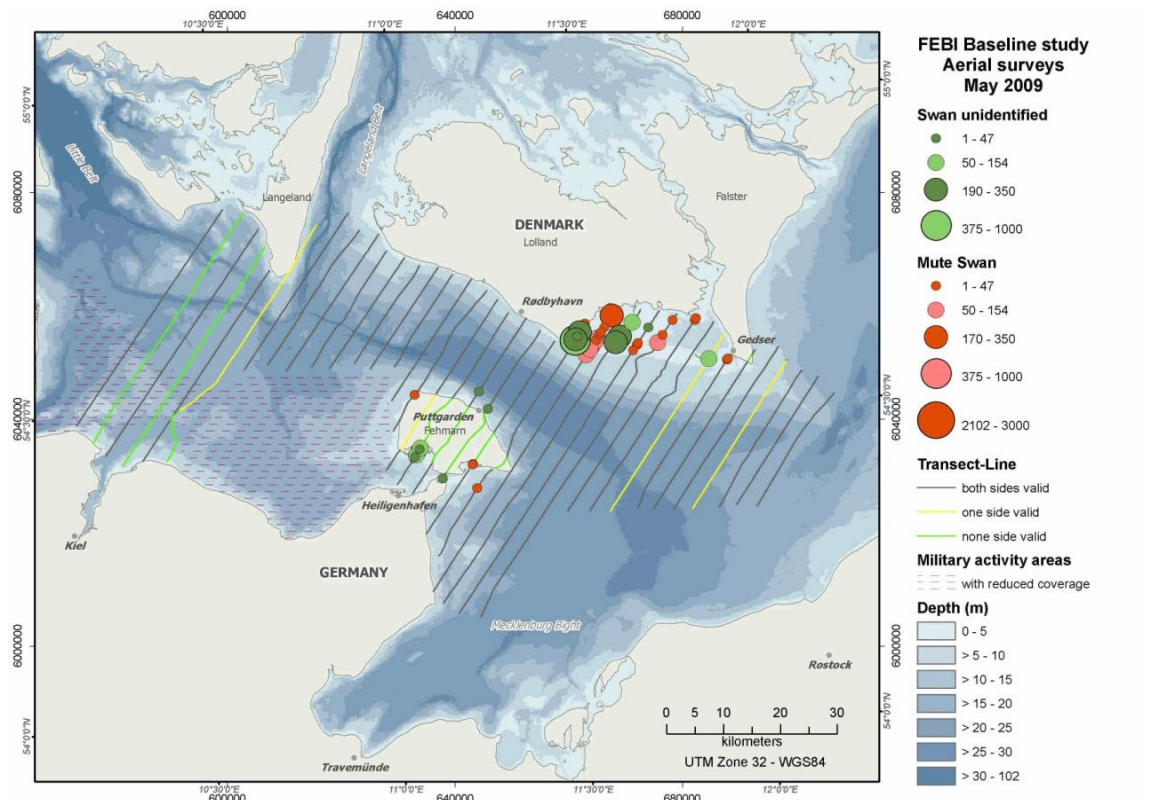


Figure 1.40 Swan distribution in the study area during aerial surveys (May 2009).

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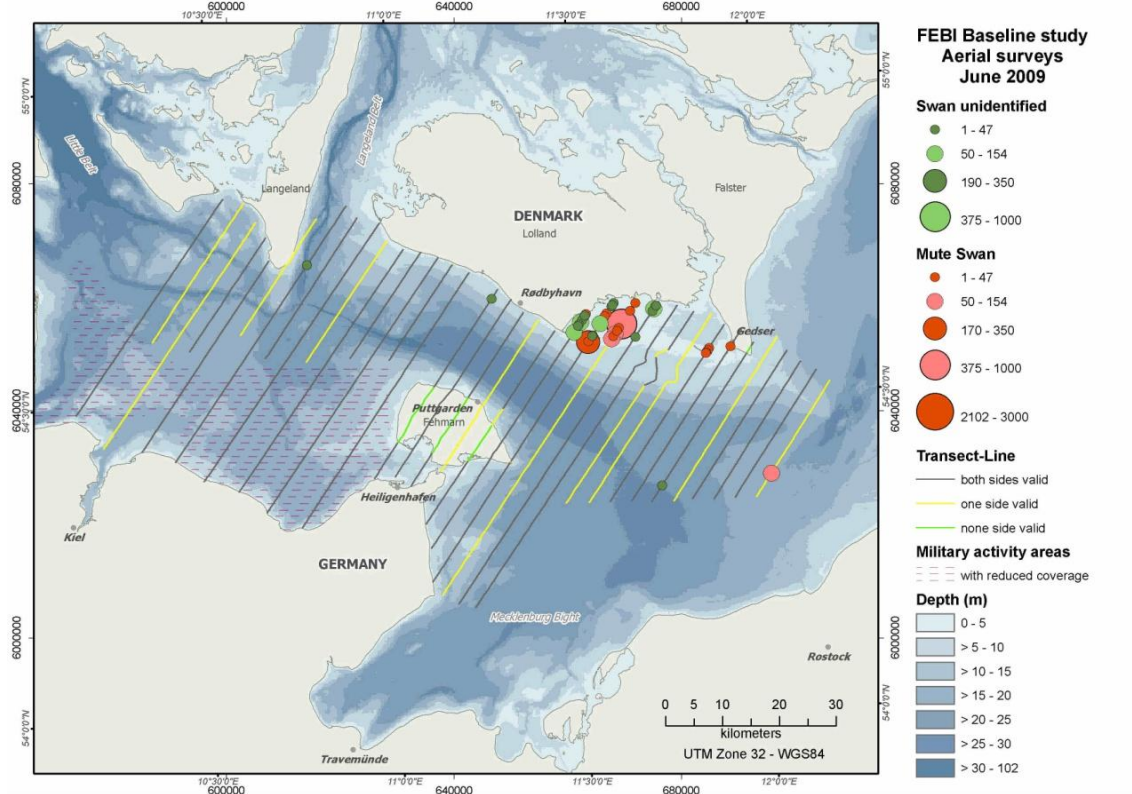


Figure 1.41 Swan distribution in the study area during aerial surveys (June 2009).

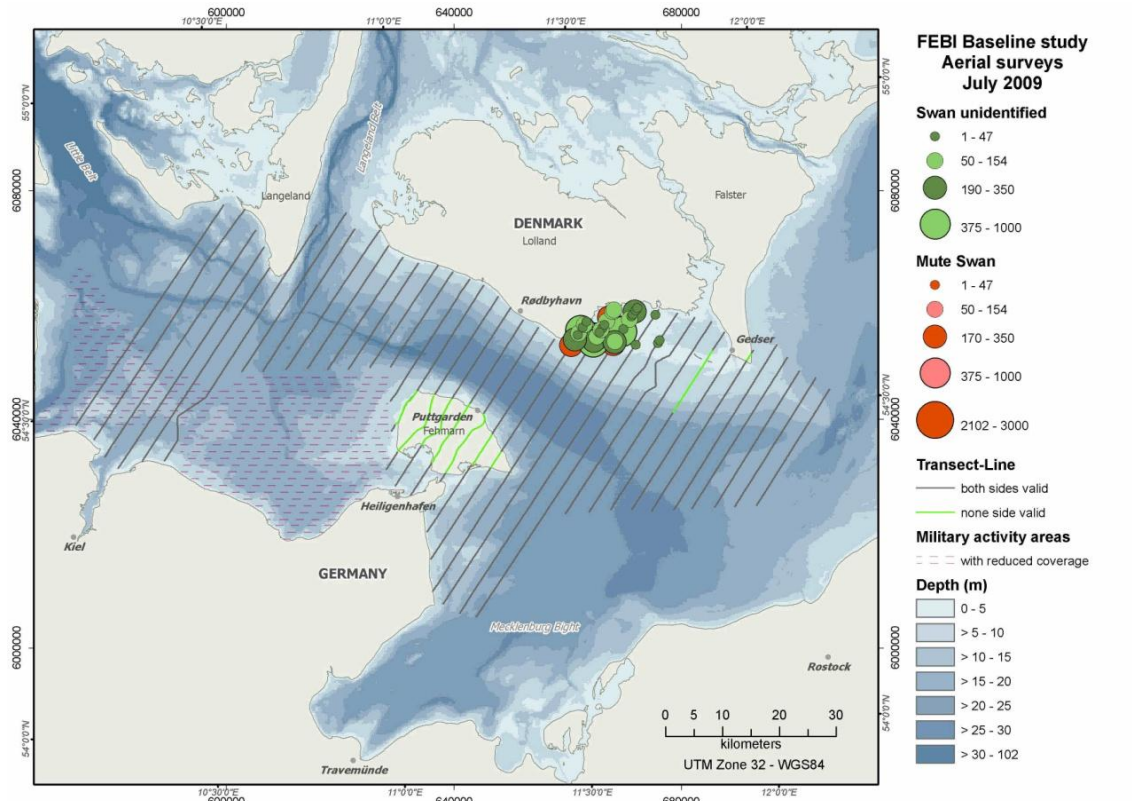


Figure 1.42 Swan distribution in the study area during aerial surveys (July 2009).

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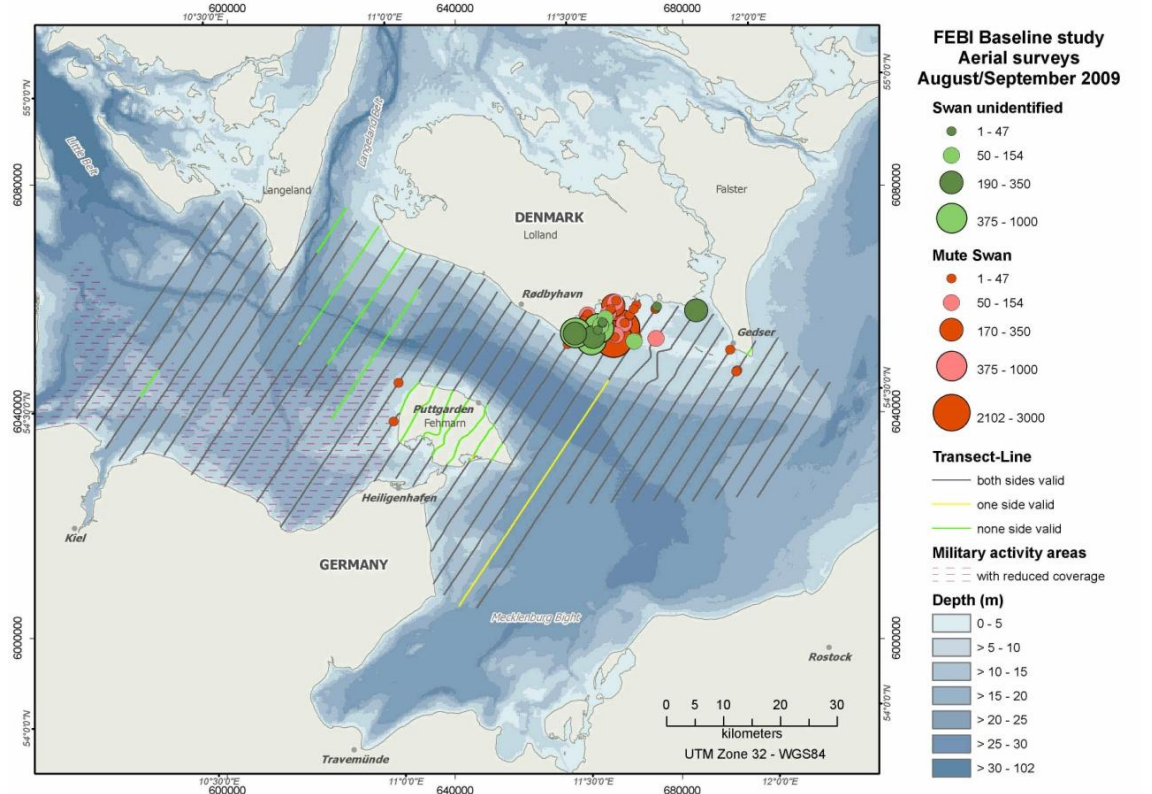


Figure 1.43 Swan distribution in the study area during aerial surveys (August/September 2009).

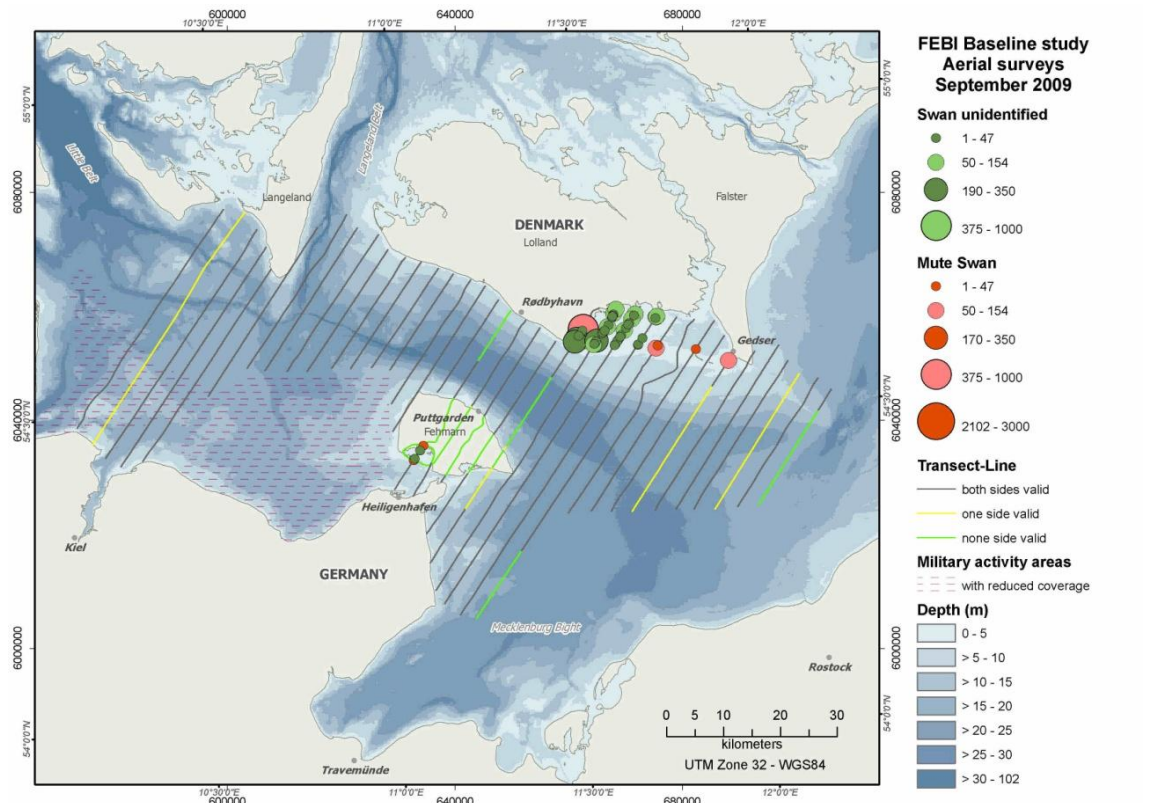


Figure 1.44 Swan distribution in the study area during aerial surveys (September 2009).

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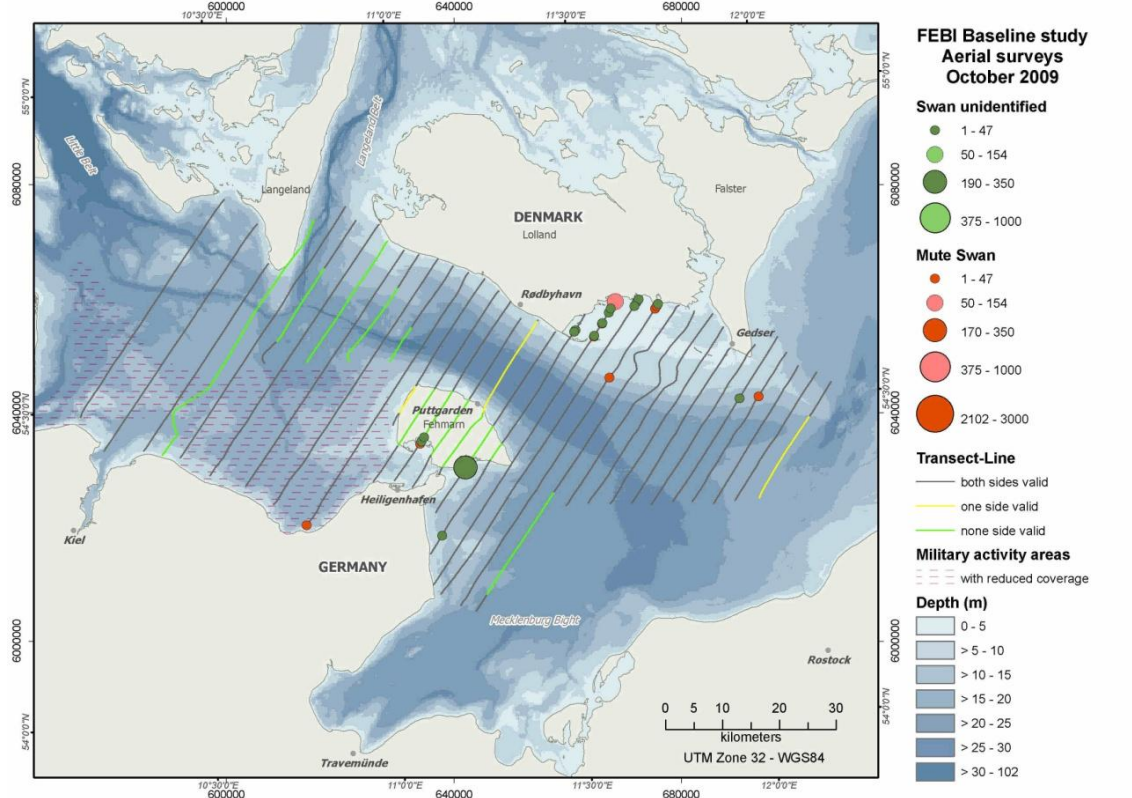


Figure 1.45 Swan distribution in the study area during aerial surveys (October 2009).

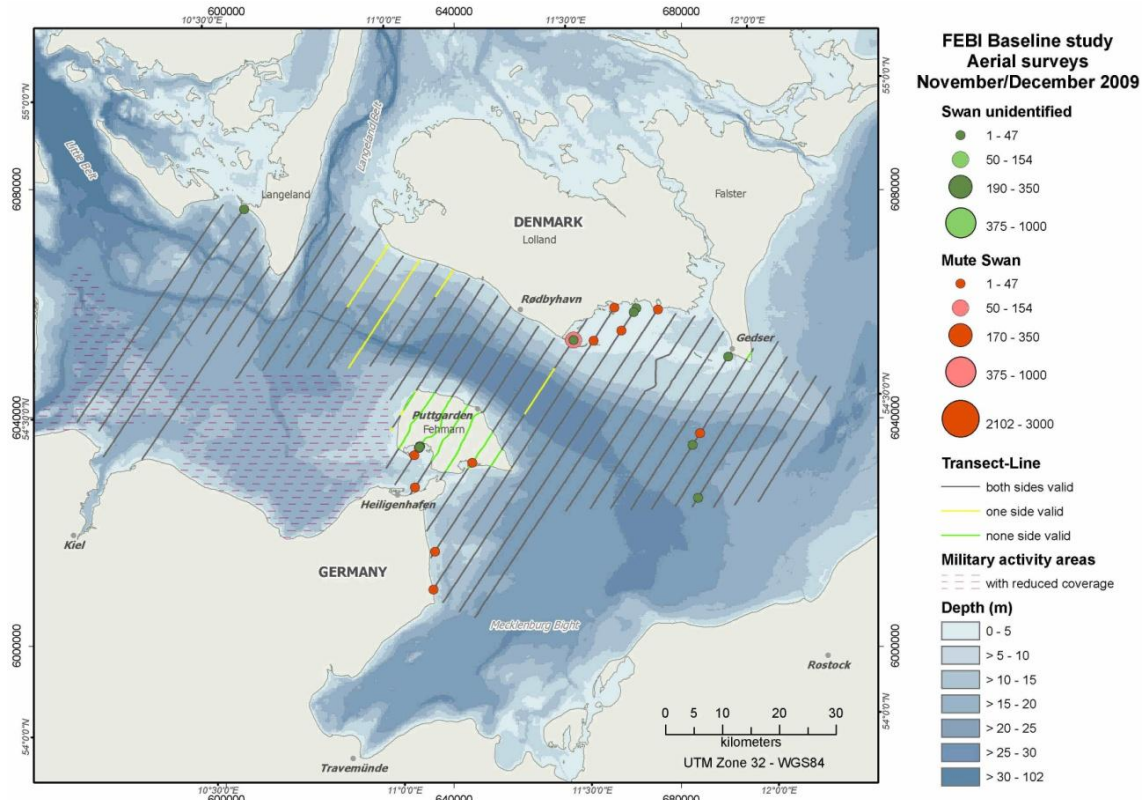


Figure 1.46 Swan distribution in the study area during aerial surveys (November/December 2009).

1.1.5 Greylag Goose – Anser anser

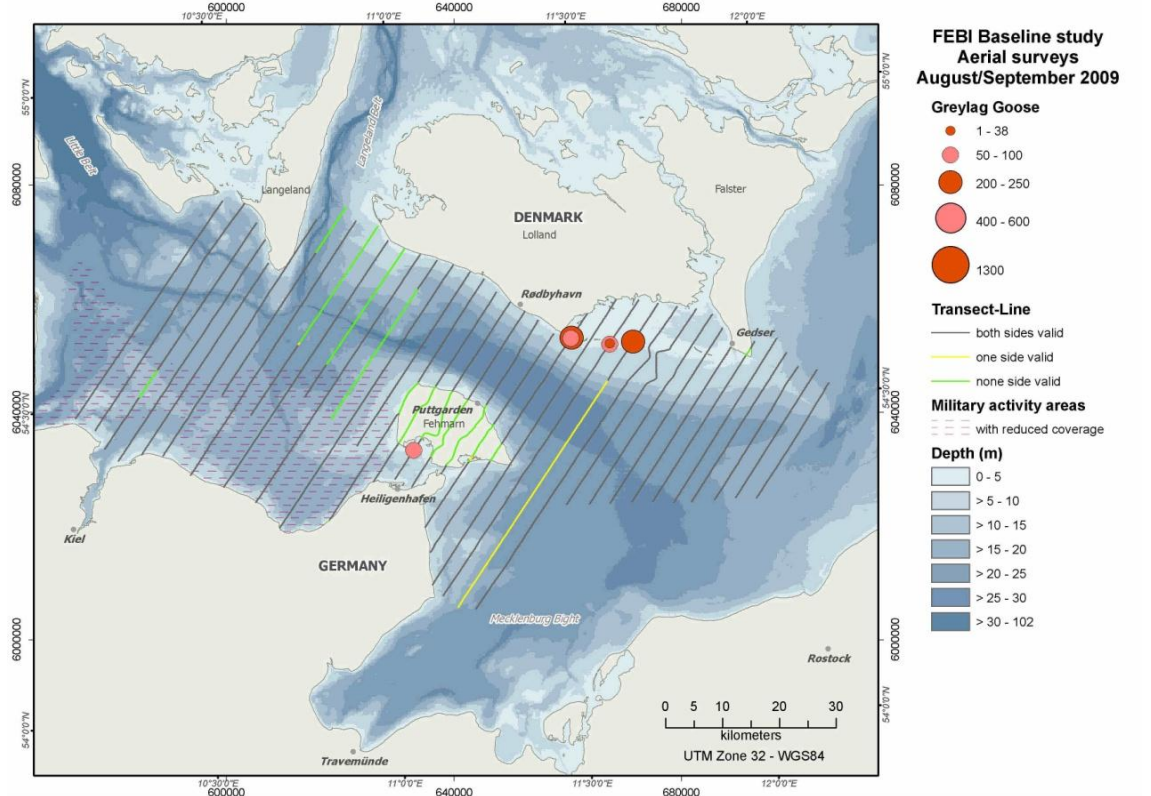


Figure 1.47 Greylag Goose distribution in the study area during aerial surveys (August/September 2009).

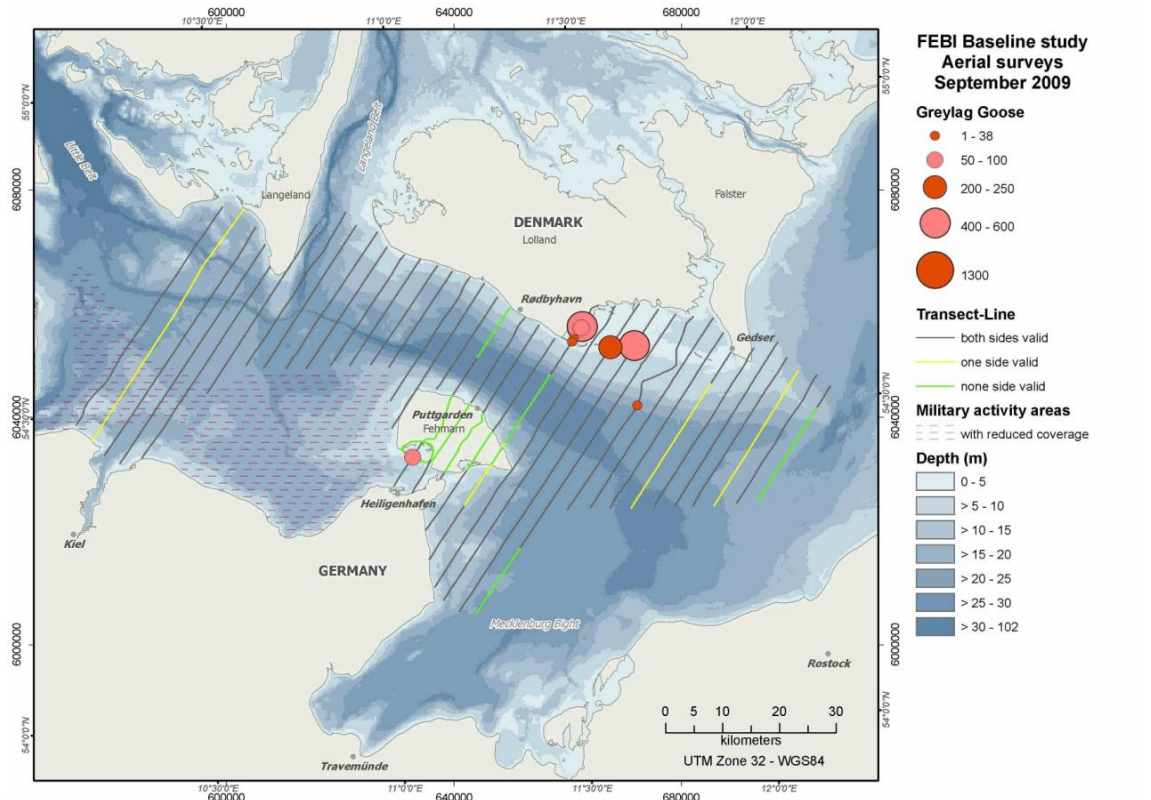


Figure 1.48 Greylag Goose distribution in the study area during aerial surveys (September 2009).

FEHMARNBELT BIRDS

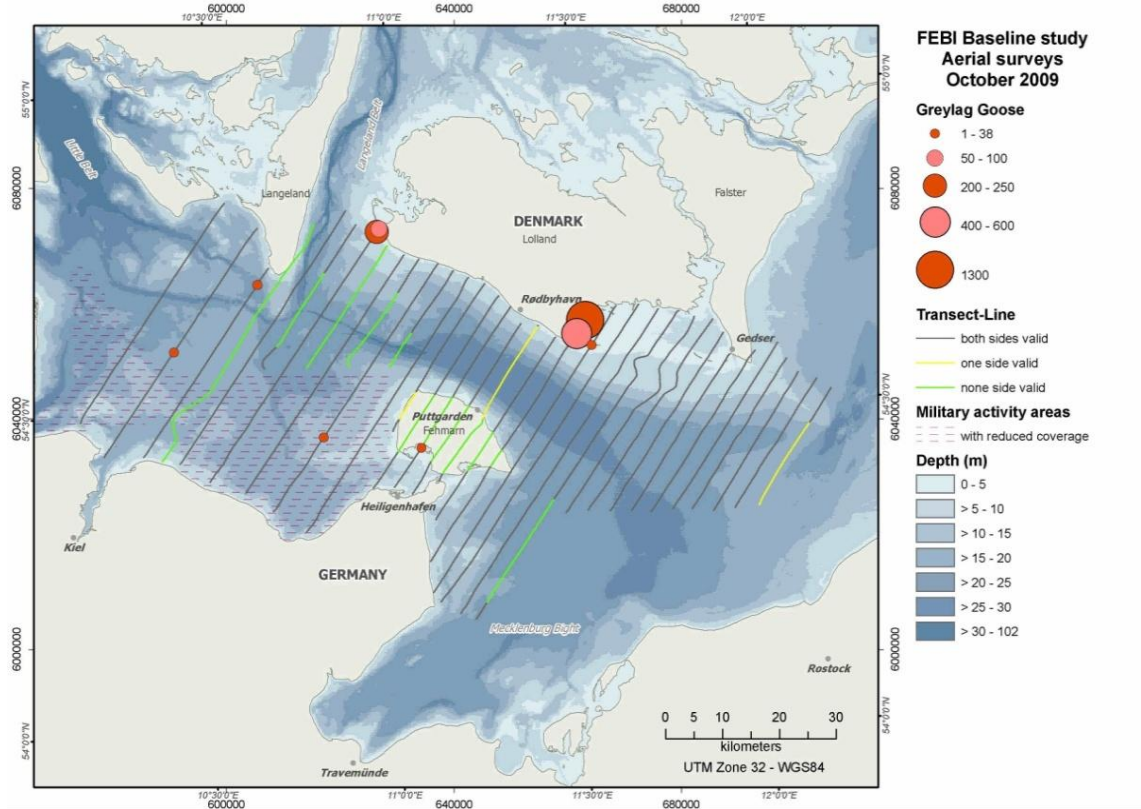


Figure 1.49 Greylag Goose distribution in the study area during aerial surveys (October 2009).

1.1.6 Eurasian Wigeon / Mallard – *Anas penelope* / *Anas platyrhynchos*

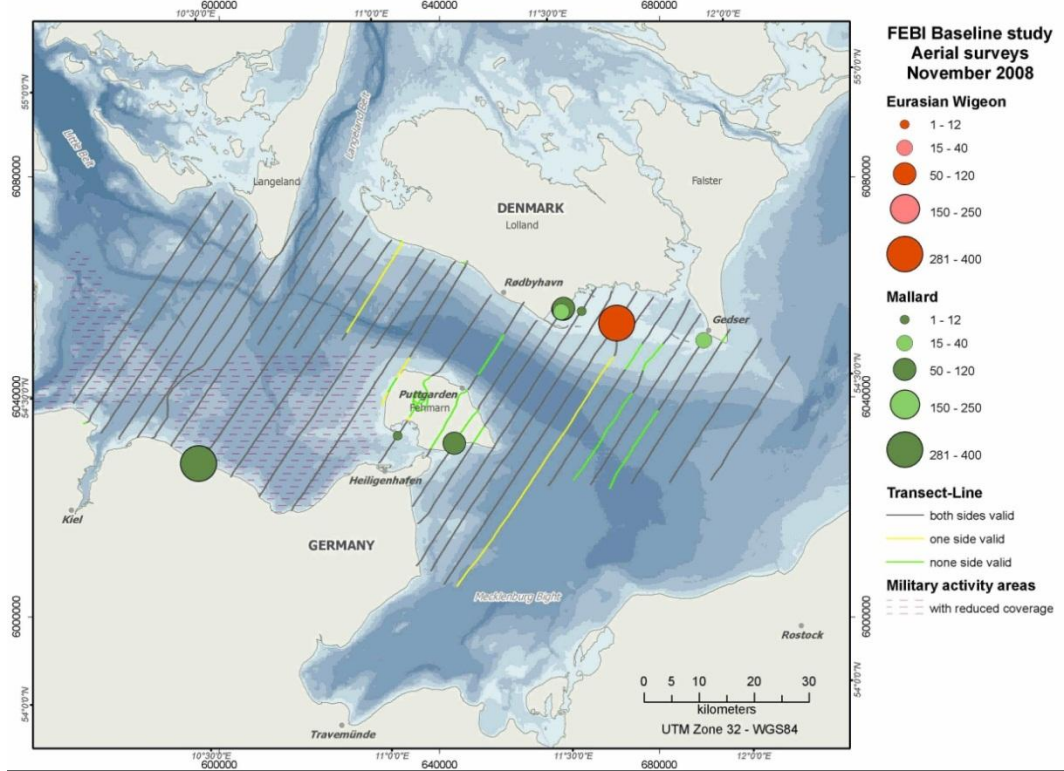


Figure 1.50 Eurasian Wigeon and Mallard distribution in the study area during aerial surveys (November 2008).

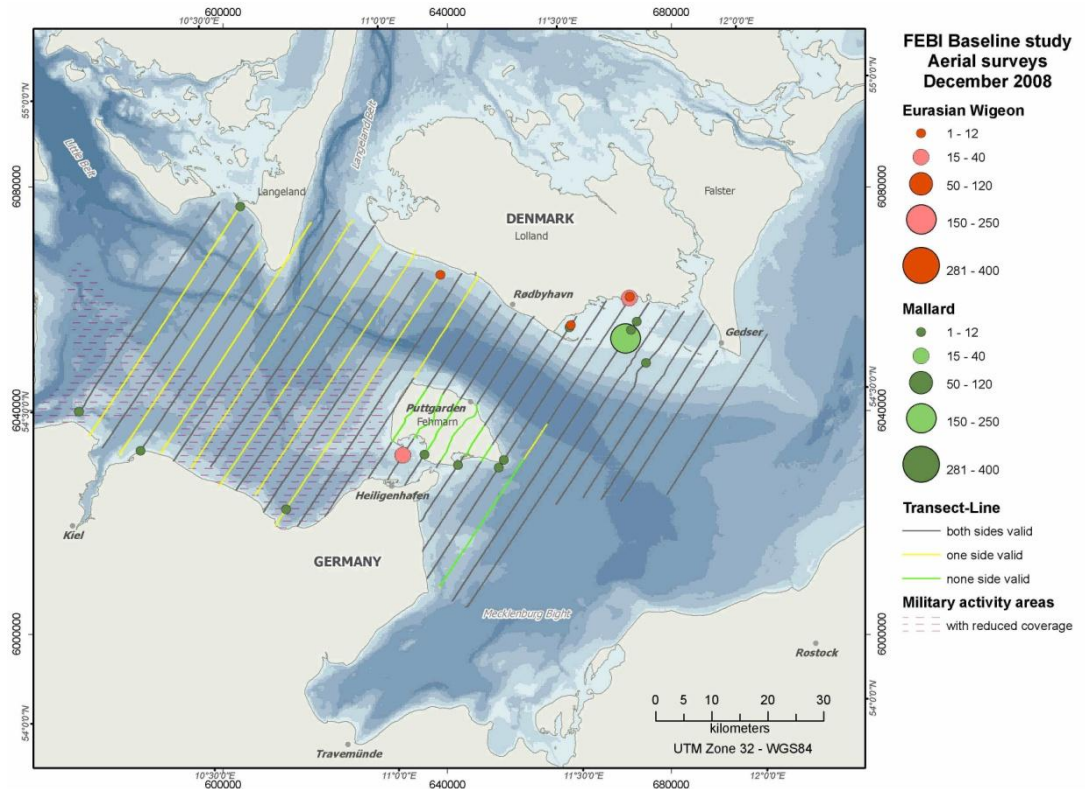


Figure 1.51 Eurasian Wigeon and Mallard distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

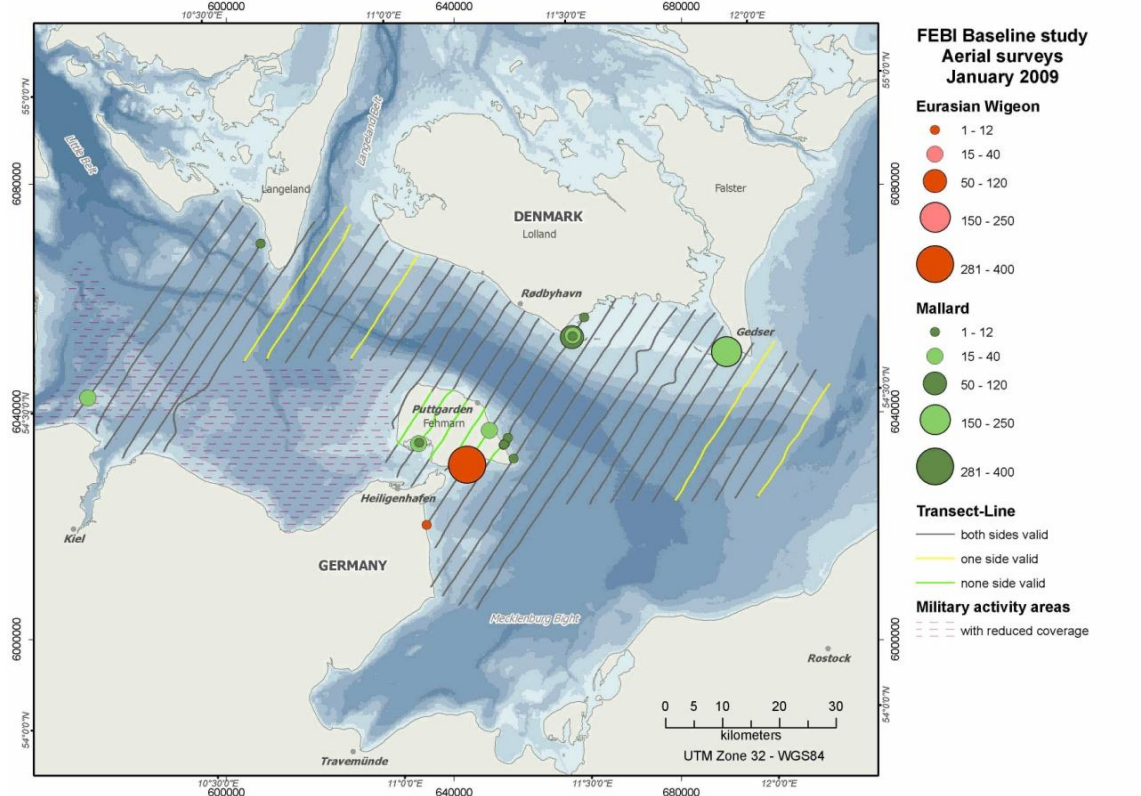


Figure 1.52 Eurasian Wigeon and Mallard distribution in the study area during aerial surveys (January 2009).

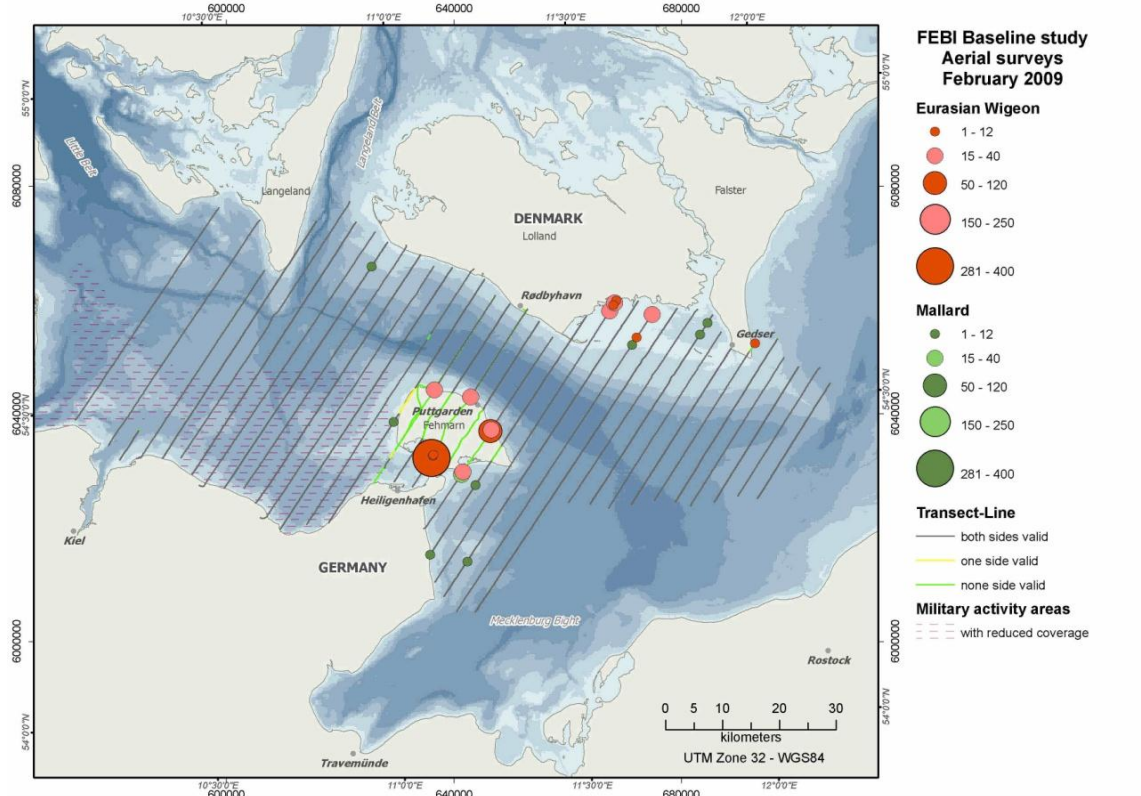


Figure 1.53 Eurasian Wigeon and Mallard distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

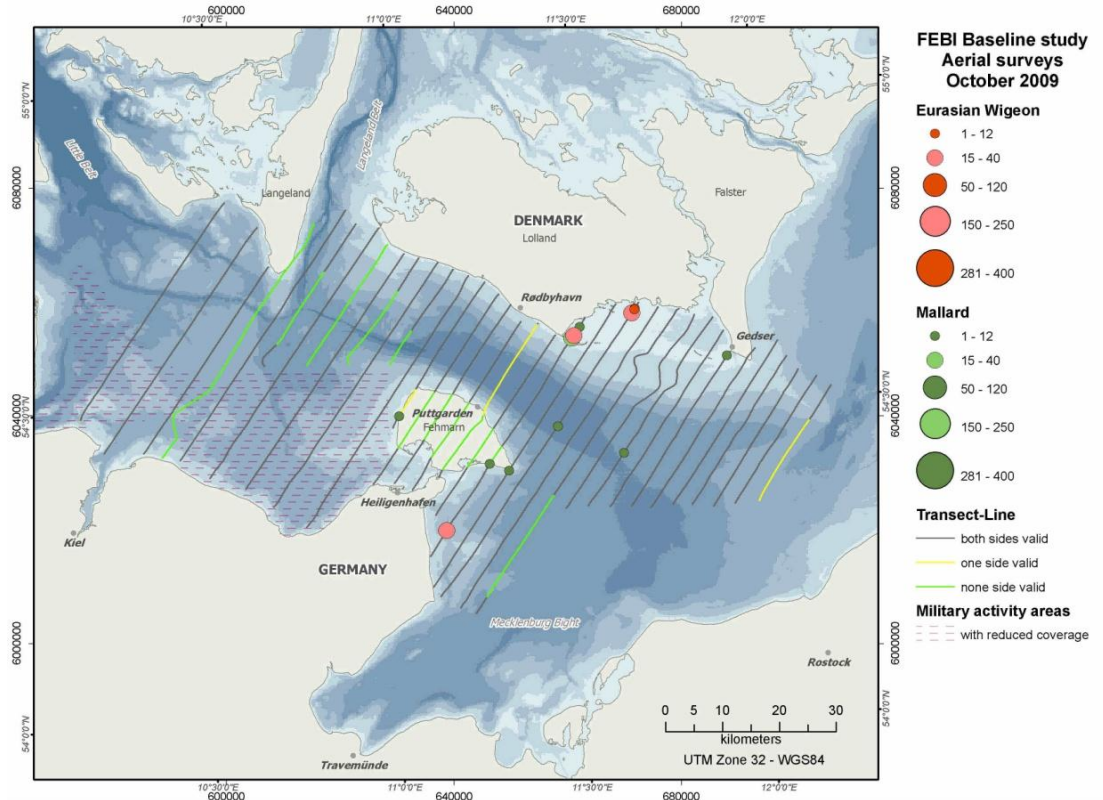


Figure 1.54 Eurasian Wigeon and Mallard distribution in the study area during aerial surveys (October 2009).

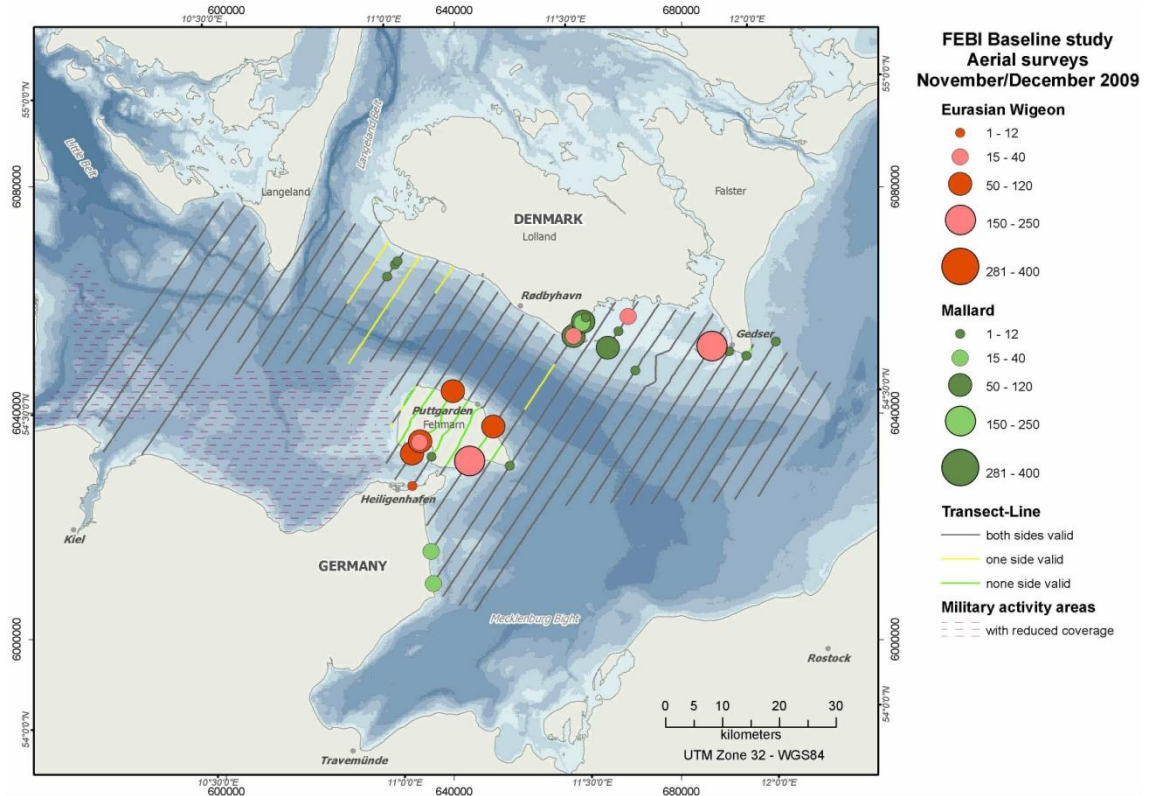


Figure 1.55 Eurasian Wigeon and Mallard distribution in the study area during aerial surveys (November/December 2009).

1.1.7 Common Pochard / Tufted Duck / Greater Scaup – *Aythya ferina* / *Aythya fuligula* / *Aythya marila*

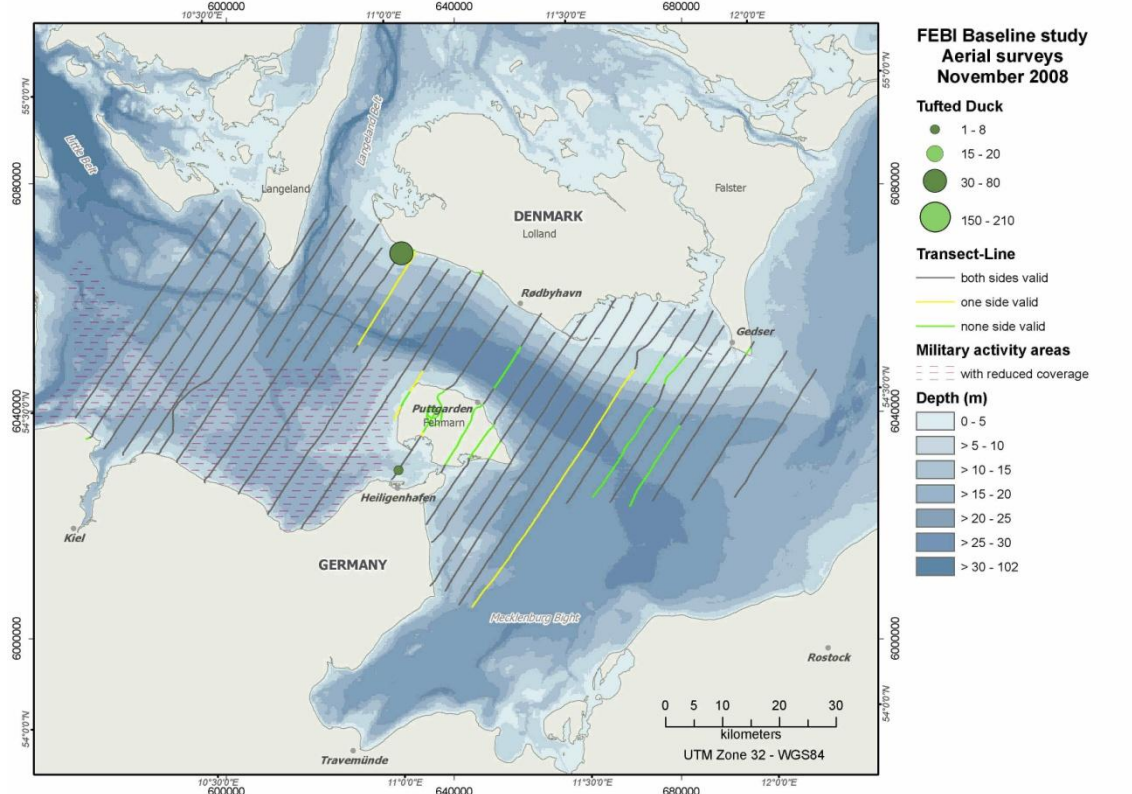


Figure 1.56 Tufted Duck distribution in the study area during aerial surveys (November 2008).

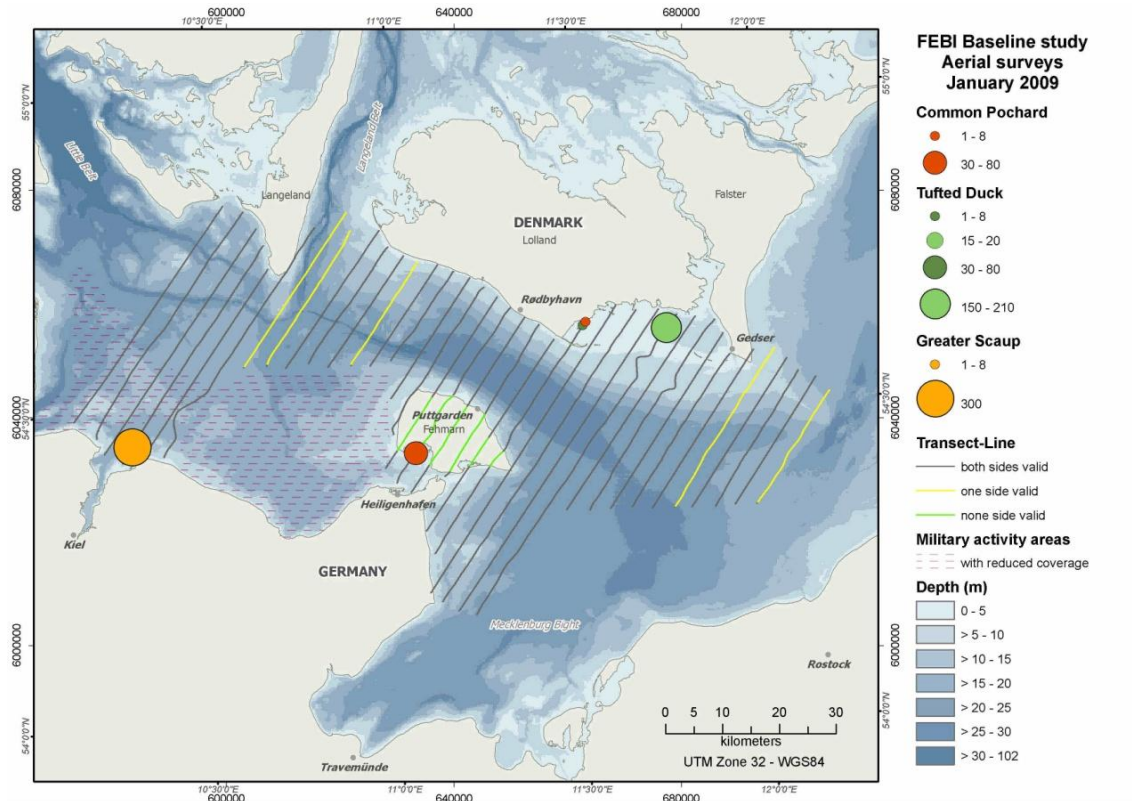


Figure 1.57 Tufted Duck, Common Pochard and Greater Scaup distribution in the study area during aerial surveys (January 2009).

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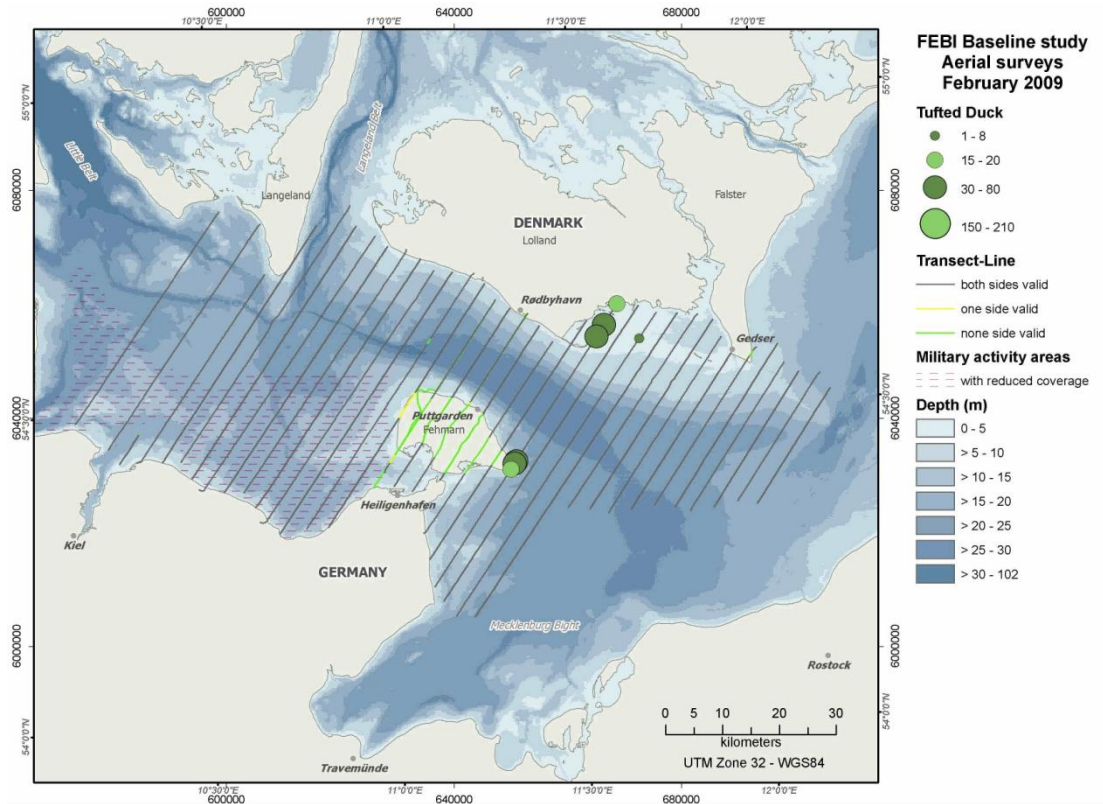


Figure 1.58 Tufted Duck distribution in the study area during aerial surveys (February 2009).

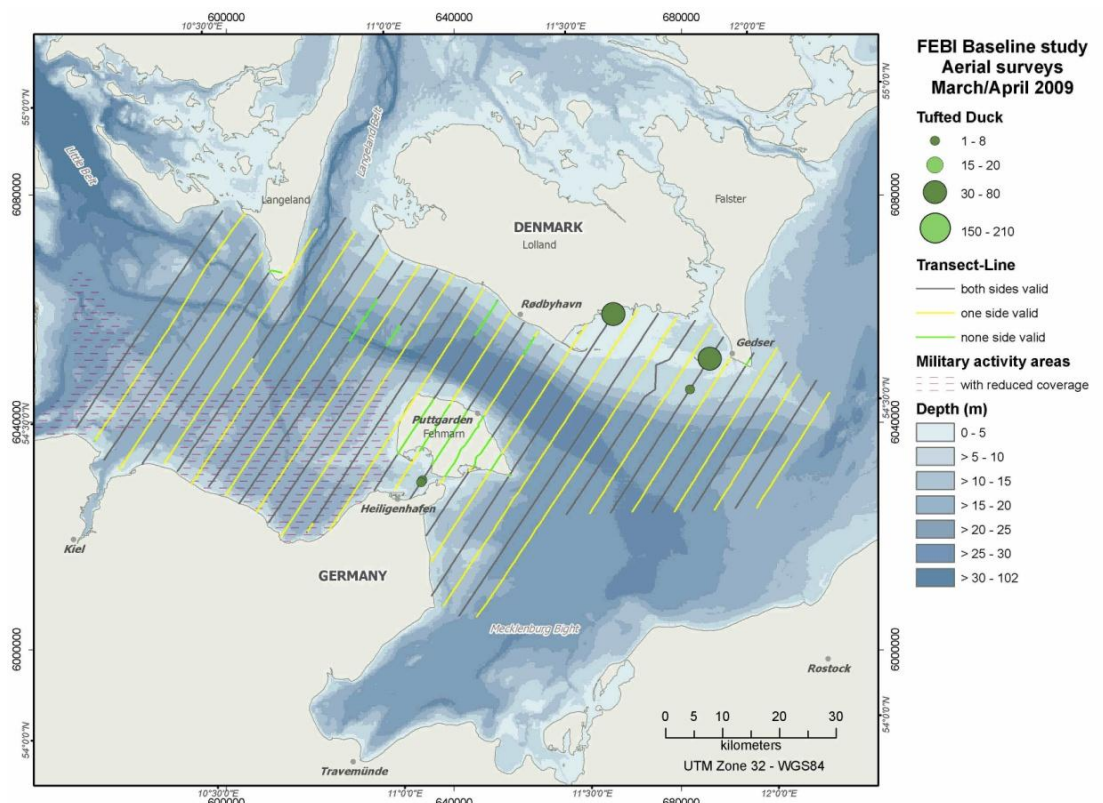


Figure 1.59 Tufted Duck distribution in the study area during aerial surveys (March/April 2009).

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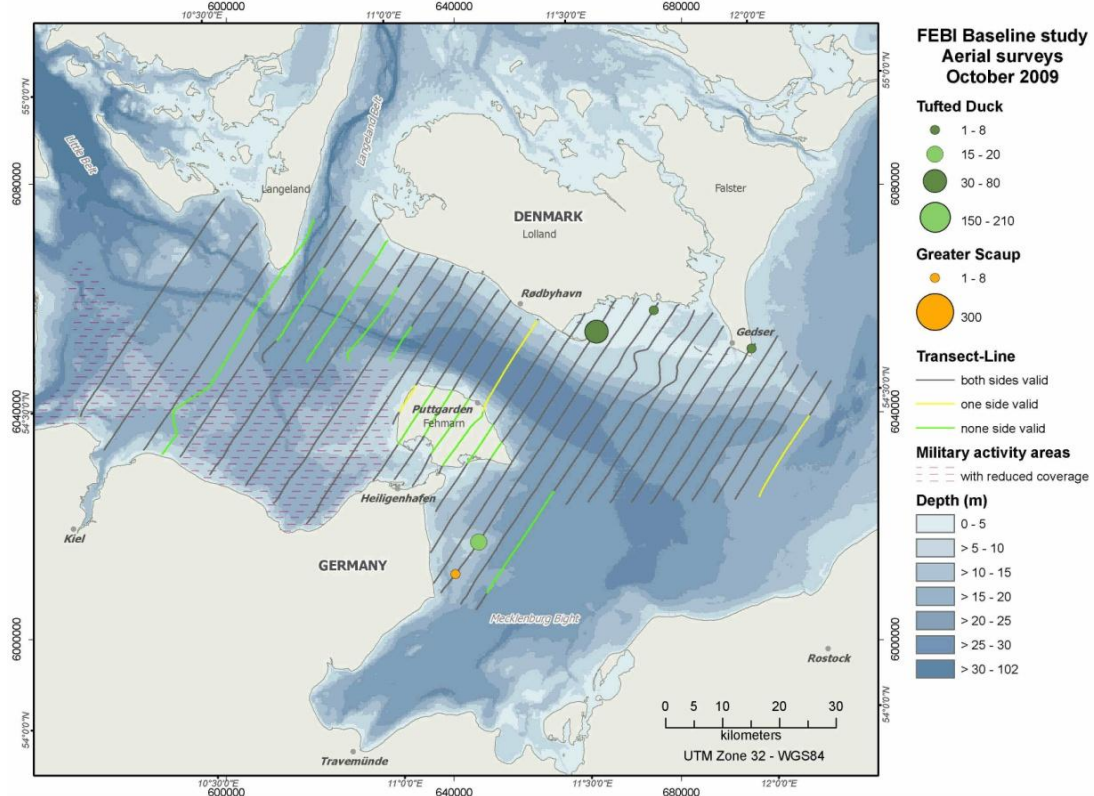


Figure 1.60 Tufted Duck and Greater Scaup distribution in the study area during aerial surveys (October 2009).

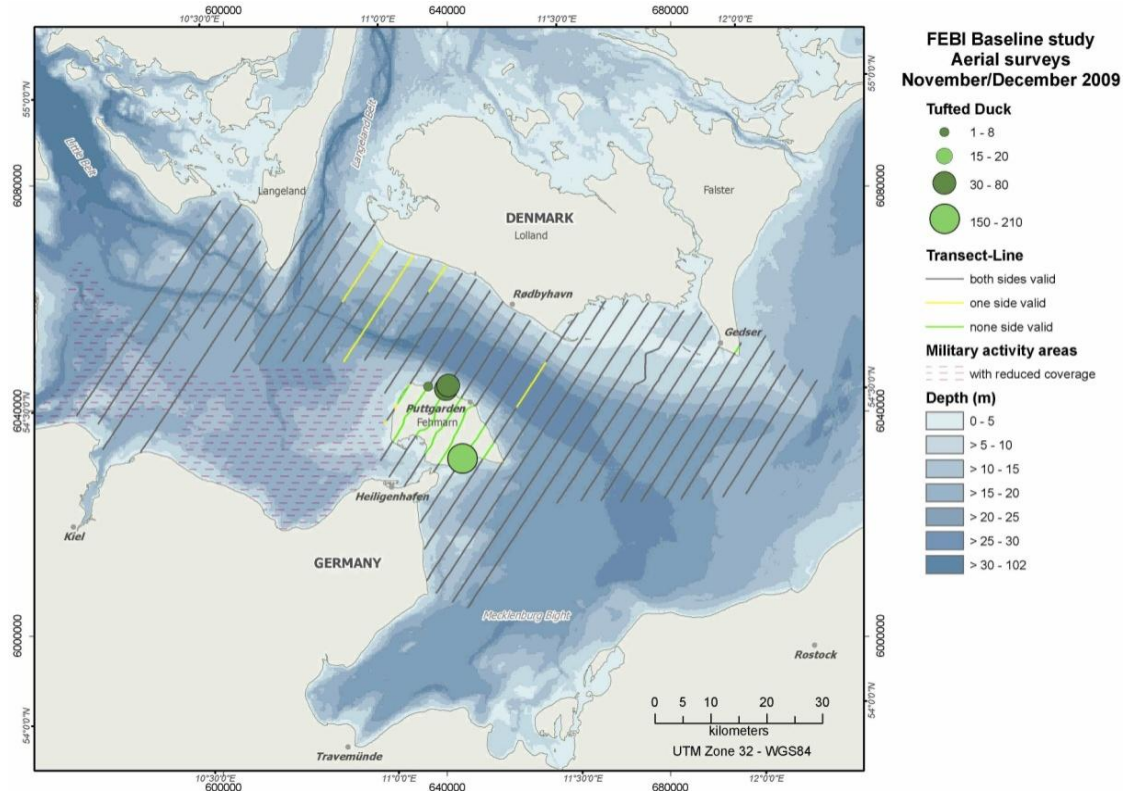


Figure 1.61 Tufted Duck distribution in the study area during aerial surveys (November/December 2009).

1.1.8 Common Eider – *Somateria mollissima*

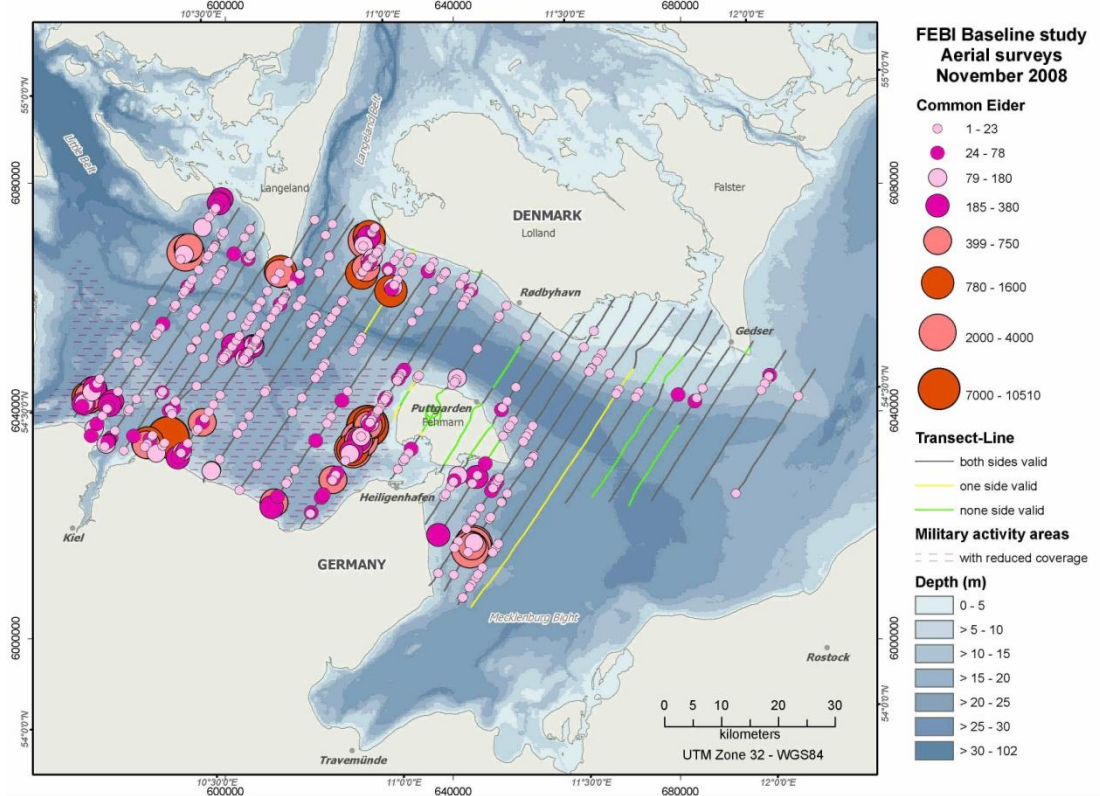


Figure 1.62 Common Eider distribution in the study area during aerial surveys (November 2008).

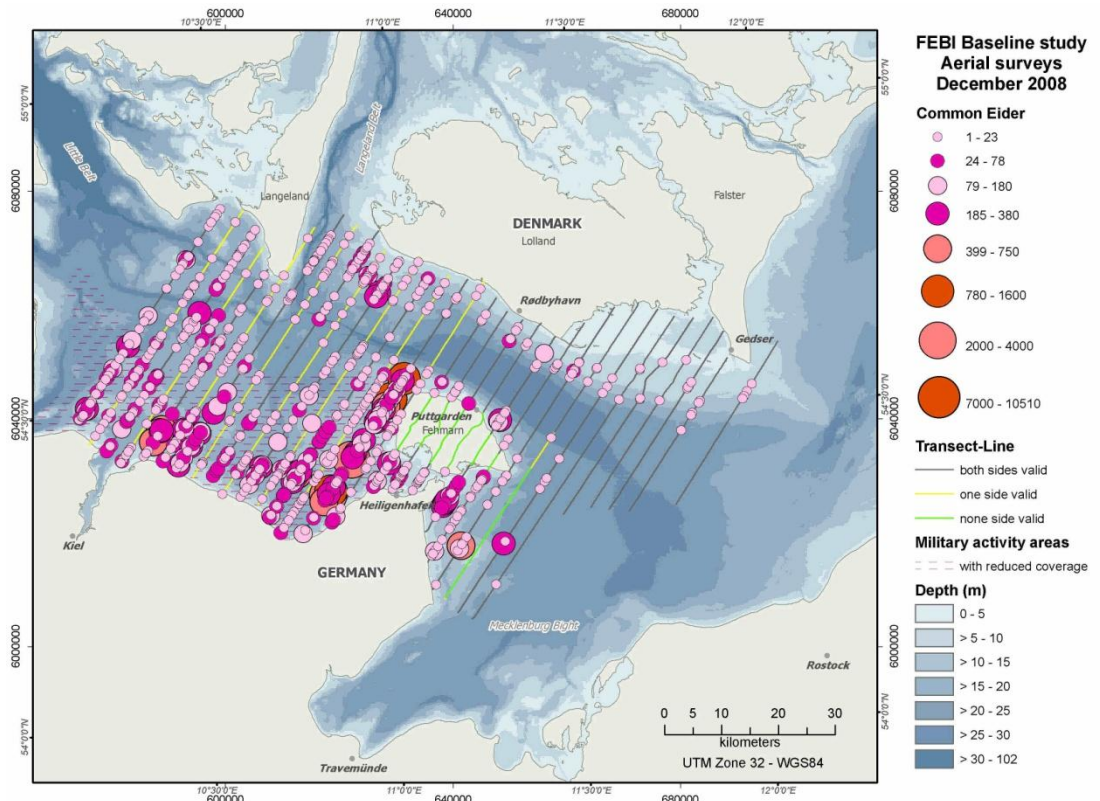


Figure 1.63 Common Eider distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

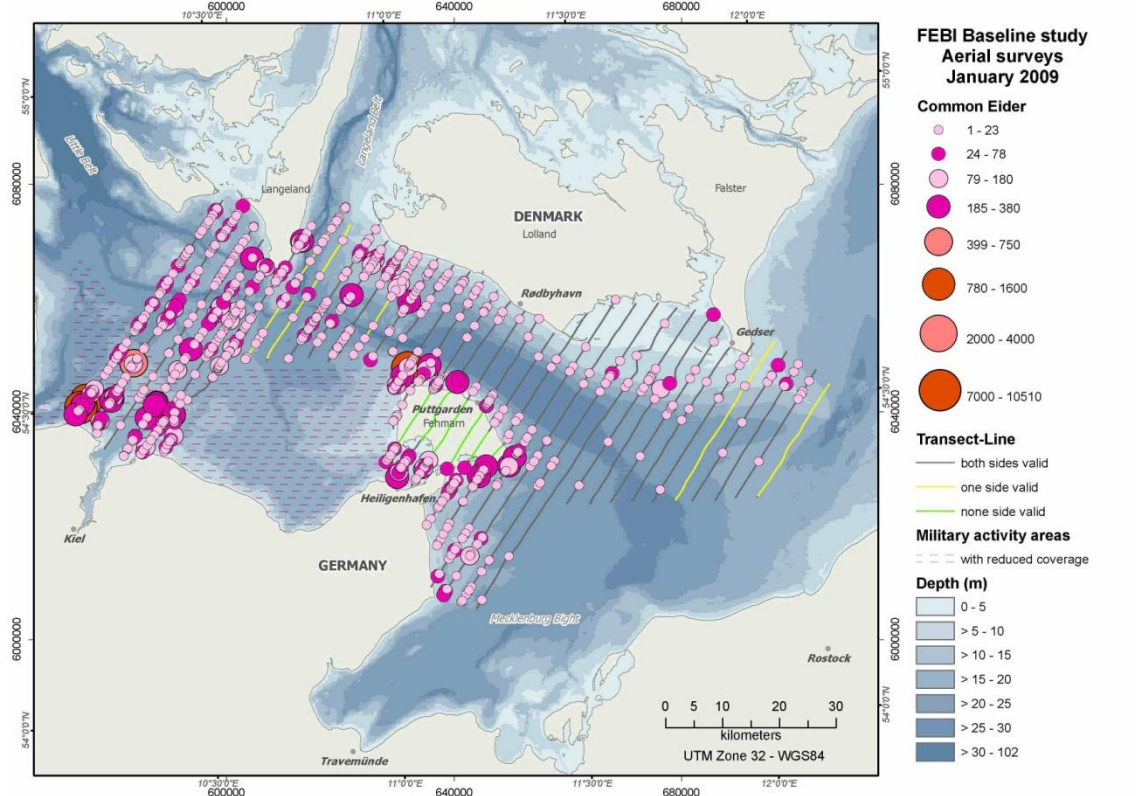


Figure 1.64 Common Eider distribution in the study area during aerial surveys (January 2009).

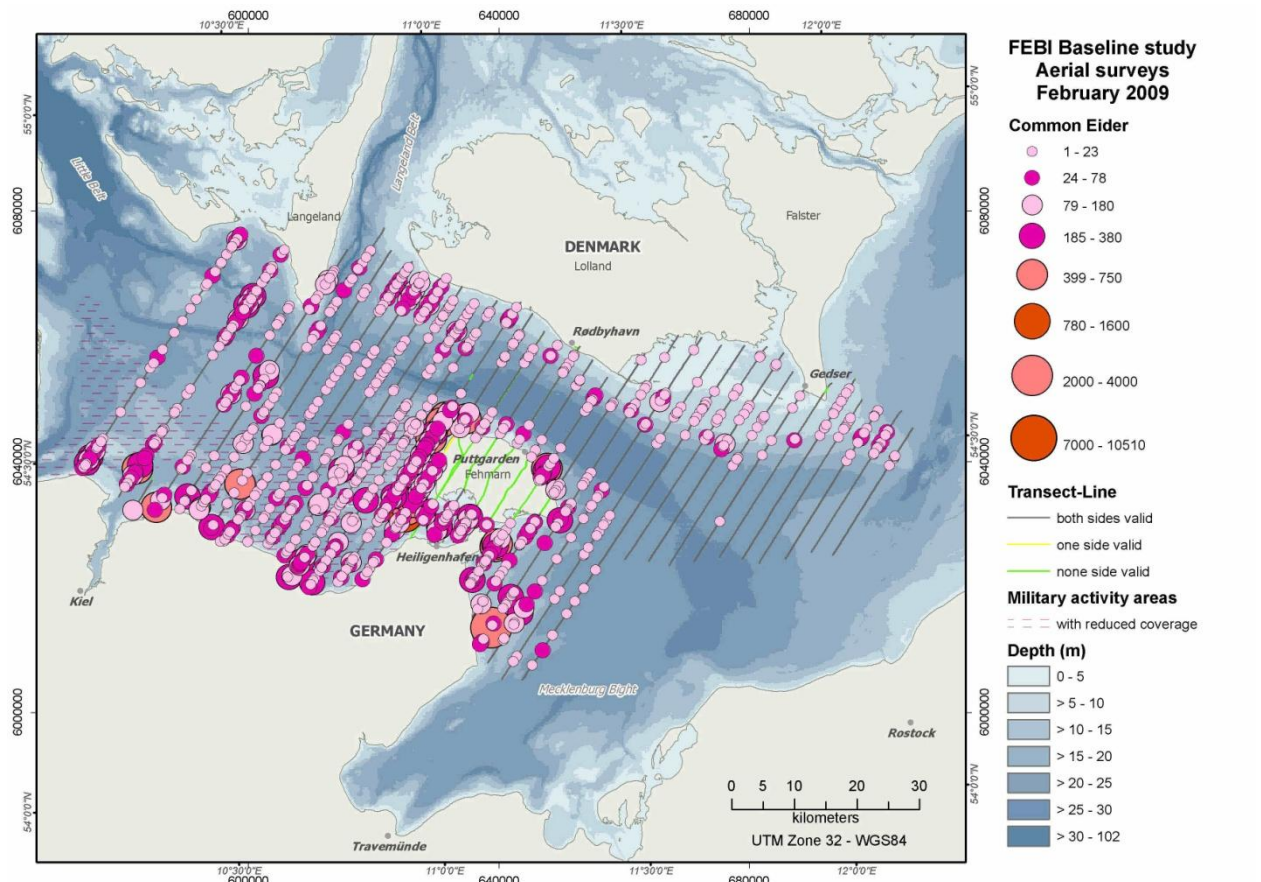


Figure 1.65 Common Eider distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

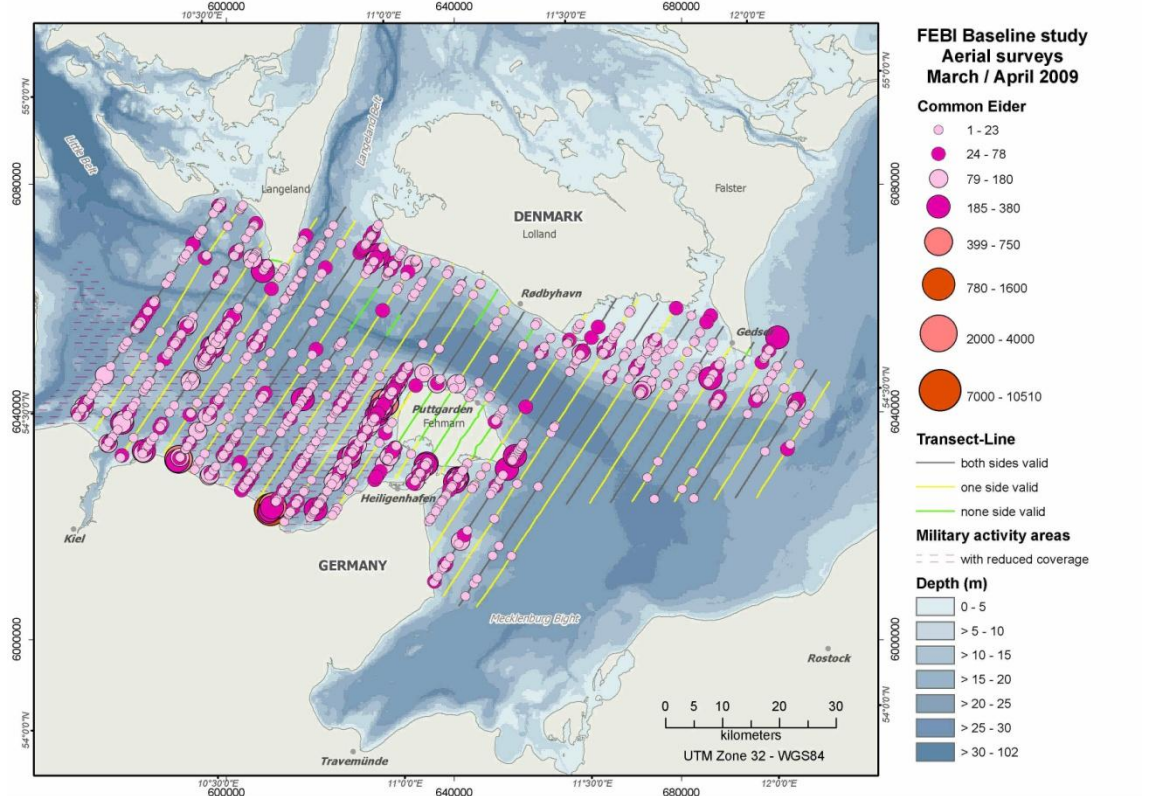


Figure 1.66 Common Eider distribution in the study area during aerial surveys (March/April 2009).

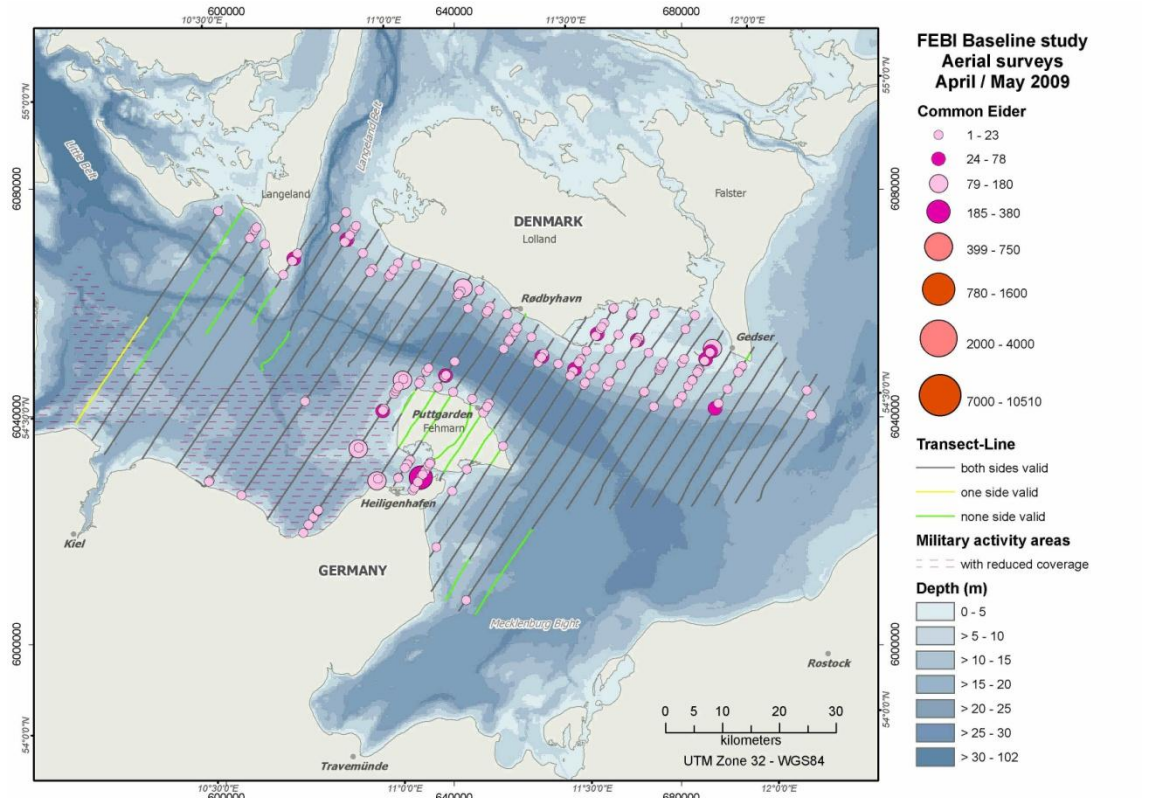


Figure 1.67 Common Eider distribution in the study area during aerial surveys (April/May 2009).

FEHMARNBELT BIRDS

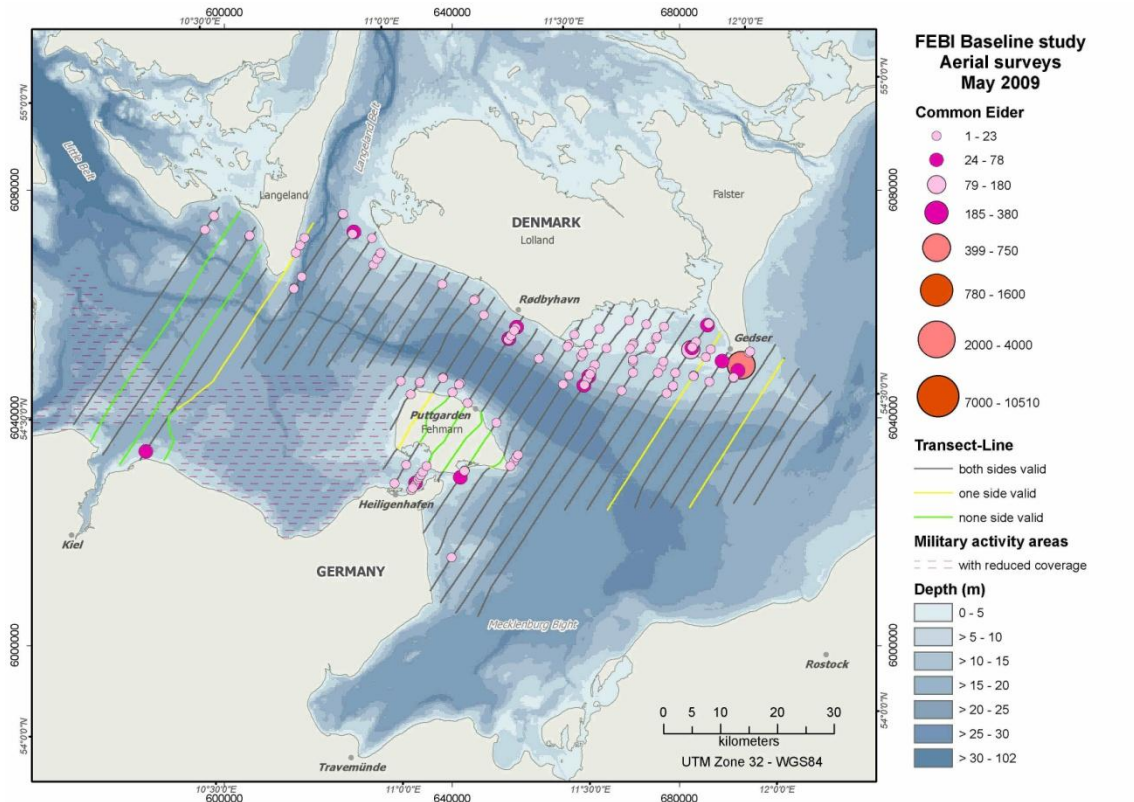


Figure 1.68 Common Eider distribution in the study area during aerial surveys (May 2009).

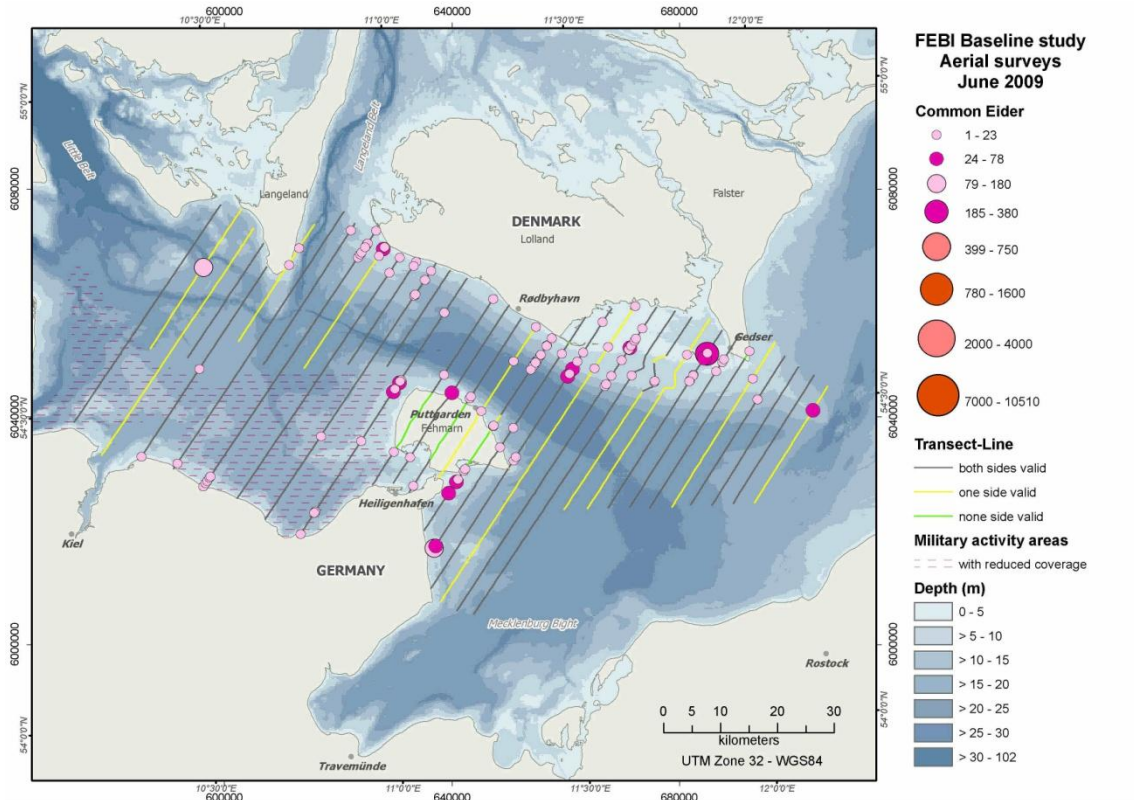


Figure 1.69 Common Eider distribution in the study area during aerial surveys (June 2009).

FEHMARNBELT BIRDS

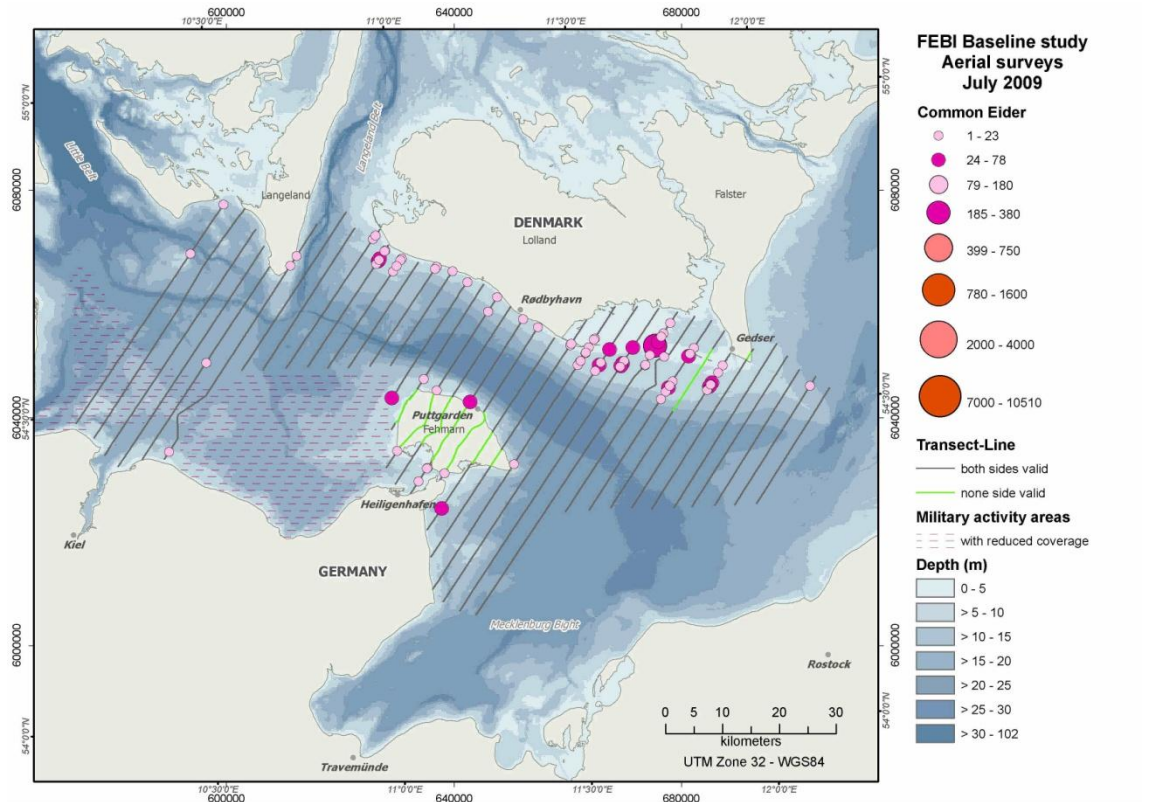


Figure 1.70 Common Eider distribution in the study area during aerial surveys (July 2009).

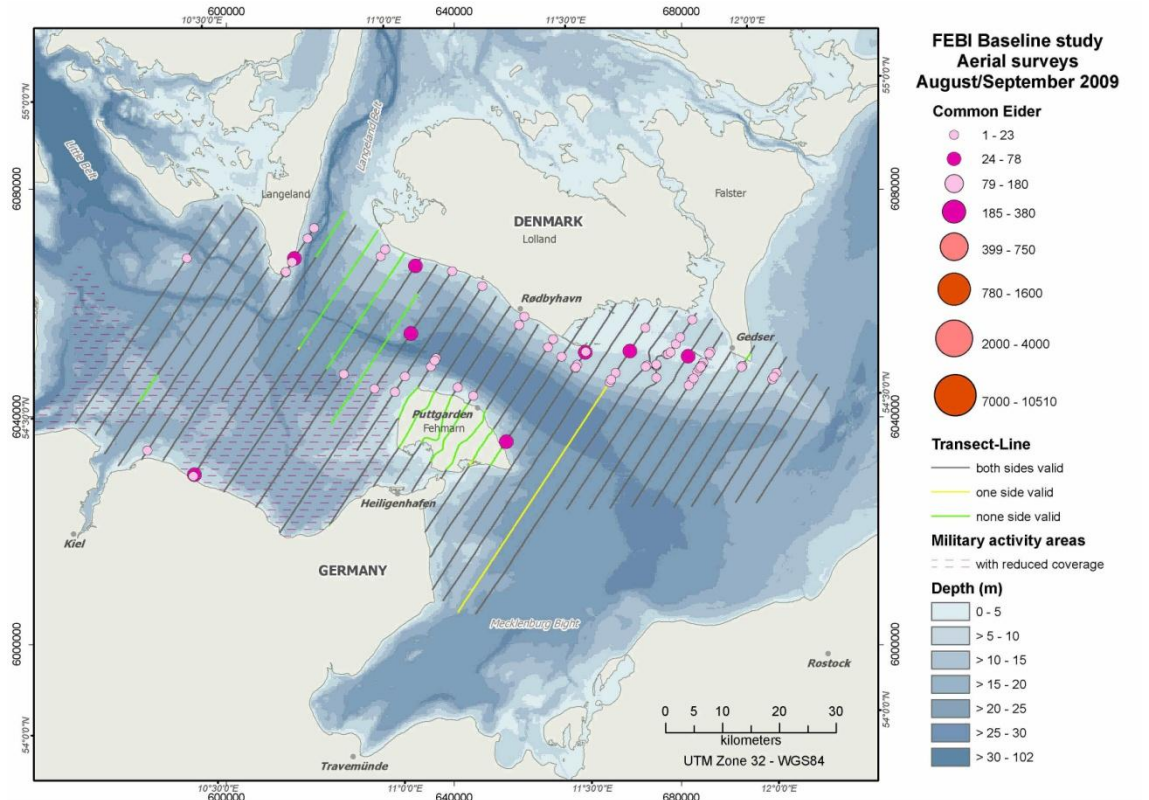


Figure 1.71 Common Eider distribution in the study area during aerial surveys (August/September 2009).

FEHMARNBELT BIRDS

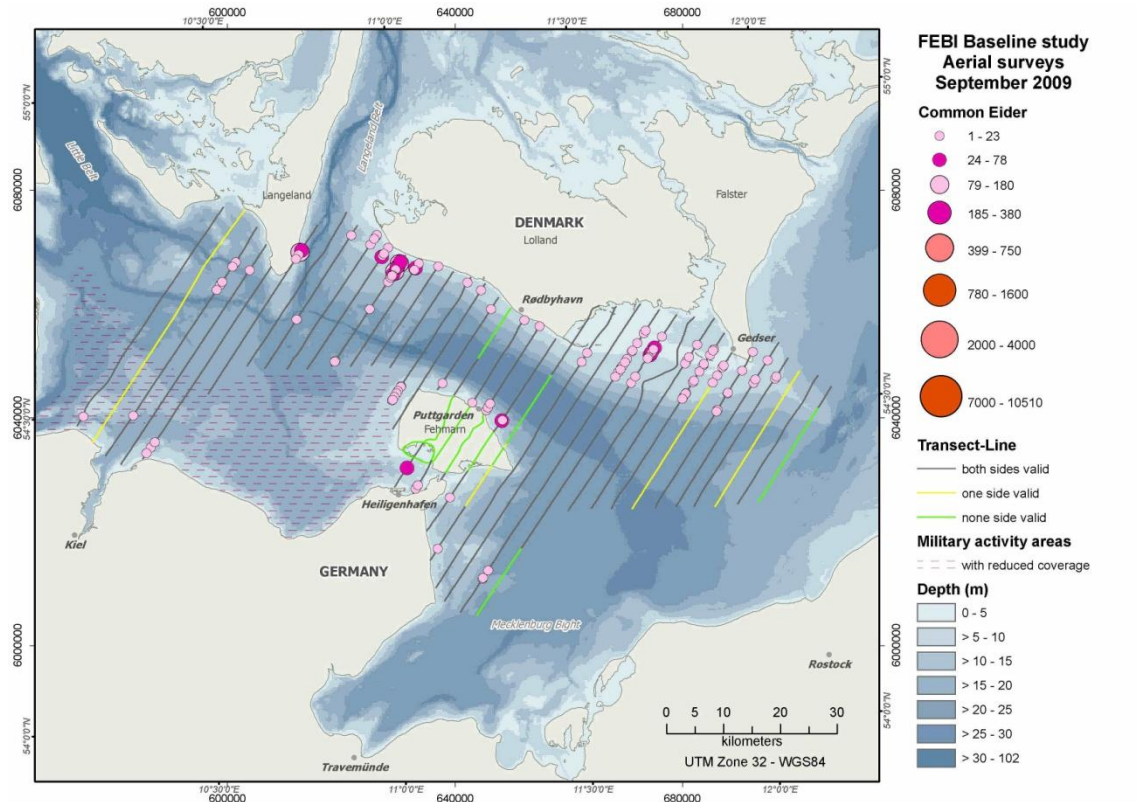


Figure 1.72 Common Eider distribution in the study area during aerial surveys (September 2009).

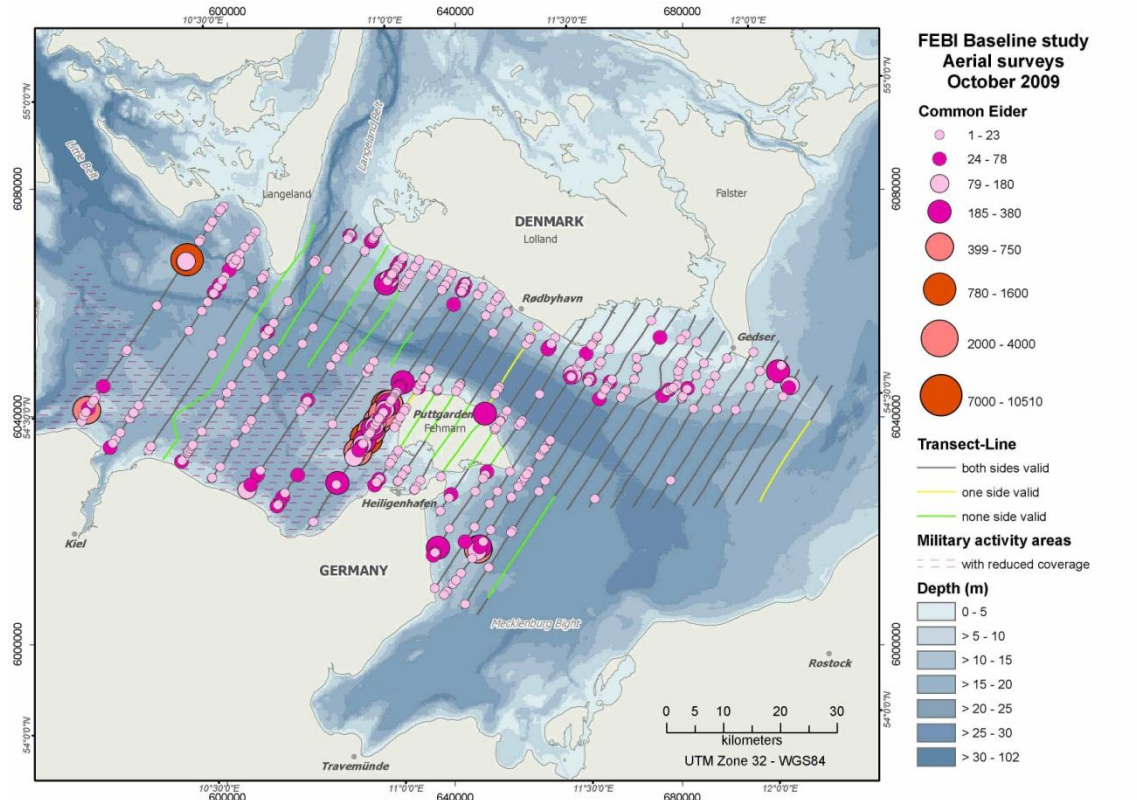


Figure 1.73 Common Eider distribution in the study area during aerial surveys (October 2009).

FEHMARNBELT BIRDS

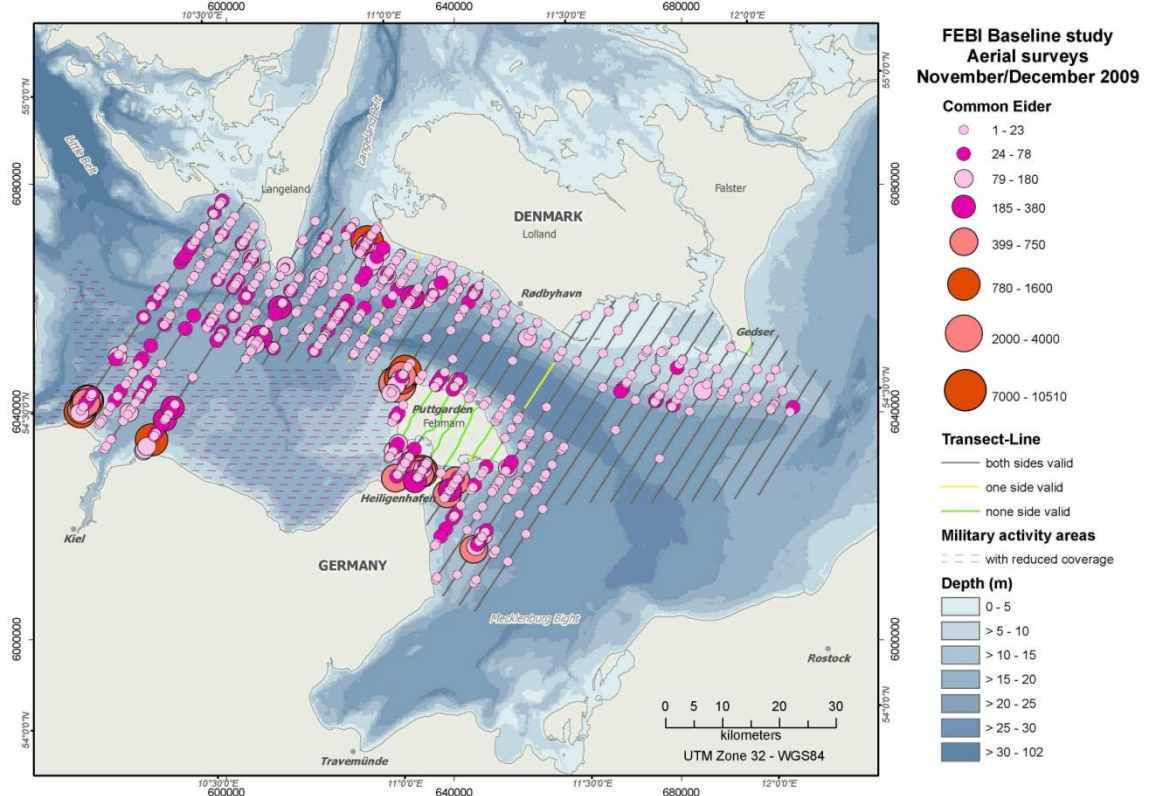


Figure 1.74 Common Eider distribution in the study area during aerial surveys (November/December 2009).

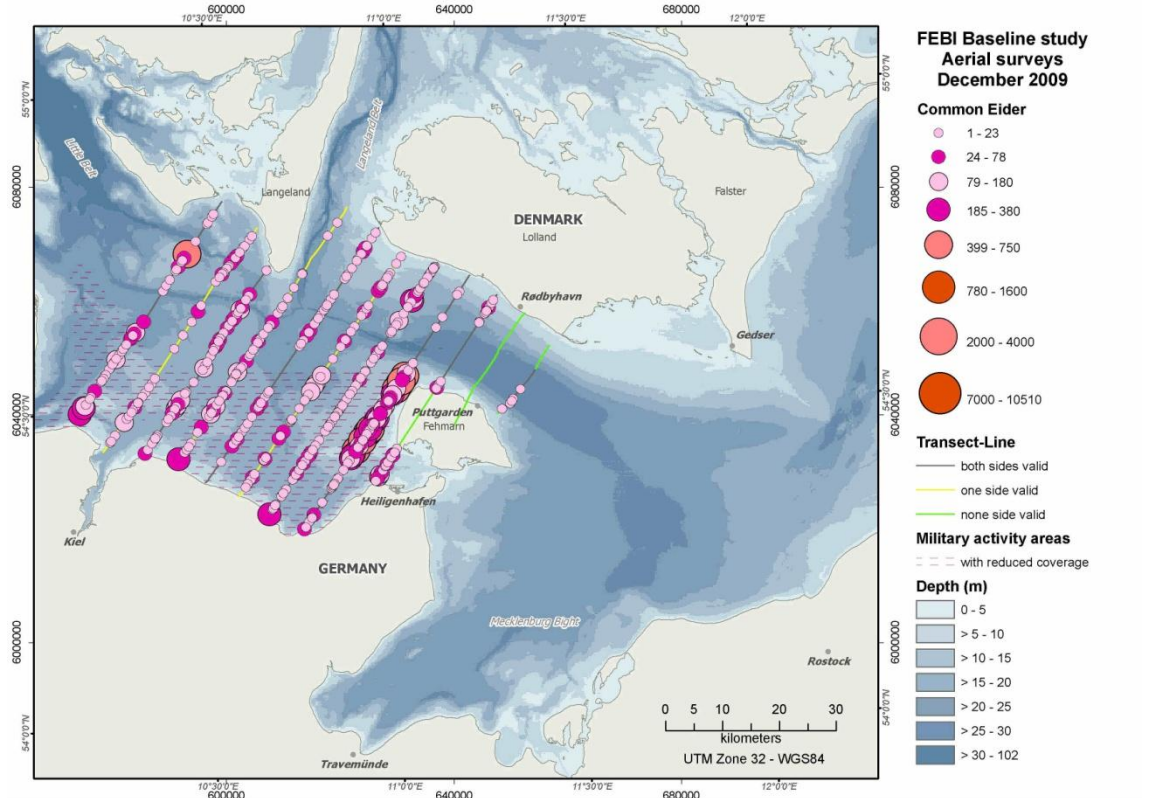


Figure 1.75 Common Eider distribution in the study area during aerial surveys (December 2009).

1.1.9 Long-tailed Duck – *Clangula hyemalis*

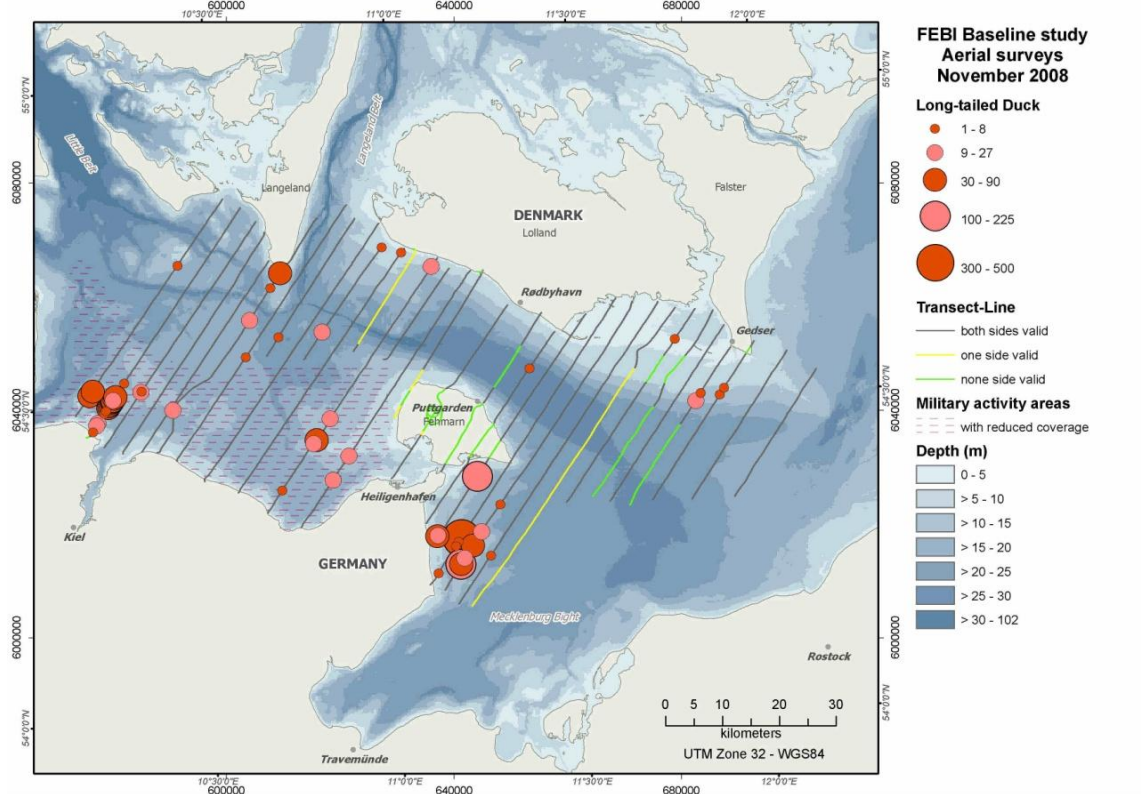


Figure 1.76 Long-tailed Duck distribution in the study area during aerial surveys (November 2008).

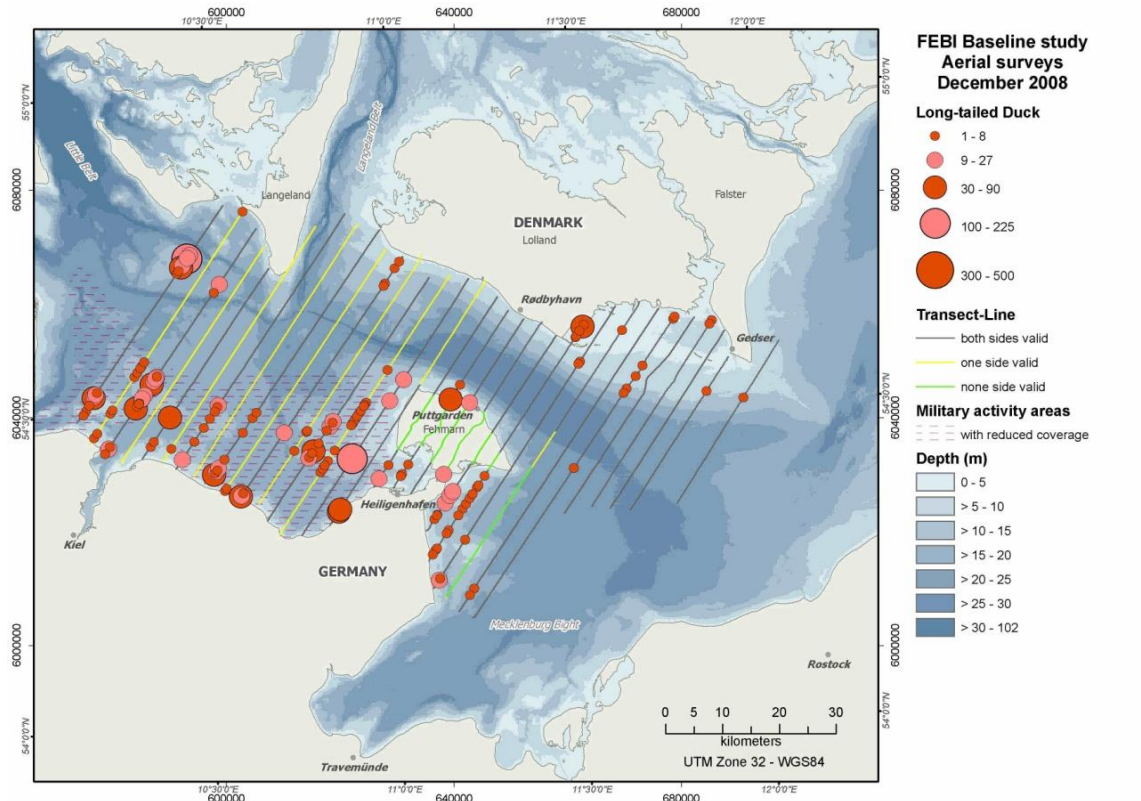


Figure 1.77 Long-tailed Duck distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

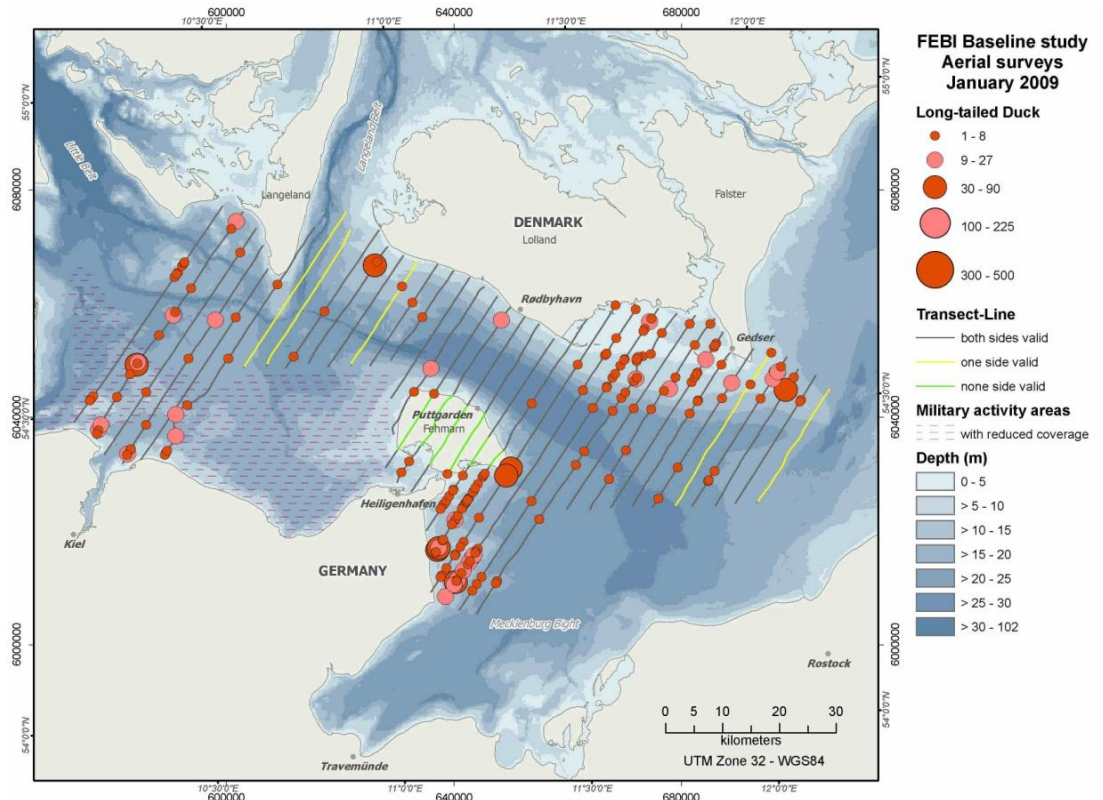


Figure 1.78 Long-tailed Duck distribution in the study area during aerial surveys (January 2009).

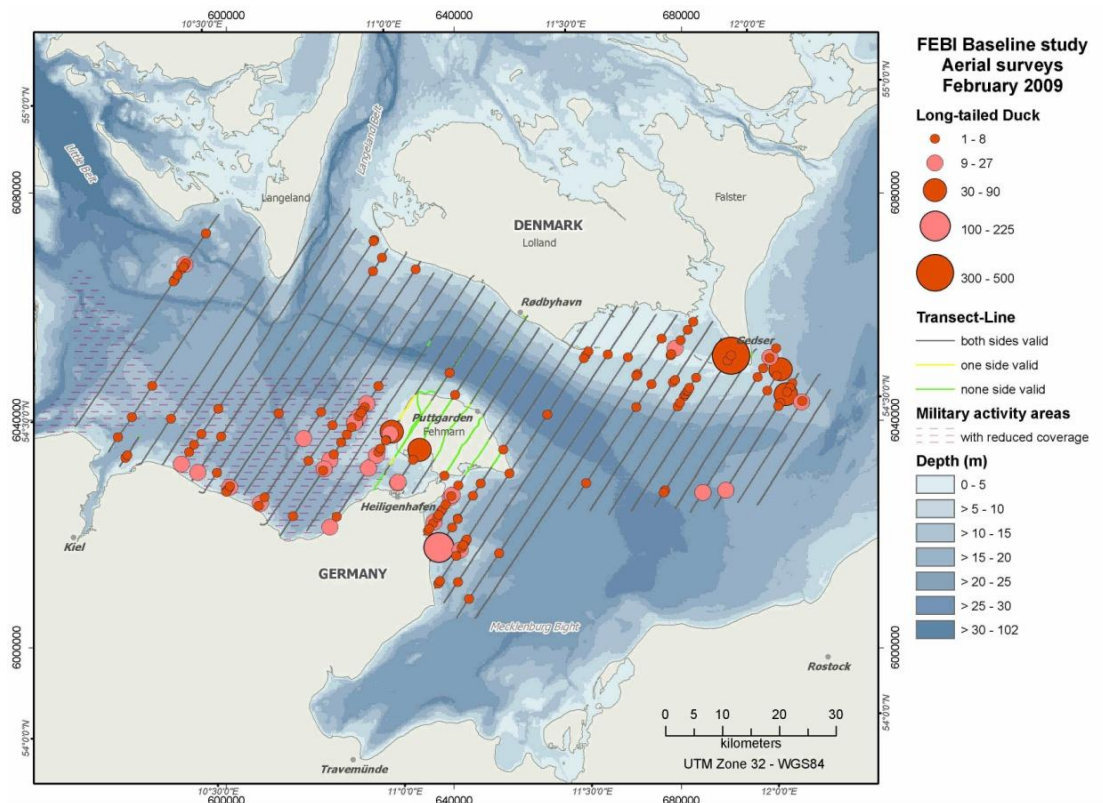


Figure 1.79 Long-tailed Duck distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

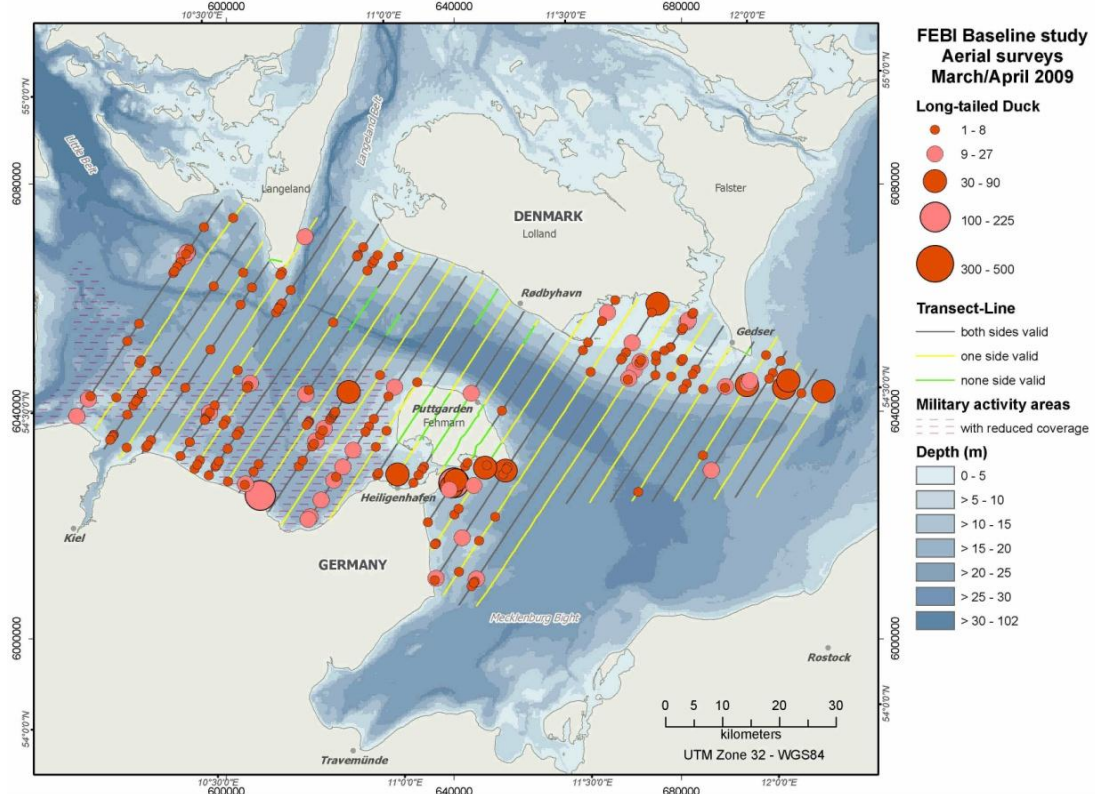


Figure 1.80 Long-tailed Duck distribution in the study area during aerial surveys (March/April 2009).

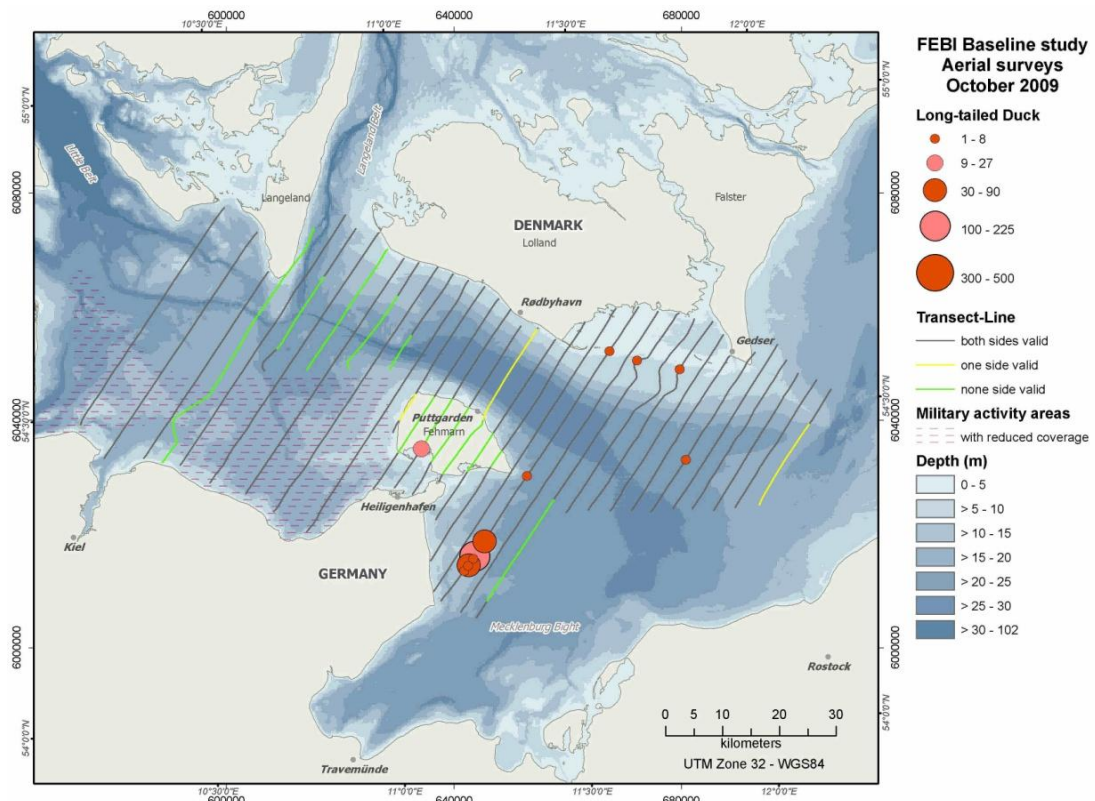


Figure 1.81 Long-tailed Duck distribution in the study area during aerial surveys (October 2009).

FEHMARNBELT BIRDS

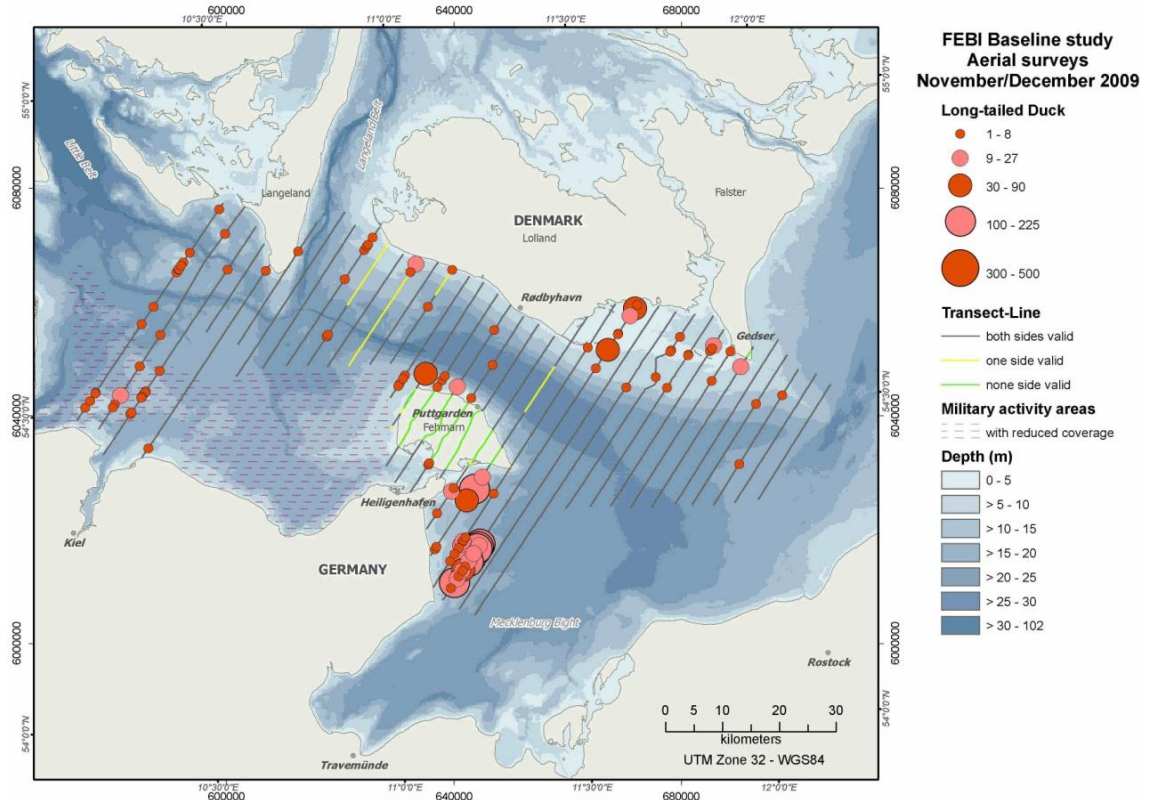


Figure 1.82 Long-tailed Duck distribution in the study area during aerial surveys (November/December 2009).

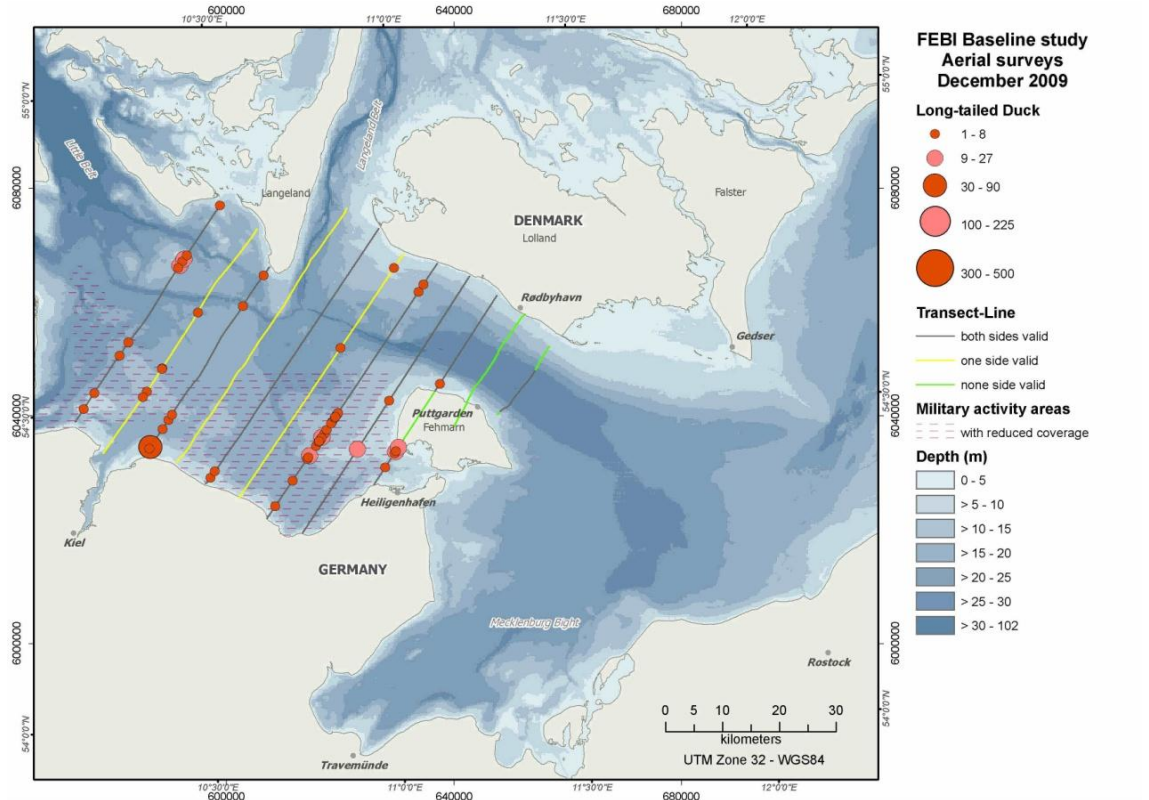


Figure 1.83 Long-tailed Duck distribution in the study area during aerial surveys (December 2009).

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

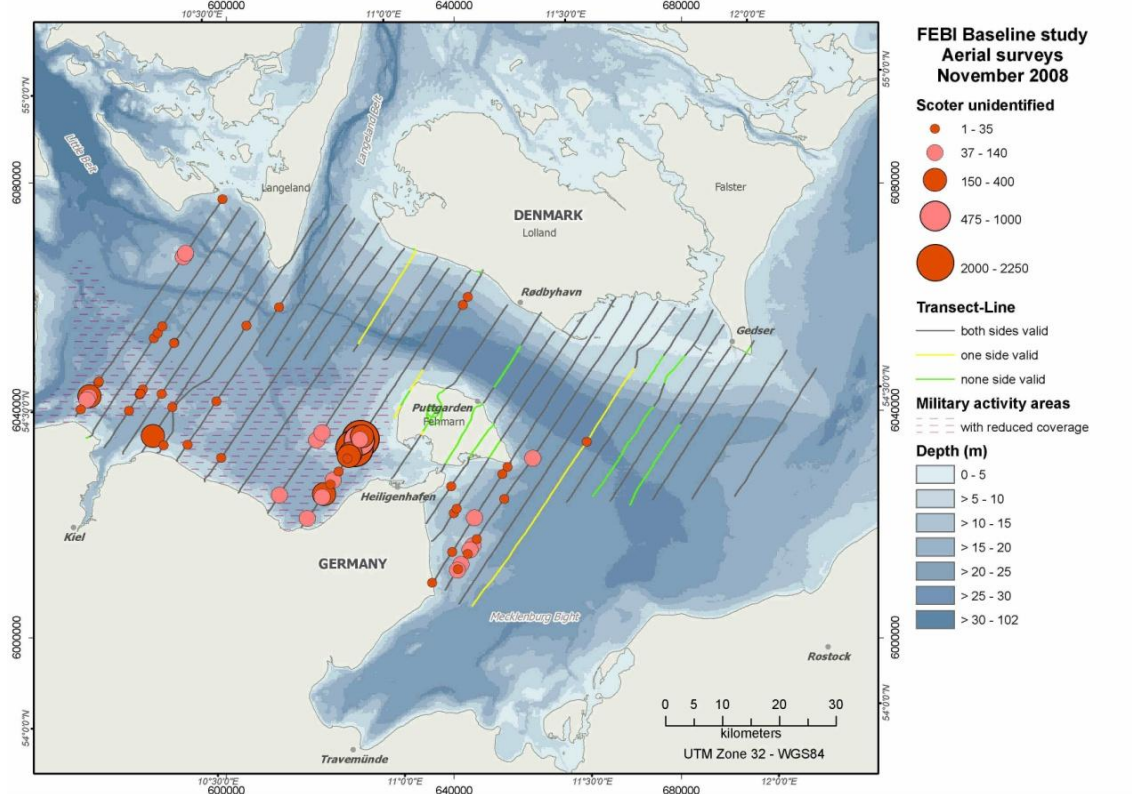


Figure 1.84 Scoter distribution in the study area during aerial surveys (November 2008).

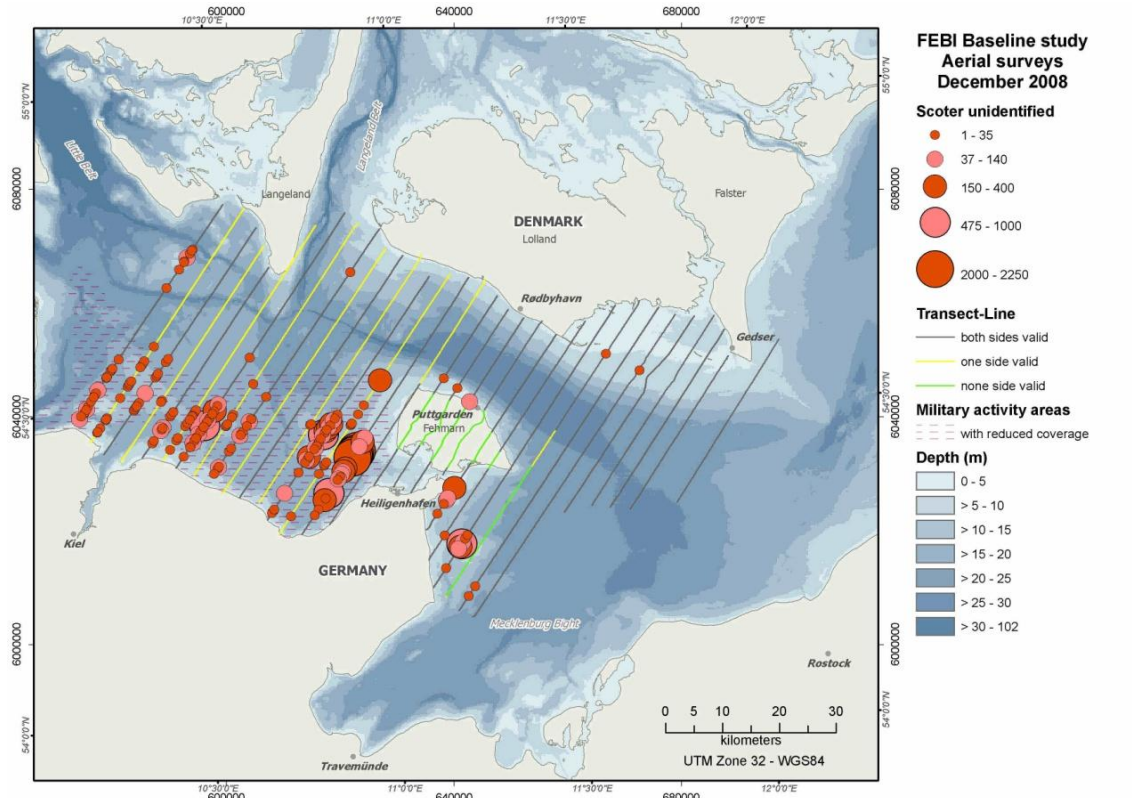


Figure 1.85 Scoter distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

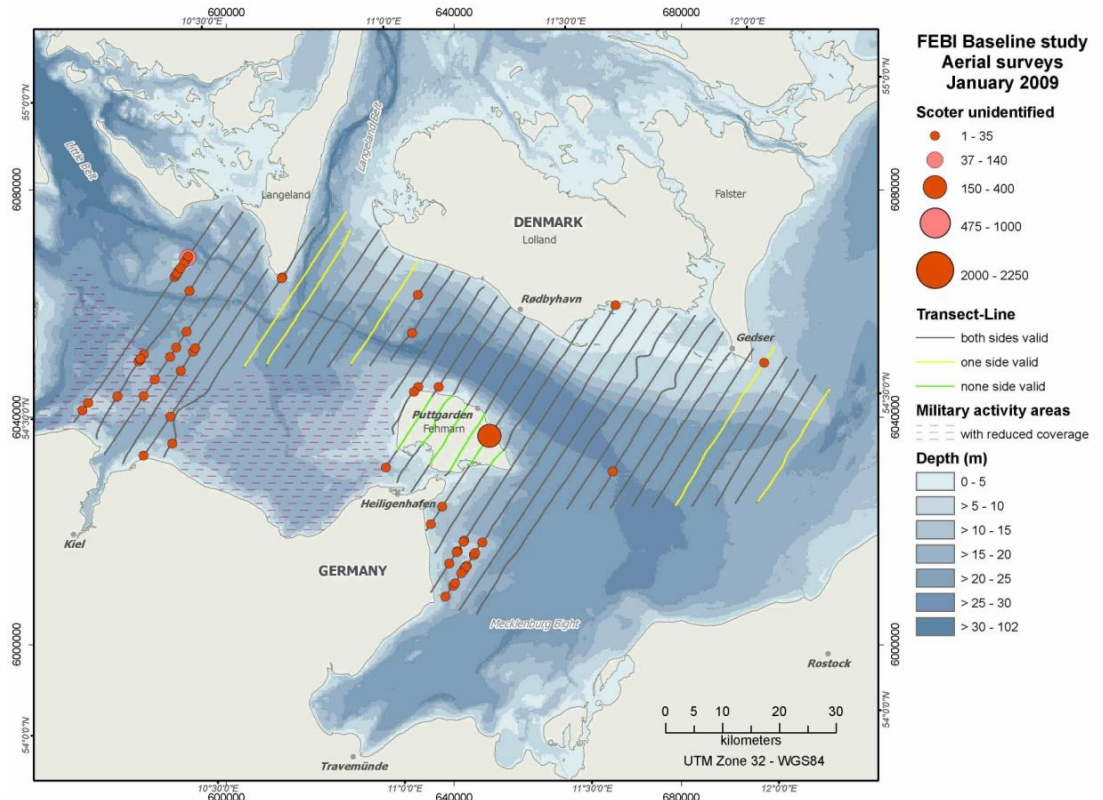


Figure 1.86 Scoter distribution in the study area during aerial surveys (January 2009).

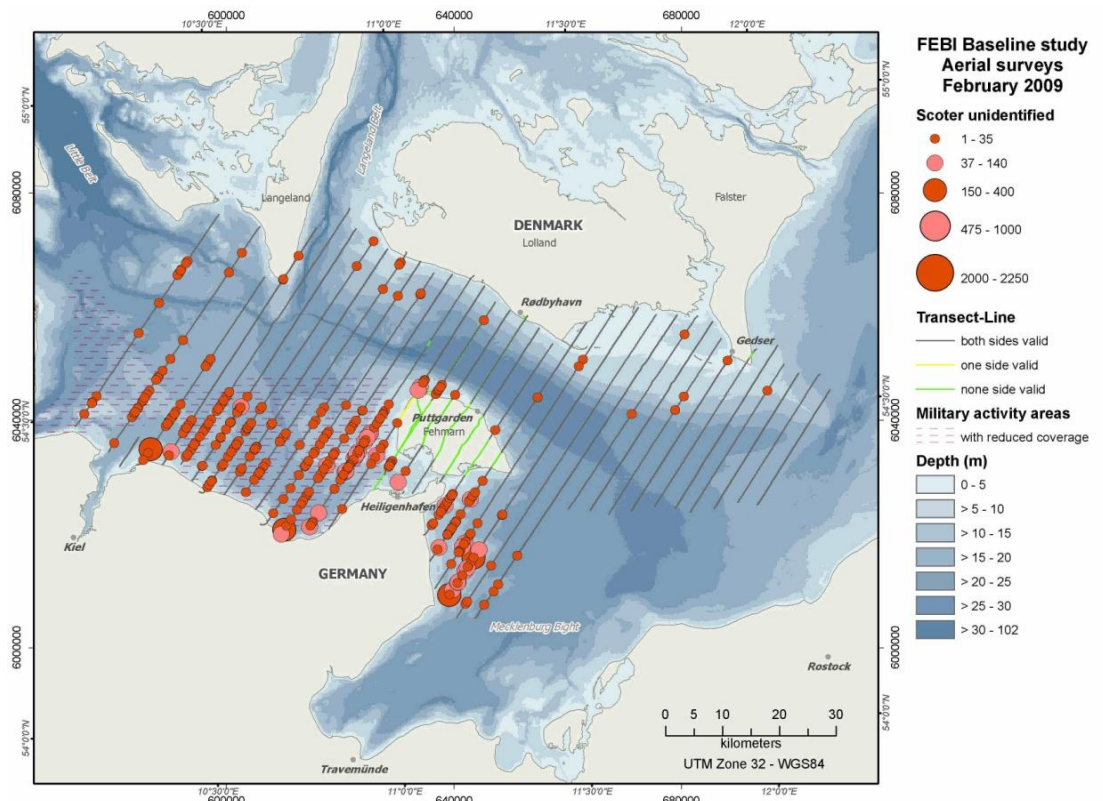


Figure 1.87 Scoter distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

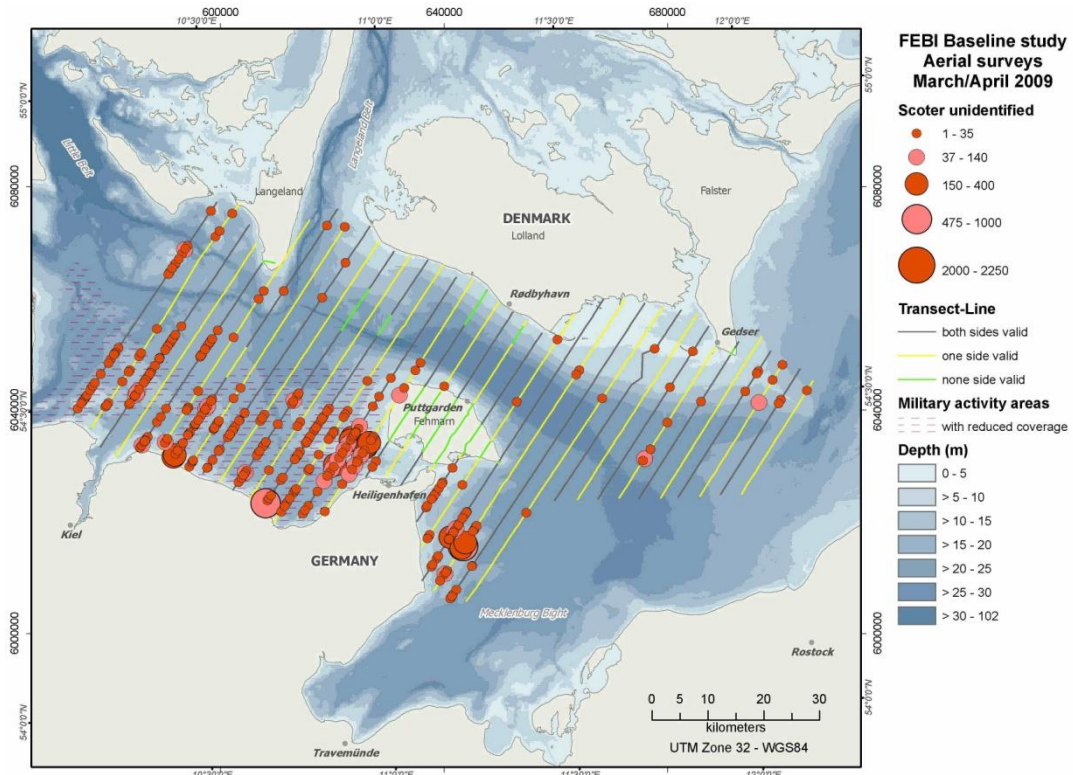


Figure 1.88 Scoter distribution in the study area during aerial surveys (March/April 2009).

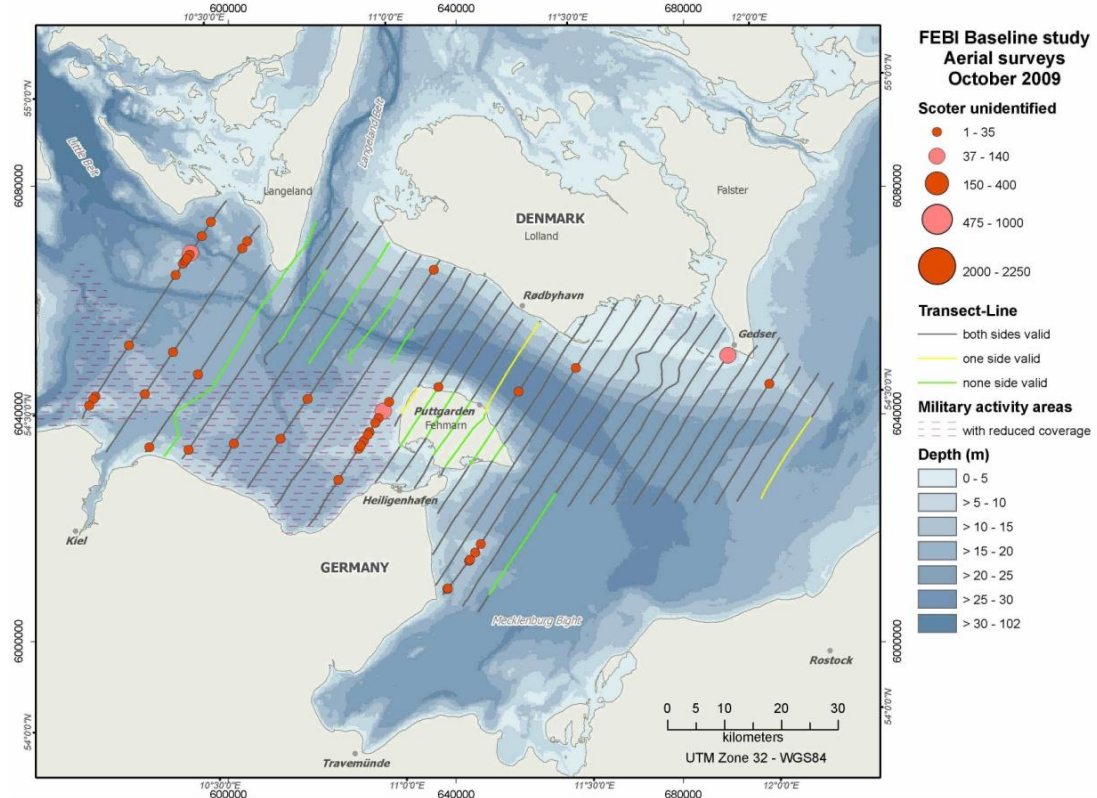


Figure 1.89 Scoter distribution in the study area during aerial surveys (October 2009).

FEHMARNBELT BIRDS

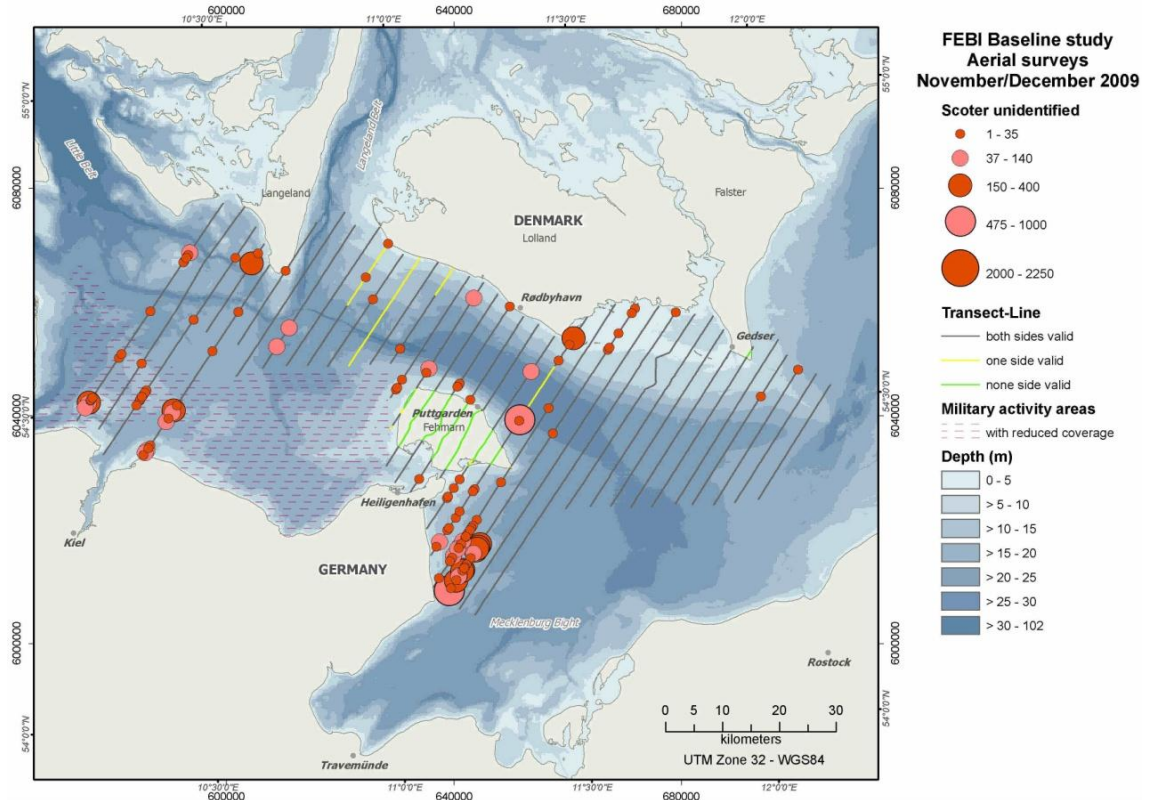


Figure 1.90 Scoter distribution in the study area during aerial surveys (November/December 2009).

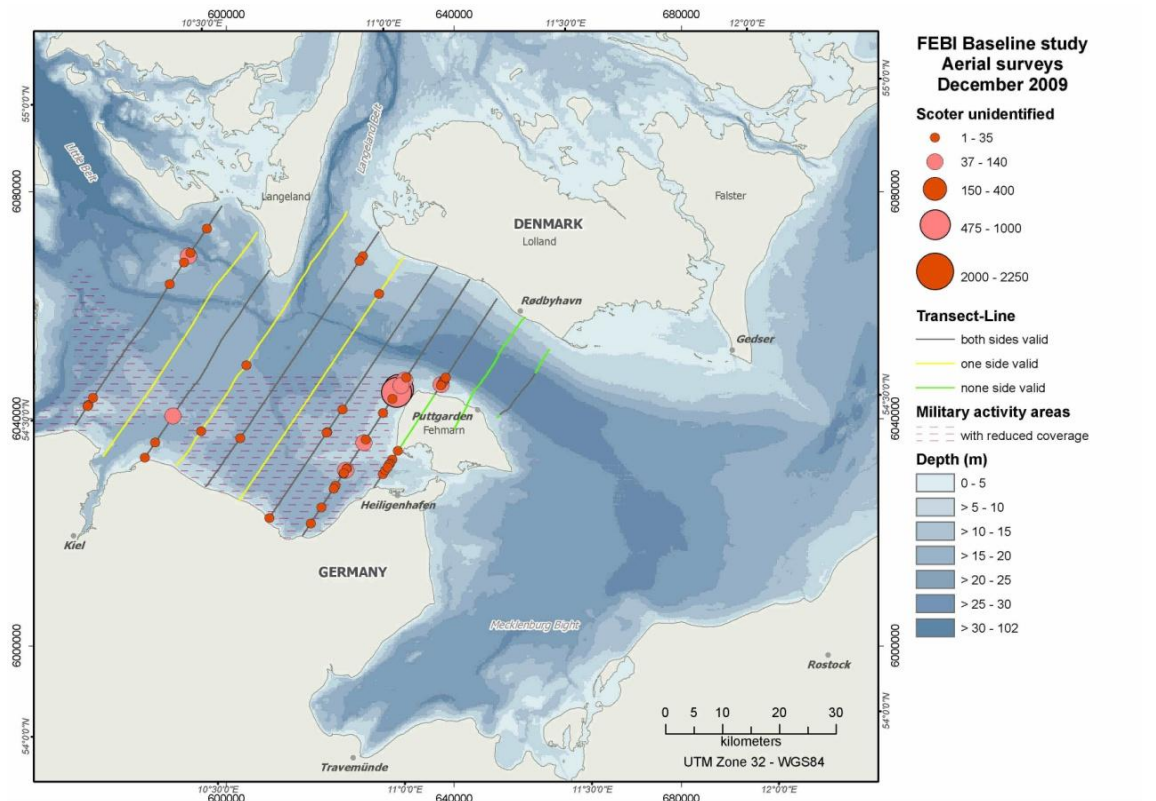


Figure 1.91 Scoter distribution in the study area during aerial surveys (December 2008).

1.1.11 Common Goldeneye – *Bucephala clangula*

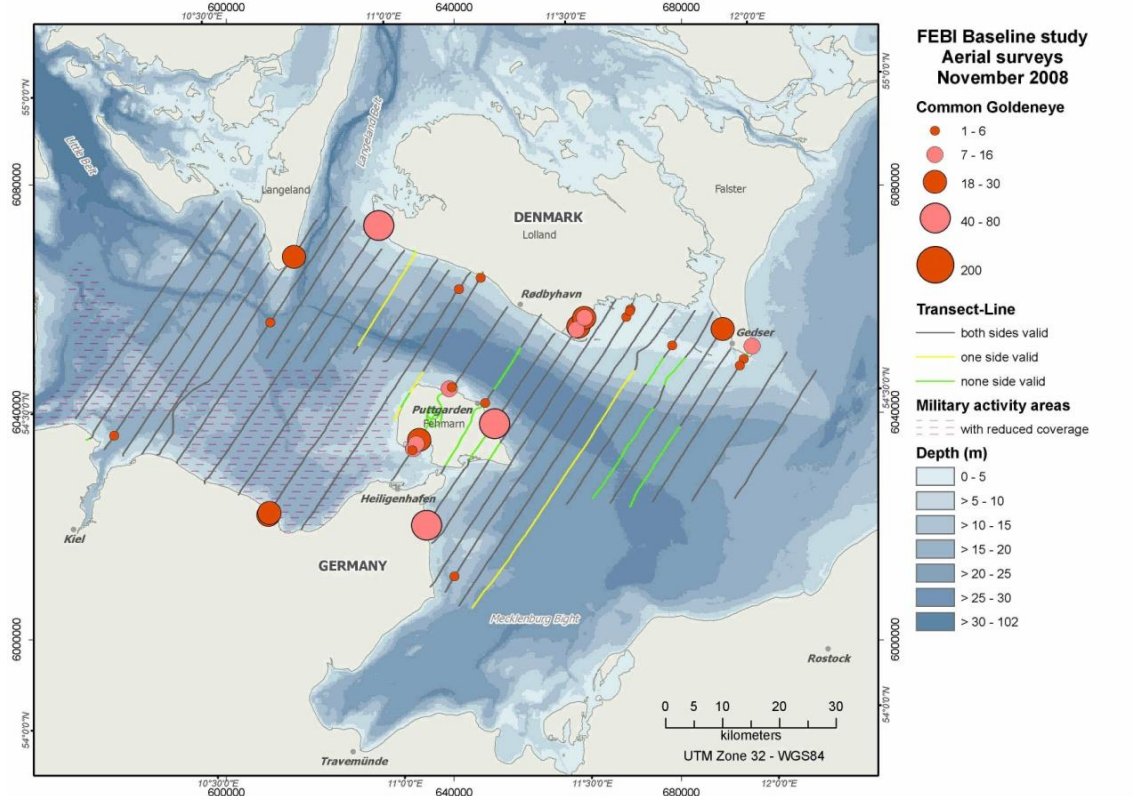


Figure 1.92 Common Goldeneye distribution in the study area during aerial surveys (November 2008).

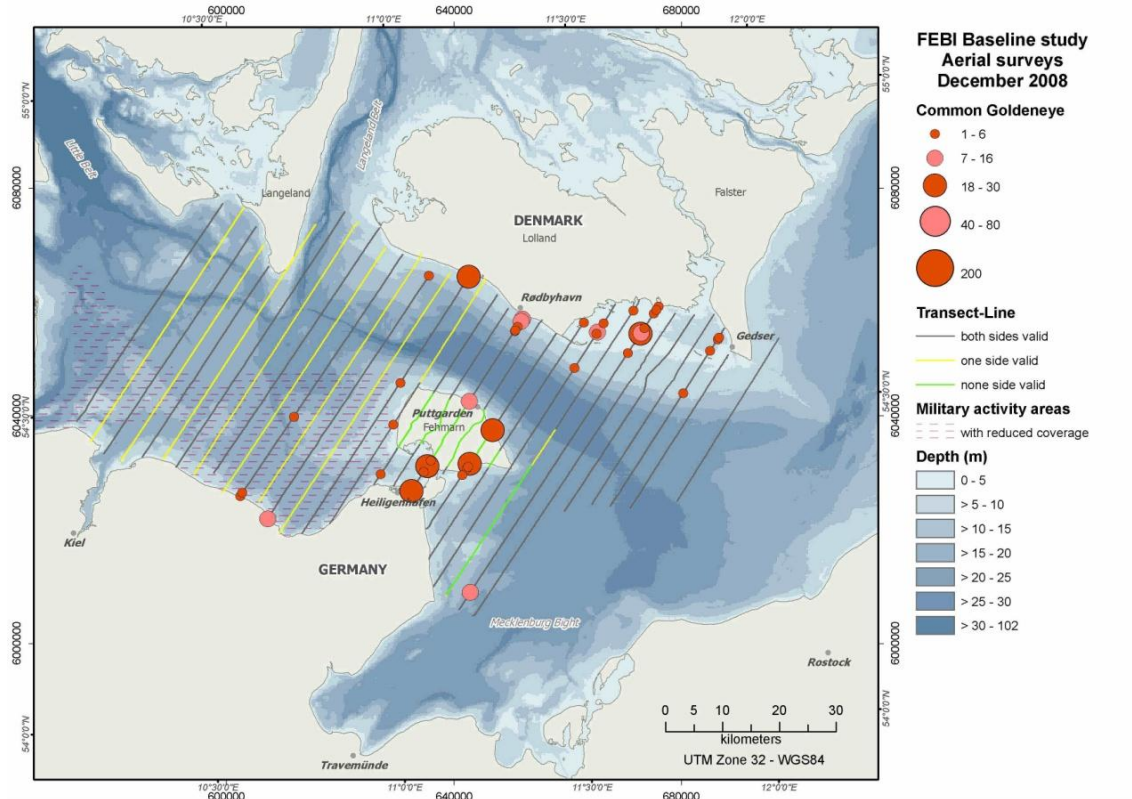


Figure 1.93 Common Goldeneye distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

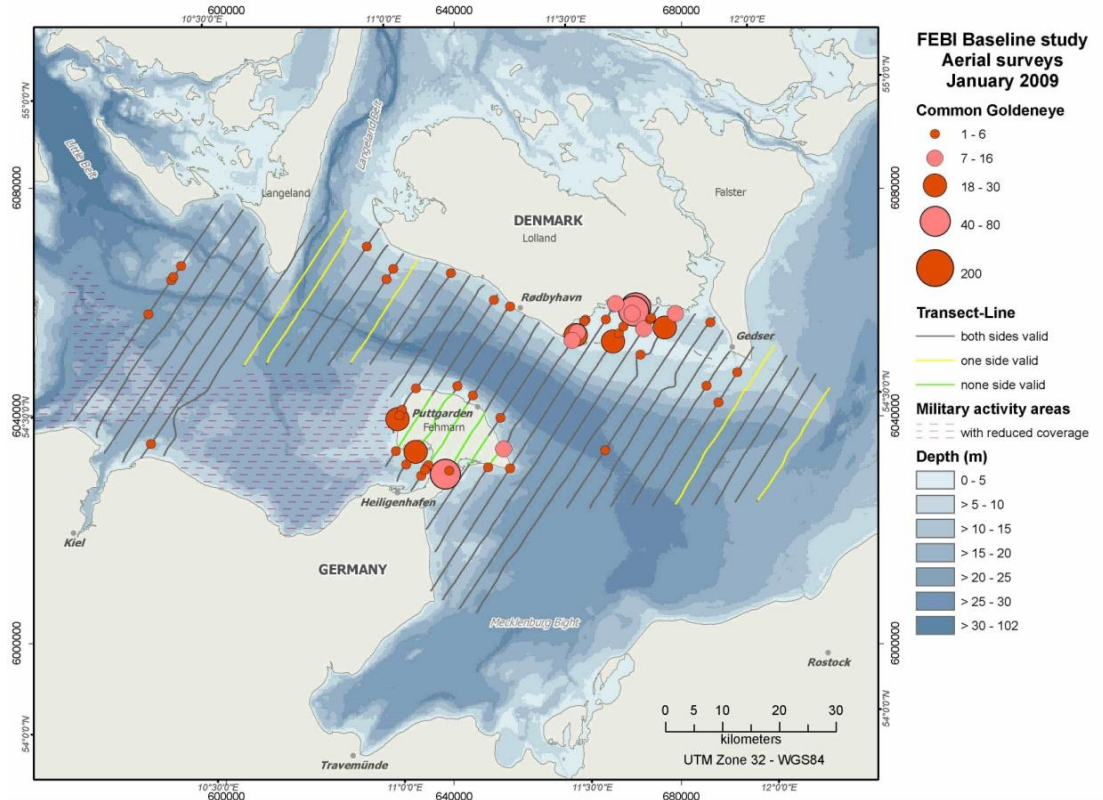


Figure 1.94 Common Goldeneye distribution in the study area during aerial surveys (January 2009).

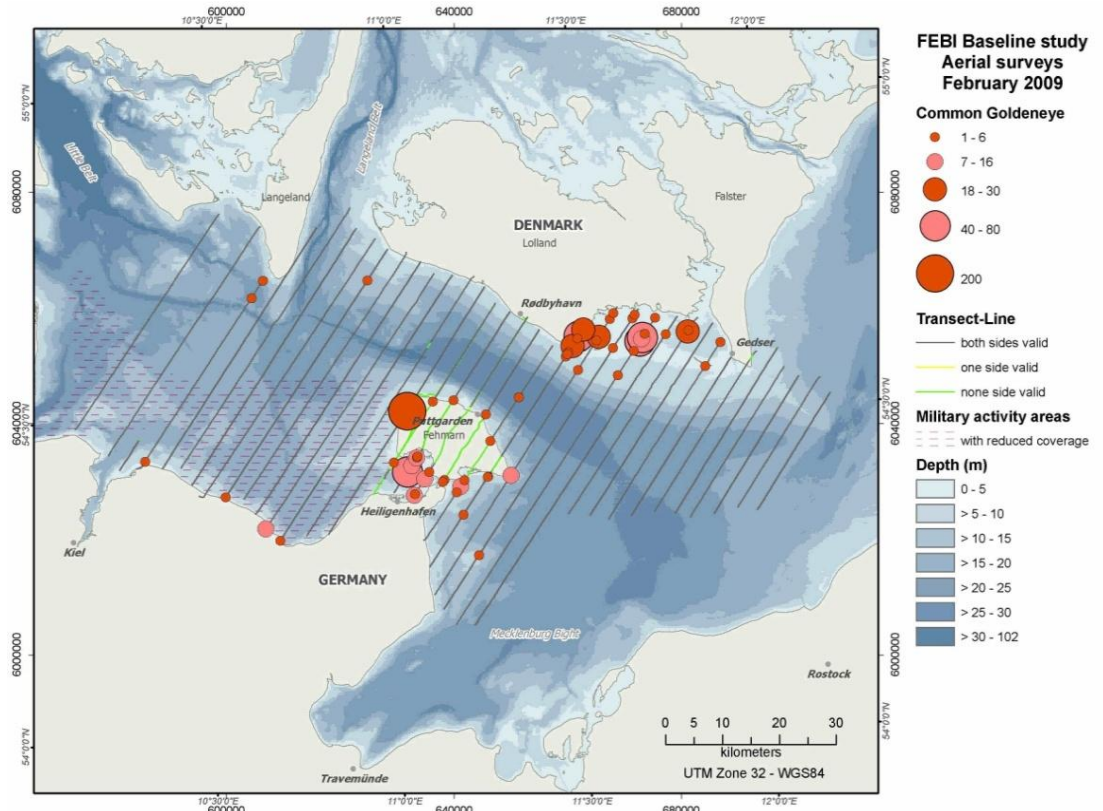


Figure 1.95 Common Goldeneye distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

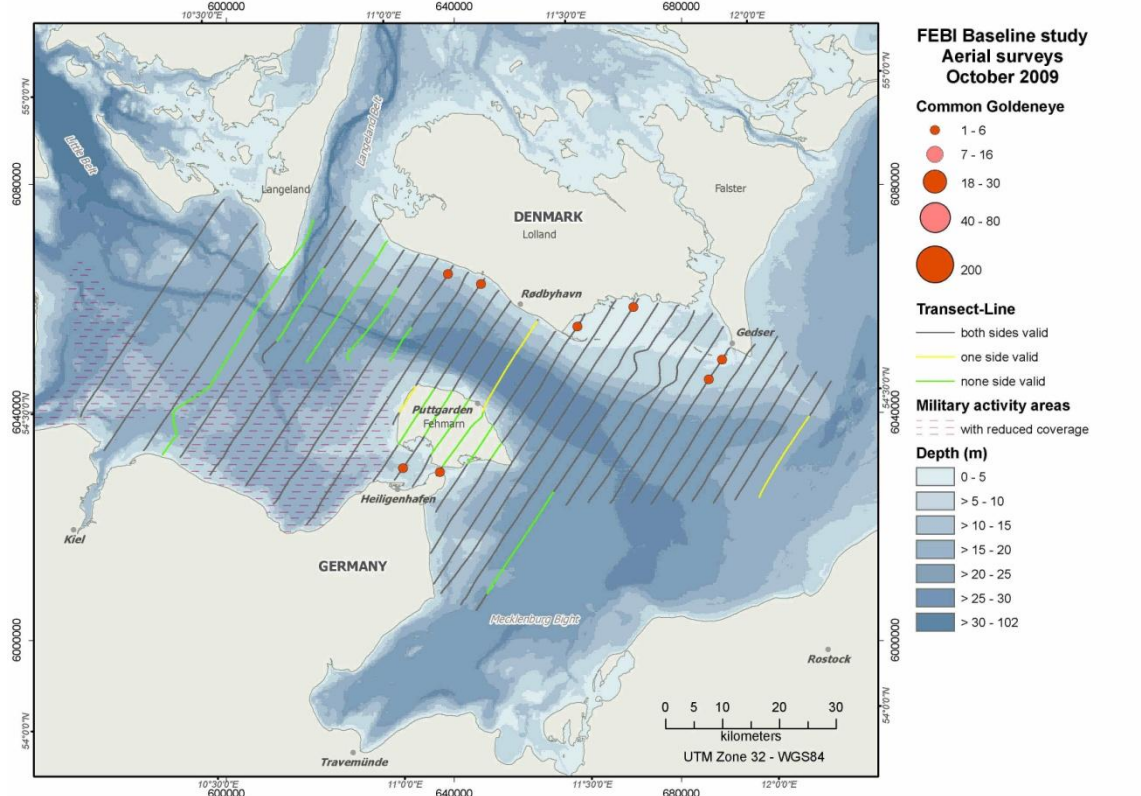


Figure 1.96 Common Goldeneye distribution in the study area during aerial surveys (October 2009).

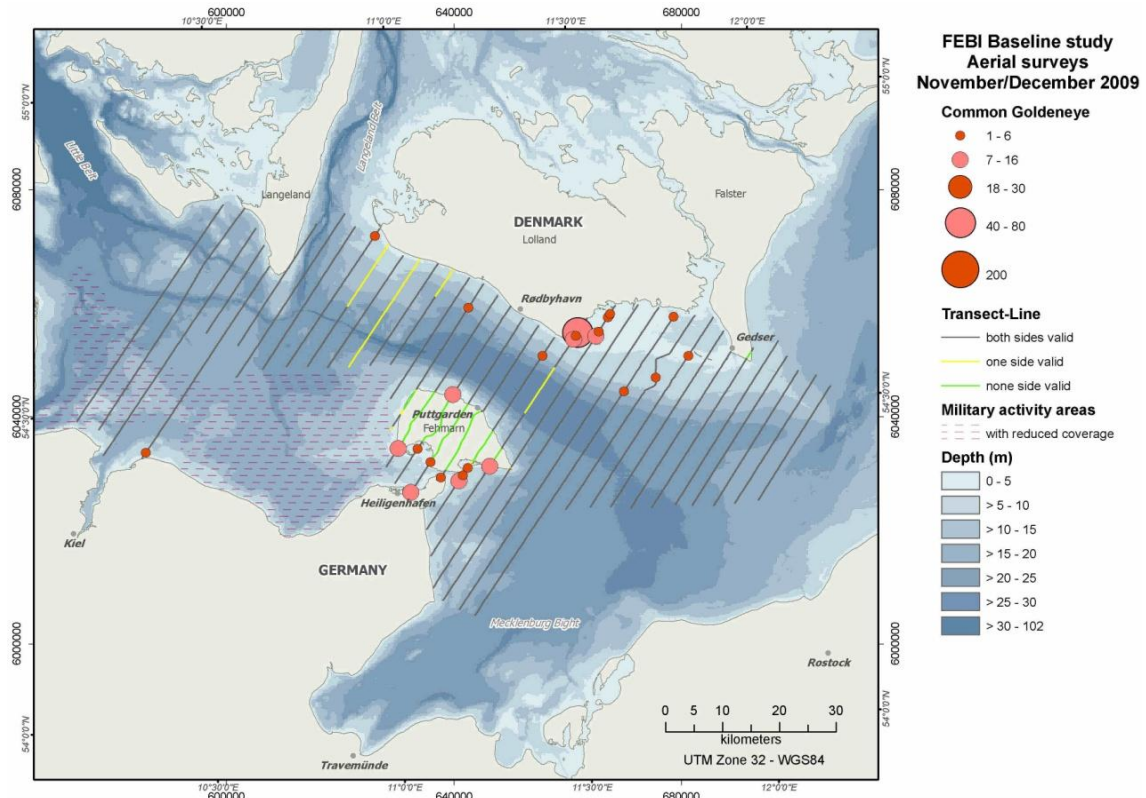


Figure 1.97 Common Goldeneye distribution in the study area during aerial surveys (November/December 2009).

FEHMARNBELT BIRDS

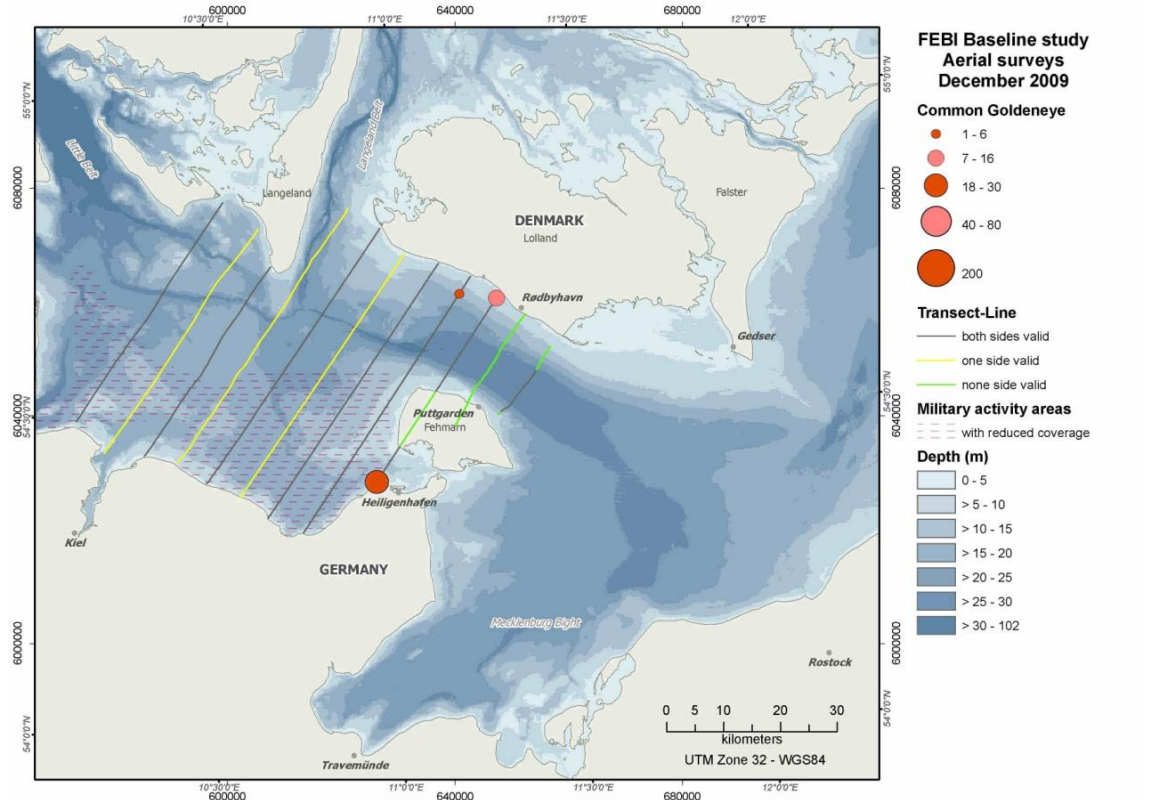


Figure 1.98 Common Goldeneye distribution in the study area during aerial surveys (December 2009).

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

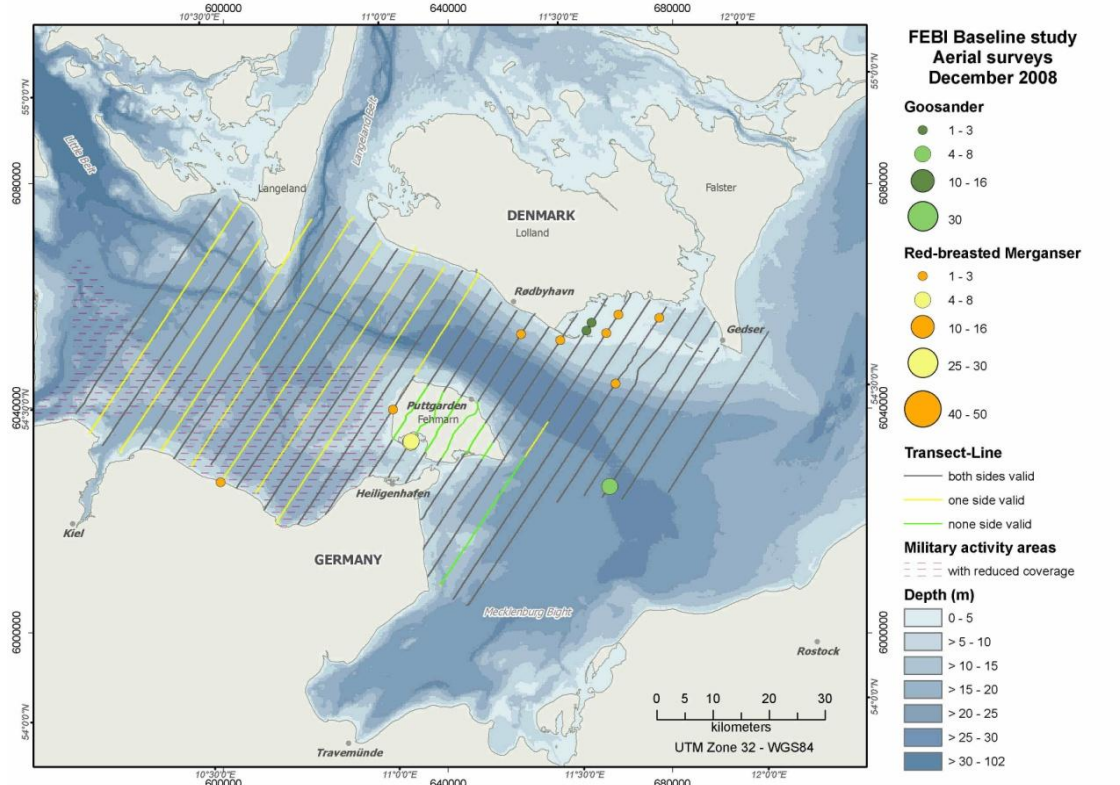


Figure 1.99 Red-breasted Merganser and Goosander distribution in the study area during aerial surveys (December 2008).

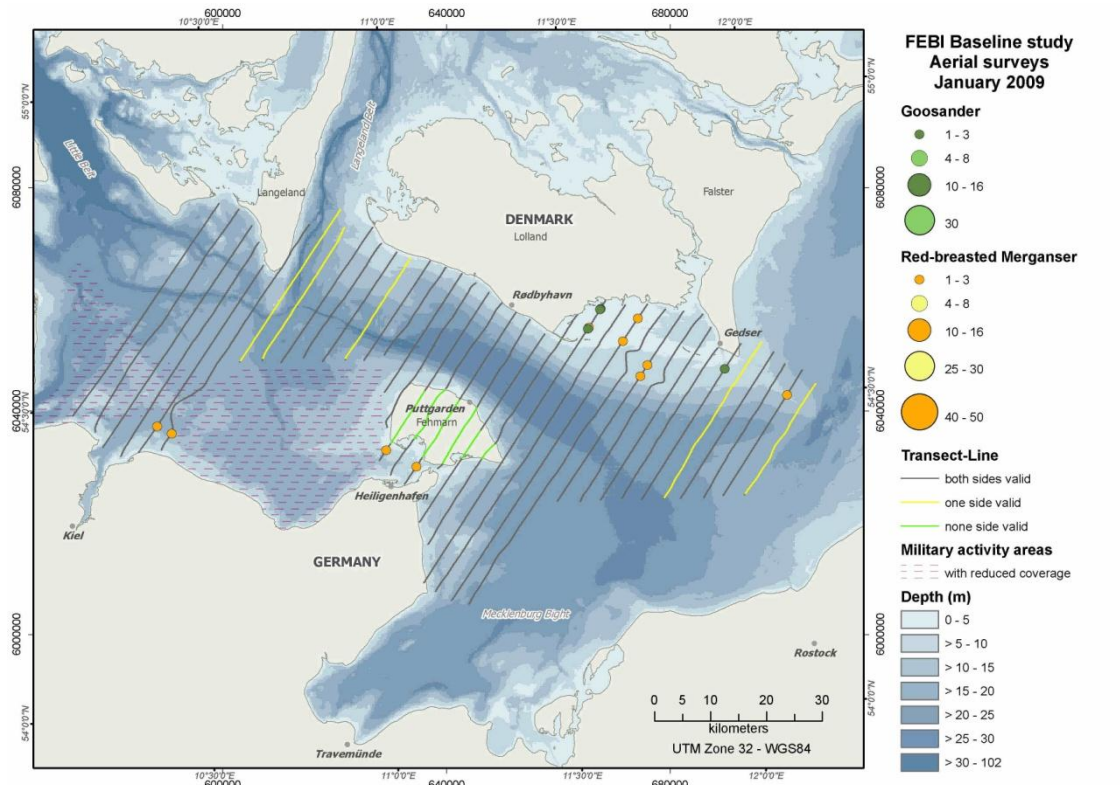


Figure 1.100 Red-breasted Merganser and Goosander distribution in the study area during aerial surveys (January 2009).

FEHMARNBELT BIRDS

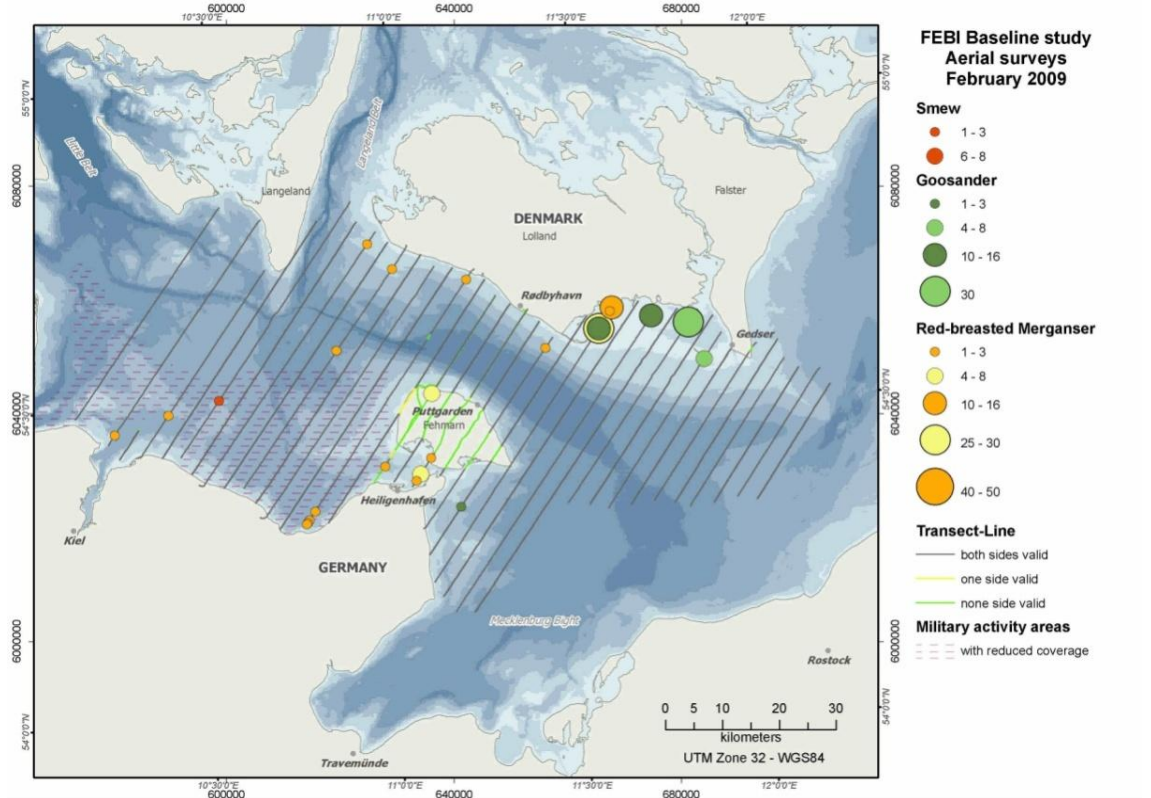


Figure 1.101 Smew, Red-breasted Merganser and Goosander distribution in the study area during aerial surveys (February 2009).

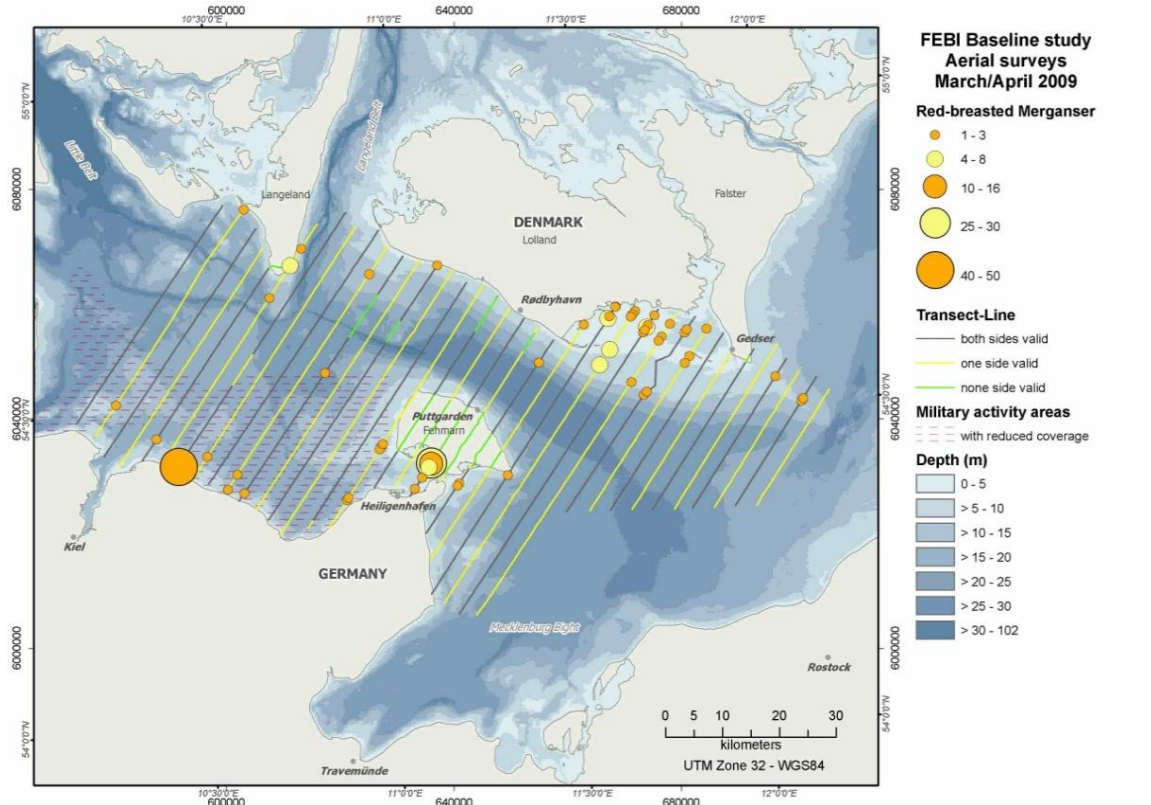


Figure 1.102 Red-breasted Merganser distribution in the study area during aerial surveys (March/April 2009).

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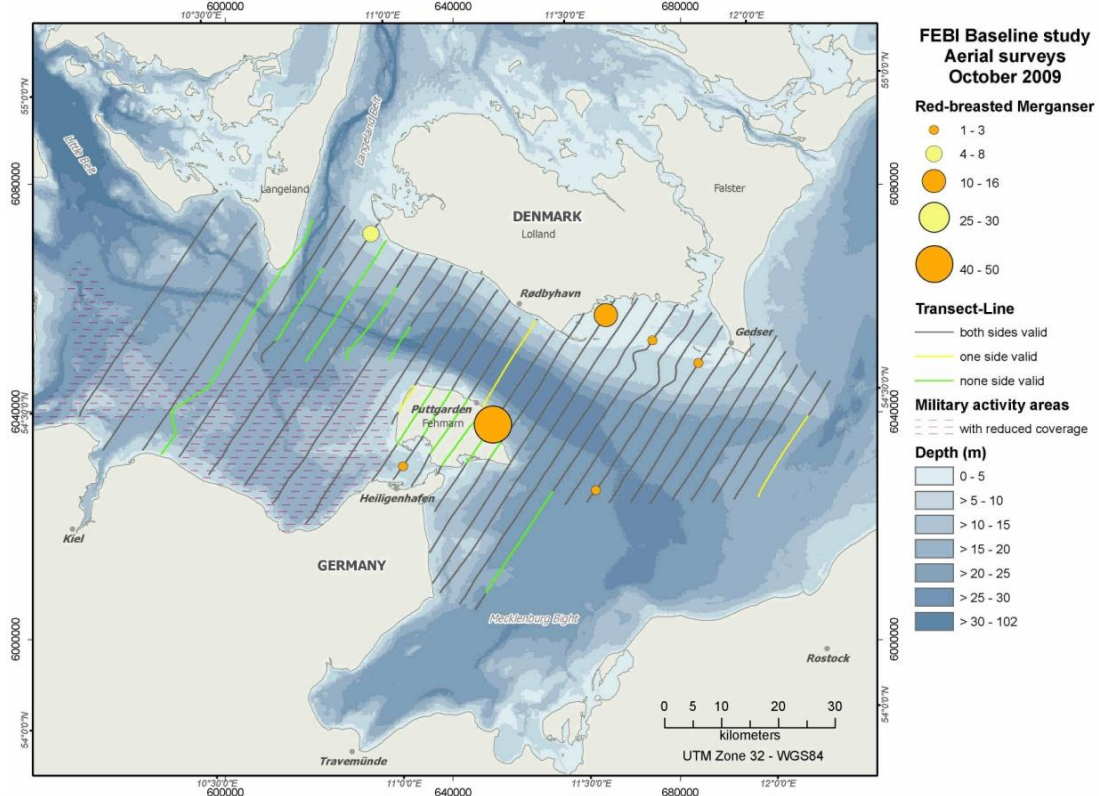


Figure 1.103 Red-breasted Merganser distribution in the study area during aerial surveys (October 2009).

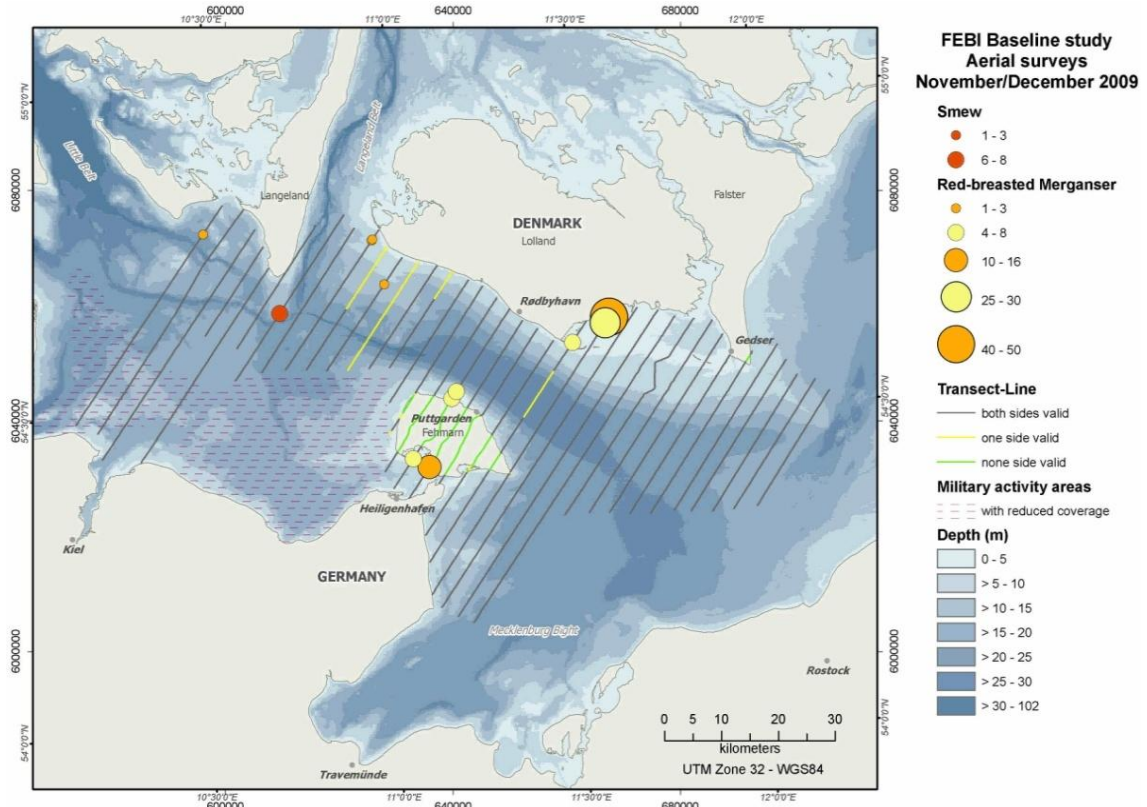


Figure 1.104 Smew and Red-breasted Merganser distribution during aerial surveys (November/December 2009).

FEHMARNBELT BIRDS

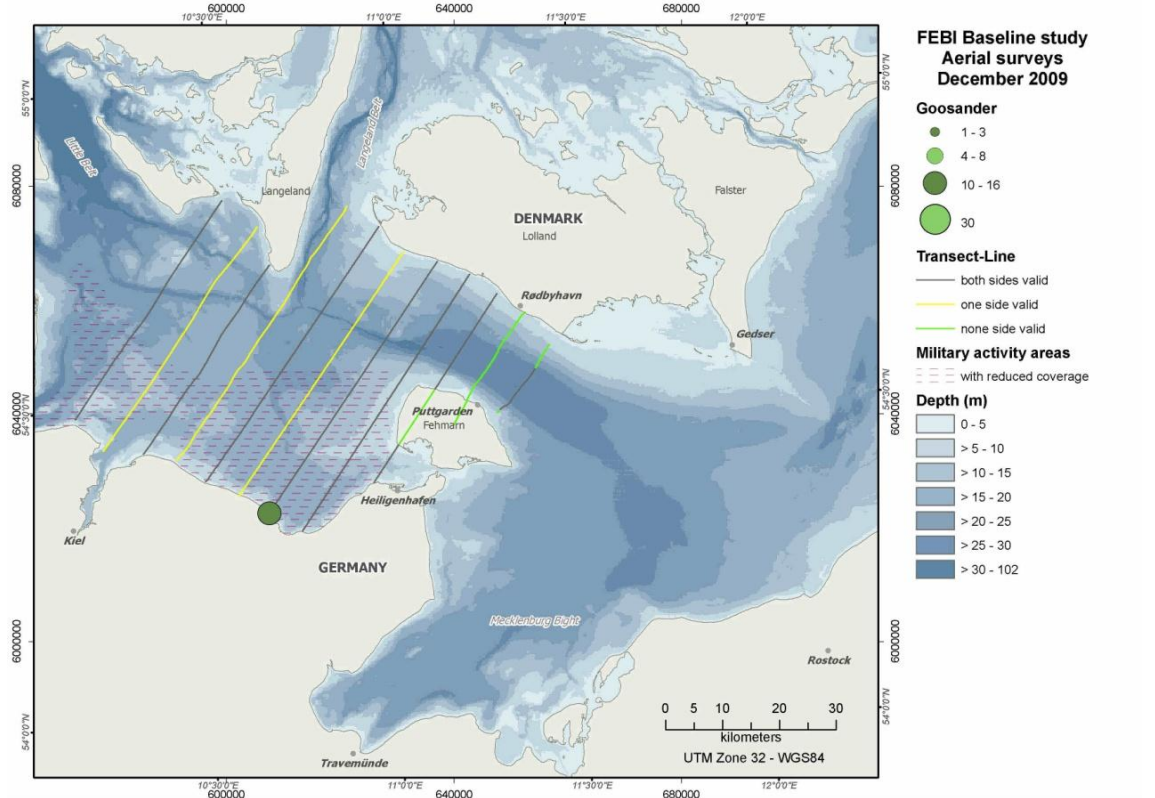


Figure 1.105 Goosander distribution in the study area during aerial surveys (December 2009).

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1.1.13 *Larus minutus* – Little Gull

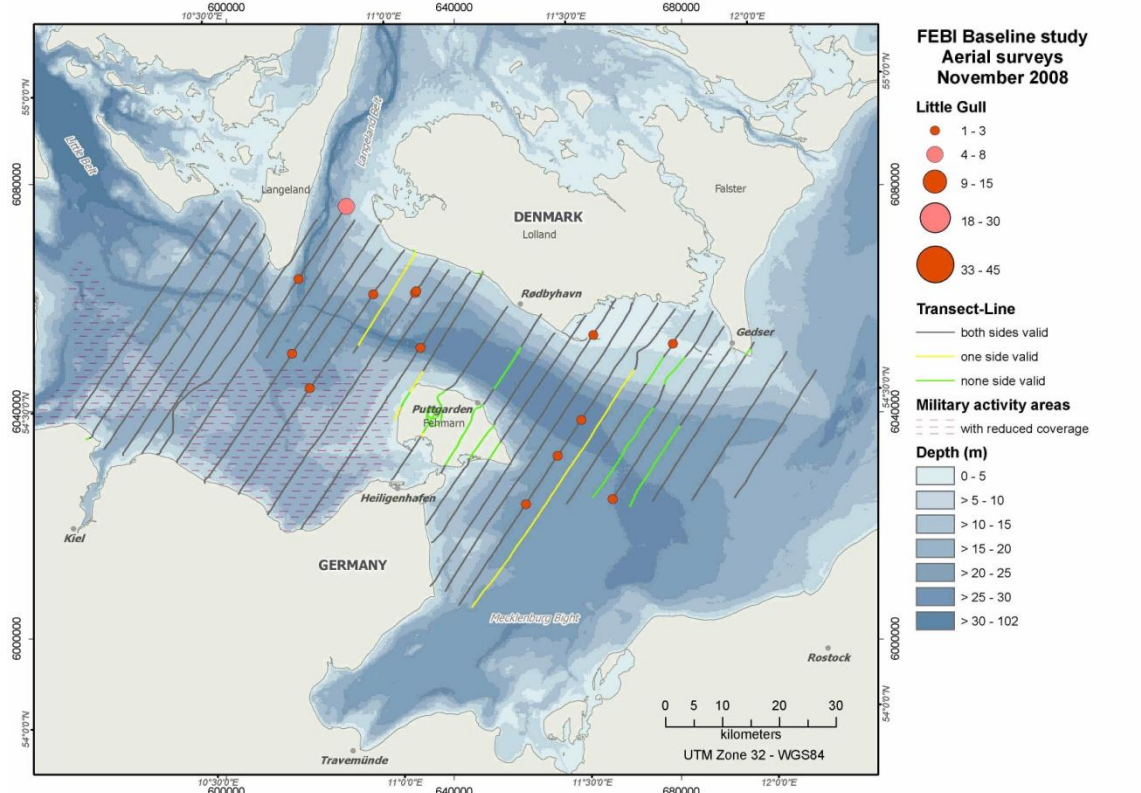


Figure 1.106 Little Gull distribution in the study area during aerial surveys (November 2008).

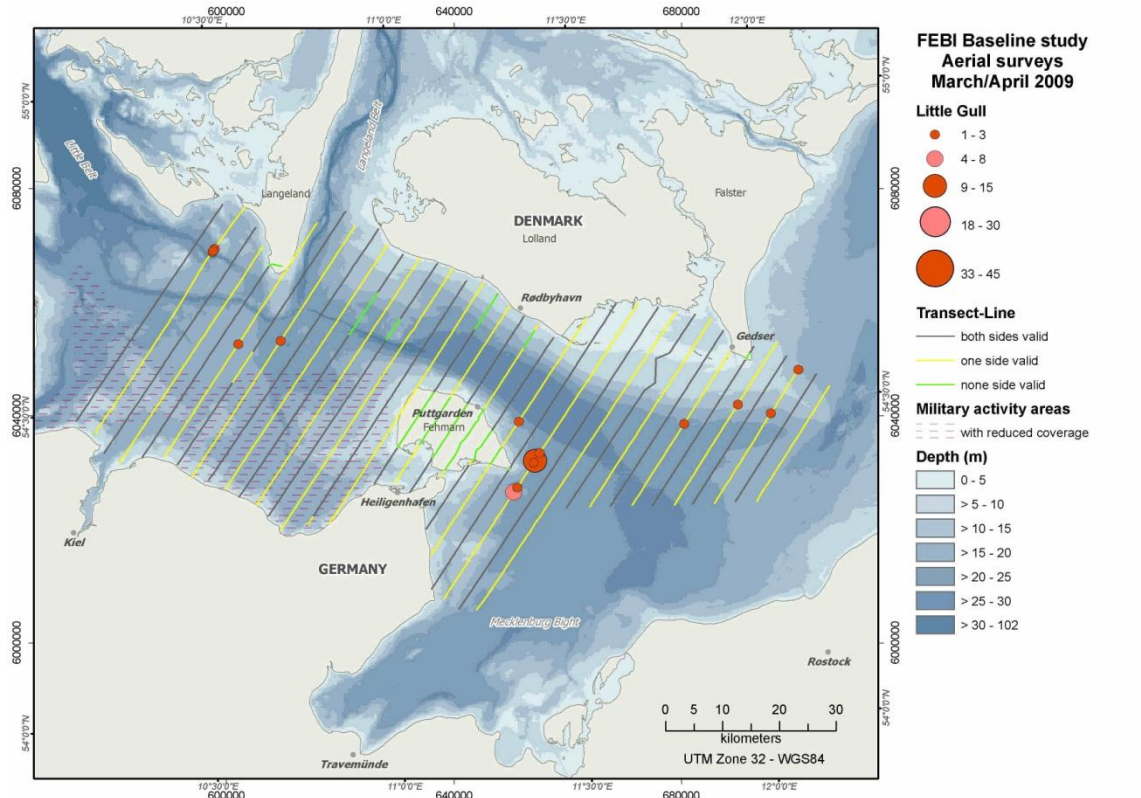


Figure 1.107 Little Gull distribution in the study area during aerial surveys (March/April 2009).

FEHMARNBELT BIRDS

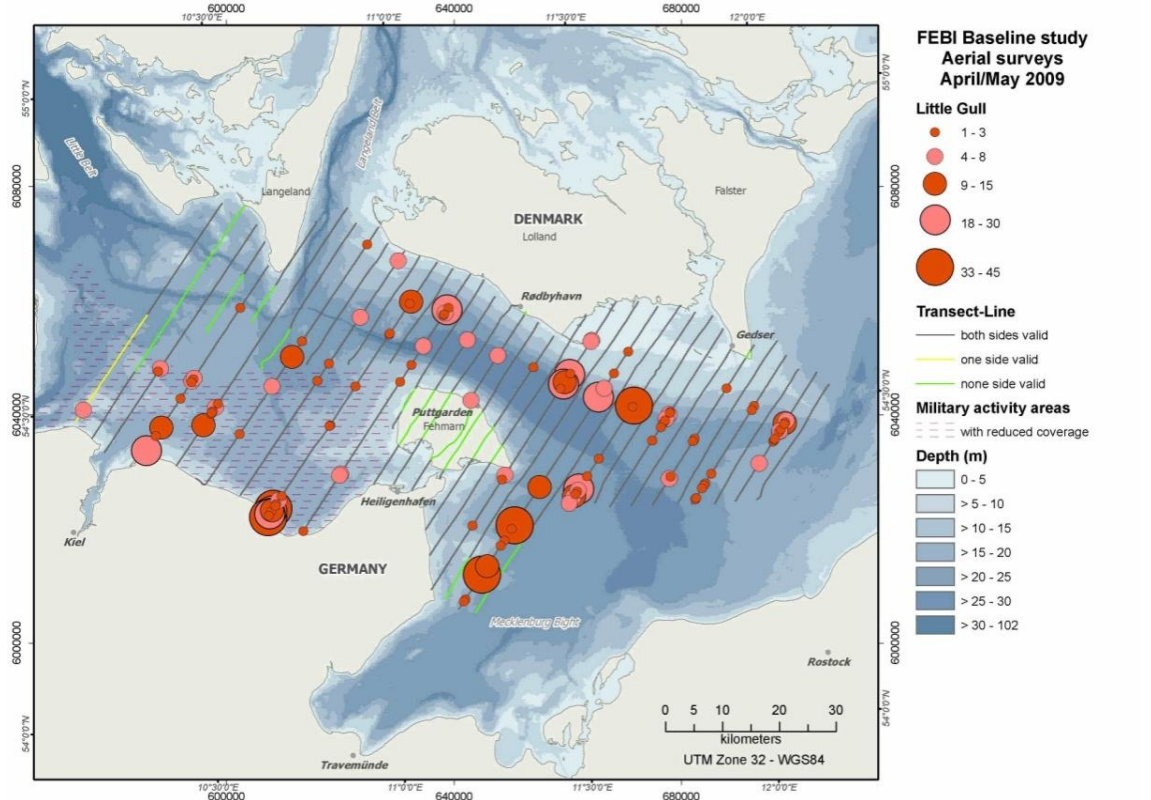


Figure 1.108 Little Gull distribution in the study area during aerial surveys (April/May 2009).

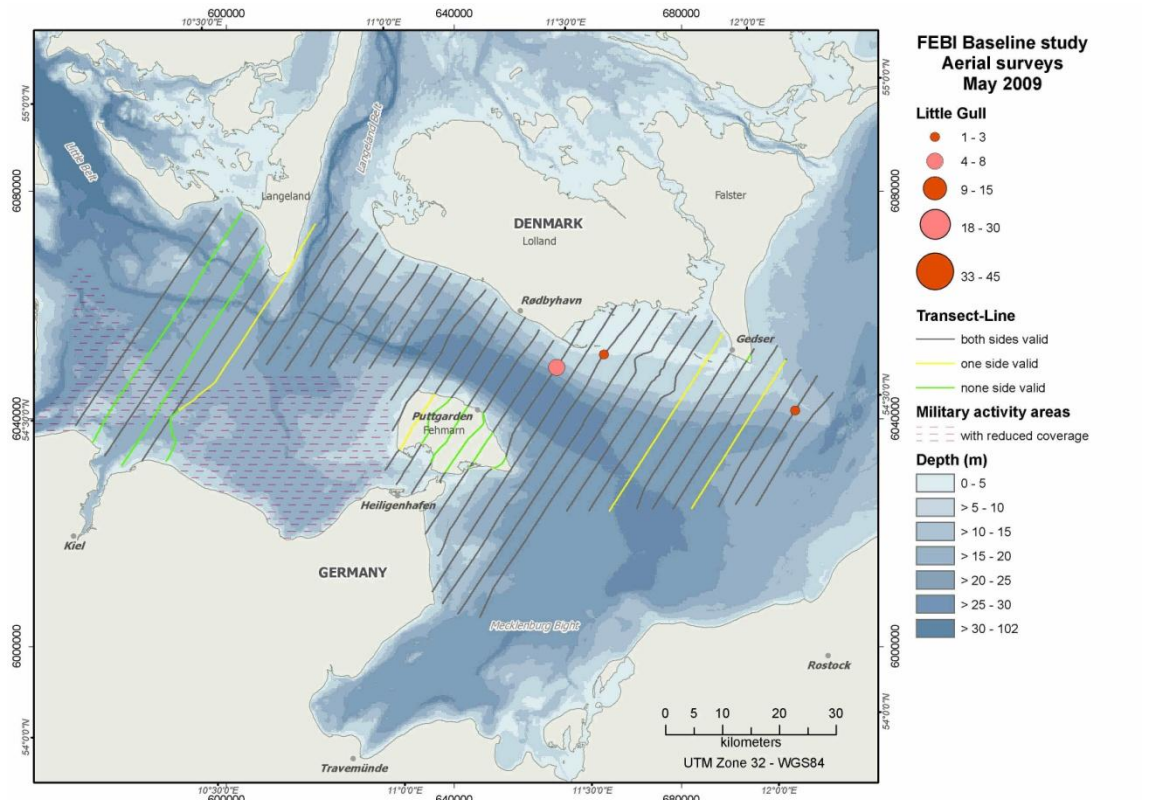


Figure 1.109 Little Gull distribution in the study area during aerial surveys (May 2009).

FEHMARNBELT BIRDS

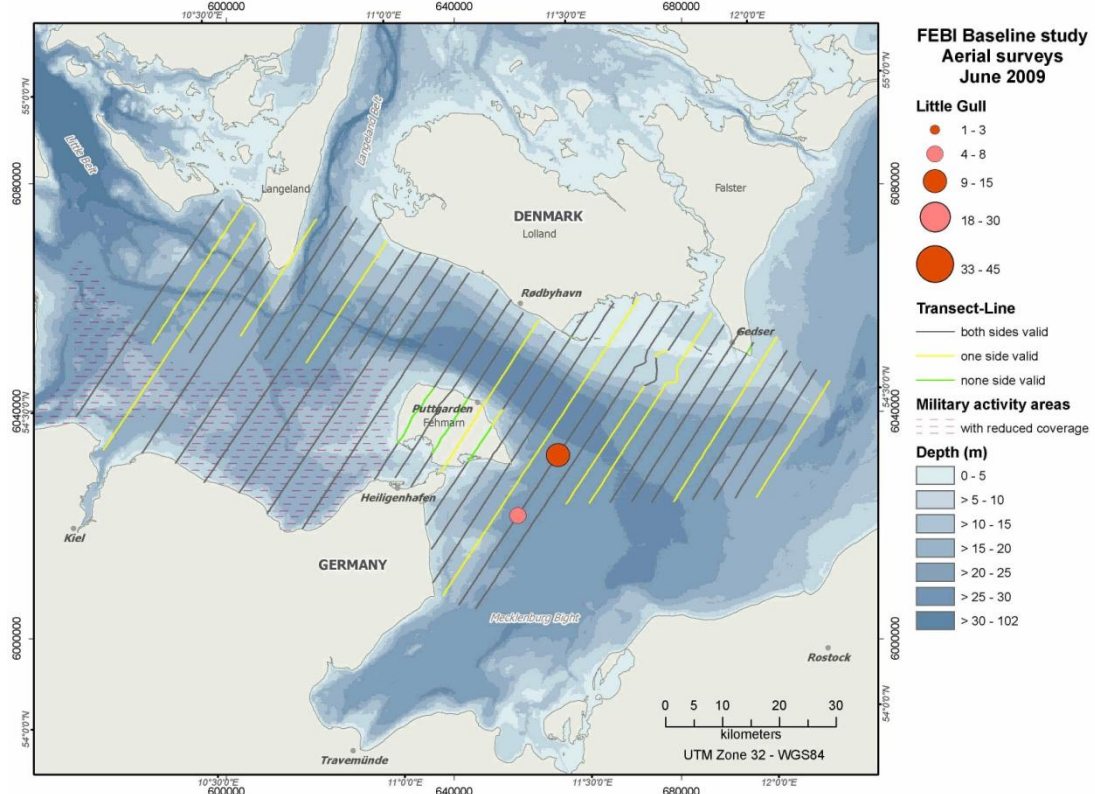


Figure 1.110 Little Gull distribution in the study area during aerial surveys (June 2009).

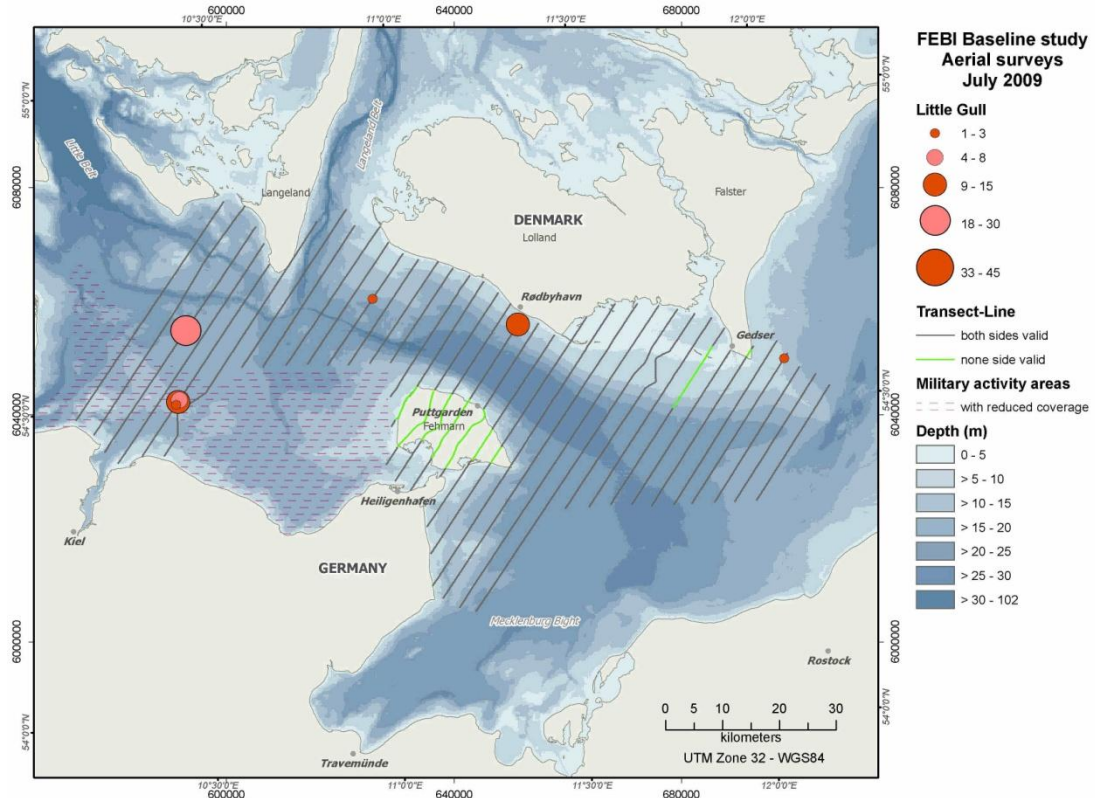


Figure 1.111 Little Gull distribution in the study area during aerial surveys (July 2009).

FEHMARNBELT BIRDS

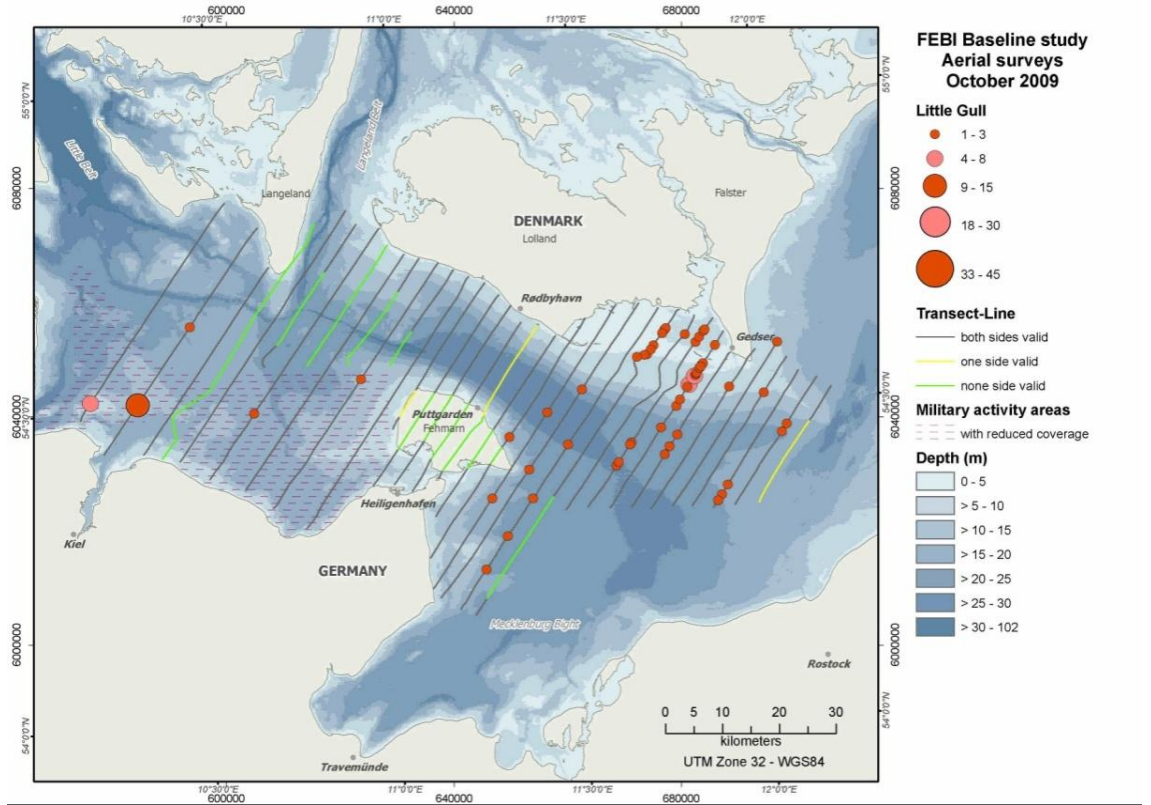


Figure 1.112 Little Gull distribution in the study area during aerial surveys (October 2009).

1.1.14 Black-headed Gull / Common Gull – *Larus ridibundus* / *Larus canus*

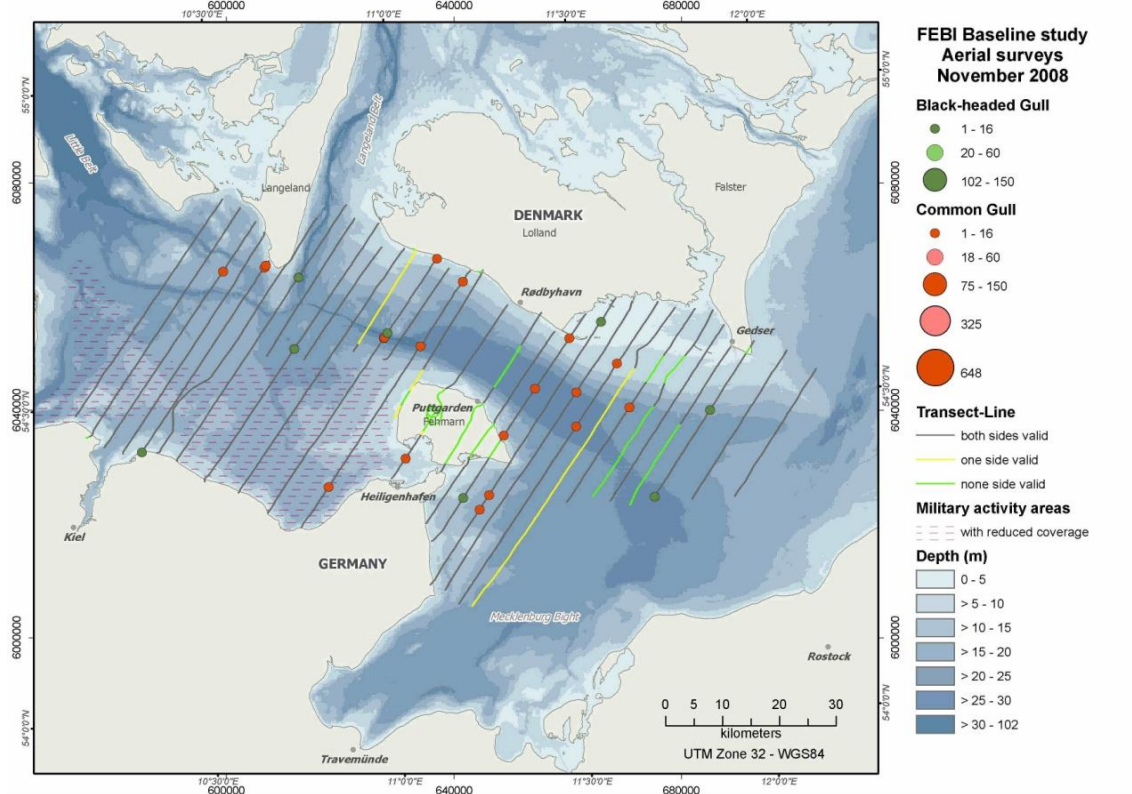


Figure 1.113 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (November 2008).

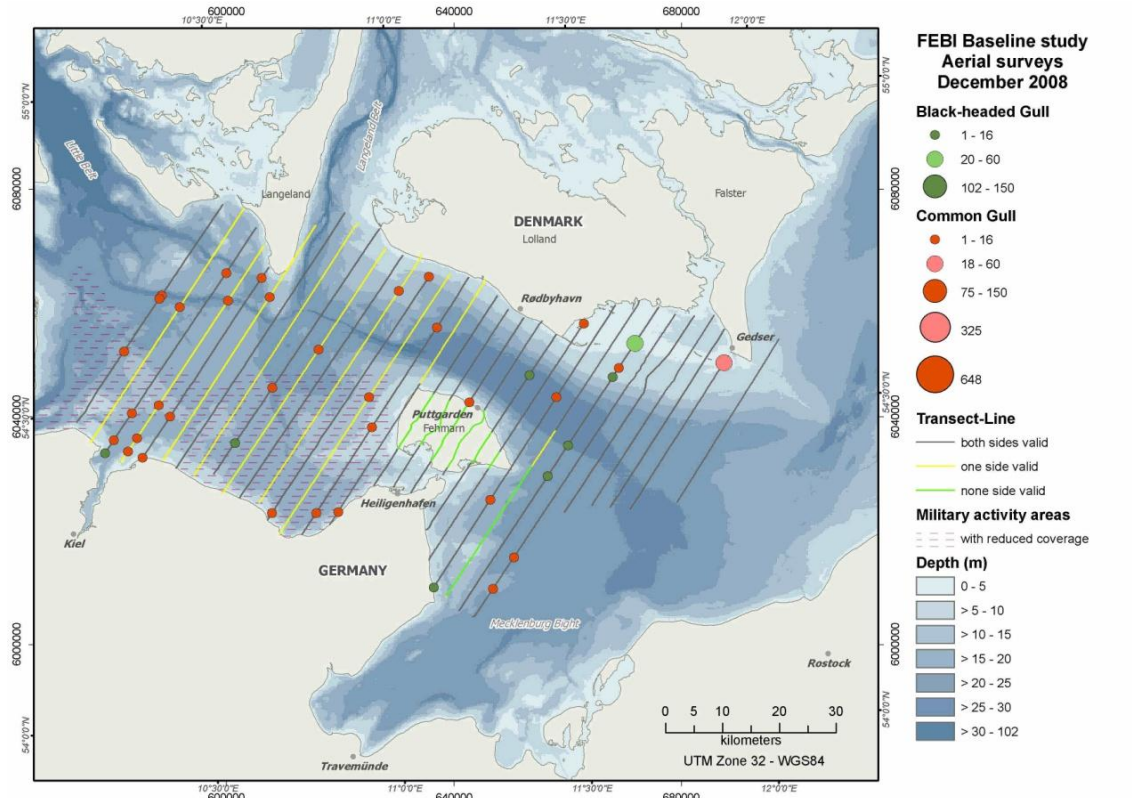


Figure 1.114 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (December 2008).

FEHMARNBELT BIRDS

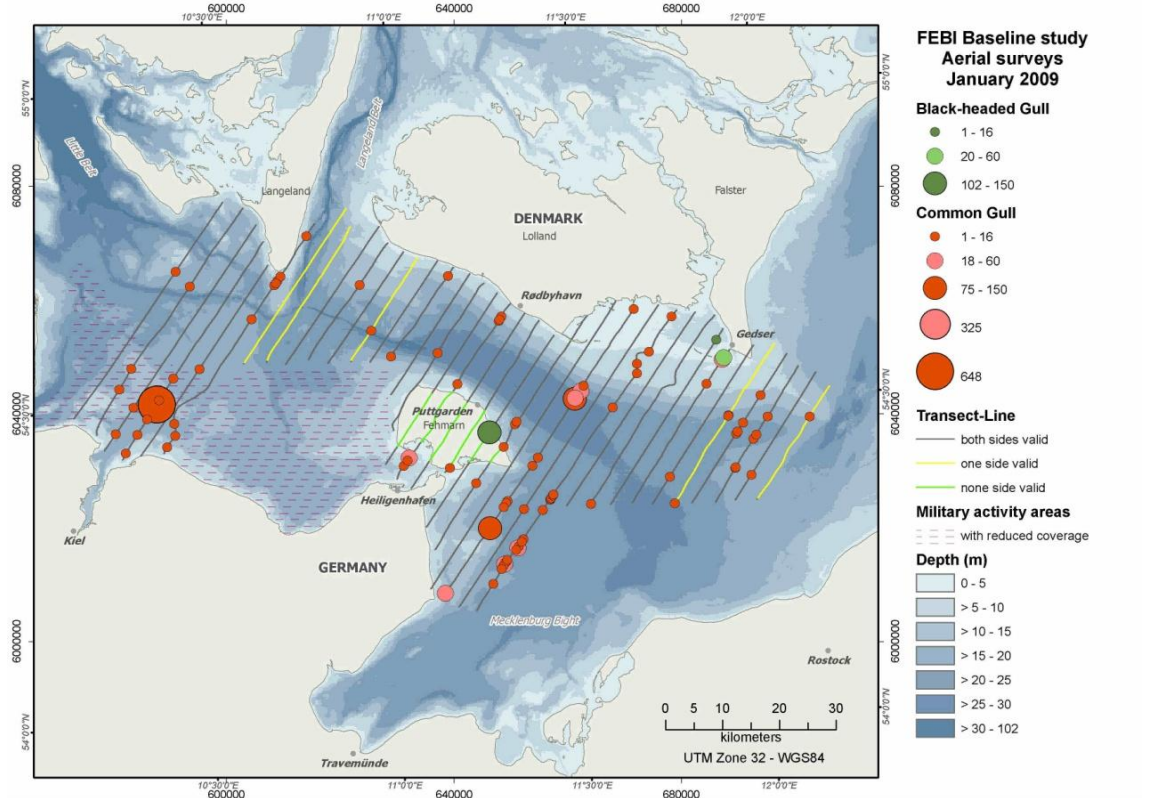


Figure 1.115 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (January 2009).

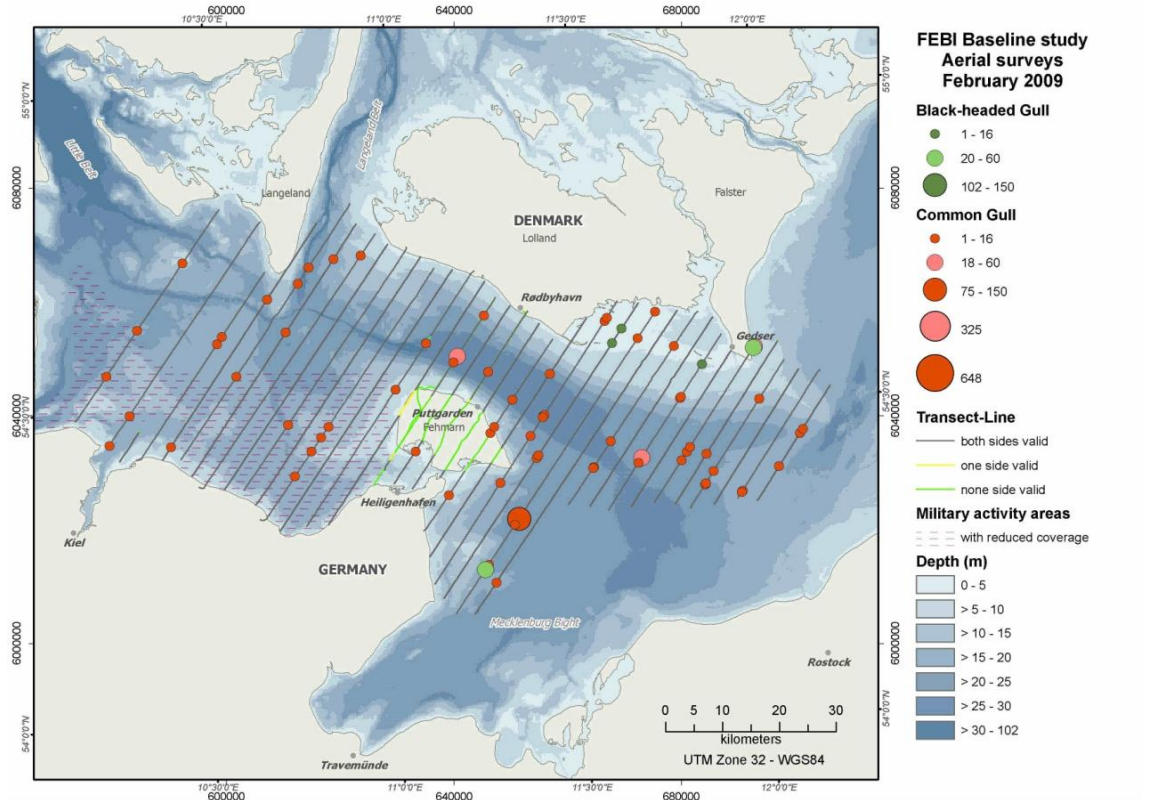


Figure 1.116 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

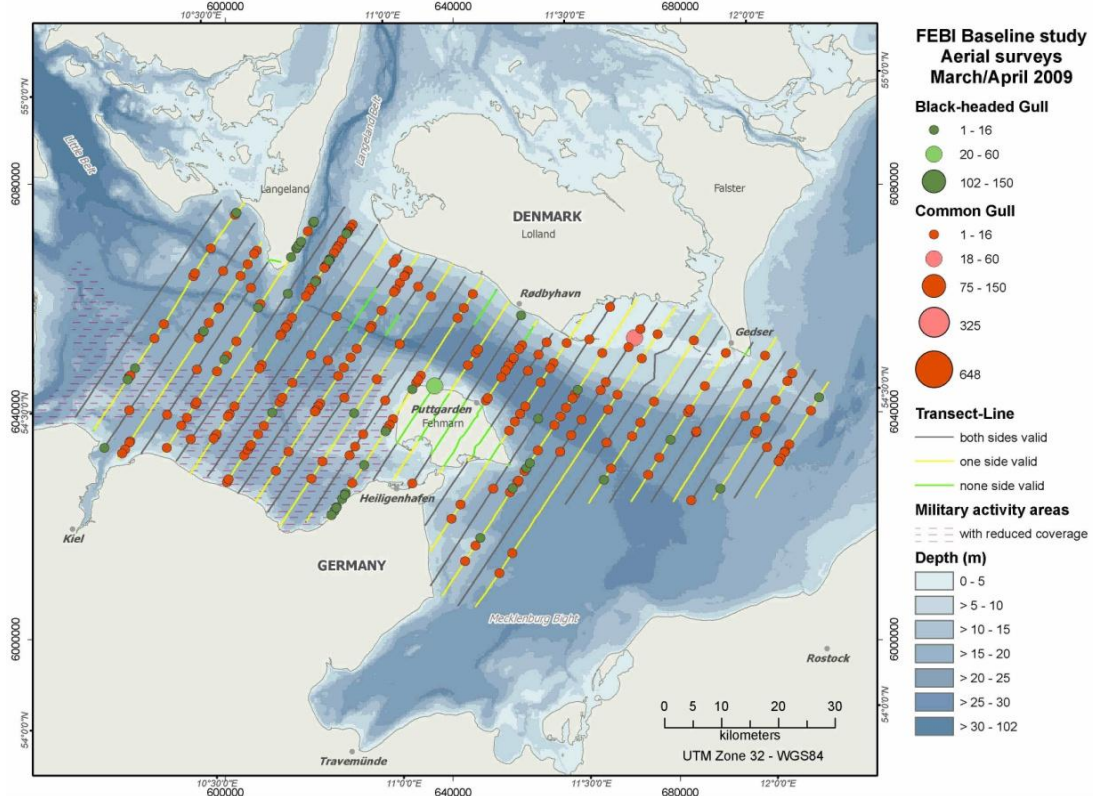


Figure 1.117 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (March/April 2009).

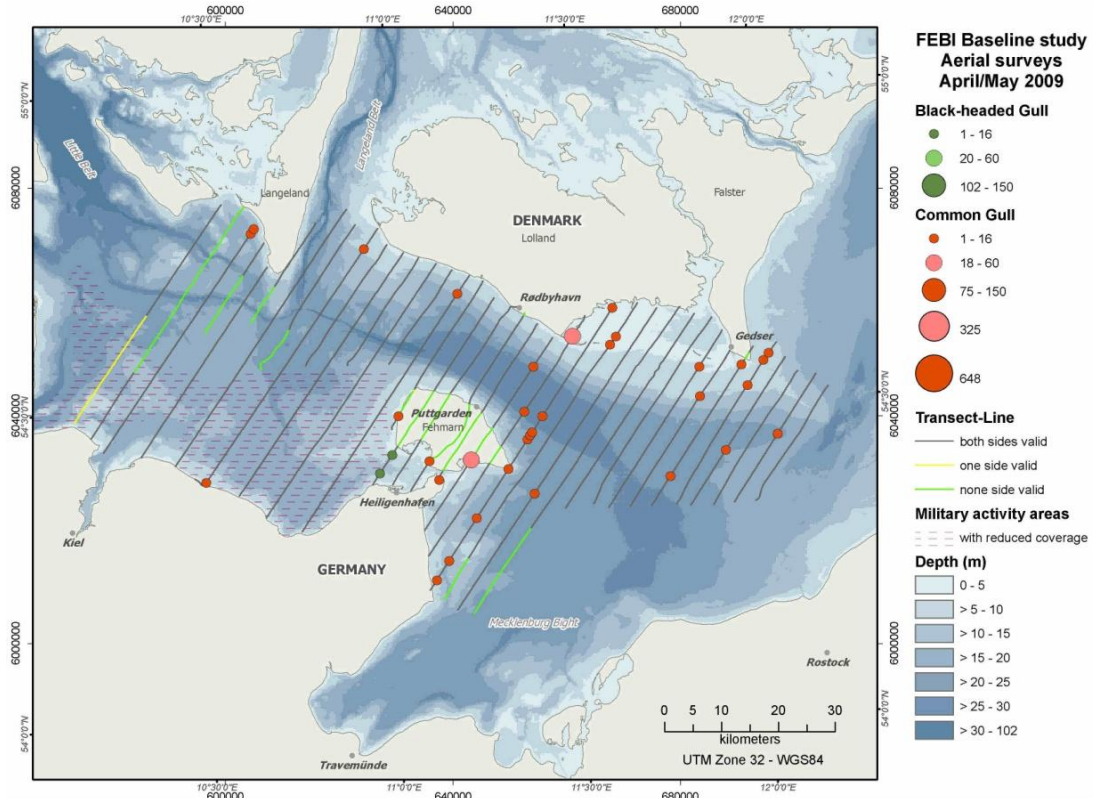


Figure 1.118 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (April/May 2009).

FEHMARNBELT BIRDS

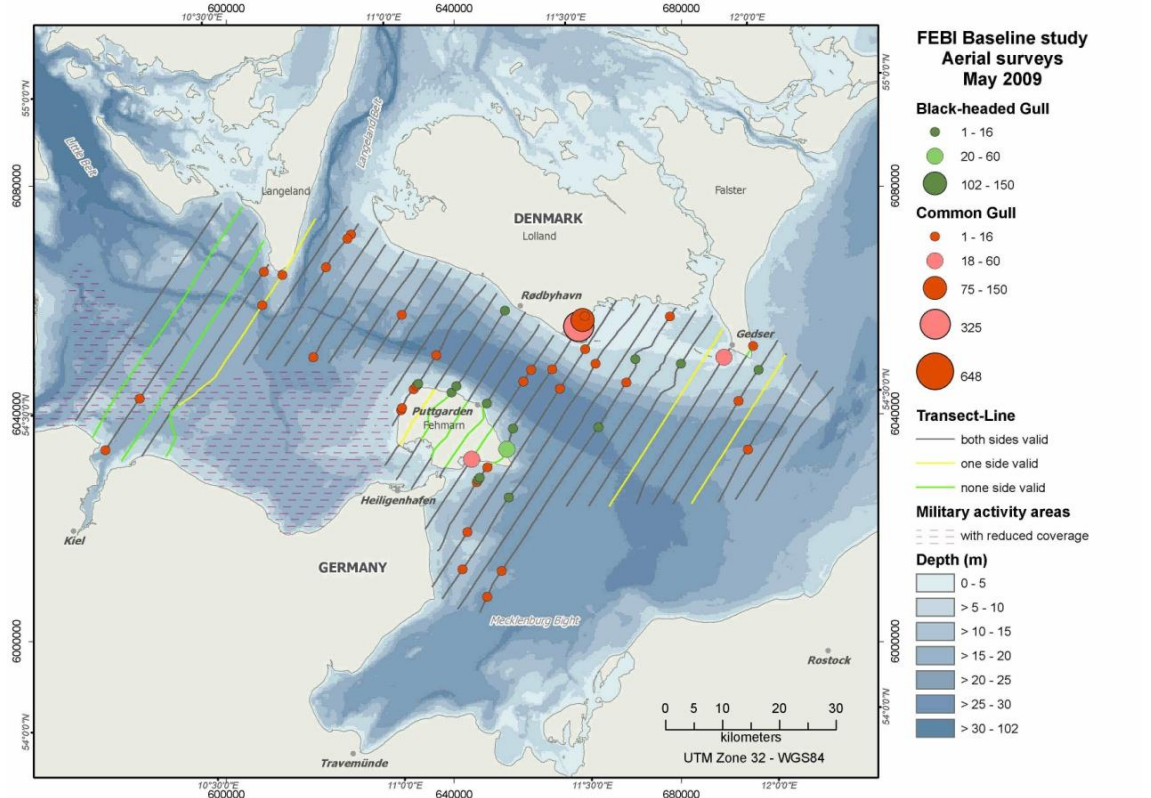


Figure 1.119 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (May 2009).

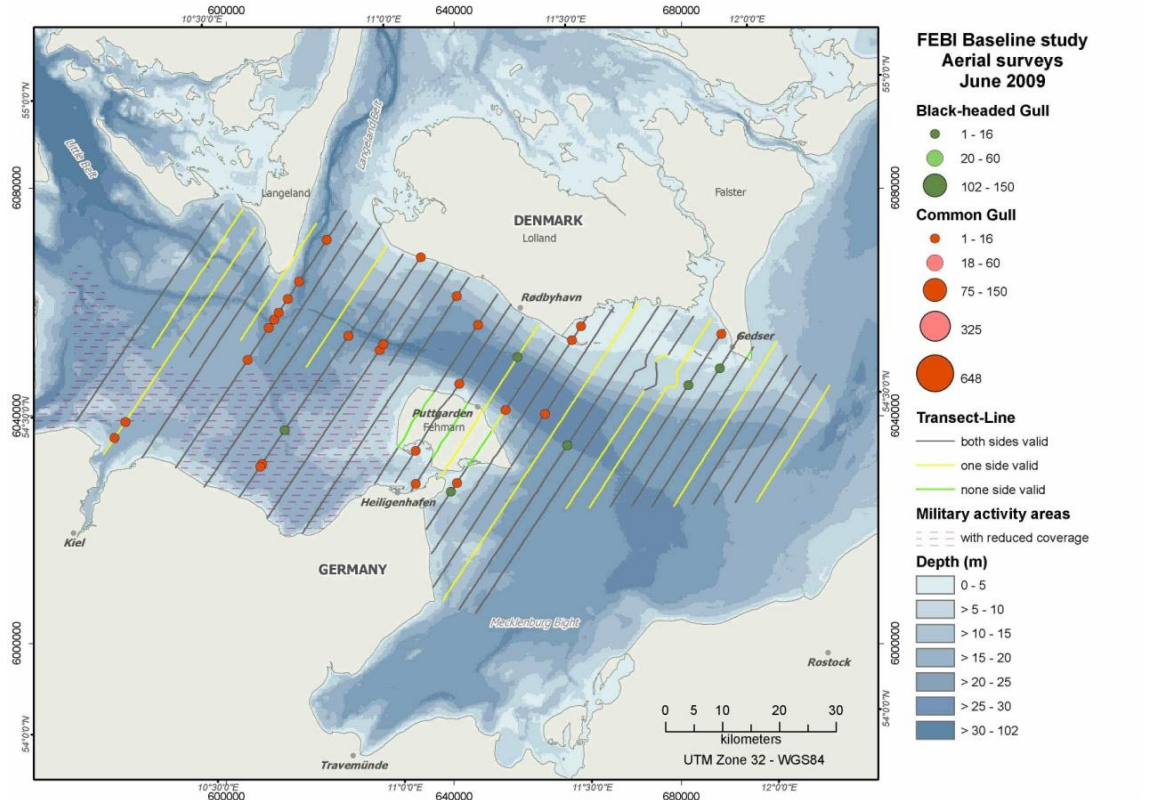


Figure 1.120 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (June 2009).

FEHMARNBELT BIRDS

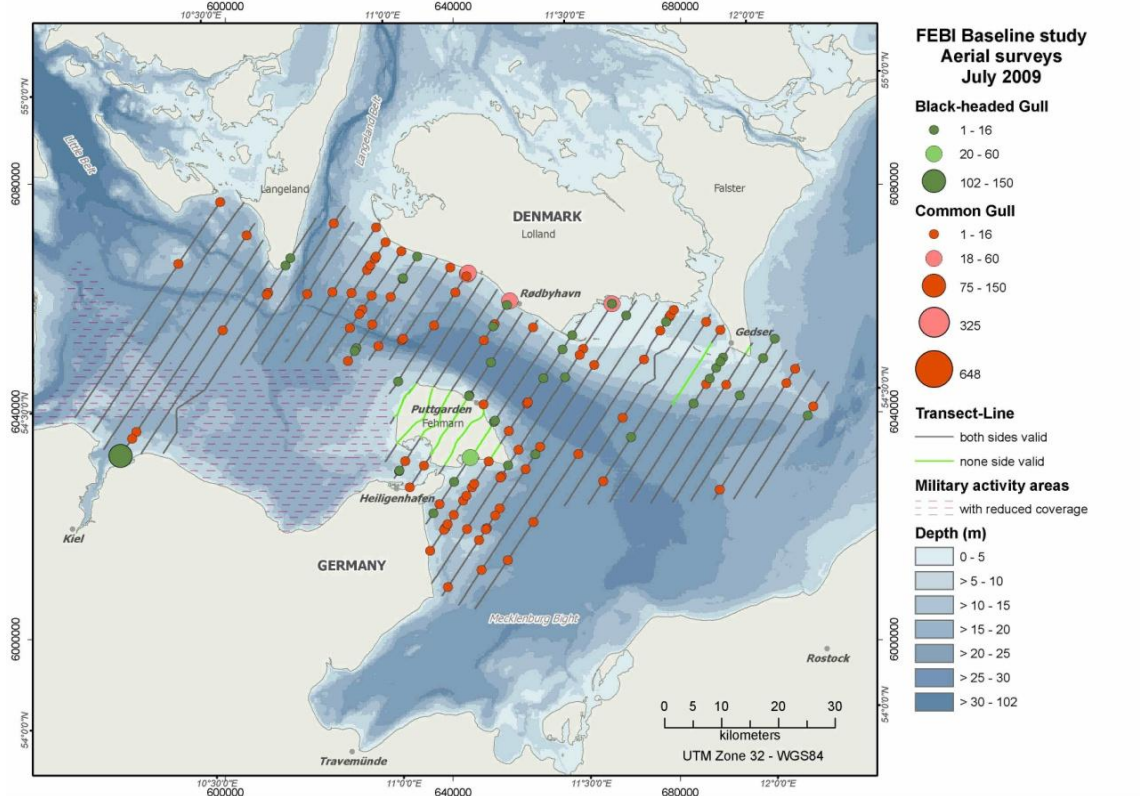


Figure 1.121 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (July 2009).

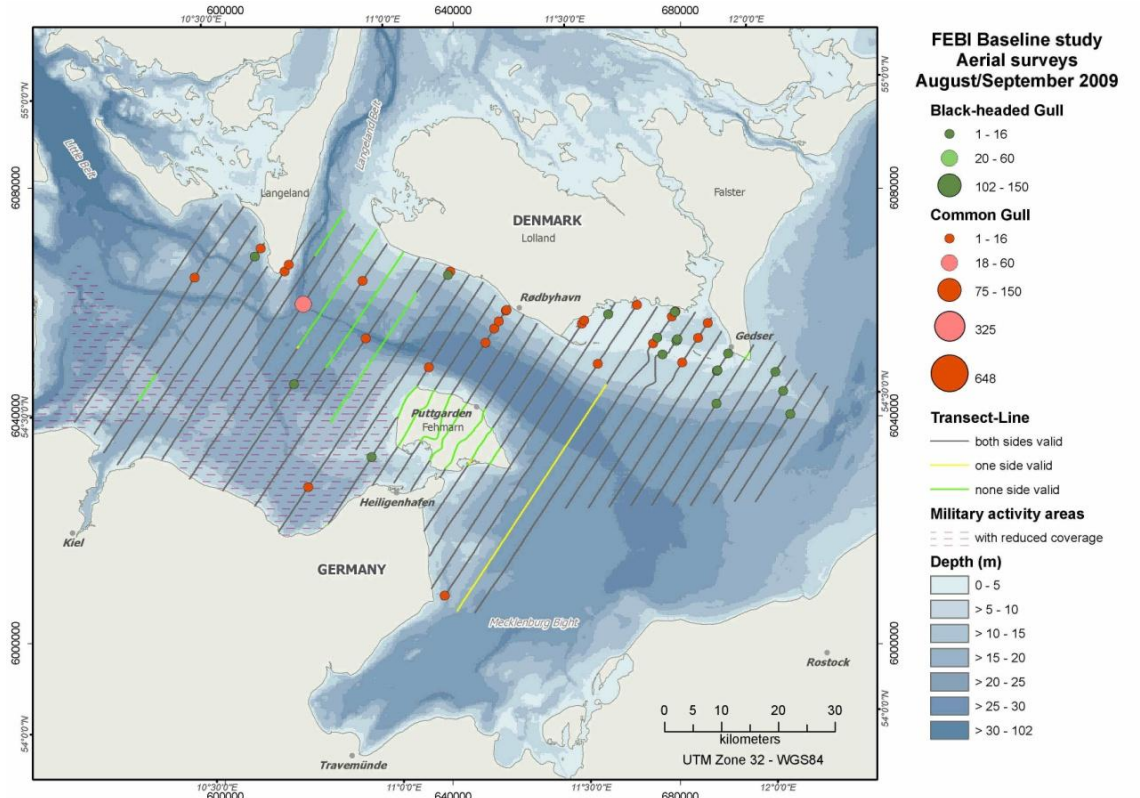


Figure 1.122 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (August/September 2009).

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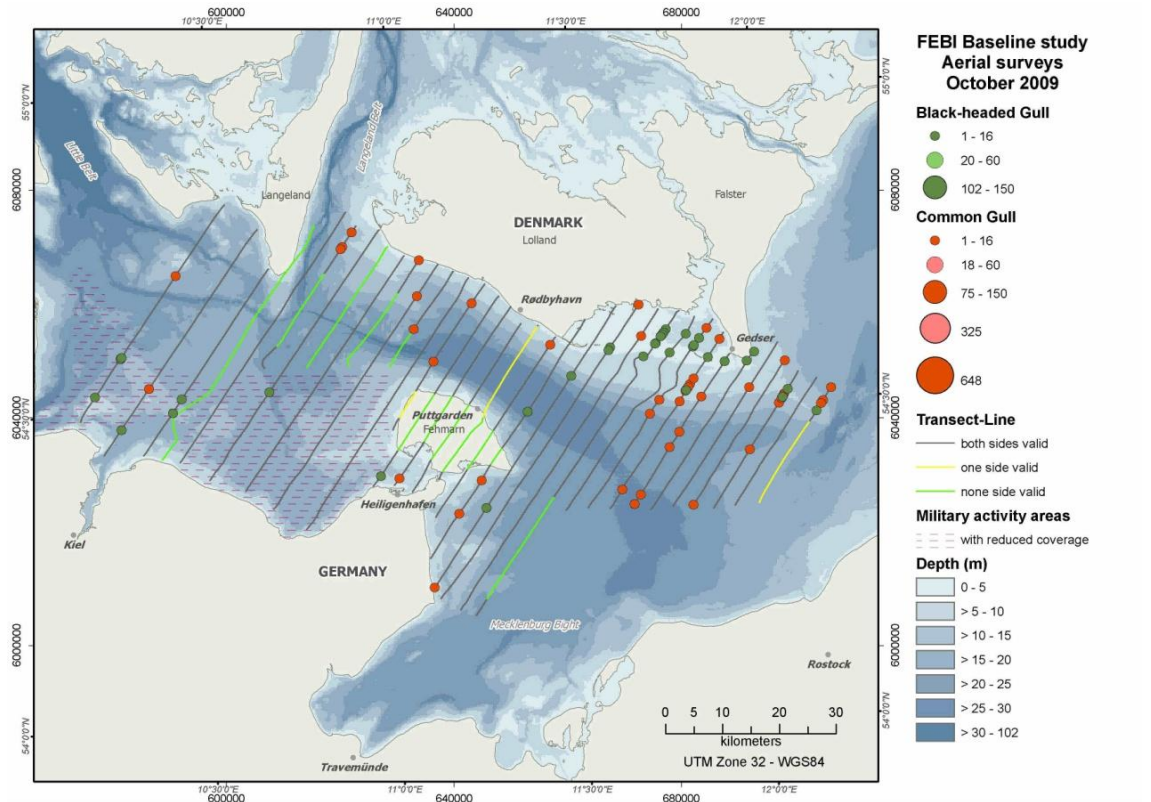


Figure 1.123 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (October 2009).

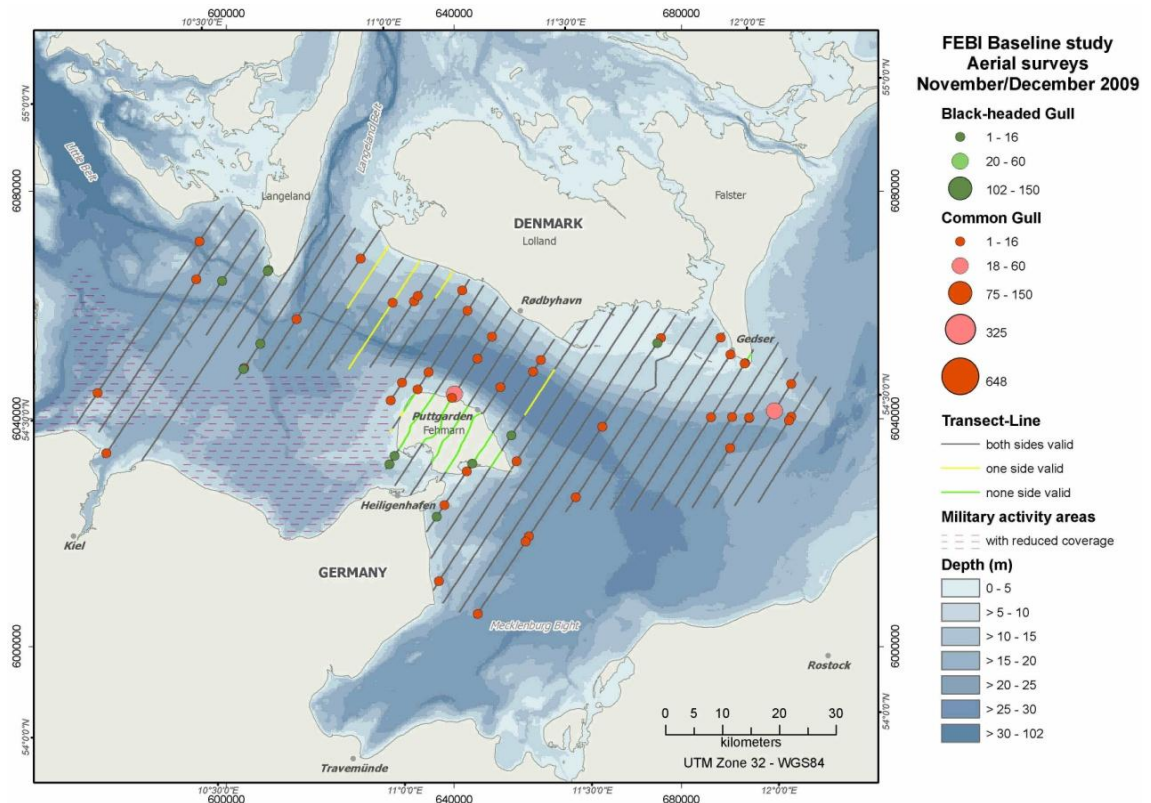


Figure 1.124 Black-headed Gull and Common Gull distribution in the study area during aerial surveys (November/December 2009).

1.1.15 Herring Gull/ Great Black-backed Gull – *Larus argentatus* / *Larus marinus*

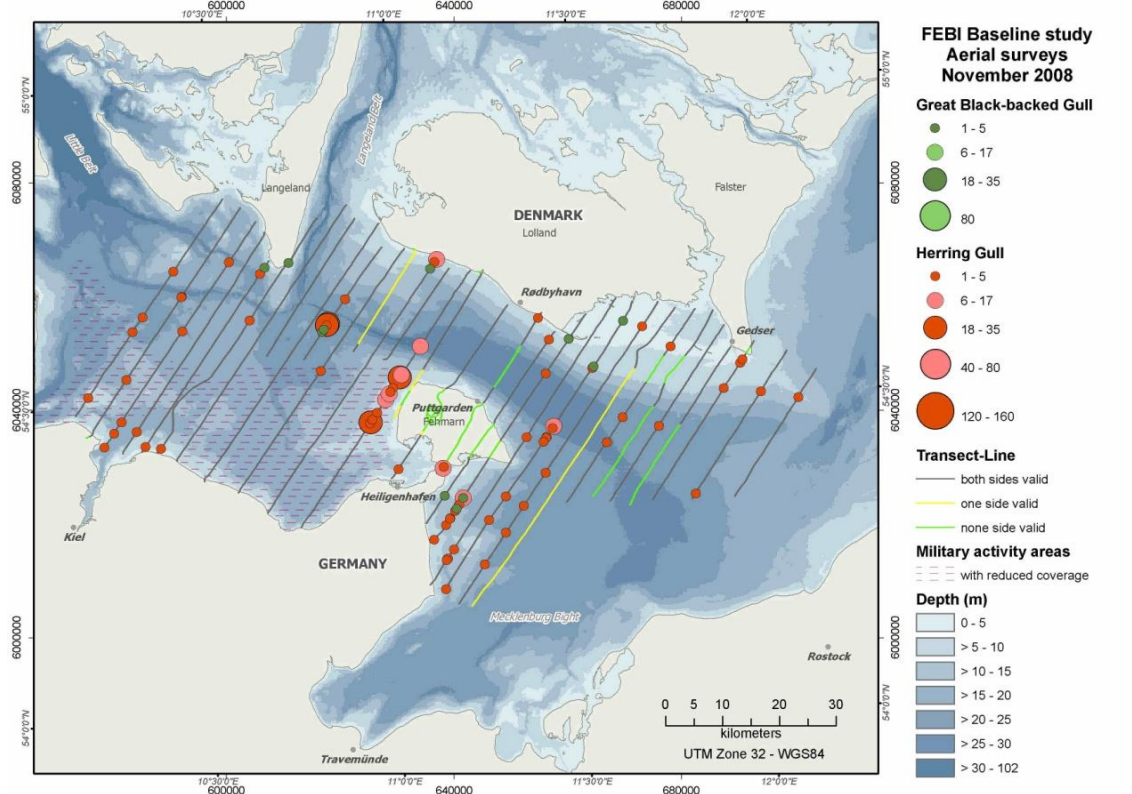


Figure 1.125 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (November 2008).

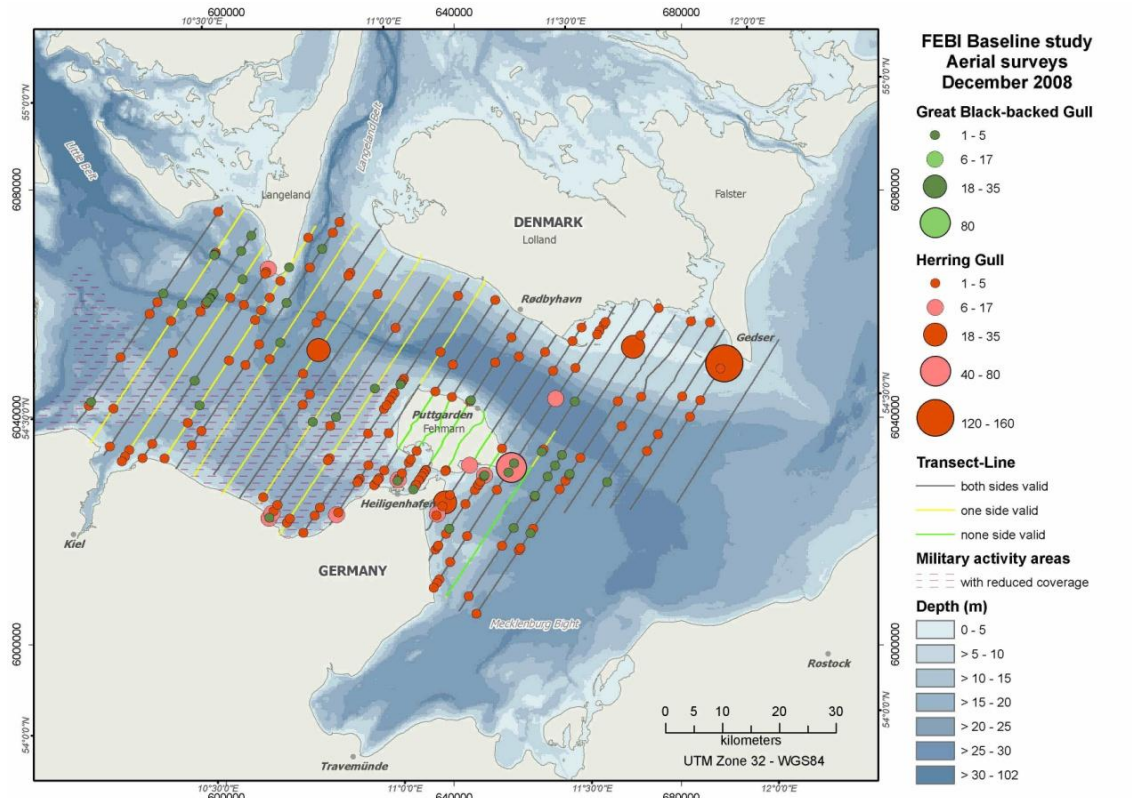


Figure 1.126 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (December 2008).

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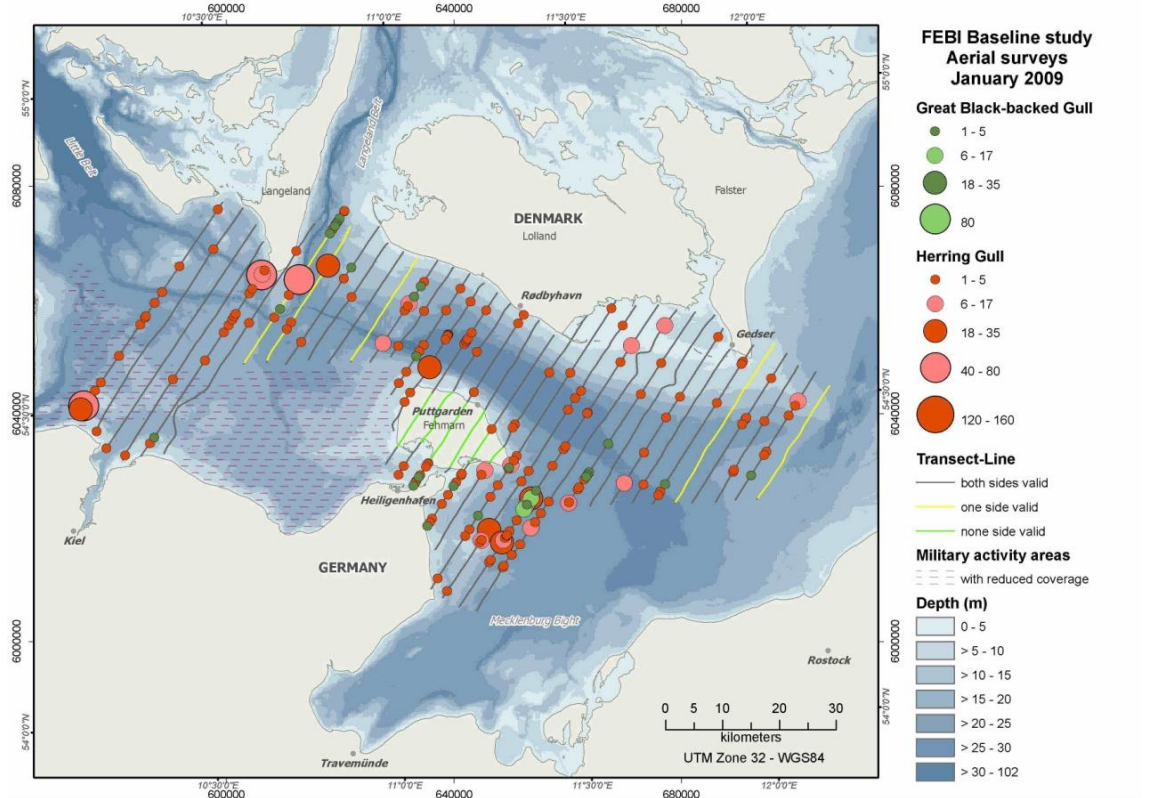


Figure 1.127 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (January 2009).

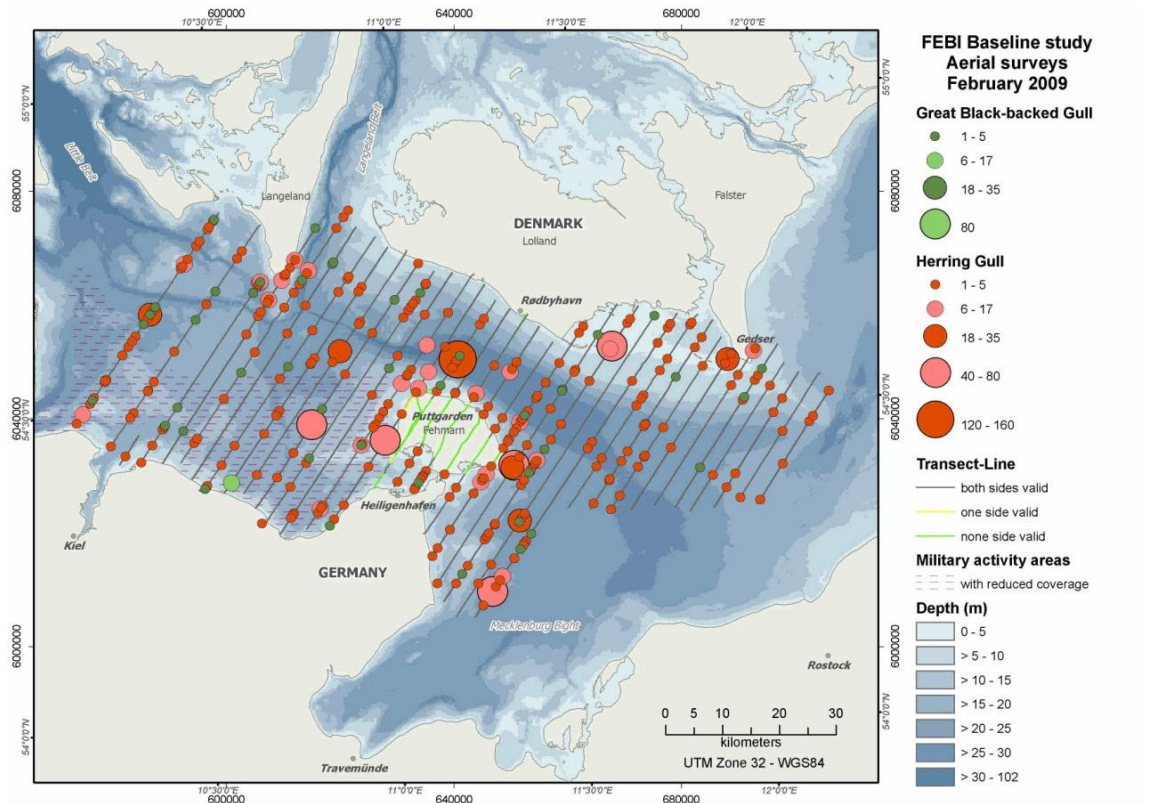


Figure 1.128 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (February 2009).

FEHMARNBELT BIRDS

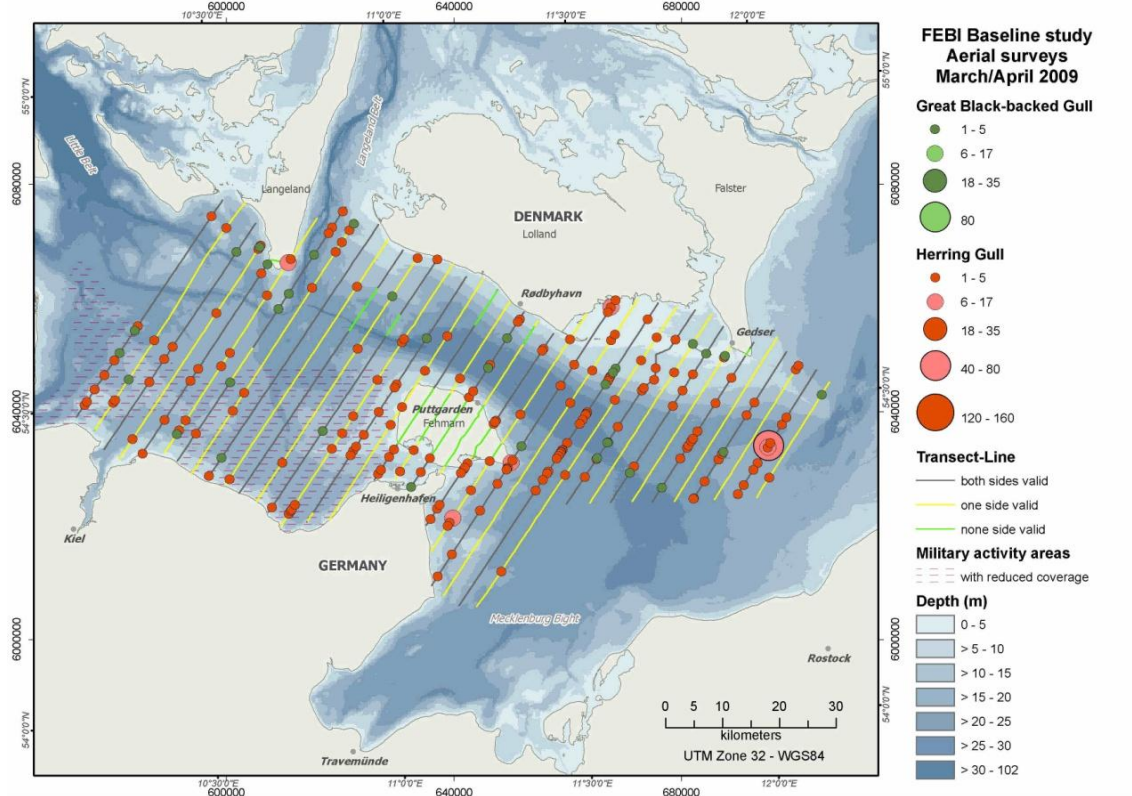


Figure 1.129 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (March/April 2009).

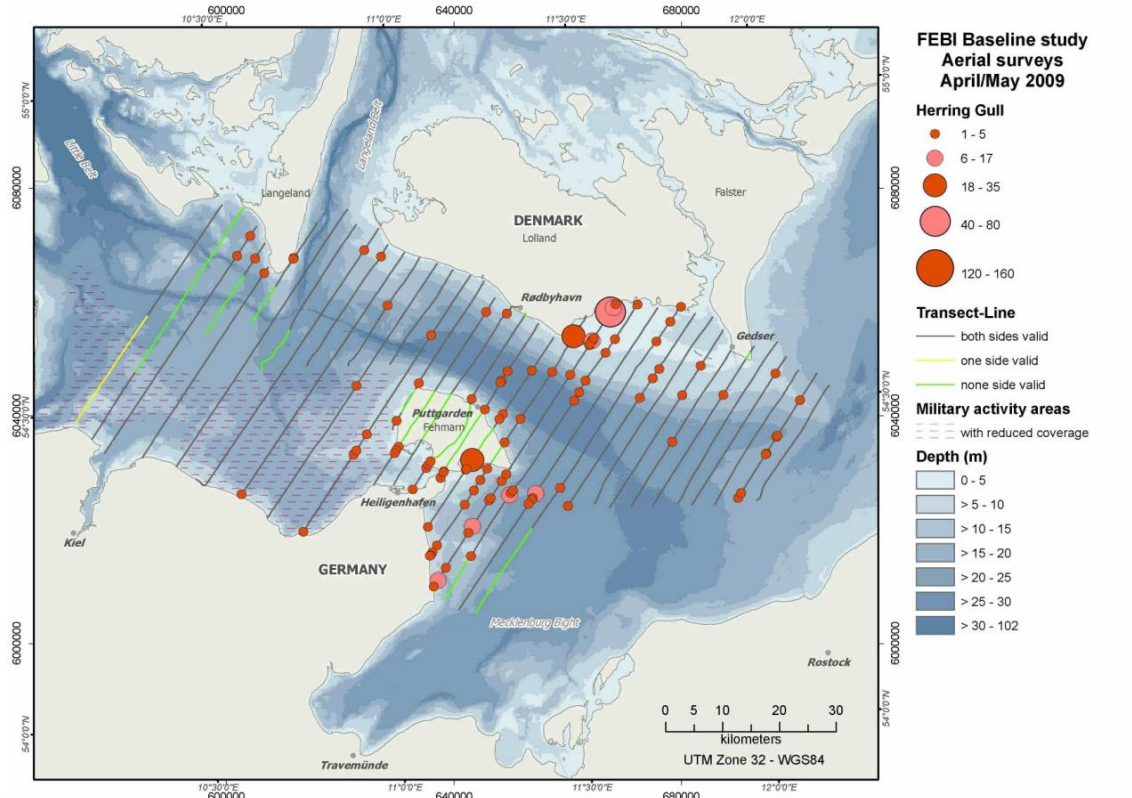


Figure 1.130 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (April/March 2009).

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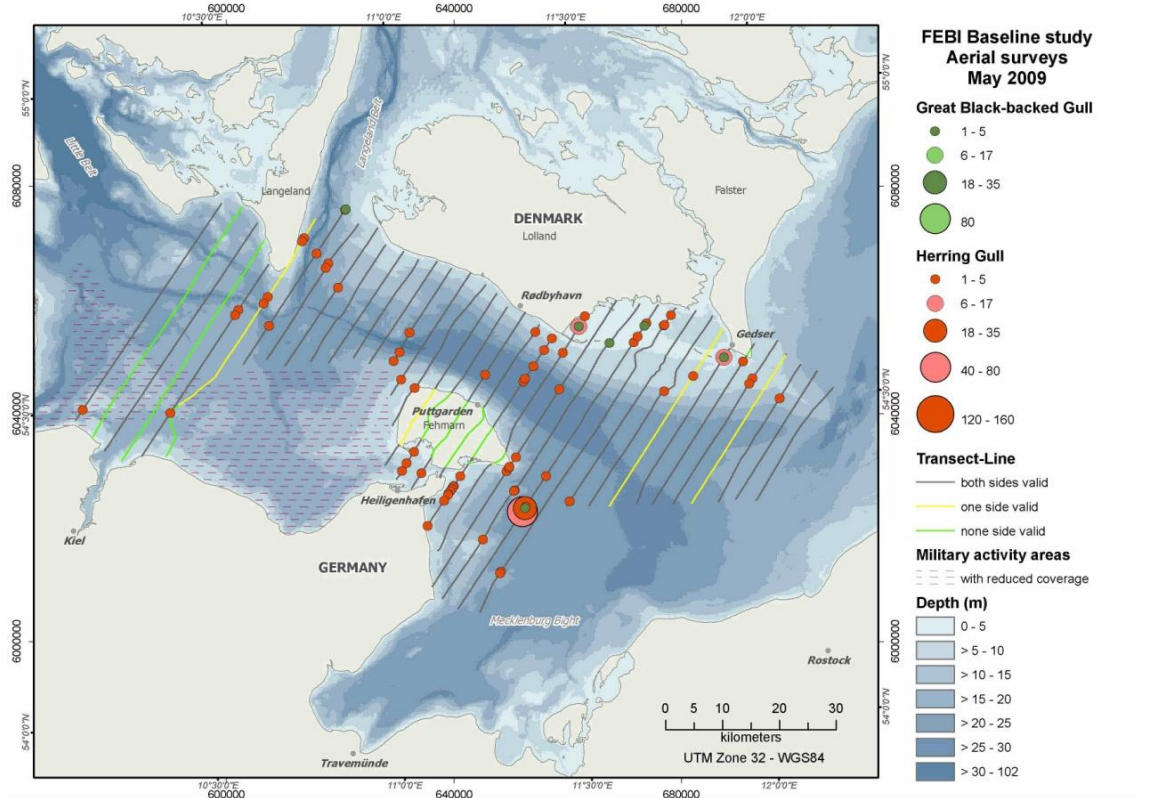


Figure 1.131 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (May 2009).

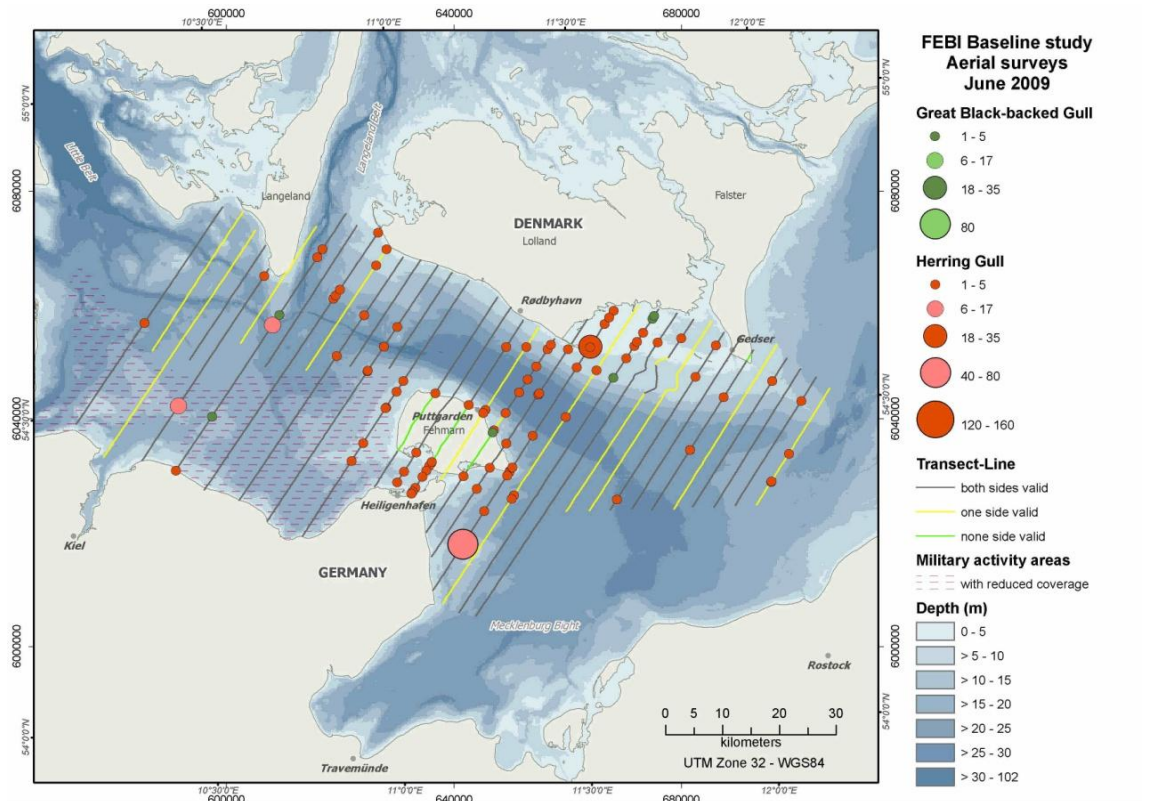


Figure 1.132 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (June 2009).

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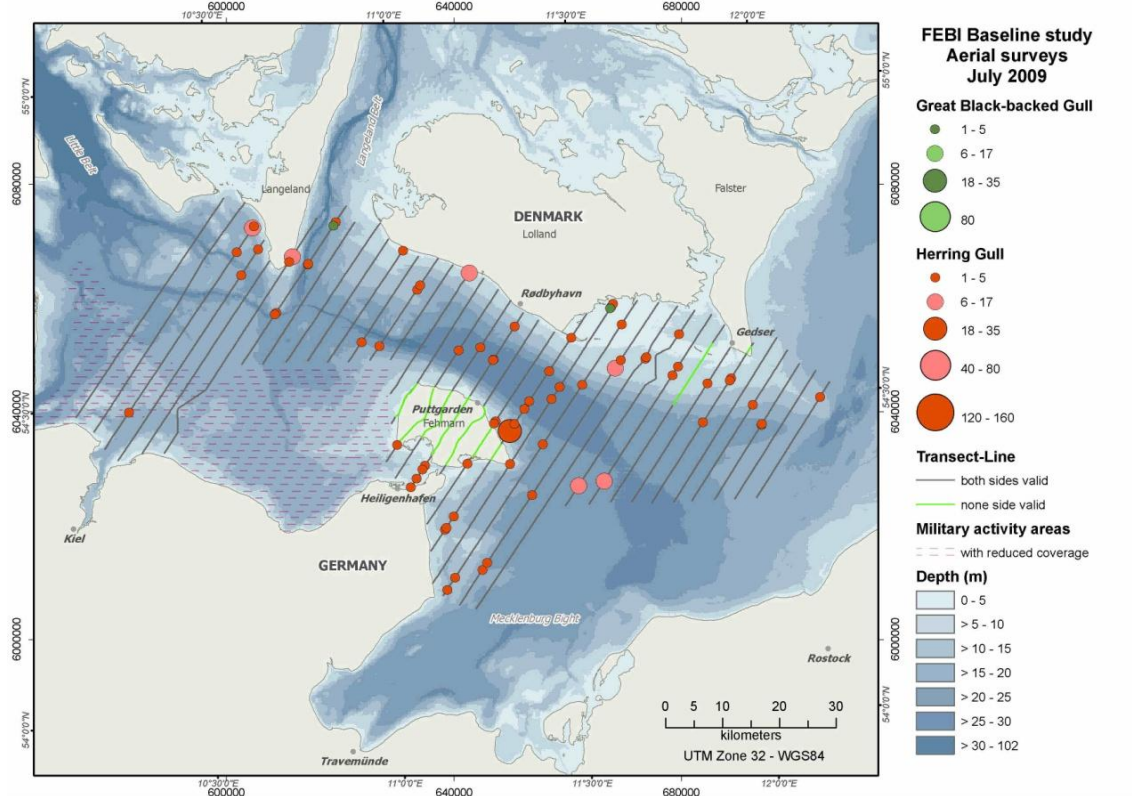


Figure 1.133 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (July 2009).

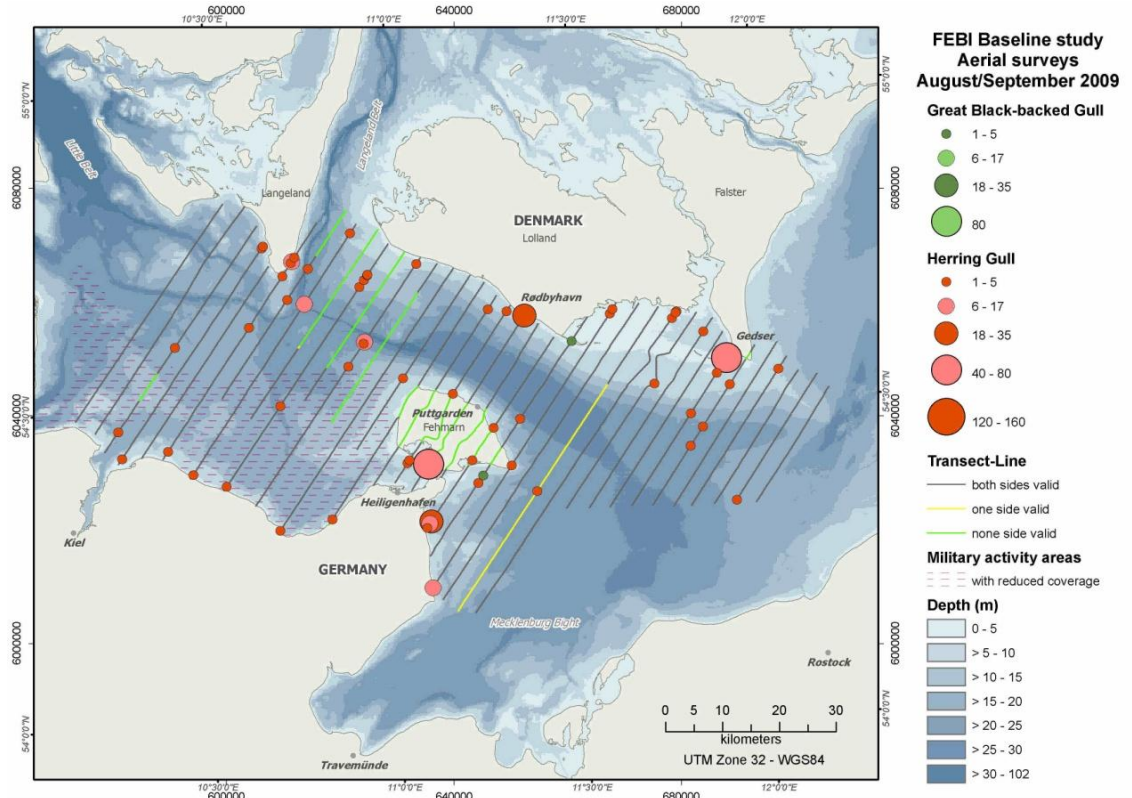


Figure 1.134 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (August/September 2009).

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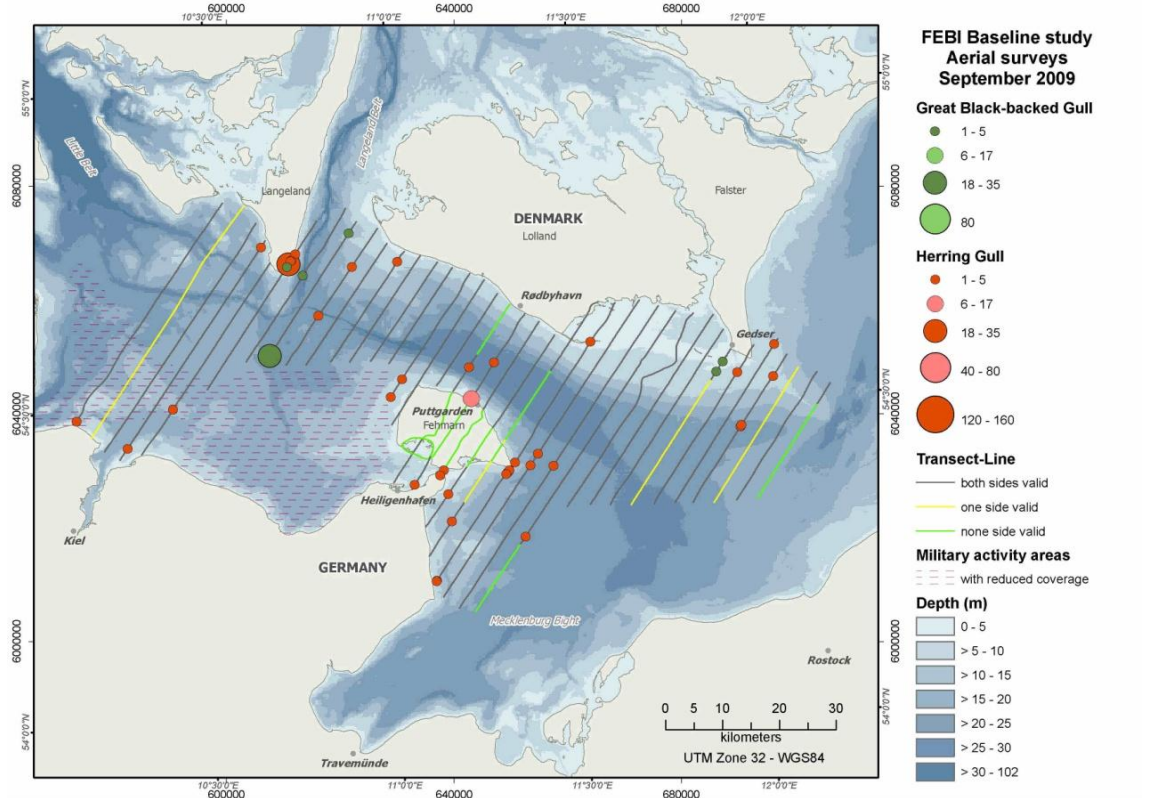


Figure 1.135 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (September 2009).

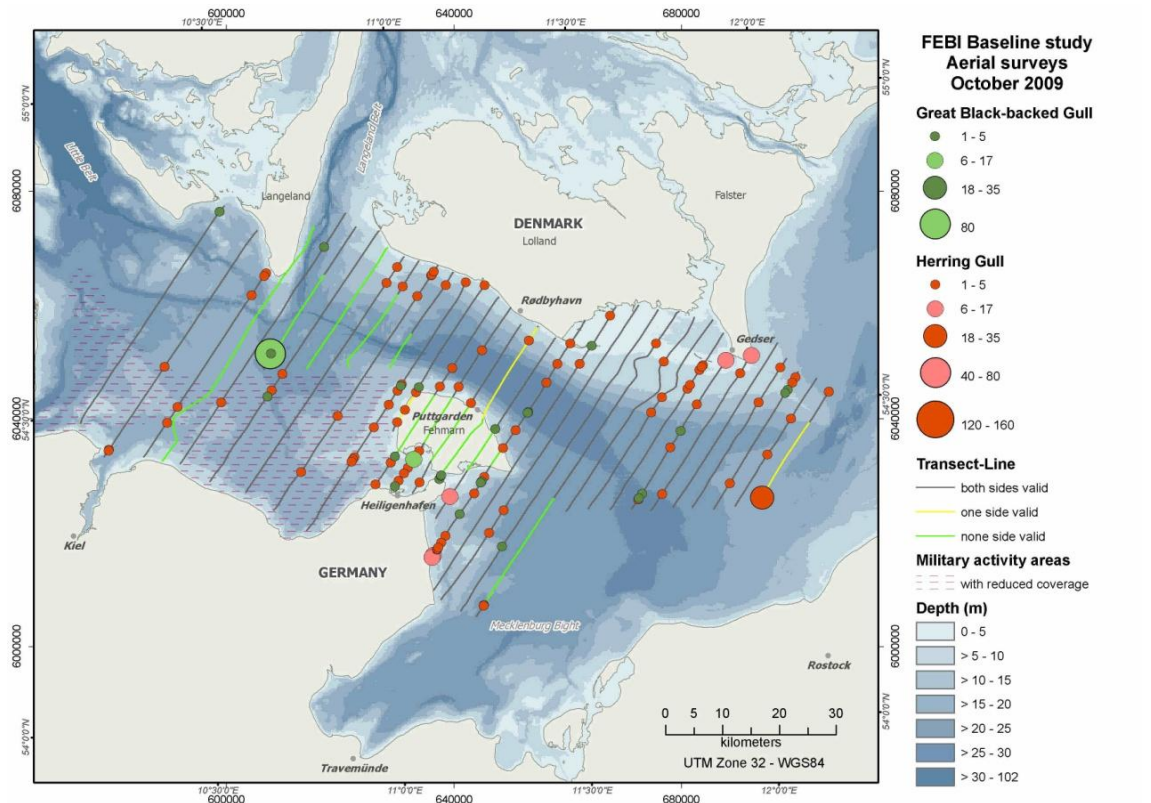


Figure 1.136 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (October 2009).

FEHMARNBELT BIRDS

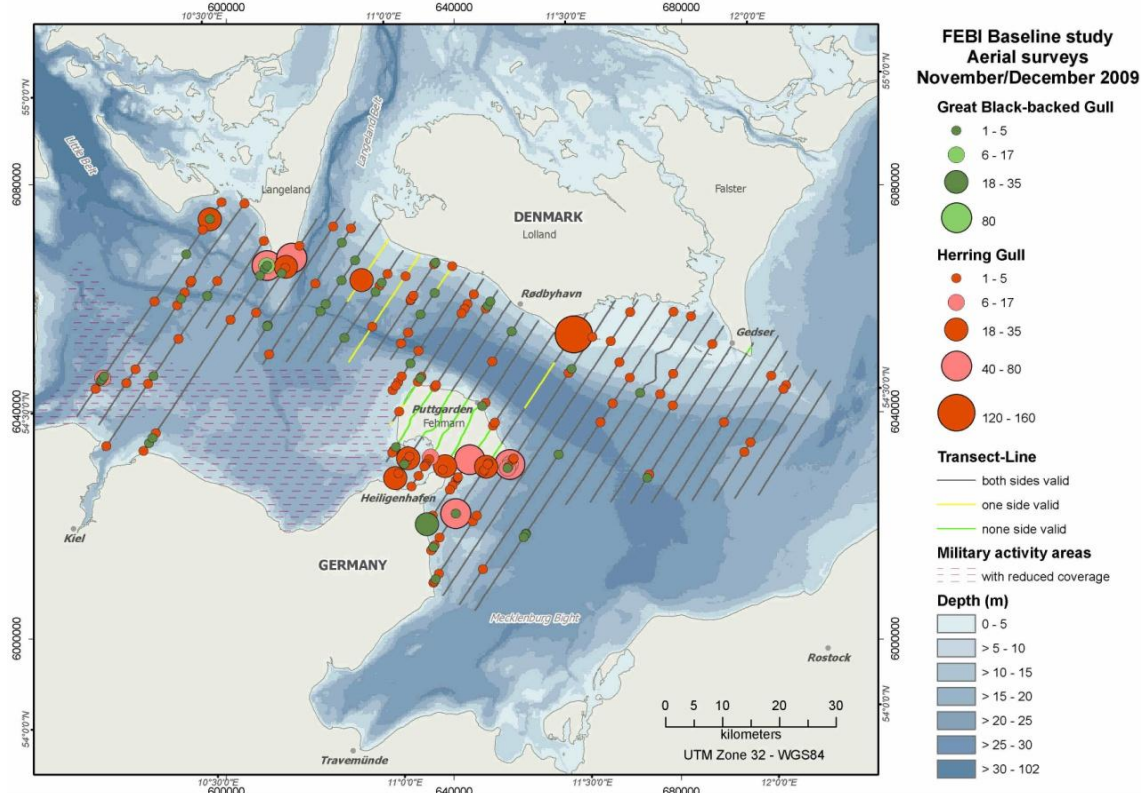


Figure 1.137 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (November/December 2009).

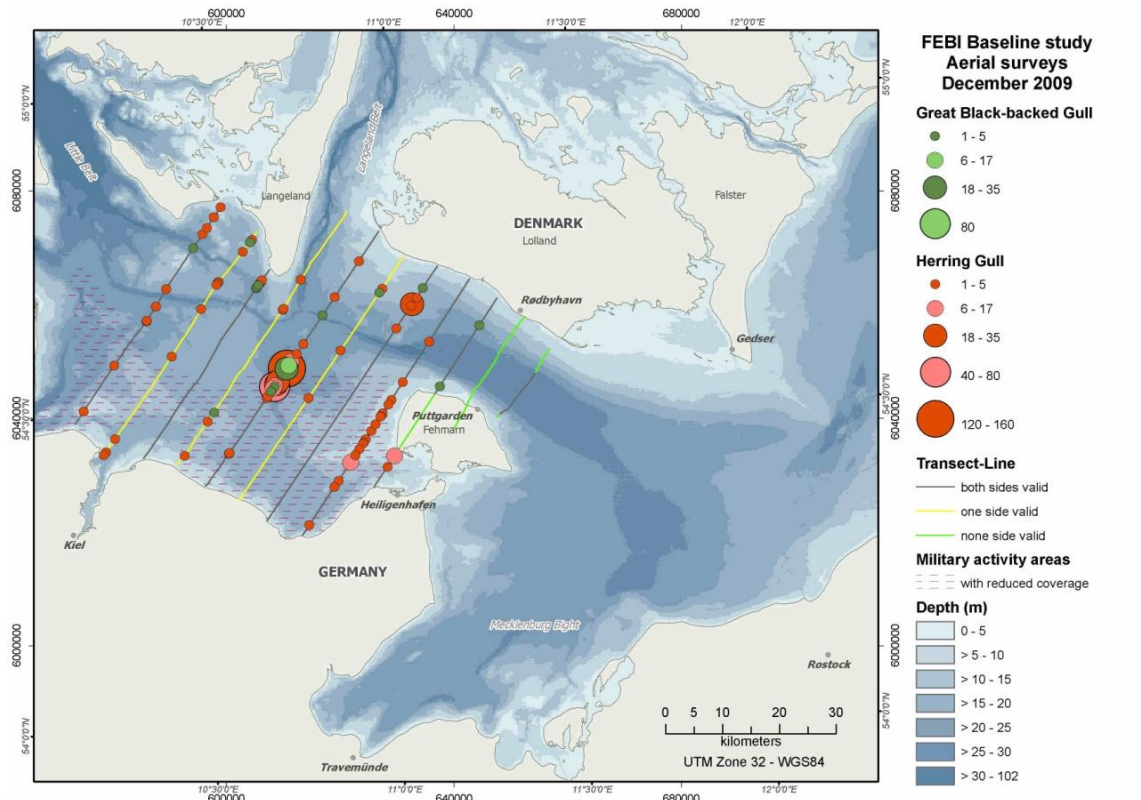


Figure 1.138 Herring Gull and Great Black-backed Gull distribution in the study area during aerial surveys (December 2009).

1.1.16 Unidentified Tern – *Sterna* spp.

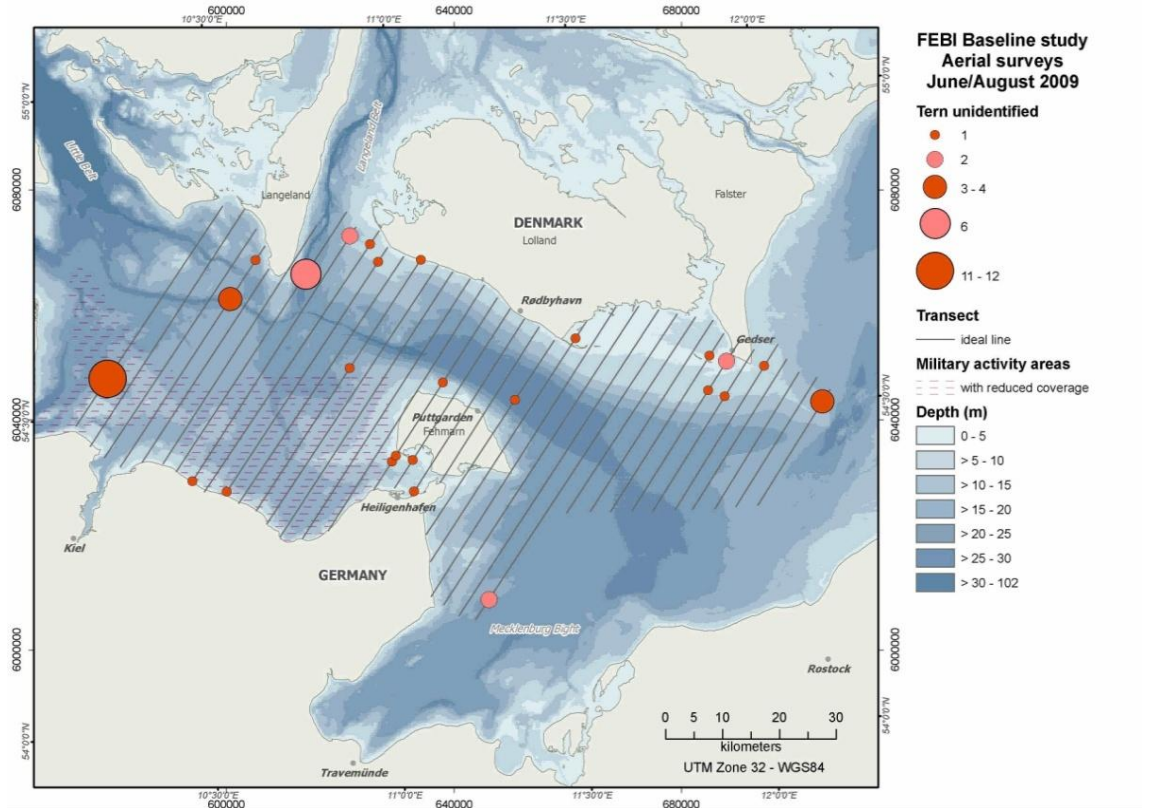


Figure 1.139 Tern distribution in the study area during aerial surveys (June-August 2009). Terns of genus *Sterna* were not identified to species level.

1.1.17 Common Guillemot / Razorbill / Black Guillemot – *Uria aalge* / *Alca torda* / *Cephus grylle*

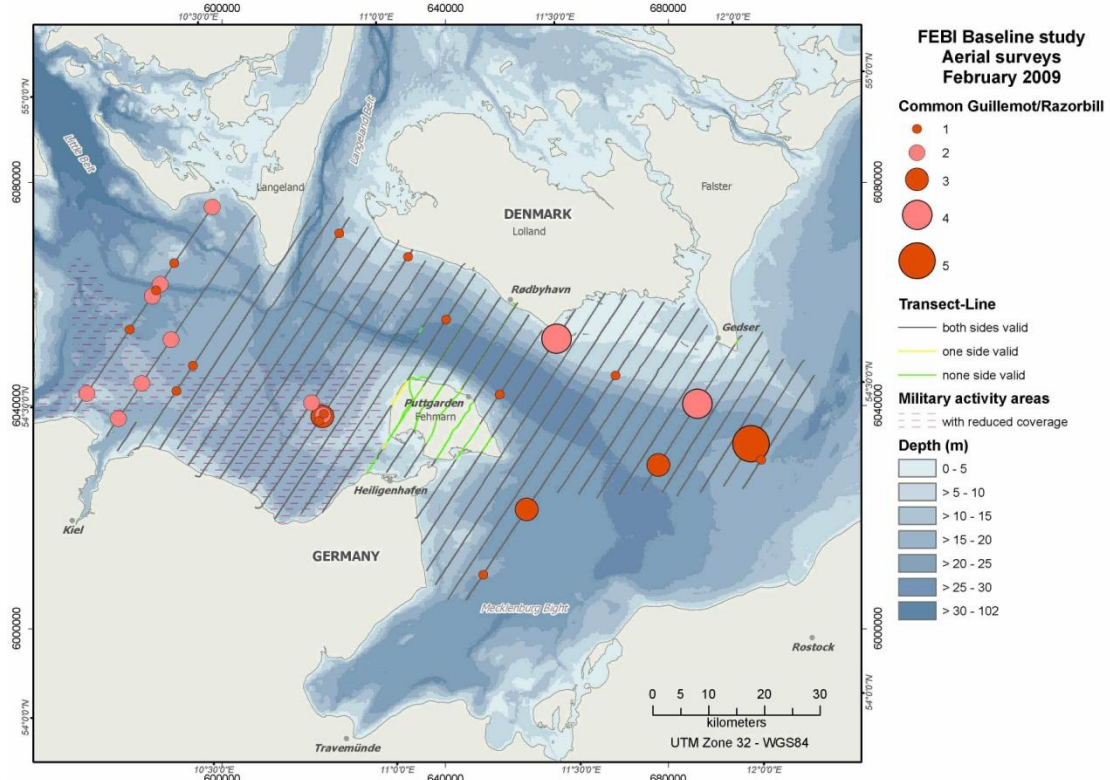


Figure 1.140 Common Guillemot/Razorbill distribution in the study area during aerial surveys (February 2009).

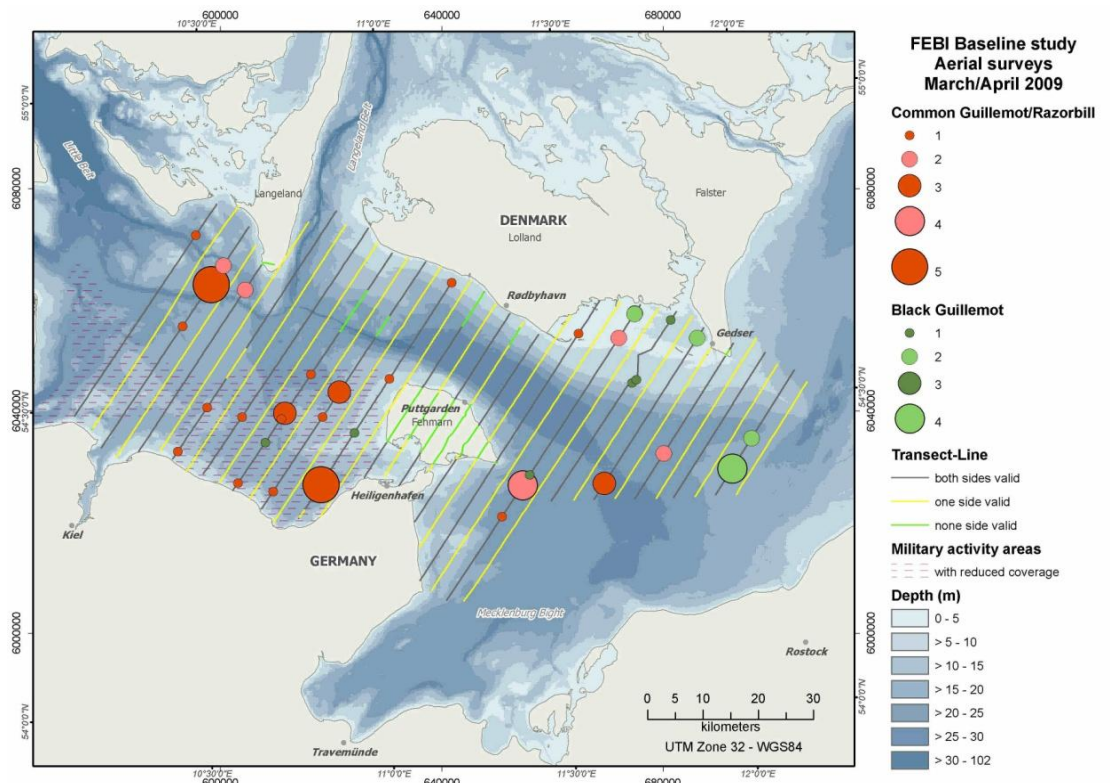


Figure 1.141 Common Guillemot/Razorbill and Black Guillemot distribution in the study area during aerial surveys (March/April 2009).

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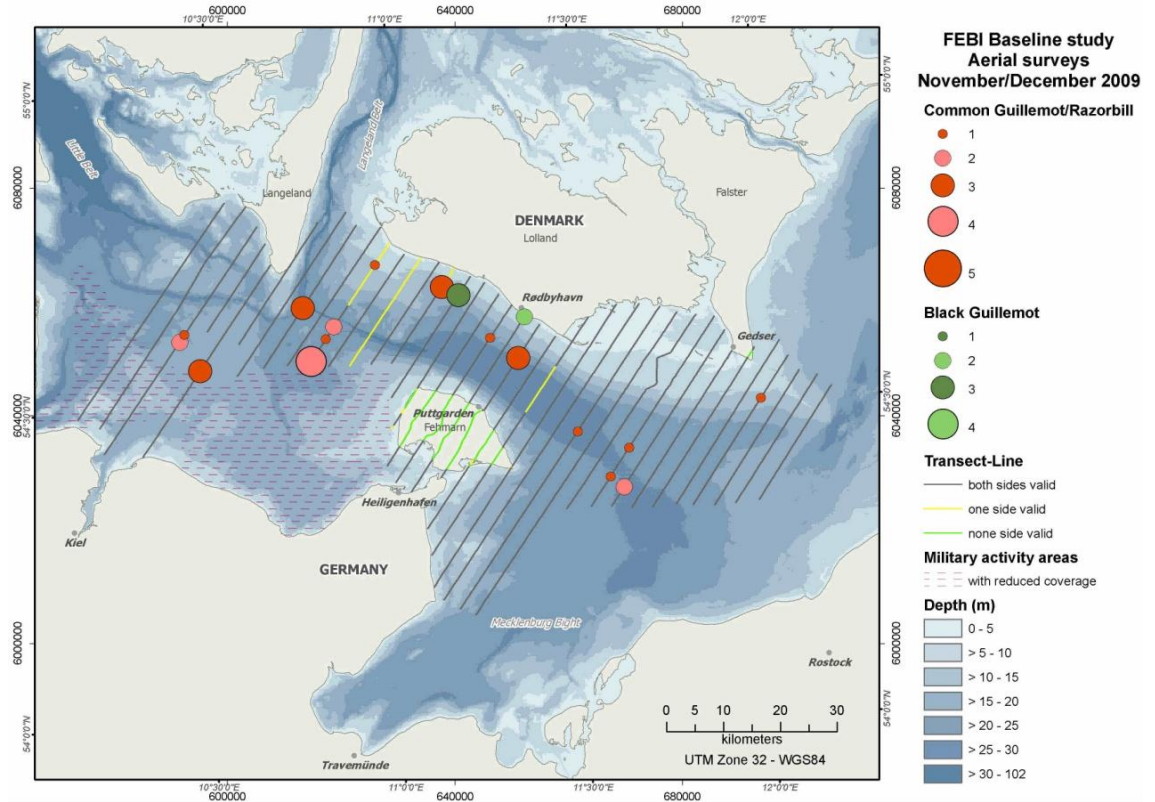


Figure 1.142 Common Guillemot/Razorbill and Black Guillemot distribution in the study area during aerial surveys (November/December 2009).

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