**Supplementary Table 1.** Distribution of the numbers of fish used in this study for each of the 45 fish species according to each modality of the explanatory factors tested (Geographical area, Sex, Sampling Year and Quarter).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Order** | **Family** | **Species** | Areas | Sex | Year | Quarter |
| VIIIa,b | VIIg,h, j | VIIe | VIId | IVb,c | F | M | -1 | 2013 | 2014 | 2015 | 1 | 2 | 3 | 4 |
| **Actinopterygii** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Roundfishes | *Ammodytidae* | *Hyperoplus immaculatus* |   |   | 18 | 121 |   |   |   | 139 |   | 139 |   |   |   | 18 | 121 |
| *Carangidae* | *Trachurus trachurus* |   |   | 148 | 96 |   |   |   | 244 |   | 244 |   |   |   | 162 | 82 |
| *Clupeidae* | *Clupea harengus* |   |   |   | 255 | 1087 | 666 | 662 | 14 | 490 | 360 | 492 | 1334 |   |   |   |
| *Sardina pilchardus* | 99 |   |   | 12 |   | 47 | 51 | 13 | 47 | 66 |   |   |   |   | 104 |
| *Sprattus sprattus* |   |   |   | 154 | 473 | 335 | 265 | 27 | 257 | 176 | 194 | 626 |   |   |   |
| *Congridae* | *Conger conger* | 27 | 30 | 20 | 17 |   | 27 |   | 67 | 32 | 62 |   |   |   | 37 | 57 |
| *Engraulidae* | *Engraulis encrasicolus* | 170 |   | 23 | 96 |   | 147 | 108 | 34 | 94 | 195 |   |   |   | 64 | 225 |
| *Gadidae* | *Gadus morhua* |   | 181 | 32 | 776 | 463 | 721 | 634 | 97 | 198 | 721 | 533 | 696 |   | 181 | 575 |
| *Melanogrammus aeglefinus* | 247 | 677 | 225 | 36 | 291 | 721 | 645 | 110 | 595 | 803 | 78 | 291 |   | 227 | 958 |
| *Merlangius merlangus* | 598 | 1298 | 409 | 2174 | 2341 | 3766 | 2685 | 369 | 1891 | 2460 | 2469 | 3222 |   | 898 | 2700 |
| *Micromesistius poutassou* |   |   | 52 |   |   |   |   | 52 |   | 52 |   |   |   | 52 |   |
| *Pollachius pollachius* |   |   | 17 | 33 |   | 23 | 27 |   |   | 29 | 21 | 14 |   | 20 | 16 |
| *Trisopterus esmarkii* |   |   |   |   | 121 | 88 | 33 |   | 54 |   | 67 | 121 |   |   |   |
| *Trisopterus luscus* |   |   | 98 | 408 |   | 195 | 243 | 68 |   | 261 | 245 |   |   | 206 | 300 |
| *Trisopterus minutus* |   |   | 43 | 121 |   |   |   | 164 |   | 164 |   |   |   | 115 | 49 |
| *Lophiidae* | *Lophius budegassa* | 330 | 159 |   |   |   | 205 | 175 | 109 | 388 | 101 |   |   | 151 |   | 338 |
| *Lophius piscatorius* | 240 | 135 |   |   |   | 152 | 163 | 60 | 274 | 101 |   |   | 54 |   | 321 |
| *Merlucciidae* | *Merluccius merluccius* | 958 | 1050 | 30 |   |   | 922 | 794 | 322 | 991 | 1047 |   |   |   | 30 | 2008 |
| *Moronidae* | *Dicentrarchus labrax* | 105 | 23 |   | 270 | 19 | 183 | 191 | 43 | 143 | 194 | 80 | 46 |   | 57 | 314 |
| *Mullidae* | *Mullus surmuletus* | 136 | 108 | 45 | 540 | 75 | 452 | 298 | 154 | 165 | 326 | 413 | 143 | 71 | 226 | 464 |
| *Phycidae* | *Phycis blennoides* | 395 | 184 |   |   |   | 388 | 91 | 100 | 186 | 237 | 156 |   |   |   | 579 |
| *Scombridae* | *Scomber scombrus* |   |   | 43 |   |   |   |   | 43 |   | 43 |   |   |   | 43 |   |
| *Sparidae* | *Spondyliosoma cantharus* |   |   | 82 | 127 |   | 22 | 12 | 175 |   | 209 |   |   |   | 103 | 106 |
| *Trachinidae* | *Trachinus draco* |   |   |   | 62 |   | 14 | 32 | 16 |   | 62 |   |   |   |   | 62 |
| *Triglidae* | *Eutrigla gurnardus* | 13 | 10 |   | 10 | 233 | 118 | 116 | 32 | 17 | 249 |   | 233 |   |   | 33 |
| *Chelidonichthys cuculus* | 242 | 183 | 174 | 744 |   | 724 | 498 | 121 | 281 | 711 | 351 | 229 |   | 352 | 762 |
| *Chelidonichthys lucerna* | 19 | 49 |   | 108 |   | 73 | 37 | 66 | 108 | 49 | 19 | 88 |   |   | 88 |
| *Zeidae* | *Zeus faber* | 20 | 25 | 103 | 103 |   | 44 | 10 | 197 | 48 | 175 | 28 |   |   | 123 | 128 |
| Flatfishes | *Scophthalmidae* | *Lepidorhombus whiffiagonis* | 683 | 266 | 28 |   |   | 579 | 333 | 65 | 605 | 372 |   |   | 200 | 28 | 749 |
| *Scophthalmus maximus* |   | 13 |   | 47 | 14 | 30 | 21 | 23 | 13 | 28 | 33 | 38 |   |   | 36 |
| *Scophthalmus rhombus* |   | 10 |   | 51 |   | 28 | 12 | 21 |   | 33 | 28 |   |   |   | 61 |
| *Soleidae* | *Solea solea* | 482 | 35 |   | 298 | 130 | 503 | 386 | 56 | 403 | 340 | 202 | 219 | 223 | 79 | 424 |
| *Pleuronectidae* | *Glyptocephalus cynoglossus* |   | 117 |   |   |   | 60 | 57 |   |   | 55 | 62 |   |   |   | 117 |
| *Limanda limanda* |   |   | 23 | 231 | 731 | 659 | 289 | 37 | 454 | 531 |   | 923 |   | 36 | 26 |
| *Microstomus kitt* | 52 | 199 | 83 | 169 |   | 254 | 209 | 40 | 101 | 323 | 79 |   |   | 120 | 383 |
| *Platichthys flesus* |   |   |   | 39 | 59 | 29 | 57 | 12 | 98 |   |   | 98 |   |   |   |
| *Pleuronectes platessa* |   | 243 | 32 | 2484 | 1925 | 2680 | 1874 | 130 | 1346 | 1325 | 2013 | 2887 |   | 534 | 1232 |
| **Elasmobranchii** |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | *Arhynchobatidae* | *Raja brachyurops* |   |   |   | 45 |   | 22 | 23 |   |   | 17 | 28 |   |   |   | 45 |
| *Rajidae* | *Raja clavata* |   |   | 21 | 466 | 121 | 341 | 267 |   | 16 | 226 | 366 | 121 |   | 191 | 296 |
| *Raja montagui* |   |   |   | 47 | 35 | 41 | 41 |   |   | 21 | 61 | 35 |   | 25 | 22 |
| *Raja undulata* |   |   | 22 | 122 |   | 68 | 76 |   |   | 66 | 78 |   |   | 56 | 88 |
| *Scyliorhinidae* | *Scyliorhinus canicula* | 17 |   | 107 | 52 |   | 89 | 77 | 10 | 14 | 162 |   |   |   | 112 | 64 |
| *Scyliorhinus stellaris* |   |   | 35 | 215 |   | 127 | 123 |   |   | 103 | 147 |   | 48 | 87 | 115 |
| *Trakidae* | *Galeorhinus galeus* |   |   |   | 87 |   | 41 | 46 |   |   | 57 | 30 |   |   | 38 | 49 |
| *Mustelus asterias* |   | 13 | 64 | 615 |   | 336 | 356 |   | 14 | 305 | 373 |   |   | 160 | 532 |

**Supplementary Table 2.** Parameters ‘a’ and ‘b’ with their Standard Error (S.E.) of the relationship (W =aLb) between weight (W; g) and body length (L; cm) for 45 species caught from the Bay of Biscay to the North Sea during 2013, 2014 and 2015.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Order** | **Family** | **Species** | a | b |
| mean (.10-2) | SE (.10-2) | mean | SE |
| **Actinopterygii** |
| Roundfishes | *Ammodytidae* | *Hyperoplus immaculatus* | 1.01 | 1.01 | 2.671 | 0.012 |
| *Carangidae* | *Trachurus trachurus* | 1.62 | 0.30 | 2.830 | 0.054 |
| *Clupeidae* | *Clupea harengus* | 0.56 | 0.05 | 3.037 | 0.026 |
| *Sardina pilchardus* | 0.29 | 0.08 | 3.322 | 0.093 |
| *Sprattus sprattus* | 0.63 | 0.16 | 3.032 | 0.098 |
| *Congridae* | *Conger conger* | 0.04 | 0.00 | 3.472 | 0.008 |
| *Engraulidae* | *Engraulis encrasicolus* | 0.10 | 0.01 | 3.353 | 0.050 |
| *Gadidae* | *Gadus morhua* | 0.48 | 0.05 | 3.185 | 0.023 |
| *Melanogrammus aeglefinus* | 0.79 | 0.05 | 3.073 | 0.017 |
| *Merlangius merlangus* | 0.61 | 0.02 | 3.095 | 0.007 |
| *Micromesistius poutassou* | 0.71 | 0.09 | 2.988 | 0.043 |
| *Pollachius pollachius* | 3.19 | 1.45 | 2.709 | 0.108 |
| *Trisopterus esmarkii* | 0.38 | 0.08 | 3.232 | 0.073 |
| *Trisopterus luscus* | 0.92 | 0.11 | 3.096 | 0.034 |
| *Trisopterus minutus* | 1.80 | 0.27 | 2.810 | 0.053 |
| *Lophiidae* | *Lophius budegassa* | 4.58 | 0.79 | 2.704 | 0.042 |
| *Lophius piscatorius* | 1.11 | 0.33 | 3.039 | 0.068 |
| *Merlucciidae* | *Merluccius merluccius* | 0.80 | 0.05 | 2.964 | 0.015 |
| *Moronidae* | *Dicentrarchus labrax* | 3.41 | 0.64 | 2.701 | 0.045 |
| *Mullidae* | *Mullus surmuletus* | 0.93 | 0.06 | 3.109 | 0.018 |
| *Phycidae* | *Phycis blennoides* | 0.96 | 0.10 | 2.946 | 0.028 |
| *Scombridae* | *Scomber scombrus* | 0.20 | 0.05 | 3.439 | 0.066 |
| *Sparidae* | *Spondyliosoma cantharus* | 1.02 | 0.16 | 3.152 | 0.043 |
| *Trachinidae* | *Trachinus draco* | 1.35 | 0.57 | 2.814 | 0.116 |
| *Triglidae* | *Eutrigla gurnardus* | 0.89 | 0.18 | 2.994 | 0.058 |
| *Chelidonichthys cuculus* | 0.79 | 0.05 | 3.059 | 0.018 |
| *Chelidonichthys lucerna* | 0.55 | 0.06 | 3.168 | 0.027 |
| *Zeidae* | *Zeus faber* | 3.52 | 0.43 | 2.793 | 0.046 |
| Flatfishes | *Scophthalmidae* | *Lepidorhombus whiffiagonis* | 0.34 | 0.03 | 3.223 | 0.023 |
| *Scophthalmus maximus* | 6.64 | 4.84 | 2.688 | 0.185 |
| *Scophthalmus rhombus* | 0.88 | 0.25 | 3.124 | 0.073 |
| *Soleidae* | *Solea solea* | 0.39 | 0.04 | 3.251 | 0.026 |
| *Pleuronectidae* | *Glyptocephalus cynoglossus* | 0.24 | 0.06 | 3.299 | 0.064 |
| *Limanda limanda* | 0.68 | 0.05 | 3.136 | 0.021 |
| *Microstomus kitt* | 1.23 | 0.14 | 2.995 | 0.033 |
| *Platichthys flesus* | 0.18 | 0.08 | 3.433 | 0.132 |
| *Pleuronectes platessa* | 0.49 | 0.02 | 3.195 | 0.012 |
| **Elasmobranchii** |
|   | *Arhynchobatidae* | *Raja brachyurops* | 0.20 | 0.21 | 3.303 | 0.231 |
| *Rajidae* | *Raja clavata* | 0.33 | 0.08 | 3.174 | 0.055 |
| *Raja montagui* | 0.23 | 0.15 | 3.263 | 0.154 |
| *Raja undulata* | 0.18 | 0.10 | 3.321 | 0.127 |
| *Scyliorhinidae* | *Scyliorhinus canicula* | 0.19 | 0.08 | 3.151 | 0.100 |
| *Scyliorhinus stellaris* | 0.21 | 0.09 | 3.167 | 0.092 |
| *Trakidae* | *Galeorhinus galeus* | 0.48 | 0.05 | 3.185 | 0.023 |
| *Mustelus asterias* | 0.19 | 0.06 | 3.159 | 0.043 |

**Supplementary Table 3.** Reproduction period (grey cell with one star) and geographical area of the 45 fish species analyzed in this study (references from FishBase).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Family | Species | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Area | Reference |
| **Actinopterygii** |  |
| *Ammodytidae* | *Hyperoplus immaculatus* | \* | \* |   |   |   |   |   |   |   |   |   |   | Eastern Atlantic | 1 |
| *Carangidae* | *Trachurus trachurus* |   |   |   | \* | \* | \* | \* |   |   |   |   |   | Celtic Sea | 2 |
| *Clupeidae* | *Clupea harengus* | \* | \* | \* |   |   |   |   |   |   | \* | \* | \* | Celtic Sea | 3 |
| *Sardina pilchardus* |   |   |   | \* |   |   |   |   |   |   |   |   | English Channel | 4 |
| *Sprattus sprattus* |   | \* | \* | \* | \* | \* | \* |   |   |   |   |   | Scotland coasts | 5 |
| *Congridae* | *Conger conger* |   |   |   |   |   | \* | \* | \* |   |   |   |   | Portugal | 6 |
| *Engraulidae* | *Engraulis encrasicolus* |   |   |   | \* | \* | \* | \* | \* |   |   |   |   | Bay of Biscay  | 7 |
| *Gadidae* | *Gadus morhua* | \* | \* | \* | \* | \* |   |   |   |   |   |   |   | Irish Sea  | 8 |
| *Melanogrammus aeglefinus* |   | \* | \* | \* |   |   |   |   |   |   |   |   | Celtic Sea | 9 |
| *Merlangius merlangus* | \* | \* | \* | \* | \* | \* | \* | \* | \* |   |   |   | Between British Isles and Bay of Biscay | 10 |
| *Micromesistius poutassou* |   | \* | \* |   |   |   |   |   |   |   |   |   | British isles | 11 |
| *Pollachius pollachius* | \* | \* | \* | \* | \* |   |   |   |   |   |   |   | Northeast Atlantic  | 12 |
| *Trisopterus esmarkii* | \* | \* | \* |   |   |   |   |   |   |   |   |   | Scotland coasts | 11 |
| *Trisopterus luscus* | \* | \* | \* | \* |   |   |   |   |   |   |   | \* | Atlantic  | 10 |
| *Trisopterus minutus* |   | \* | \* |   |   |   |   |   |   |   |   |   | English Channel | 10 |
| *Lophiidae* | *Lophius budegassa* | \* | \* |   |   |   |   |   |   |   |   | \* | \* | Atlantic Iberian Coast | 13 |
| *Lophius piscatorius* |   |   | \* | \* | \* | \* |   |   |   |   |   |   | British isles | 11 |
| *Merlucciidae* | *Merluccius merluccius* | \* | \* | \* | \* | \* |   |   |   |   |   |   |   | North Sea  | 11 |
| *Moronidae* | *Dicentrarchus labrax* |   | \* | \* | \* | \* | \* |   |   |   |   |   |   | British isles | 14 |
| *Mullidae* | *Mullus surmuletus* |   |   |   |   | \* | \* | \* |   |   |   |   |   | North Sea | 15 |
| *Phycidae* | *Phycis blennoides* |   |   | \* | \* | \* | \* | \* |   |   |   |   |   | North Atlantic | 10 |
| *Scombridae* | *Scomber scombrus* |   |   |   |   | \* | \* |   |   |   |   |   |   | British isles | 11 |
| *Sparidae* | *Spondyliosoma cantharus* |   |   |   | \* | \* |   |   |   |   |   |   |   | British isles | 19 |
| *Trachinidae* | *Trachinus draco* | - | - | - | - | - | - | - | - | - | - | - | - |   |   |
| *Triglidae* | *Eutrigla gurnardus* |   |   |   | \* | \* | \* | \* | \* |   |   |   |   | North Sea | 11 |
|  | *Chelidonichthys cuculus* | \* | \* | \* | \* | \* | \* | \* |   |   |   |   |   | Northeast Atlantic  | 21 |
|  | *Chelidonichthys lucerna* | \* | \* | \* | \* |   |   |   |   |   | \* | \* | \* | Tunisia | 22 |
| *Zeidae* | *Zeus faber* | \* | \* | \* | \* |   |   |   |   |   |   |   |   | British isles | 11 |
| *Scophthalmidae* | *Lepidorhombus whiffiagonis* |   |   | \* | \* | \* | \* |   |   |   |   |   |   | Northeast Atlantic  | 11 |
| *Scophthalmus maximus* |   |   |   | \* | \* | \* | \* | \* |   |   |   |   | North Sea | 18 |
| *Scophthalmus rhombus* |   |   | \* | \* | \* | \* | \* | \* |   |   |   |   | North Sea | 11 |
| *Soleidae* | *Solea solea* | \* | \* | \* | \* | \* |   |   |   |   |   |   | \* | Bay of Biscay  | 20 |
| *Pleuronectidae* | *Glyptocephalus cynoglossus* |   |   | \* | \* | \* | \* | \* | \* | \* |   |   |   | North Sea | 11 |
| *Limanda limanda* | \* | \* | \* | \* | \* | \* | \* | \* |   |   |   |   | British isles | 11 |
| *Microstomus kitt* |   |   |   | \* | \* | \* | \* | \* |   |   |   |   | British isles | 11 |
| *Platichthys flesus* | \* | \* | \* | \* |   |   |   |   |   |   |   |   | French coasts | 16 |
| *Pleuronectes platessa* | \* | \* | \* |   |   |   |   |   |   |   |   |   | Channel and North Sea | 17 |
| **Elasmobranchii** |  |
| *Arhynchobatidae* | *Raja brachyurops* | - | - | - | - | - | - | - | - | - | - | - | - |   |   |
| *Rajidae* | *Raja clavata* |   | \* | \* | \* | \* | \* | \* | \* | \* |   |   |   | British isles | 23 |
| *Raja montagui* | - | - | - | - | - | - | - | - | - | - | - | - |   |   |
| *Raja undulata* |   | \* | \* | \* | \* | \* | \* | \* | \* |   |   |   | British isles | 24 |
| *Scyliorhinidae* | *Scyliorhinus canicula* |   |   |   |   |   |   |   | \* |   |   |   |   | Eastern North Atlantic | 25 |
| *Scyliorhinus stellaris* | - | - | - | - | - | - | - | - | - | - | - | - |   |   |
| *Trakidae* | *Galeorhinus galeus* | \* |   |   |   |   |   |   |   |   |   |   | \* | Australia | 26 |
| *Mustelus asterias* | - | \* | \* | \* | \* | \* | \* | - | - | - | - | - | English Channel and North Sea | 27 |

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