Spawning of Bluefin Tuna in the Black Sea: Historical Evidence, Environmental Constraints and Population Plasticity

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Supplementary Table S2. Datasets used in statistical analyses and results of General Additive Modelling (GAM) of vertical distributions of temperature, salinity, density and oxygen concentration vs. depth in spawning areas of bluefin tunas in the global ocean. All GAMs are statistically significant at P < 0.0001. Abbreviations: N = sample size (number of years), Expl. Dev. = explained deviance, GCV = Generalized cross-validation statistic, EDF = estimated degrees of freedom.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Region | Variable | Years | N | Expl. Dev. | GCV | EDF |
| Black Sea | density | 1890-2001 | 13861 | 0.77 | 0.91 | 3 |
| Balearic isl. |  | 1910-1998 | 5714 | 0.77 | 0.39 | 3 |
| Cyprus |  | 1962-1981 | 679 | 0.78 | 0.17 | 3 |
| G. Mexico |  | 1932-1995 | 7675 | 0.56 | 0.78 | 3 |
| Sicily |  | 1880-1998 | 2469 | 0.8 | 0.29 | 3 |
| W. Pacific |  | 1925-2005 | 16549 | 0.49 | 0.4 | 3 |
| Tyrrhenian Sea |  | 1880-1996 | 1675 | 0.94 | 0.12 | 3 |
| Aust.-Indon. |  | 1916-2004 | 13204 | 0.73 | 0.5 | 3 |
| Black Sea | temperature | 1890-2001 | 13861 | 0.77 | 9.43 | 7 |
| Balearic isl. |  | 1910-1998 | 5714 | 0.81 | 2.68 | 7 |
| Cyprus |  | 1962-1981 | 679 | 0.75 | 1.54 | 5 |
| G. Mexico |  | 1932-1995 | 7675 | 0.4 | 7.39 | 6 |
| Sicily |  | 1880-1998 | 2469 | 0.73 | 3.13 | 6 |
| W. Pacific |  | 1925-2005 | 16549 | 0.32 | 3.81 | 5 |
| Tyrrhenian Sea |  | 1880-1996 | 1675 | 0.92 | 1.28 | 7 |
| Aust.-Indon. |  | 1916-2004 | 13204 | 0.72 | 3.71 | 6 |
| Black Sea | salinity | 1890-2001 | 13861 | 0.55 | 0.59 | 3 |
| Balearic isl. |  | 1910-1998 | 5714 | 0.17 | 0.16 | 3 |
| Cyprus |  | 1962-1981 | 679 | 0.05 | 0.06 | 3 |
| G. Mexico |  | 1932-1995 | 7675 | 0.14 | 0.39 | 3 |
| Sicily |  | 1880-1998 | 2469 | 0.42 | 0.11 | 3 |
| W. Pacific |  | 1925-2005 | 16549 | 0.13 | 0.05 | 3 |
| Tyrrhenian Sea |  | 1880-1996 | 1675 | 0.58 | 0.04 | 3 |
| Aust.-Indon. |  | 1916-2004 | 13204 | 0.04 | 0.24 | 3 |
| Black Sea | oxygen | 1924-1998 | 4484 | 0.68 | 1.42 | 6 |
| Balearic isl. |  | 1910-1997 | 2189 | 0.37 | 0.13 | 7 |
| Cyprus |  | 1966-1977 | 417 | 0.04 | 0.47 | 3 |
| G. Mexico |  | 1935-1995 | 1737 | 0.44 | 0.26 | 4 |
| Sicily |  | 1910-1998 | 495 | 0.28 | 0.11 | 4 |
| W. Pacific |  | 1929-2005 | 5723 | 0.03 | 0.09 | 5 |
| Tyrrhenian Sea |  | 1910-1995 | 342 | 0.58 | 0.1 | 6 |
| Aust.-Indon. |  | 1929-2004 | 4982 | 0.6 | 0.19 | 5 |