Essington data

B = individual body mass

temp = C

lc50 = standard median lethal concentration (LC50) tests lasting 96 h

units = pct (percent)

The response variable we are looking for here is lc50, the median lethal dose after 96h (Plante, 1998).

See also this compilation from 2002: *Determination of lethal dissolved oxygen levels for selected marine and estuarine fishes, crustaceans, and a bivalve*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| b | temp | lc50 | units | spc | ref | salinity |
| 1821 | 6 | 26.4 | pct | AtlanticCod | plante1998 | 33 |
| 1653 | 6 | 22.3 | pct | AtlanticCod | plante1998 | 33 |
| 622 | 6 | 18.7 | pct | AtlanticCod | plante1998 | 33 |
| 517 | 6 | 19.2 | pct | AtlanticCod | plante1998 | 33 |
| 1734 | 2 | 22 | pct | AtlanticCod | plante1998 | 33 |
| 1842 | 2 | 20 | pct | AtlanticCod | plante1998 | 33 |
| 697 | 2 | 23.7 | pct | AtlanticCod | plante1998 | 33 |
| 880 | 2 | 21 | pct | AtlanticCod | plante1998 | 33 |
| 145 | 17 | 28.837036 | pct | AtlanticCod | shurmann1992 | 33 |
| 145 | 15 | 16.608239 | pct | AtlanticCod | shurmann1992 | 33 |
| 145 | 11 | 15.345912 | pct | AtlanticCod | shurmann1992 | 33 |
| 145 | 10 | 13.964497 | pct | AtlanticCod | shurmann1992 | 33 |
| 145 | 9 | 10.927766 | pct | AtlanticCod | shurmann1992 | 33 |
| 145 | 5 | 5.168397 | pct | AtlanticCod | shurmann1992 | 33 |
| 58.97 | 28.7 | 0.85 | mg/L | seabream | Cerezo2004 | 33 |
| 91.89 | 28.7 | 0.81 | mg/L | seabream | Cerezo2004 | 33 |
| 125.19 | 22.2 | 0.62 | mg/L | seabream | Cerezo2004 | 33 |
| 166.67 | 19.5 | 0.7 | mg/L | seabream | Cerezo2004 | 33 |
| 177.19 | 15.5 | 0.64 | mg/L | seabream | Cerezo2004 | 33 |
| 281.55 | 22.4 | 0.87 | mg/L | seabream | Cerezo2004 | 33 |
| 255.66 | 24.9 | 0.97 | mg/L | seabream | Cerezo2004 | 33 |
| 14.95 | 27.4 | 0.79 | mg/L | seabream | Cerezo2004 | 33 |
| 509.11 | 15.1 | 0.81 | mg/L | seabream | Cerezo2004 | 33 |
| 47.43 | 12.4 | 1.7728 | mg/L | commoneelpout | Portner2008 | 33 |
| 47.43 | 13.2 | 1.6448 | mg/L | commoneelpout | Portner2008 | 33 |
| 47.43 | 14.7 | 1.9456 | mg/L | commoneelpout | Portner2008 | 33 |
| 47.43 | 15.6 | 2.1184 | mg/L | commoneelpout | Portner2008 | 33 |
| 47.43 | 17.1 | 2.5952 | mg/L | commoneelpout | Portner2008 | 33 |
| 47.43 | 18.5 | 3.072 | mg/L | commoneelpout | Portner2008 | 33 |
| 675 | 12 | 5.4 | pct | sablefish | Leeuwis2019 | 28 |
| 5.01 | 25 | 1.28 | mg/L | menidia | Hoff1967 | 25 |
| 4.98 | 18.5 | 0.93 | mg/L | menidia | Hoff1967 | 25 |
| 4.19 | 12 | 0.77 | mg/L | menidia | Hoff1967 | 25 |
| 1.95 | 25 | 1.03 | mg/L | wflounder | Hoff1967 | 25 |
| 1.8 | 18.5 | 0.87 | mg/L | wflounder | Hoff1967 | 25 |
| 2.45 | 12 | 0.66 | mg/L | wflounder | Hoff1967 | 25 |
| 2.1 | 25 | 1.36 | mg/L | nswellfish | Hoff1967 | 25 |
| 3 | 18.5 | 0.92 | mg/L | nswellfish | Hoff1967 | 25 |
| 3.3 | 12 | 0.7 | mg/L | nswellfish | Hoff1967 | 25 |
| 115\* | **8** | **18.5\*\*** | **pct** | **plaice** | **ScholzWaller1992** | **35** |
| 0.75\*\*\* | **13** | **20%\*\*\*\*** | **pct** | **flounder** | **Tallqvist1999** | **0.5** |

\*((0.00813\*16^3.05)\*(0.00813\*33^3.05))^0.5, with a and b from Fishbase (<https://www.fishbase.se/summary/pleuronectes-platessa.html>)

\*\* Unfortunately, only 24 experiments…

\*\*\*\* (0.00813\*4.4^3.05): VERY SMALL FISH

\*\*\*\* This is too low because only 40% survive (not 50%) and that’s at 48 H. 50% survival is reached for 20% O2 after 29 h.

**Approach**

We could use Essington’s