

Effects of pH on Fish and Aquatic Animals

Limiting pH Values

Minimum	Maximum	Effects of Some Scientific Studies
3.8	10.0	Fish eggs could be hatched, but deformed young were produced.
4.0	10.1	Limits for the most resistant fish eggs.
4.1	9.5	Range tolerated by trout.
4.3	--	Carp died in five days.
4.5	9.0	Trout eggs and larvae develop normally.
4.6	9.5	Limits for perch.
5.0	--	Limits for stickleback fish.
5.0	9.0	Tolerable range for most fish.
--	8.7	Upper limits for good fishing waters.
5.4	11.4	Fish avoided waters beyond these limits.
6.0	7.2	Optimum range for fish eggs.
1.0	--	Mosquito larvae were destroyed at this pH.
3.3	4.7	Mosquito larvae lived within this range.
7.5	8.4	Best range for the growth of algae.

Effects of Water Temperature on Fish

Species of Fish	Fish Won't Grow When It Gets Warmer Than This (C means Celsius, F is Fahrenheit, is degrees)	Maximum Temperature Fish Will Survive (-- Indicates information unavailable)	Fish Won't Spawn (lay eggs) Above This Temperature	Fish Embryos Can't Survive Above This Temperature	Optimum or Preferred Temperature
	C (F)	C (F)	C (F)	C (F)	C (F)
Atlantic Salmon	20 (68)	23 (73)	5 (41)	11 (52)	---
Black Crappie	27 (81)	---	17 (63)	20 (68)	---
Bluegill	32 (90)	35 (95)	25 (77)	34 (93)	---
Brook Trout	19 (66)	24 (75)	9 (48)	13 (55)	---
Carp	---	36 (97)	21 (70)	33 (91)	32 (90)
Chan. Catfish	32 (90)	35 (95)	27 (81)	29 (84)	---
Coho Salmon	18 (64)	24 (75)	10 (50)	13 (55)	20 (68)
Emerald Shiner	30 (86)	---	24 (75)	28 (82)	---
Lake Herring	17 (63)	25 (77)	8 (37)	8 (46)	---
Lg. Mth. Bass	32 (90)	34 (93)	21 (70)	27 (81)	23 (74)
Northern Pike	28 (82)	30 (86)	11 (52)	19 (66)	---
Rainbow Trout	19 (66)	24 (75)	8 (46)	15 (59)	13 (55)
Sauger	25 (77)	---	12 (54)	18 (64)	---
Sm. Mth. Bass	29 (84)	---	17 (63)	23 (73)	---
Sockeye Salmon	18 (64)	22 (72)	10 (50)	13 (55)	15 (59)
White Sucker	28 (82)	---	10 (50)	20 (68)	---
Yellow Perch	29 (84)	32 (89)	12 (54)	20 (68)	---

From *Quality Criteria for Water*, EPA, July 1976 and *Water Quality Criteria*, California Water Quality Control Board, 1963.