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MICROBIOLOGY OF THE SEA BOTTOM.

By Melle M. Wayenbergh and Prof. A. Boeyé

Cruise of June 26th-July 14th 1972.

Network A (Grid points 1-25)

1) Comparison of titre of aerobic and anaerobic colony formers

The titres were determined by plating 0.1 ml of successive dilutions of soil in quadruplicate on marine agar. Two plates of each set were incubated in aerobic and two in anaerobic conditions. The colonies were enumerated after 10 days of incubation at 18° C. Table 1 summarizes the results. The average aerobic and anaerobic titres for the proximal grid points were $10^{4.05}$ and $10^{2.87}$, respectively. For the distal grid points, the averages were $10^{3.31}$ and $10^{2.15}$, respectively. In each category, therefore, the number of bacteria yielding colonies was at least one order of magnitude higher under aerobic than under anaerobic conditions. The over-all difference for the 22 pooled grid points was $1.16 \log_{10}$. The significance of this discrepancy was analyzed statistically and found to be highly significant ($p < 0.1 \%$).

2) Comparison of titre at the same grid points in this and a former cruise.

In addition to the titrations by superficial plating given in Table 1, the titres were also determined by pour-plating, which was the method used in former cruises. The results are given in Table 2, together with the results determined by the same method in the cruise of January 1972 (Network A). In all eight points ^h _^ where comparison is possible, the titre found in June-July was lower than that found in January.

Additional data will be collected to establish possible ^{to} _^ seasonal differences.

3) Comparison of proximal and distal points.

It can be seen in both Table 1 and Table 2 that the average titres, both aerobic and anaerobic, were higher for the 7 proximal than for the 15 distal points. As was also the case in the January cruise, the single estuarine point yielded the highest titre.

Table 1 : Total colonyformers on marine agar under aerobic and anaerobic conditions.

Grid Points	Aerobic incubation			Anaerobic incubation		
	ml soil plated	Actual counts	log ₁₀ of titre	ml soil plated	Actual counts	log ₁₀ of titre
<u>Proximal grid points</u>						
1	10 ⁻²	152	4.18	10 ⁻²	38, 11	3.40
2	10 ⁻²	76, 61	3.64	10 ⁻²	16, 14	3.18
3	10 ⁻³	107, 145	5.10	10 ⁻²	27, 22	3.38
4	10 ⁻²	5, 1	2.48	10 ⁻²	0, 0	1.70
11	10 ⁻³	145, 133	5.14	10 ⁻²	22, 33	3.44
16	10 ⁻²	79	3.90	10 ⁻²	20, 23	3.30
21	10 ⁻²	77, 23	3.68	10 ⁻²	0, 1	1.70
		Average	4.05		Average	2.87
<u>Distal grid points</u>						
7	10 ⁻²	125, 114	4.08	10 ⁻²	2, 0	2.00
8	10 ⁻²	11, 9	3.00	10 ⁻²	2, 0	2.00
9	10 ⁻²	11, 2	2.81	10 ⁻²	1, 0	1.70
10	10 ⁻²	32, 29	3.49	10 ⁻²	2, 1	2.18
12	10 ⁻³	27, 28	4.44	10 ⁻²	30, 30	3.48
13	10 ⁻²	71, 90	3.91	10 ⁻²	3	2.48
14	10 ⁻²	8, 8	2.90	10 ⁻²	19, 0	2.98
15	10 ⁻³	27, 24	4.41	10 ⁻²	2, 1	2.18
17	10 ⁻²	17, 13	3.18	10 ⁻²	1, 0	1.70
18	10 ⁻²	20, 15	3.24	10 ⁻²	1, 1	2.00
19	10 ⁻²	5, 4	2.65	10 ⁻²	0, 0	1.70
20	10 ⁻²	36, 72	3.73	10 ⁻²	2, 0	2.00
22	10 ⁻²	1, 2	2.28	10 ⁻²	1, 2	2.18
23	10 ⁻²	1, 4	2.40	10 ⁻²	1, 0	1.70
25	10 ⁻²	27, 2	3.16	10 ⁻²	1, 1	2.00
		Average:	3.31		Average :	2.15
<u>Estuarine grid point</u>						
5	10 ⁻²	181	4.26	10 ⁻²	60, 1	3.49

Table 2 : Total aerobic bacteria in January and June-July 1972 -
Cruise of Network A.

Grid point	June-July cruise			January 1972
	ml soil plated	Actual counts	log ₁₀ of titre	log ₁₀ of titre
<u>Proximal points</u>				
1	10 ⁻²	151, 113	4.12	
2	10 ⁻²	1, 4	2.40	
3	10 ⁻²	30, 27	3.45	
4	10 ⁻²	0, 0	< 1.70	
11	10 ⁻²	10, 15	3.90	
16	10 ⁻²	25, 29	3.43	3.49
21	10 ⁻²	9, 5	2.84	3.52
<u>Distal points</u>				
7	10 ⁻²	10, 19	3.16	
8	10 ⁻²	0, 1	1.70	
9	10 ⁻²	0, 0	< 1.70	2.39
10	10 ⁻²	0, 0	< 1.70	
12	10 ⁻²	37, 22	3.47	
13	10 ⁻²	8, 5	2.82	
14	10 ⁻²	1, 3	2.30	
15	10 ⁻²	1, 5	2.48	
17	10 ⁻²	1, 1	2.00	3.18
18	10 ⁻²	0, 0	< 1.70	2.00
19	10 ⁻²	1, 0	1.70	2.31
20	10 ⁻²	1, 1	2.00	2.40
22	10 ⁻²	1, 2	2.18	
23	10 ⁻²	1, 1	2.00	
25	10 ⁻²	2, 2	2.30	
<u>Estuarine point</u>				
5	10 ⁻²	104 104, 93	3.99	5.18