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Reduced Growth and Survival of Clams Transplanted to an Oil Spill Site

In May 1974 some long-term effects of a 1963 Iranian crude oil spill on the survival and growth of soft clams (Mya arenaria, Linnaeus) in the flats of Long Island, Friendship, Maine, were reported (1).

Oil residues were found at levels greater than 4000 ppm in sediments occupied by clams containing comparable concentrations of petroleum hydrocarbons (2).

During continued 1974 studies four previously undiscovered clams from the June 1973 experimental transplant were found to have survived the winter of 1973-1974. Total survival of transplanted clams, including 227 collected at monthly intervals after June 1973, was 12.8% as compared with 78.1% survival of clams in the control area.

The average 1973 growth of the four clams prior to transplanting was 9.3 mm in length, or a monthly growth rate of 1.6 mm. The average linear growth of these same clams from June 20, 1973, to April 9, 1974, was 5.0 mm, or a monthly rate of .5 mm, a 65% reduction in the growth after transplanting to the oiled area. The annual growth rate of the experimental clams before transplanting was 18.6 mm, as contrasted with 6.4 mm after transplanting. The post-planting growth rate was within the 3.6 to 8.2 mm annual average growth range of the native clams in the experimental area. The decline of 65% in the annual growth rate of the surviving transplanted clams can be attributed to oil residues (Table 1).

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References

- (1) D. W. Mayo, et al. Long Term Weathering Characteristics of Iranian Crude Oil: The Wreck of the "Northern Gulf."
Marine Pollution Monitoring (Petroleum) Symposium and Workshop, National Bureau of Standards, Gaithersburg, Maryland, May 13-17, 1974.
- (2) Ibid.

Table 1

ATTAINED SIZE AND LONG DIAMETER INCREMENTS
 FRIENDSHIP, LONG ISLAND, SOFT CLAM TRANSPLANTS
 (diameter in mm)

Shell #	January 1973	June 1973	Total Increase	Monthly Increase	Annual Rate	April 1974	Total Increase	Monthly Increase	Annual Rate	Average Percent Decline in Annual Growth Rate
1	44.5	50.1	5.6	.9	10.8	53.3	3.2	.3	3.6	67
2	44.3	50.9	6.6	1.1	13.2	55.8	4.9	.5	6.0	55
3	46.2	64.5	18.3	3.1	37.2	73.6	9.1	1.0	12.1	67
4	42.2	48.8	6.6	1.1	13.2	51.2	2.8	.3	3.7	72
Mean	44.3	53.6	9.3	1.6	18.6	58.5	5.0	.5	6.4	65