

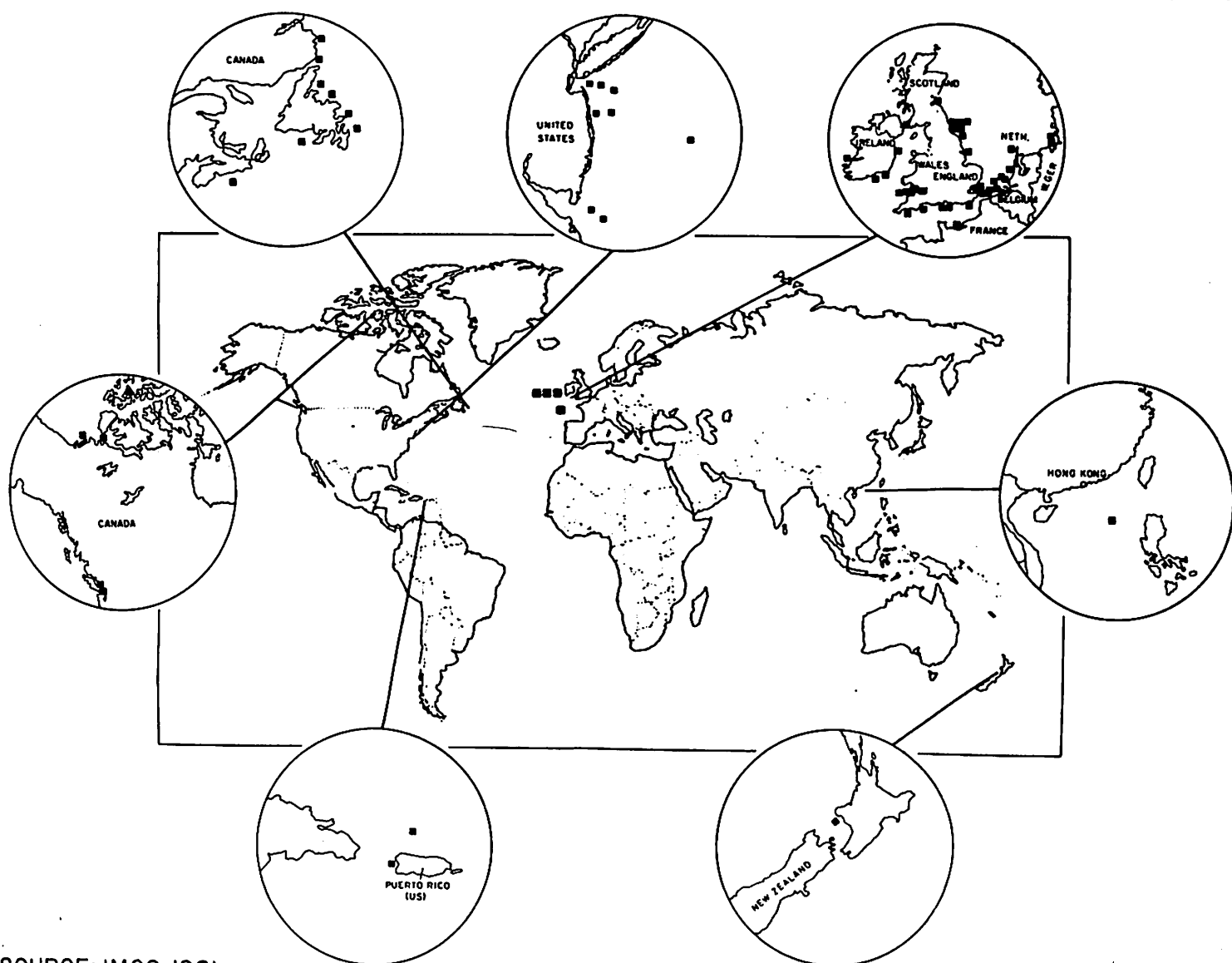
M. Waldichuk

PROGRAM AND ABSTRACTS

FIFTH INTERNATIONAL OCEAN DISPOSAL SYMPOSIUM

Oregon State University
Corvallis, Oregon, U.S.A.

10-14 September 1984



SOURCE: IMCO, 1981

PROSPECTS FOR USING DREDGED MATERIAL TO DEVELOP REARING HABITATS FOR
JUVENILE SALMONIDS AT TWO BRITISH COLUMBIAN ESTUARIES

C. D. Levings¹, C. D. McAllister², and E. P. Anderson³

¹Department of Fisheries and Oceans,
Salmon Habitat Research Section
West Vancouver Laboratory
4160 Marine Drive
West Vancouver, British Columbia
V7V 1N6, Canada

²Department of Fisheries and Oceans,
Salmon Habitat Research Section
Pacific Biological Station
Nanaimo, British Columbia
V9R 5K6, Canada

³Edward Anderson Marine Sciences
10-2614 Bridge Street
Victoria, British Columbia
V8T 4S9, Canada

Dredged sand and gravel have been used in experiments at the Fraser and Campbell River estuaries in British Columbia to test if the material could be used to develop rearing habitats for juvenile chum and chinook salmon.

At the mouth of the Fraser River, as predicted by hydraulic modelling, wave and current energy levels prohibited stability of pumped sand. Vegetation transplants with sedges (Carex lyngbyei) on a sand island in September of 1981 were unsuccessful. However, catches of chum and chinook on unvegetated shorelines were higher than at open-water sites, suggesting some attraction for the salmon to the shallow water.

Invertebrates that used the sand for habitats colonized the dredged material rapidly but were not food species for the salmonids. Sand disposed of in a protected area for about 20 y had been colonized by sedges. Catches of juvenile salmon at this site were not statistically different from those at adjacent reference habitats.

The Campbell River estuary is protected by a spit and hence is not subjected to heavy wave and current action. The river is regulated and flows are relatively stable. Several gravel and sand islets (total area 35,000 m²) were constructed in early spring of 1982 and transplanted with 27,000 cores of sedges from an adjacent donor site. Transplants were successful and juvenile chum and chinook consumed the food produced on the islands, and used the island as habitats. In 1982, insect larvae, an important food source for juvenile salmon, were as abundant on the islands as at nearby reference areas. Catches of juvenile salmon were not statistically different from natural reference areas, but the level of use of the island habitats appeared to depend on the overall abundance in the estuary.

Although islet construction under certain conditions may be useful as a restoration strategy, caution is required to avoid irrevocable changes in the water volumes of the estuary. In addition, there are difficulties in experimental design for evaluating the success of such projects.