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**Plan of Research Cruise of Russian *R/V RUBINOVYI* in Open
Waters of the Northwestern Pacific, April – May 1999**

by

State Committee on Fisheries of the Russian Federation
All-Russian Research Institute of Fisheries & Oceanography (VNIRO)
Pacific Scientific Research Fisheries Centre (TINRO-CENTRE)
KAMMAG, Ltd.

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Program of Russian Studies of the Distribution and Biology of Salmonids in Open Waters of the Northern Pacific, April - May, 1999.

The survey is to be conducted onboard a drifter with nets of 40-65 mm mesh. Studies are consistent with research plans of the VNIRO and TINRO-CENTRE. The shipowner is KAMMAG, Ltd.

The major objectives of the expedition are the following:

- to study the horizontal and vertical distribution of young and mature salmonids in open waters of the Northern Pacific at the end of winter feeding and the onset of migration to waters of summer feeding within Russian EEZ;
- to study diurnal vertical migrations of the salmonids;
- to sample salmon scales for a later determination of the age composition and identification of salmon stocks which winter in open waters of the northern Pacific;
- to collect data on environmental conditions of the salmonids during this period, i.e. temperature, salinity, depth of occurrence;
- to study salmon nutrition;
- to sample muscle and entrails tissues for parasitological and histological analyses;
- to sample gonad tissues for gametogenesis studies.

Area and Terms of Studies. Studies are to begin on April 1, 1999, and to finish on May 15, 1999. The vessel shall start from Pusan (Republic of Korea) on March 27, 1999, and regress to Pusan on May 18, 1999.

The survey area is limited by the following points: 46° N 160° E, 46° N 162° E, 50° 50' N 164° 50' E, and 50° 50' N 166° 50' E (Figure 1). Nets shall be first deployed at 46° N 160° E. Further it is planned to make an eastward section along 46° N with net deployment at each the degree of longitude. The R/V shall turn to the north-east at 46° N 162° and then turn westward at 46° 50' N 162° 50' E deploying nets likewise, i.e. at each the degree of latitude, etc. The order of net deployment is shown in Figure 1. Overall number of net deployments shall make 30.

Research Methods. Works at each the station start with the STD-zonde measurements of temperature and salinity in the water column from the surface down to the 100 m horizon. Then a net deployment follows. The R/V shall use four of six lines of 62 nets (each net will be 40 m long with a 40-65 mm mesh. Time of nets at the depths of catch are 12-20 hours. The lines are deployed at 18-20 p.m. and the haul starts at 8 a.m. The catch is assorted by species. A daily biological analysis of salmonids includes length measurements; fish weighting; weighting of fish without entrails; determination of sex and maturity; assessment of stomach contents (in marks); and analysis of stomach contents. All the fish caught are sampled for scales, muscle, and entrails tissues which are then fixed in formalin for later parasitological and histological analyses.

Immediate Performers. The responsible executive: Bogdanov German Anatolyevich, Candidate of Biology, Senior Researcher, VNIRO. Tel: (095) 264-86-83. Fax (095)

264-91-87. Information about the second executive (TINRO-CENTRE) will be submitted later.

Appendix: Chart of the survey polygon
Schedule of studies

Schedule of studies

April - May 1999	Expedition schedule of the R/V <i>RUBINOVY</i>
March 27	Pusan (Republic of Korea). Equipment loading. Setting of experts onboard
March 27-31	Voyage to the survey area
April 1	Hydrological studies and net deployment at 46° N 160° E
April 2	Haul and biological studies ant the 1 st station. Voyage to the 2 nd station. Net deployment at the 2 nd station.
April 3 - 14 May	Hydrological and biological studies at all the stations in the order presented in Figure 1.
May 15-18	Voyage to Pusan
May 18	Regress to Pusan. Setting down of experts.

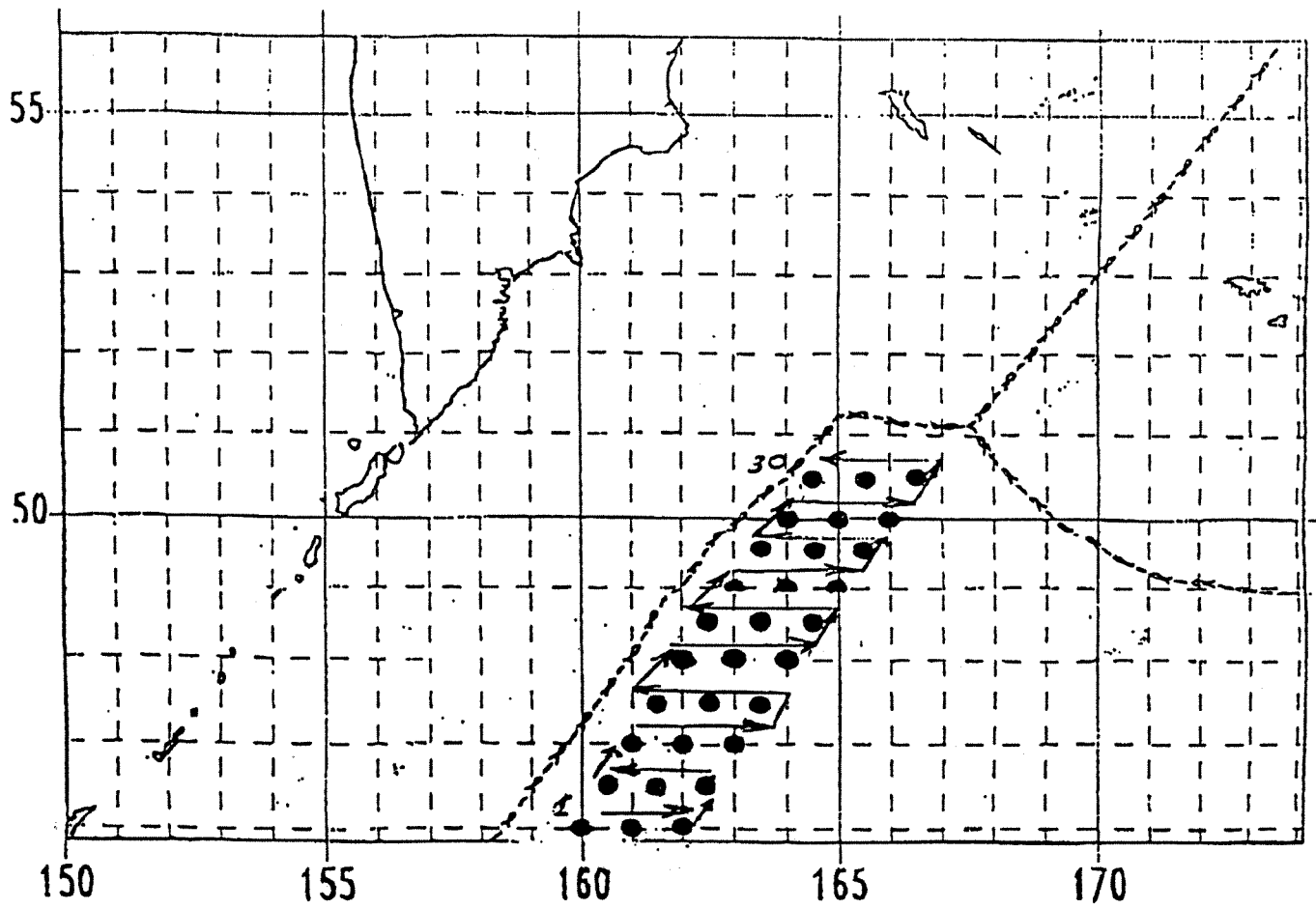


Рис. 1. Экспедиция д/л «Рубиновый»

• : Станции постановки дрейфтерных порядков

Figure 1. Trip of the R/V RUBINOVYI

• : Stations for the driftnet setting