International Council for the Exploration of the Sea

C.M. 1985/E:1
Report of Activities

MARINE ENVIRONMENTAL QUALITY COMMITTEE

by

B.I. Dybern

1984

Belgium

(J. Vyncke)

1. The effects of dumping industrial wastes off the Belgian coast on the fish and shrimp stocks and invertebrates were studied further.

   A monitoring programme was carried out every three months at two dumping areas for industrial wastes derived from titanium dioxide production, one area for wastes from the production of thiocarbamates and of anilines and an area for an industrial waste containing 1,5 % phenols.

   A biological and physico-chemical survey was carried out.

2. The biological and physico-chemical monitoring of the Kwinte Bank, Buiten Ratel, Oostdyckbank where sand extractions are taking place was continued.

3. The monitoring programmes on heavy metals and organochlorines in fish and shellfish were continued. Samples of cod, flounder, brown shrimps and mussels from the Southern North Sea were analyzed (JMJ area 1). The study on the evolution of mercury in Solea solea in the North Sea and the Irish Sea was finalized.

4. Petroleum hydrocarbons were analysed in sediments and biota samples taken off the Belgian coast. Special emphasis was laid on the area around the wrecked MS "Mont Louis".

5. The radioactivity of sediments and samples of fish and shellfish from Belgian coastal waters was measured.

6. Studies on fish pathology were continued in Belgian coastal waters, especially in dumping areas.

7. The regular monthly survey to assess the general state of the marine environment was carried further out till June 1984. Samples were taken in a 28 stations grid. From July 1984 onwards the new oceanographic vessel "Belgica" replaced the old "Mechelen". The monthly survey was actually resumed in October 1984.

   Parameters : temperature, salinity, suspended matter, plant pigments, heavy metals (Hg and Cd), PCB, tritium and beta + K40 radioactivity.

8. The survey of the benthic fauna was continued in relation with the program COST 47 and also the problem of sand extraction.

9. Geomorphological surveys (bathymetry, sedimentology, seismology) were continued in the coastal area.

10. The monthly survey of the Scheldt estuary parallels the survey at sea.

    Parameters : hydrology, heavy metals (Hg and Cd) and PCB.

11. A special campaign was devoted to the study of the flux of heavy metals through the sediment interface in the Scheldt estuary.

Canada

(J.F. Uthe)

A study to develop water quality criteria for the coastal marine environment of southeastern Nova Scotia is being carried out through assessment of available baseline data for water, sediment and biota; an examination of present water uses and coastal activities; and a determination of anticipated activity in the area. The study hopes to be able to develop environmental criteria which can be applied to any activities in the coastal zone with the potential of degrading the marine environment, in an effort to preserve a reasonable standard of environmental quality (EPS).

An overview of environmental quality in the Baie des Chaleur, northern New Brunswick, has been completed and a report including and extensive bibliography has been published (EPS).

The types, quantities and, where possible, origins of persistent litter adrift in the North Atlantic are being studied through the collection of monthly samples on several 1 km beach sections of Sable Island. Sable Island is ideally situated to trap litter in an offshore setting. The work will provide a initial measurement of the problem which has not been previously examined in these waters (EPS).

Under Canada's Ocean Dumping Control Act, several proposed and potential ocean disposal sites were sampled for baseline contaminant levels and a number of follow-up studies were performed to evaluate the environmental impact of disposal of contaminated dredge spoils. The Ocean Dumping Research Fund sponsored a series of research programs to evaluate the physical and chemical environemtal impacts of dredging operations (EPS).

In response to a proposed use of oil-based drilling muds in exploratory drilling a preliminary screening program was conducted in cooperation with the Atlantic Oceanographic Laboratory. Mudsand components were evaluated using acute and long-term bioassays, body-burden measurements and mixed function oxidase studies (EPS).

A program to evaluate baseline data on sea bottom debris has been initiated. Information provided by commercial fishermen was correlated with data on sea bed geology and ship wrecks to provide an indication of the presence of obstacles or unauthorized disposal of persistent debris(EPS).

Results of studies of the exchange of cadmium and lead between aqueous, sedimentary and biological phases in intertidal North Sea mudflats, that took place in 1982, 1983 and 1984 in collaboration with the University of Heidelberg and the Institute for Sea Research, Bremerhaven, using medium scale artificial enclosures, are being interpreted preparatory to publication (BIO).

Studies of the movement of metalliferous tailings from Greenland mines are being carried out in collaboration with the Greenland Geological Survey, Copenhagen (BIO.

Results from laboratories participating in the ICES intercomparison of trace metals in sediments are being collated and interpreted. A pilot intercomparison of methods for the analysis of suspended particulate material retained on filter membranes being conducted under ICES auspices, has also been completed. The results of both of these experiments will be reported to the Working Group on Sediments in Relation to Pollution in 1985 (BIO).

Studies of dissolved-particulate exchanges of metals in the Tamar estuary, carried out in collaboration with the Institute for Marine Research, Plymouth, have been completed and are being published. The results of similar studies in the St. Lawrence estuary are undergoing interpretation preparatory to publication (BIO).

A survey of chemical oceanographic conditions in Hudson Strait and northern Hudson Bay has been carried out with particular reference to nutrients, sea-ice meltwater and petroleum hydrocarbons. Baseline distributions of petroleum residues in waters of the entire eastern seaboard of Canada have now been determined and further, more detailed, investigations of areas having abnormal amounts of such constituents due to natural seepage, e.g. Scott Inlet on Baffin Island, are being planned (BIO).

Studies of the major ion composition of sea-ice have shown that actual sea-ice samples have varying compositions and that these cannot be predicted with any reliability from laboratory simulations of seawater freezing (BIO).

Investigations of the nature and composition of ambient deep ocean suspended particulate material are continuing with the major effort being devoted to the development and proving of an *in situ* pumping/filtration device for obtaining large samples of particulate material (BIO).

An overall review of dissolved metal data from deep ocean areas is being undertaken in an attempt to assess the degree to which distributions reflect physical oceanographic, chemical and biological processes in the deep ocean (BIO).

A study of reactive mercury in the North Atlantic has been completed and further investigations of total mercury in seawater are planned (BIO).

Field and laboratory studies of the rates and mechanisms of the degradation of Sable Island condensate in beaches are being carried out to determine if the weathering rates of oil can be accelerated through enhancement of microbiological activity by the provision of nutrients (BIO).

Time-series measurements of the discharge of organic material from the St. Lawrence River are being continued following the earlier completion of a study of trace metal discharges from this river. The nature of the organic matter contributed by this river to its estuary is also being investigated using both organic analysis and stable isotope techniques. This work is a contribution to the SCOPE/UNEP project on transport of carbon in major world rivers (BIO).

A study of sterols within the lipid fraction of particulate material in Bedford Basin has been carried out in an effort to determine the predominant terrigenous and anthropogenic sterols in this area and to examine the seasonal variability in sterol concentrations in relation to biological productivity (BIO).

Investigations of the physical and chemical oceanography of Fram Strait have been initiated in collaboration with the University of Hamburg and the University of Gothenburg. This work relates to previous investigations conducted at the FRAM-III and CESAR ice camps in the Arctic Ocean. The results of investigations of nutrient, trace metals, sea-ice meltwater and radionuclide distributions at these latter locations are undergoing analysis and interpretation preparatory to publication. Further ice-camp work is planned to be carried out north of Ellesmere Island in 1985 (BIO).

Geochronological and radionuclide transport studies in the Saguenay Fjord are continuing with particular attention being given to the detection of proxy-climate information in the sedimentary record (BIO).

The distribution of fallout nuclides in the vicinity of Thule, Greenland is being studied in collaboration with Danish scientists in order to determine the transport of plutonium released into the area following an aircraft accident in 1968 (BIO).

Surveillance activities related to thermal and radionuclide releases from the Point Lepreau Nuclear Generating Station are being continued (BIO).

In cooperation with Chemical Oceanography a survey of cadmium levels in lobsters, seawater and sediment from the area of Belledune Harbour, New Brunswick was carried out during 1984. The results were compared with similar data obtained in 1980 and substantial drops in cadmium levels in all phases were documented (DFO-HFX)

The concentrations of arsenic, lead, copper and silver were determined in cooked meat from lobsters captured in the area of Belledune Harbour in 1984. The results showed that only lead levels were elevated in meat from lobsters captured within the harbour but that the elevation was not significant in terms of human health concerns (DFO-HFX).

A study of cadmium levels in tissues of sea scallops (Placopecten magellanicus) showed that insignificant cadmium concentrations were present in adductor muscle irrespective of the catch location even for areas of known anthropogenic cadmium inputs. Over 90% of the total amount of cadmium present in the soft tissues of the scallop was present in the digestive gland. The concentration and tissue burden of cadmium increased with size (shell height) with the relationship best described by a power curve. Simple consideration of cadmium levels in tissues did not prove useful in identifying contaminated areas. Cadmium tissue ratios(digestive gland to adductor muscle) were significantly lower for contaminated areas. Area without known cadmium inputs such as Browns Bank yield scallops with high tissue concentrations of cadmium. Studies on starved animals and consideration of tissue weight ratios suggest that the cause of the high cadmium levels in these scallops is nutritionally based. Scallops held for fourteen months without feeding did not loose a significant amount of cadmium from their soft tissues in spite of marked increases in tissue cadmium concentrations due to tissue catabolism (DFO-HFX).

An ICES-sponsored study of the intercomparability of the determination of polycyclic aromatic hydrocarbons in biological tissue demonstrated that serios problems still exist in the determination of these compound, so serious, in fact, as to preclude such measurements from coordinated monitoring studies and cast severe doublts on the accuracy of measurements being caried out in the participating laboratories (DFO-HFX).

Lobster fishing in the southern arm of Sydney Harbour, Nova Scotia was banned in 1982 due to the presence of high levels of polycyclic aromatic hydrocarbons in edible tissues. The results of a re-survey of the harbour in 1984 indicated that a long term problem is present in the area since levels of these compounds had not changed significantly between 1982 and 1984 (DFO-HFX).

A rapid, fast method for the determination of polycyclic aromatic hydrocarbons in shellfish tissue has been developed based on saponification of small samples in Folin-Wu tubes, clean-up of the isooctane extract from the saponification by automated gel permeation chromatography followed by either column effluent monitoring for total hydrocarbons or high performance liquid chromatography for individual hydrocarbons (DFO-HFX).

A few more lobster samples were screened for the presence of chlorinated dibenzodioxins and dibenzofurans. Digestive gland contained significant amounts of chlorinated dibenzofurans but not the dioxins (DFO-HFX).

Radioimmunoassay procedures have been developed for measuring blood levels of 17-alpha-hydroxy-20-beta-dihydroprogesterone and 20-alpha-dihydroprogesterone in female salmon allowing studies of the sub lethal effects of contaminants to be expanded to include females as well as males (DFO-HFX)

Cod and haddock caught in the vicinity of the blowout (Uniake G-72, Shell Oil. 44/11/29.0 N, 59/49/9.4 W, about 16 km north of the eastern tip of Sable Island) were analyzed for hydrocarbons by GCMS and fluorescence spectrophotometry. Traces of dimethyl benzenes and slightly elevated flourescence were detected in fish from areas receiving the blowout, as opposed to fish from control areas. Other compounds, possibly related to oil exploration or other industrial discharges were detected in fish from both area (DFO-St. A).

The organoarsenic fungicide OBPA used in PVC 'swimming pool" liners is extremely toxic to fish and has resulted in an extensive fish kill in a commercial hatchery (DFO-St. A).

Denmark (Greenland)

(P. Johansen)

1. Monitoring studies continued in a fiord system in NW Greenland affected by heavy metal pollution from tailings discharged into the sea from a lead zinc mine and mill. Lead, zinc, cadmium, and copper are monitored in sea water, sediments and marine organisms including brown algae, mussels, shrimp, fish, seabirds and seals.

2. Monitoring studies of the level of heavy metals in seawater, seaweed, the blue mussel and shrimp continued in a fiord at a cryolite mine in South Greenland.

3. Baseline studies of heavy metals were initiated in a South West Greenland fiord which may be affected by possible future mining of a gold deposit.

4. A study of the impact on the marine environment by heavy metals and PCBs were conducted at the military camp in Thule, North Greenland.

5. Samples of marine mammals and seabirds were collected in the Thule area for analysis of heavy metals, especially Hg and Cd.

Finland

(P. Tulkki and P. Kangas)

1. THE COUNCIL RESOLUTIONS

Baltic sediment studies, framework of the ICES/SCOR, have been continued in cooperation with German Democratic Republik. A meeting was held on RV Aranda in Rostock with representatives from all the Baltic Sea states. Inter-calibration of sediment analyses has partly been finished. Convener in this work is Dr. Lauri Niemistö (C. Res. 1984/2:27, C. Res. 1982/4:9, C. Res. 1984/4:6, C. Res. 1984/3.2).

Concentrations of heavy metals and organochlorine compounds have been studied in the seals from the Gulf of Finland. Unfortunately earlier data from this sea area have been scarce. Similar studies were continued in the Gulf of Bothnia and Aaland Sea (C. Res. 1984/2:37).

2. ADDITIONAL

Longterm changes of the Baltic Sea ecosystem have been continued. The research include e.g., long-term variations of oxygen and nutrient concentrations in water, variations in the biota, nutrient and heavy metal concentrations, as well concentrations in the Baltic sea sediments of halogenized hydrocarbons compounds.

Studies on the behaviour of the Baltic Sea ecosystem has been continued both in the coastal waters as well as in the open Baltic Proper. The ultimate goal of this kind of research is to learn to understand the occurrence of oxygen deficiences of the Baltic deep basins.

Concentrations of halogenated hydrocarbons in different compartments of the Baltic Sea ecosystem have been studied, as well as concentrations of heavy metals in benthic animals.

According to an old recommendation by ICES, year to year changes of benthos in the deep basins of the Baltic Sea has been followed up. A continuous series since 1963 shows the effects of oxygen deficiencies on the distribution of macrobenthic fauna in the Baltic Proper and Gulf of Finland.

The eutrophication of the Baltic Sea has been followed up by aid of the sublittoral communities as mentioned in the earlier national report. Results have been published during 1984. The development of littoral communities will be continuously monitored. The decline of bladder-wrack in late 1970's along the southern coast of Finland was connected with general eutrofication of the Baltic Sea. In the beginning of 1980's the recolonization seems to begin, however.

The transport of nutrients, suspended matter and organic matter off two rivers (Kymijoki and Kyrönjoki) has been studied in order to clarify the sedimentation of substances in the coastal zone. The transport of nutrients, metals and organic matter has been measured on a routine basis in the lower courses of all major rivers.

Effects of fish cultures on the marine environment have been studied in the Archipelago Sea area. Especially hydrography and chemistry of water, effects on periphyton production and the ability of Baltic herring to avoid waters affected by fish cultures have been studied.

Studies related to marine gravel extraction have been made in the Gulf of Finland. Effects on fish fauna, benthos and fisheries as well as on chemical properties of water have been the main topics. Extended studies in the same area were planned for the year 1985.

France

No report received.

Germany, Fedederal Republic of

No report received.

Iceland

(Ó. Ólafsson

The only work in 1984 directly related to Council resolutions has been preparations for the ICES Baseline Study.

Ireland

(M. P. O'Sullivan)

1. Contaminant monitoring in fish and shellfish from selected areas around the coast of Ireland was continued for national purposes and as part of the input to I.C.E.S. and Oslo and Paris Commission programmes (FRC, Dublin)

2. The monitoring of algal blooms was continued with exceptional blooms being recorded off the East, South and South-west coasts. Shellfish from affected areas were assayed for D.S.P. and P.S.P. (cross-refer to Mariculture Committee Report 1984). (FRC, Dublin).

3. A brief survey of the organic industrial waste dumping ground off the south-west coast was carried out and included measurements of physico-chemical parameters and nutrients. (FRC, Dublin).

4. Studies are continuing on the ecology of Nucula turgida in Dublin Bay, in relation to sediment organic content. A project on the chemistry of sediments and associated biota in selected areas of inshore coastal waters along the east coast has commenced. (Trinity College, Dublin)

5. Radioactivity measurements were carried out on fish, seawater, sediments and seaweeds were sampled from coastal areas.

6. Environmental impact assessment work is being carried out off the south west coast in the vicinity of an industrial outfall (University College, Galway).

7. Work on fish and shellfish pathology as an indication of degraded water quality conditions in Cork Harbour is in progress and studies in the use of cryptofauna and artifical substrates in monitoring pollution is still continuing (University College, Cork).

8. Intercalibration work (FRC, Dublin)

   Participated in

   a) ICES 7th round intercalibration exercise for trace metals in biota.

   b) ICES 1st round intercalibration exercise for trace metals in sediments.

Netherlands

(S.J. de Groot)

- In December 1984 new PCB tolerances for fishery products came into force based on the levels of 7 individual chlorobiphenyls. Excess of these levels were observed in eel from the rivers Rhine and Meuse as well as their estuaries. A critical increase was observed in PCB residues caught in the Meuse in an area near the Dutch-Belgium border.
- High dieldrin (0.76 mg/kg) and endrin (0.15 mg/kg) residues observed in eel from the Hollandse IJssel could be attributed to a former dumping site by means of mass spectrometry.
- The HCB contaminations of the river Rhine decreased considerably from 2.9 mg/kg in 1978-81 to 0.56 mg/kg in 1984 as measured in eel on product base.
- Mean mercury and selenium residues in flounder varied 0.14 - 0.38 mg/kg (Sylt) till 0.21 - 0.28 mg/kg (Scheveningen).
- As an outcome of the loss on at sea (North Sea) an HPLC method to detect Dinoseb in fish has been developped. Dinoseb could not be detected (< 5 µg/kg) in the gills, the skin or the flesh of plaice which were caught together with the Dinoseb barrels in the trawl. Dinoseb did not degrate in batch aerobic sea as well as freshwater biodegradation tests.
- Marine biodegradation tests showed the following increase of turnover-time:

4-hydroxybenzoicacid phenol, glucose mono-methylphenols	monochlorophenols 4 > 3 > 2	mononitrochlorophenols 2 > 3 > 4

  Repetitive Die Away tests with adaptions were carried out. The results of these adapted screening tests for apolar compounds are comparable with those of MITI respirometric tests.
- Regular surveillance of shellfish culture areas showed a good sanitary quality of the mussels and their surrounding water. Diarrhetic Shellfish Poisoning did not occur in 1984. In the Dutch coastal waters *Dinophysis acuminata* was observed sporadically.
- For the parasitological and pathological research an extended program was carried out for fish disease recordings at sea with several routine assessment surveys. The results underline former impressions that diseases in marine wild fish stocks are a matter of hosts, areas and seasons.
- An important part of the pathological research concerned the challenge test on the presence of the oyster *Bonamia ostreae* in the Yerseke Bank area by planting for the first time since 1980/1981 a large number of experimental oysters on commercial way. Three foci of infection were still observed, but only on oyster beds used for rejects of former years. The new planted oyster beds remained free of the disease, which was considered as a positive sign that the control measures of former years have proven to be effective.
- Experiments on the effects of the impact of commercial bottom trawlgear at a partially - or unburied pipeline confirmed that pipelines with the new type of coatings can endure the fishing gear without damage. The forces by the fishing gear especially the beamtrawl, can be considerably reduced by adaptions of the trawl head.

Norway

(P.T.Hognestad and K.Palmork)

1. Field programmes

1.1 Investigations on the environmental qualities in the Skagerrak area in one section (Torungen-Hirtshals) between Norway and Denmark were carried out with 11 surveys throughout the year. Measurements were made of temperature, salinity, oxygen, nutrients and phytoplankton. (Flødevigen Biological Station).

1.2 To investigate the effect of sewage outlet in Tvedestrandfjord, 5 surveys were carried out in 1984 at 4 stations measuring temperature, salinity, oxygen, nutrients and phytoplankton. In addition current meters worked continiously at 2 stations. (Flødevigen Biological Station).

1.3 Monitoring of the environmental qualities of selected Norwegian fjords from Stavanger to Varangerfjord were carried out.The fjords were selected to represent different types of environmental stress conditions; i.e. industrial and domestic load. Measurements: oxygen and turbidity.(Institute of Marine Research,Bergen)

1.4 Environmental quality of coastal sea water. This programme continued for the ninth season. The organic load of the Baltic current is being investigated from the Øresund through the Kattegat and Skagerrak and along the western Norwegian coast. Recordings are made of particulate matter, nutrients and temperature, whereas primary production indices are measured at intervals. (Institute of Marine Research, Bergen)

1.5 During a cleaning operation of pipe lines from the oil installations in the North Sea, control were made of possible leakage of cleaning luquid.(Institute of Marine Research, Bergen).

1.6 Within the framework of the State Pollution Monitoring Programme, sponsored and administered by the State Pollution Agency, baseline and monitoring studies have been carried out in about 12 coastal areas, most of them heavily polluted either from plant nutrients and easily degradable organic material and/or toxic substances (PAH,metals,fluoride, halogenated organics). The investigations have included standard hydrography. Surface water wuality (transmission, chlorophyll a), shallow water and soft bottom community structure and registration of micropollutant levels in sediments and indicator organisms (mussels,snails, seaweeds).(Norwegian Institute of Water Research, Oslo).

1.7 Studies within the Joint Monitoring Programme under the auspices of the Oslo and Paris Commissions have been conducted in two fjords.(Norwegian Institute of Water Research).

1.8 Effects of drill cuttings on soft bottom fauna have been the subject of extensive field experiments. The seabed around oil platforms has been monitored.(NOrwegian Institute of Water Research, Oslo).

1.9 The observations of background levels of micro pollutants and basic microbiological and chemical processes in the extremely stgnant and naturally anoxic basin Framvaren have continued.(Norwegian Institute of Water Research,Oslo).

1.10 The long time dosage of low diesel oil concentrations have ended after 2 years. Restauration of the influenced hard bottom community will be followed. Similar stress experiments are carried out with simulated soft bottom communities. This research programme is a concerted effort of NIVA and the Oslo University in cooperation with foreign researchers. (Norwegian Institute of Water Research, Oslo).

1.11 Investigations have been performed in the marine environment in connection with outlet tunnels for sewage near Bergen. Recordings of pollution from fish farms have been made. (Institute of Marine Biology, University of Bergen)

1.12 The death of 1000 tons of herring in a small bight caused severe organic pollution. Investigations were made for describing the status, and will be followed by monitoring the environmental development. (Institute of Marine Biology, University of Bergen).

2. Laboratory assays

2.1 Embryological material from sea urchins and marine fishes is used to study the effect of Ekofisk oil, photooxidiced oil, aromatic hydrocarbones, oil dispersants and drilling fluids. (Inst. of Biology and Geology, University of Tromsø).

2.2 Quantitative descriptions have been made of littoral hard-bottom communities (macroalgae and invertebrates) in Troms and Finnmark, North Norway, from fully exposed to very sheltered localities. Structure and species composition have been related to environmental factors. (Institute of Biology and Geology, University of Tromsø).

2.3 Enzyme studies (Mixed function Oxidase) using flounders (Platichthys flesus) has been performed. (Institute of Marine Research, Bergen).

2.4 How environmental factors (light and nutrients) affect the growth rate of toxic dinoflagellates has been studied. (Trondhjem Biological Station & Inst. of Marine Biochemistry, University of Trondheim).

Poland

No report received.

Portugal

(C. Lima)

Regular surveys of heavy metals (Hg and Cd) and PCB's has continued at five areas, in the framework of the Joint Monitoring Programme of the Oslo and Paris Conventions.

Baseline studies of mercury levels in fish and shellfish with commercial interest, along the Portuguese coast were continued. The study of mercury levels in several tissues of Aphanopus carbo from Madeira and continental waters has continued.

The study chlorinated pesticides and PCB's in some fish (Merluccius merluccius and Aphanopus carbo) was continued.

A "Mussel Watch" survey of metals, chlorinated pesticides, PCB's and hydrocarbons was carried out.

Prevalence of finfish and shellfish diseases related with pollution is recorded along the Portuguese coast.

The environmental study of the Tejo Estuary was continued. Assessments of the results obtained in previous years were done and particular effort had been devoted to publication of data and preparation of future programmes in order to obtain a more comprehensive approach.

Radioactivity of deep water fish from Madeira and continental waters was measured.

The survey of the benthic fauna is continued in connection with the EEC Project Coast 47. Investigations of variation of dynamics and productivity of macrozoobenthos populations (Patella depressa, P.vulgata, P. aspera) were studied.

Monitoring studies in an area of discharge of a submarine outfall (urban and industrial wastes) located at Sines, was continued.

Environmental conditions in sea water off Portuguese coast in connection with fisheries resources studies were carried out. Tª, salinity, oxigen, nutrients, pigments and primary production were measured.

Petroleum hydrocarbons were analysed in effluents from petroleum reffineries, in surrounding coastal waters (Leixões, Aveiro, Lisboa, Sines and Faro) and in some organisms.

A study on the bathing water quality along the beaches near Lisboa and in the south coast was continued.

A regular bacteriological control of the shellfish (bivalves) culturing areas showed some problems related to water quality in few areas near urban outfalls in summer.

Special surveys were carried out to monitor the development of red tides in the outer Tejo Estuary (Cascais-Guincho). T°, salinity, oxygen, pH, nutrients, suspended particulate matter, pigments, primary productivity, phytoplankton and zooplankton(respiration and excretion) were measured.

Sediments:

- Mobility of some elements as a result of anoxic/oxic conditions in sediments.
- Tentative of geochemical mass balance in estuaires
- Studies about the bioavailability of trace metals in sediments.
- Transfer of metals from sediments to the living organisms.

Spain

No report received.

Sweden

(B.I. Dybern)

The following projects are related to a number of ICES resolutions, either in principle or because the fact that the investigators are attached to ICES Working Groups etc.

Monitoring of the marine environment. This programme comprises all main physical, chemical and biological parameters. The part which is carried out in the open sea is connected with the monitoring programme of HELCOM.

Eutrophication in the marine environment. The project, which is aimed at the assessment of the impact on the marine environment of cultural eutrophication, started in 1984 and will go on for several years. It consists of a number of sub-projects both in the Baltic area and on the Swedish west coast.

Project Environment/Cellulose. The effects on the recipients and their life forms of effluents from different types cellulose industries are studied, the main emphasis lying on factories along the coast of the Gulf of Bothnia.

Project ESTHER. Aims at systems for testing and hazard evaluation of chemicals in the marine and freshwater environments. Is divided into a large number of sub-projects. An international evaluation was made in 1984 and the results will steer the future activities.

Fish diseases and parasites in the marine environment. A survey of the distribution of diseases and parasites in fish (and partly shellfish) has been made in Swedish waters on the west coast and in the Baltic proper. The interest has recently been turned to some "hot spots" where pollution is expected to cause infestation.

Patchiness studies: Preparations have been made for the Swedish participation in the Baltic Patchiness Experiement (PEX) in 1986 and a pilot study, PrePEX in 1985.

Cooling waters from nuclear power plants. The discharges of cooling waters have been studied for a number of years and these studies will be continued with some emphasis laid on the effects on the living resources.

Environmental factors influencing herring recruitment in coastal areas. Investigations have been carried out on the west coast (influence of eutrophication) and on the coast of the Baltic proper (eutrophication, oil spills).

Biological nitrogen transformation. Since nitrogen often seems to be the main factor behind eutrophication the transformation processes have been studied in some detail in various parts of the sea.

Toxic planton algae. Toxic dinoflagellates have infested mussels grown at aquaculture arrangements along the west coast and studies on this problem have been initiated. At the Baltic coast there are some studies on Nodularia blooms and the toxicity of this species.

United Kingdom

(England and Wales)

(J.E. Portmann)

In accordance with Council's request this report focusses on those activities pursued to implement Council resolutions. We have no additional activities, beyond those to be reported as meeting papers, which we feel should be mentioned.

C. Res 1980/4:7 Work has been undertaken using M. edulis as an indicator of pollution stress caused by the disposal of sewage sludge in a number of areas around the coasts. Stress as indicated by scope for growth measurements was clearly experienced but affected animals grew well and were in other respects judged to be in better condition than controls. Further investigations are in progress using this species.

C. Res 1981/4:6 A limited amount of work was undertaken in 1984 on the histological changes in livers of dab taken from Liverpool Bay. The results of this and earlier work were reported to the 1984 Statutory meeting (Paper CM 1984/F:8). Plans are being developed for wider scale investigations in 1985 both in areal coverage and histopathological effects terms.

C. Res 1982/4:10 As part of the preparatory work for the Bremen North Sea Conference an assessment of the Status of the North Sea was prepared. This was not compiled entirely in accordance with the ICES guidelines on Regional Assessments but consideration is now being given to the possibility of conducting Assessments of all or part of the North Sea and the Irish Sea, which will comply with the ICES Guidelines for the conduct of Regional Assessments.

C. Res 1982/4:6 Plans for the England and Wales contribution to the 1985 Baseline survey of contaminant concentrations in fish and shellfish and a parallel study of metals and petroleum hydrocarbons in sea water have been finalised and the sampling and analysis programme has commenced.

C. Res 1982/4:7 An initial study has been undertaken to assess inputs of metals and certain organo chlorine compunds to the marine environment. This study included an assessment of gross river inputs. It is hoped that it will be possible to report the results to ICES in 1985.

C. Res 1983/4:1 In connection with investigations into the impact of disposal to sea of sewage sludges and dredging spoils investigations are in progress into the concentrations of certain contaminants in sediments and the content of these substances in the benthic organisms found in the disposal areas.

United Kingdom

(Scotland)

(A.D. McIntrye)

Work towards the implementation of a number of Council's resolutions continued in Scotland during 1984. This is summarised below under the heading of the appropriate activity, arranged in chronological order.

C.Res.1976/4:13 Drilling muds. A regular pattern has been developed of surveys round oil production platforms in the northern North Sea. Sediments and bottom fauna are analysed and the platforms studied are selected to provide a range of operational usages. Particular attention is paid to the zones of effect already reported with a view to detecting any extension of the effect.

C.Res.1979/4:14 Sewage sludge dumping. Monitoring of sludge dumping grounds off the east coast of Scotland has continued and no adverse effect detected. In parallel with this, experimental work is being conducted to determine the levels of sewage input which result in significant effects.

C.Res.1981/4:6 Monitoring biological effects. Another research cruise was conducted in 1984 to record pathological conditions and parasites on commercial species of fish. These annual cruises contribute to the general inventory of data on disease incidence and distribution. In addition, observations were made on several other biological effects, including enzyme induction and changes in microbial populations, with a view to identifying effects suitable for inclusion in the 1985 pollution baseline survey.

C.Res.1982/4:10 Regional assessments. Work has continued on the preparation of a regional assessment of the Firth of Forth, using the guideline formulated by ICES.

C.Res.1982/4:7 Gross riverine inputs. The collection of data on inputs via Scottish rivers is done on a routine national basis and is utilized as required. Such data are particularly relevant to the regional assessment of the Forth.

C.Res. 1982/4:2
C.Res. 1982/4:6
C.Res. 1982/4:8 Baseline survey. Input to the biological effects component of the 1985 baseline survey has already been referred to. Preparation for the more standard parts of the survey are also well advanced.

C.Res. 1983/4:1 Bioavailability of contaminants in sediments. An experimental programme has been developed to study the impact of sediments contaminated with certain heavy metals on invertebrate benthos.

In addition to these reactions to specific Council resolutions a number of other activities relevant to the Committee's interests have been underway. Monitoring of the main commercial species of fish and shellfish for mercury in edible tissues has been done on samples collected from the main fish markets every six months. The levels detected indicate no cause for concern. Studies are being made of situations where tributyltin is used as an anti-foulant, and the possible impact of this on oyster farming is being assessed.

U.S.A.

No report received.

U.S.S.R.

(S.A. Studenetsky)

The method for the evaluation of the toxicity of sewage water and certain pollutants based on the disturbance of behavioral reactions of crustaceans (phototaxis) was developed and tested.

The toxicity of sea grounds taken out during bottom digging for dumping was evaluated by bioassays.

Trial of bioassays based on sea unicellular algae, protozans and rotifers as test objects was made with the view to use them in sewage monitoring control systems of factories.

Background for comprehensive approach to establishing levels of industrial wastes of fishing enterprises was worked out.

Maximum allowable limits of concentrations of synthetic surfactants used in oil industry during drilling and productive bed uncovering were established for marine environment.

Chemical pollution of ecosystems of Kurshsky and Vislinsky Bays was investigated. Changes of microflora, phytocenosis, zoocenosis and benthic communities under anthropogenic pollution as well as the impact of pollution on early development stages of the young and several commercial fish species were evaluated.

Measures were developed to prevent pollution of bays.

The impact of pollution on hydrochemical conditions, abundance and specific composition of phytoplankton from different areas of the Baltic Sea was studied. Investigations of the distribution of migrations and the impact of several pollutants on hydrobionts of the north-eastern Baltic Sea were also carried out.