ACADEMY OF SCIENCES OF THE ESTONIAN S.S.R.
ESTONIAN REPUBLICAN COMMITTEE FOR IBP

ESTONIAN NATIONAL PROGRAMME FOR IBP

TARTU 1970

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INTRODUCTION

The study of the biological productivity of the Earth has become a central problem of the biological sciences. The following three problems can be recognized as its main objectives:

1) to satisfy the needs of the rapidly increasing human population for food and facilities;

2) to offer a scientific background for planned interference with changes in the environmental status and the natural resources, including the struggle against pollution;

3) to carry out investigations with the aim of gathering adequate biological information necessary for the future of mankind.

The IBP started with the initiation of the corresponding efforts in 1964. At the present time 58 countries are participating in the IBP and another 32 are still considering their possibilities of joining in the programme.

The Soviet National Committee for the IBP was appointed by the Presidium of the U.S.S.R. Academy of Sciences on March 19, 1965. The preparatory phase was finalized by approving the «U.S.S.R. participation in the International Biological Programme» on May 29, 1968, by the Soviet National Committee for the IBP. The Programme was distributed to the corresponding organizations during the year 1968. Nearly at the same time the stage of planning was generally overcome in other countries as well, and so Phase I (1964—1967) came to an end. The operational phase will run five years (1967—1972).

In order to shorten the time necessary for the design and feasibility studies not completely finished yet, the U.S.S.R. Academy of Sciences asked the U.S.S.R. Republican Academies to appoint Republican IBP Committees. The Branch of the Chemical and Biological Sciences of the Academy of Sciences of the Estonian S.S.R. prepared a corresponding proposal which was approved by the Presidium of the Estonian Academy of Sciences on December 24, 1968, as the Estonian Republican Committee for the IBP. The main task of the Committee (IBP Est NC) is to harmonize all the IBP studies in the Estonian S.S.R. and to co-ordinate local investigations with the U.S.S.R. National Committee.

The IBP Est NC started its activities in early 1969. However, some preliminary inquiries within the Estonian Academy of Sciences and useful contacts with the SCIBP, London, had already been conducted for several years. In 1969 the greatest attention was paid to the clarification of the studies of the corresponding nature outside the Academy of Sciences. As a result, the «Preliminary Programme of the Est IBP» was adopted in January 1970.

For the lack of special funds for carrying out IBP studies in the Estonian S.S.R., the present «Estonian National Programme for the IBP» to a considerable extent consists of projects initiated by different institutions independently of the IBP, but modified, as far as possible, to fit the profile of the IBP. Other projects were initiated in 1969 drawing on internal resources and the enthusiasm of researchers.

In our Republic several fields of interests are comparatively well represented by reliable researchers, and it is due to this fact that all the seven IBP sections will function. Unfortunately, not all of them are sufficiently provided with technical personnel. So there are evident difficulties in planning the investigations on the methodical level suggested by the IBP Central Office.

In compiling the Estonian National Programme an attempt was made to avoid direct duplication of the U.S.S.R. National Programme. Moreover, certain efforts were made with a view to taking into account of the investigations conducted in the neighbouring Republics to support and collaborate, or to fill some evident gaps. In this way the Estonian National Programme is quite an independent one and does not include the investigations which are carried out by our specialists in other Republics or with grants from any of the all-Union research institutes.

Due to the geographical location, the investigations to be carried out in the Estonian S.S.R. (e. g. the communities of the Gulf of Finland — PM; MAR — CT; the primary productivity of the Norway spruce — PT) are very closely related to the IBP programmes in Scandinavia and Northern Europe (Poland, Democratic Republic of Germany, Czechoslovakia). Therefore a considerable amount of information exchange resulting from IBP Est NC activities is to be expected. In addition to this, the IBP Est NC tries to do its best in publishing research data on the Estonian S.S.R., in organizing regional symposia in some narrower fields of interests in collaboration with the U.S.S.R. PT section, in translating IBP handbooks, etc.

Below, the Estonian National Programme for the IBP brings to your attention the research projects and themes now in hand in 17 research institutions of the Republic.

Up to 98 persons are mentioned as supervisors or coordinators and team leaders, of whom 12 have the degree of Doctor of Sciences, and 54 hold the degree of Candidate of Sciences (which is equivalent to Ph. D.). The number of persons working on each project is indicated by a formula-like expression. For example 2—3+5—10 stands for the number of researches varying during a year from 2 to 3 and there are 5 to 10 assistants or technical workers (undergraduates included).

The addresses of the officers of the IBP Est NC, members of the sectional committees, supervisors, co-ordinators of the themes, team leaders or/and persons responsible are given in the List of Addresses at the end of the Programme.

Estonian Republican Committee for IBP

ESTONIAN REPUBLICAN COMMITTEE FOR IBP

Chairman: Prof. Dr. H. Haberman, Member of the Estonian Academy of Sciences; Director of Institute of Zoology and Botany

Vice-Chairman: Dr. T. Frey, Institute of Zoology and Botany

Scientific Secretary: K. Kalamees, Institute of Zoology and Botany

Members: PT — Prof. Dr. H. Trass, Tartu State University, Head of Chair of Plant Taxonomy and Ecology

PP — V. Tohver, Tartu State University, Head of Chair of Plant Physiology and Biochemistry

CT — Prof. Dr. E. Kumari, Corresponding Member of the Estonian Academy of Sciences, Asst. Director for Research of Institute of Zoology and Botany

PF — N. Mikelsaar, Institute of Zoology and Botany, Head of Sector of Hydrobiology

PM — A. Järvekülg, Institute of Zoology and Botany

HA — A. Viru, Tartu State University, Head of Chair of Sports Medicine

UM — Prof. Dr. Ü. Oll, Estonian Agricultural Academy, Head of Chair of Animal Nutrition

Chairman: Prof. Dr. H. Trass
Secretary: L. Kannukene
Members: J. Martin
K. Kalamees
Prof. Dr. V. Masing
V. Lasting
L. Reintam

Five subsections are organized for the study of the productivity of terrestrial communities:
A — autotrophs (J. Martin), B — heterotrophic higher plants and fungi (K. Kalamees), C — consumers (V. Masing), D — detritus-organisms (V. Lasting), E — edaphotop (L. Reintam). During the first period (1969—70) the chief emphasis will be on the fauna and the flora, during the second period (1971—72) on biomass, during the third period (1973—74) on ecosystem processes. The final period (1975 onwards) will be devoted to synthesis.

1. Primary production of the nemoral spruce forest

Institute of Zoology and Botany
Tartu State University
Estonian Agricultural Academy
Estonian Institute of Agriculture and Melioration
Tallinn Botanical Gardens

Supervisor: Dr. T. F r e y

— Vascular plants: flora, biomass (T. Frey, L. Kannukene, 2—3+5—15)
— Lichens: flora, biomass (H. Trass, J. Martin, 2—4+ +2—5)
— Fungi: flora, seasonal periodicity of species, biomass (K. Kalamees, 2—4+1—5)

— Soil micro-organisms: flora, seasonal periodicity of species (V. Lasting)
— Dynamics of soil gas exchange (K. Pork, 1—3+1—2).
— Algae: flora (E. Kukk)
— Fauna: faunistic composition of main groups of mammals, birds and insects (V. Masing, 1—6)
— Spatial mapping of phytomass: trunks, branches, LAI, clorophyll content, energetic equivalent of phytomass (T. Frey, V. Porgasaar, 3—7+10—15)
— Seasonal dynamics of phytomass: analysis of increment, debris and litter, quantities and turnover of nutrients, primary net production (T. Frey, H. Rätsep, 3—5+5—10)
— Habitat: soil humidity, pH, temperature and gas exchange, air humidity, temperature, CO_2, precipitation, total radiation (K. Pork, T. Frey, H. Roostalu, 2—5+5)
— Soil composition and characteristics: organic matter, decomposition and transformation, migration and accumulation of soil substances at the Vooremaa experimental area (L. Reintam, E. Arvisto, R. Sepp, 3+5—10)

As far as possible:

— Secondary production (account of herbivores and wood-destroying fungi in determining the net primary production)
— Energetic balance of communities on the primary productivity level.
— Energetic efficiency of the components of a community

Research areas:

Main experimental area:

VOOREMAA — Jõgeva Dist., Roela, 3 spruce stands with an area of 1 ha each plus work and buffer areas, in all up to 80 hectares

Supporting experimental area:

VENEVERE — Rakvere Dist., Hanguse, a spruce stand of 0.5 ha

2. Biological productivity and genesis of soils in connection with their processes and regimes

Estonian Agricultural Academy
Institute of Zoology and Botany
Institute of Experimental Biology
Estonian Forestry Institute

Supervisor: L. Reintam

— Formation, dynamics and change of above-ground phytomass (R. Kõlli, 1+1)
— Underground phytomass (R. Kõlli, 1+1)
— Quantity and dynamics of above-ground debris and forest litter (R. Kõlli, R. Sepp, 2+2)
— Decomposition and transformation of organic matter and formation of humus in the soil and in forest litter (E. Arvisto, 1+1)
— Mineral and biochemical composition of phytomass and non-living plant residues (R. Kõlli, R. Sepp, E. Arvisto, 3+3)
— Dynamics of soil moisture, soil temperature, soil air composition and soil respiration as well as R_2O_3-forms, nutrients and ORP in soils (H. Roostalu, 1+1)
— Migration and accumulation of substances investigated by means of chromotographic absorbents, radioactive isotopes and lysimeters (L. Reintam, V. Hellenurme, 2+1)
— Composition and properties of soils, their mineralogy and micromorphology (L. Reintam, A. Oja, 2+2)
— Flora on the Mihkli experimental areas: higher plants, lichens, fungi (K. Kalamees, T. Frey, 3—5+5—10)

— Structure of the Mihkli experimental areas: LAI, chlorophyll spatial distribution, calorimetrics (T. Frey, 1—2+5)
— On the basis of the problems mentioned: turnover of substances in the «soil-plant» system (L. Reintam, R. Kõlli, R. Sepp, E. Arvisto, H. Roostalu)

Research areas:

MIHKLI — Pärnu Dist., Koonga, a spruce stand of 0.7 ha; Mihkli, an oak stand of 1 ha
EERIKA — Tartu Dist., Eerika Farm, three-field crop rotation (rye, barley, potato) of 0.36 ha
MOOSTE — Põlva Dist., Mooste, a pine stand of 0.5 ha
MÖKSI — Põlva Dist., Möksi, a field of 0.2 ha

— Seasonal dynamics in the numbers of soil microbes in biometers filled with several soils from the Estonian S.S.R. (P. Rahno, O. Rõõs, 5+4)

3. Collaboration with the CT section

Scientific co-ordinator: Prof. Dr. V. Masing
See below Nos. 1, 2 and 3 of the CT section

4. Collaboration with the UM section in the study of natural resources

Scientific co-ordinator: H. Ling
See below No. 5 of the UM section

PP: PRODUCTION PROCESSES

Chairman: V. Tohver
Secretary: J. Viil
Members: J. Ross
Dr. P. Rahno
H. Mägi

In the field of photosynthesis the main tasks embrace the study of the productivity of the vegetation in dependence on the physical and biological factors of environment, the mathematical modelling of these processes, and the establishment of the pathways of control at early stages of CO_2 assimilation by light. Among investigations on the nitrogen cycle the main problems are the micrological regulation of the soil nitrogen supply, and research in the fields of ecology, as well as of the physiology and biochemistry of denitrification, the last-named group basically being studies on the inducibility of nitrate-reducing enzymatic systems.

1. Dependence of photosynthesis on radiation, temperature, carbon dioxide diffusion, water regime, the level of mineral nutrition, and leaf structure

Institute of Physics and Astronomy
Institute of Experimental Biology

Supervisors: A. Laisk, H. Moldau, O. Keerberg

— Role of diffusion processes in the photosynthesis of the leaf (A. Laisk, 2+2—3)
— Dependence of photosynthesis on the water regime of plants (H. Moldau, 2+1—2)
— Regulation of the early stages of CO_2 assimilation by light (O. Keerberg, J. Viil, 5+4—5)

2. Photosynthesis and productivity of plant communities

Institute of Physics and Astronomy
Institute of Experimental Biology
Estonian Agricultural Academy

Supervisors: J. Ross, V. Dushetchkin

— Mathematical modelling of photosynthesis and of the productivity of the vegetation (J. Ross, H. Tooming, 5+3—5)

— Photosynthesis and productivity of field crops under the climatic conditions of Estonia (H. Mägi, V. Anderson, 4+3−6)
— Effect of mineral nutrition and of the water regime on photosynthesis and the utilization of plastic substances by crops (V. Dushetchkin, 2+2−3)

3. Regulation of the vital activities of soil micro-organisms with the aim of ensuring a better nitrogen supply for plant growth

Institute of Experimental Biology
Estonian Institute of Agriculture and Melioration

Supervisor: Dr. P. Rahno

— Dynamics of total and available nitrogen in soils in dependence on soil microbial development (P. Rahno, M. Aksel, 4+2)
— Isolation and study of new races of highly efficient root-nodule bacteria (E. Pärsim, V. Lasting, 3+3−5)

4. Ecology and physiology of denitrifying bacteria, and the biochemistry of denitrification

Tartu State University

Supervisor: V. Tohver

— Distribution of denitrifiers in soils, their vital activities, and nitrogen losses in dependence on the physico-chemical properties of soils (V. Tohver, L. Viileberg, 4+4−6)
— Position of nitrate-reducing systems in the electron transport chains in *Achromobacter agile* and *Pseudomonas denitrificans,* inducibility of reductase enzyme systems, competition phenomena between nitrate reductase and respiratory systems, and kinetics of nitrate reductase activity (V. Tohver, J. Simisker, 2+5−6)

Chairman: Prof. Dr. E. Kumari
Secretary: O. Renno
Members: M. Margus
Prof. Dr. V. Masing
Dr. U. Valk
K. Veber

Already for a long time before the IBP officially came into operation in the U.S.S.R. and in the Estonian S.S.R., the Commission for Nature Conservation of the Academy of Sciences of the Estonian S.S.R. and partly also the Institute of Zoology and Botany have been engaged in activities which are at present included in the research programme of the CT section: since 1955 — participation in the international investigation of the waterfowl (IWRB), since 1938 — investigation of peat bogs with special attention to the bird fauna, since 1962 — the Project MAR, since 1967 — midwinter counts of the waterfowl. Attendance of the Project MAR and the IWRB conferences: 1962 — in France (presentation of materials and making proposals for the selection of MAR areas in Estonia), 1966 — in Warsaw (Jablonna), 1967 — in Helsinki, 1968 — in Leningrad.

1. Selection and establishment of stationary research areas

Commission for Nature Conservation of the Academy of Sciences of the Estonian S.S.R.
Institute of Zoology and Botany

Supervisor: Prof. Dr. E. Kumari

— Inspection of the existing network of national and local nature reserves from the point of view of further research work (E. Kumari, 1+2)
— Selection and recording of new prospective areas, and the compiling of an annotated list of protected as well as research areas proposed for conservation (V. Masing, M. Margus, 3+3)

Institute of Zoology and Botany
Matsalu State Nature Reserve
Vaika State Nature Reserve
State Museum of Natural History of the Estonian S.S.R.

Supervisor: Prof. Dr. E. Kumari

— Research is going on in accordance with the conference resolutions on the Project MAR and the IWRB, and also according to the resolutions of the conferences going to take place in the years 1970—1972
— International counts of the waterfowl according to the programme of the IWRB (S. Onno, A. Jõgi, O. Renno, 3+2)
— The bird fauna of the Matsalu Bay, particularly the ecology of the Greylag Goose (V. Paakspuu, T. Kastepõld, 4+10)
— The bird fauna of the maritime islands in the environs of Vilsandi with special attention to the ecology of the Common Eider (L. Aumees, 1+1)
— The bird fauna of the Käina Bay as a prospective IBP area (A. Mank, 1+1)

Research areas:

MATSALU (a MAR area of the A-category) — Haapsalu Dist., Matsalu State Nature Reserve, a bay covering 60,000 hectares

WESTERN SAAREMAA (a MAR area of the B-category) — Kingissepa Dist., Vaika, Kuusnõmme, Kihelkonna, up to 1,000 hectares

In addition, the areas that will be selected according to the first theme

Tartu State University
Institute of Zoology and Botany
Nigula State Nature Reserve
Estonian Forestry Institute
Naturalists' Society attached to the Academy of Sciences of the Estonian S.S.R.

Supervisors: Prof. Dr. V. Masing, Prof. Dr. E. Kumari

Research is proceeding in accordance with the resolutions of the Shrewsbury Conference (June, 1967) and other conferences of the Project TELMA.

— The selection of Estonian peat bogs within limits of the first theme of the CT section (V. Masing, E. Kumari, 4+8)
— Types of Estonian peat bogs and the phytoclimatology of open peat bogs (U. Valk, 2+1)
— Further investigation of the Endla marshlands and of the Nigula peat bog (Section of Botany of the Naturalists' Society, V. Masing, H. Vilbaste, 4+4)
— Further study of the bird fauna of Estonian peat bogs (Section of Ornithology of the Naturalists' Society, E. Kumari, 1+3)

PM: PRODUCTIVITY MARINE

Chairman: A. Järvekülg
Secretary: E. Ojaveer
Members: A. Lumberg
J. Tenson
T. Trei

In the Baltic Sea as a brackish water basin standing in a limited contact with ocean waters through narrow and shallow sounds, the distribution of vegetation and animals

as well as the process of formation of biological production is governed by specific regularities. Scientific research in the areas of the sea off the coasts of the Estonian S.S.R. included in the program of the section, is of essential importance as the results can be related to the corresponding research in the other Baltic countries.

1. Ecology of distribution and the biological productivity of the brackish-water communities in the eastern Baltic

Estonian Laboratory of Marine Ichtyology
Institute of Zoology and Botany

Supervisor: A. Järvekülg

— Primary productivity of the Gulf of Riga (J. Tenson, 2+2)
— Quantitative distribution and seasonal fluctuations in zooplankton communities and dominant species in the Gulf of Finland (A. Lumberg, 1+1)
— Quantitative distribution of communities and dominant species of zoobenthos in the Gulf of Riga, the Gulf of Finland and the eastern part of the Middle Baltic (A. Järvekülg)
— Causes of stock fluctuations of the dwarf herring (*Clupea harengus membras* L.) in the north-eastern Baltic and its mortality rates (E. Ojaveer, 2+2)
— Species composition and distribution of the underwater vegetation and production by commercial algae in the off-shore waters of the western coast of the Estonian S.S.R. (T. Trei, 2+1)

Chairman: N. Mikelsaar
Secretary: M. Kangur
Members: R. Laugaste
M. Pork
Õ. Tölp
H. Starast

The aim of the PF section is the collection of comparable data characterizing biological processes in freshwater ecosystems. In the Estonian S.S.R. it was possible to carry out reliable investigations only in Lake Võrtsjärv. The final aim is to establish quantitative relations between all stages of the energy chain.

1. Quantitative study of the stages of production processes

Institute of Zoology and Botany
Tartu State University
Hydrometeorological Service Board of the Estonian S.S.R.

Supervisor: N. Mikelsaar

— Hydrology (N. Mikelsaar, 1+2−3)
— Hydrochemistry (H. Starast, 2−4+1−3)
— Bacteria: biomass and seasonal dynamics (S. Lokk, 1+1)
— Macrophytes: distribution, biomass and productivity (Aime Mäemets, 1+1)
— Phytoplankton: primary production and blooming of algae (R. Laugaste, 2+1)
— Epiphyton and periphyton: flora and biomass (M. Pork, 1+1)
— Zooplankton: biomass and productivity in trophic groups (E.-J. Haberman, 1+1)
— Microbenthos (A. Järvekülg)

— Benthos: biomass and productivity in trophic groups (Õ. Tölp, 3+1)
— Fishes: biomass and productivity (2—3+1)
  — population dynamics (H. Haberman, Ervin Pihu)
  — trophical relations (Evi Pihu)
  — the role of rough fish in general fish production (M. Kangur)
— Physiology and biochemistry of water biotas (A. Kirsipuu, A. Kangur, 3—5+2)
— Fish parasites: biomass and production (H. Tell, 1+1)
— Birds: biomass and production (O. Renno, 1+1)

Research area:

VÕRTSJÄRV — Tartu Dist., Rannu, Limnological Station of the Institute of Zoology and Botany, Lake Võrtsjärv, 270 km^2

HA: HUMAN ADAPTABILITY

Chairman: A. Viru
Secretary: S. Oja
Members: Prof. Dr. E. Käer-Kingissepp
Prof. Dr. J. Aul
O. Imelik

In the development of human working capacity and adaptibility and also in the prevention of the so-called civilization diseases, physical education and sport have become important factors. Clarification of these questions, starting from the actual conditions of the Estonian S.S.R. and the peculiarities of the local population, is the topic of investigations conducted by the HA section.

1. Anthropological characterization of the population of the Estonian S.S.R.

Tartu State University
Tallinn Pedagogical Institute

Scientific co-ordinator: Prof. Dr. J. Aul

— Anthropological characterization of the population of the Estonian S.S.R. and the dynamics of anthropometric parameters during the last 30 years (J. Aul, 2—3+2—3)
— Anthropometric peculiarities of teenagers going in for sport (H. Tiik, 1+1)

2. Peculiarities of lipid and carbohydrate metabolism in the population of the Estonian S.S.R.

Institute of Experimental and Clinical Medicine
Tartu State University

Scientific co-ordinator: Prof. Dr. E. Käer-Kingissepp

— Lipid and carbohydrate metabolism in the population of the Estonian S.S.R. in relation to age, occupation and diet (E. Vagane, 2+2—3)
— Adaptation of the functioning of the digestive glands to different diets (E. Käer-Kingissepp, 2—3+2—3)

3. Human working capacity, neuro-hormonal mechanism of adaptation to muscular strain and the aspects of its development with regard to age

Tartu State University
Tallinn Institute of Epidemiology, Microbiology and Hygiene
Tallinn Pedagogical Institute

Scientific co-ordinator: A. Viru

— Development of a complex method for investigating human working capacity and general characteristics of the processes of adaptation in man (M. Epler, 2—3+ +3—4)
— The role of the pituitary-adrenocortical system in the regulation of adaptation to muscular strain (A. Viru, 4—6+4—6)

— Peculiarities of the adaptation of the pupil's organism to different physical work loads, and the norms of motor activity for different age groups (R. Silla, 4–6+ +4–6)
— Effects of physical education and sport on the body development and health at different ages (O. Imelik, 2–3+2–3)
— Longitudinal study of the peculiarities of the effect of exercises used in physical education and sports training (A. Viru, 6–8+4–6)
— Improvement of the physical education programmes for schools imparting general education (S. Oja, 3–4+ +2–3)
— Biochemical mechanisms of the effects of psychotropic drugs on human mental and physical working capacity (L. Tähepõld, 2–3+3–4)

4. Cardiovascular injuries and psychic disturbances in the people of today

Tartu State University

Scientific co-ordinator: J. Riiv

— Distribution of cardiovascular injuries among the population of the Estonian S.S.R. in relation to the factors of modern civilization (psychic stress, intensive physical activity, peculiarities of nutrition, etc.) (J. Riiv, 2–3+1–2)
— Distribution of psychic disturbances in relation to civilization factors (J. Saarma, 2–4+2–4).

Chairman: Prof. Dr. Ü. Oll
Secretary: Ü. Tamm
Members: M. Margus
H. Ling
E. Rannak
H. Kopvillem
J. Tammeorg

The whole research is conducted in four subsections: plant gene pools (No. 1), biological control (Nos. 2—4), natural resources (No. 5) and nutrition (No. 6). The most promising investigations are being carried out in the subsection of biological control; research into the cultivation of algae and meadow agarics is notable too. The other subjects are in the initial stage of research.

1. Selection of the tree species most valuable in the Estonian S.S.R.

Estonian Agricultural Academy
Estonian Forestry Institute

Supervisors: E. Pihelgas, I. Etverk

— Pinus silvestris (E. Pihelgas)
— Picea abies (I. Etverk)
— Betula (P. Ott)
— Populus (Ü. Tamm)

2. Investigation of adaptations and ecology of insect species showing promise in forest protection

Institute of Zoology and Botany

Supervisors: V. Maavara, H. Kopvillem

— Ecological study of the *Formica rufa* group with the aim of ascertaining most effective and reproductive forms (V. Maavara, 3+2)

— The entomophages of the European pine sawfly (*Neodiprion sertifer* Geoffr.) as a possible new system of biological control of this pest (H. Kopvillem, 2+2)

3. Investigation of entomophages and their use in the biological pest control of crops

Institute of Zoology and Botany

Supervisors: H. Kopvillem, V. Maavara, 3+1

— Ascertainment of the role of entomophages in the dynamics of the number of pests of cruciferous plants under various ecological conditions (H. Kopvillem)
— Establishment of the physiological parameters and the parasites of some pest butterflies (large cabbage butterfly, night-moths) in conditions of being infected with nosematoses (H. Kopvillem, V. Maavara)

4. Phytopathogenic micromycetes of the Estonian S.S.R.

Institute of Zoology and Botany

Supervisor: P. Põldmaa (1+1)

5. The possibilities of a more extensive utilization of the natural resources suitable for human nutrition

Tartu State University
Estonian Laboratory of Marine Ichtyology
Estonian Institute of Agriculture and Melioration
Estonian Forestry Institute
Ministry of Food Industry of the Estonian S.S.R.

Scientific co-ordinator: H. Ling

— Population densities and ecology of large mammals and gallinaceous birds (H. Ling, 6+3)

— The possibilities of cultivating promising cultures of algae (*Chlorella, Furcellaria*) (E. Kukk, T. Trei, 2+2)
— Ascertainment of suitable artificial substrata for cultivating meadow agarics (U. Kalamees, 3+2)
— Forest resources in the economical regions of the Estonian S.S.R. (M. Margus, 1+1)
— The biochemical composition and the possibilities of technological utilization of forest berries in conditions of the Estonian S.S.R. (R. Piir, K. Sõgel, 2+2)

6. Rational foundations of modern nutrition

Tartu State University
Estonian Agricultural Academy
Estonian Institute of Agriculture and Melioration

Scientific co-ordinator: Prof. Dr. Ü. Oll

— Evaluation of the biological value of foodstuffs and diet (daily ration) and the role of the food factor in the etiology and prevention of chronic non-infectious diseases (E. Rannak, 1+2)
— Investigation of the properties of the dry protein feed prepared from alfalfa (R. Pork, Ü. Oll, 2+2)

LIST OF ADDRESSES

The following abbreviations are used below in the addresses of IBP officers, supervisors, team leaders and other persons in the Estonian S.S.R.

EAA — Estonian Agricultural Academy, 12 Riia St., Tartu, Estonian S.S.R.
EFI — Estonian Forestry Institute, 12 Õpetaja St., Tartu, Estonian S.S.R.
EIAM — Estonian Institute of Agriculture and Melioration, Saku, Harju Dist., Estonian S.S.R.
ELMI — Estonian Laboratory of Marine Ichtyology, 1—2 Apteegi St., Tallinn, Estonian S.S.R.
IEB — Institute of Experimental Biology, Harku, Harju Dist., Estonian S.S.R.
IPA — Institute of Physics and Astronomy, Tõravere, Tartu Dist., Estonian S.S.R.
TSU — Tartu State University, 18 Ülikooli St., Tartu, Estonian S.S.R.
IZB — Institute of Zoology and Botany, 21 Vanemuise St., Tartu, Estonian S.S.R.
IZB (LS) — Limnological Station of Institute of Zoology and Botany, Rannu, Tartu Dist., Estonian S.S.R.
TPedI — Tallinn Pedagogical Institute, 41 Narva Highway, Tallinn, Estonian S.S.R.

AKSEL, Maria, Cand. Sc. (Biol.), senior researcher, Sector of Microbiology, IEB
ANDERSON, Vello, senior teacher, Chair of Physics, EAA
ARVISTO, Eda, postgraduate, Chair of Soil Science and Agronomical Chemistry, EAA
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