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EUROPEAN MARINE BIOMETEOROLOGY NETWORK
EMBN

Objective: Marine organisms equally respond to climatic forcing as terrestrial organisms do (Greve et al. 2001). The biometeorological surveillance of marine organisms lags far behind terrestrial supervision of climatic effects on life at land. The anticipation of global warming and the increased economic and social utilisation of coasts requires an improved understanding of climatic affects which interfere with trophic processes, anthropogenic stress and monitoring strategies for the surveillance of marine biota.
According to the few available results climate response of marine organisms functions mainly on the basis of temperature. It is an element of the functional biodiversity of species and varies in the response direction (positive and negative temperature correlation), in the length and timing of the period of the reception of the temperature impact and with the gradient and the extremes of the thermal forcing.
The EMBN project is designated to develop a monitoring strategy for the phenology of marine organisms which is applicable over most of European marine biota on a low expense level as can be continued by one or several agencies for a long period expected in order to catch up with global warming disturbances of the marine ecosystem.

List of tasks:

The establishment of the EMBN will have
- to define the phenological criteria to be observed,
- to recruit, train and establish EMBN observers,
- to organise the data collection, certification and distribution,
- to analyse the observations.

These tasks will be organised as follows:

1. Investigation of phenological candidates

Regional and ecological expertise (plankton, benthos, nekton) will be gathered in iterative conferences, literature studies and local feasibility studies in order to define populations which can be phenologically monitored and promise biometeorological results on a regional and/or Europewide basis. This group of experts will generate a list of phenological indicators to be considered. The transferability of the phenological garden concept will be tested.

2. EMBN phenological checklist

The production of a EMBN phenological checklist is the assigned task of this exercise. This checklist must be accompanied with a precise description of the organism, the observation conditions and the rules for reporting. The checklist will be printed in the languages of the observers following a standard format.

3. Selection of EMBN observers

The EMB observers are expected to serve as public volunteers, accepting a lasting duty for the community, safeguarding a high accuracy of their contribution for a limited financial reward. To recruit them from the possible interest groups (environmentalists, sailors, fishermen, divers, national park rangers and others) will require a clear concept, a precise documentation and a public recognition of this work. This recognition will include the professional training by research institutes, the certification of this training, technical support, priviledged access to EMBN information and the continuous notification by the responsible agency (newsletter). The EMBN observers are expected to develop an attitude of a public solicitor for the life in the sea.

4. Definition of EMBN training

According to the EMBN checklist a concise teaching program for public education will have to be developed including the access to marine organisms, the rules of conduct for the handling of these, the possibilities of taxonomic confusion, the phenological definitions and the means of reporting. These steps have to be formulated and printed in the languages of the participating nations and structured according to the didactic experience of adult education.

5. Training for EMBN observers

The training of EMBN observers will follow the textbooks developed for this purpose. The timing and effort to be put into the education has to be found according to the experiences.

6. Test observation

Comparative test observations shall be started soon after the training of the EMB observers. The feasibility of analysing such information, establishing an IT dialogue, and improving the complete EMBN monitoring is part of this exercise.

7. Establish data management

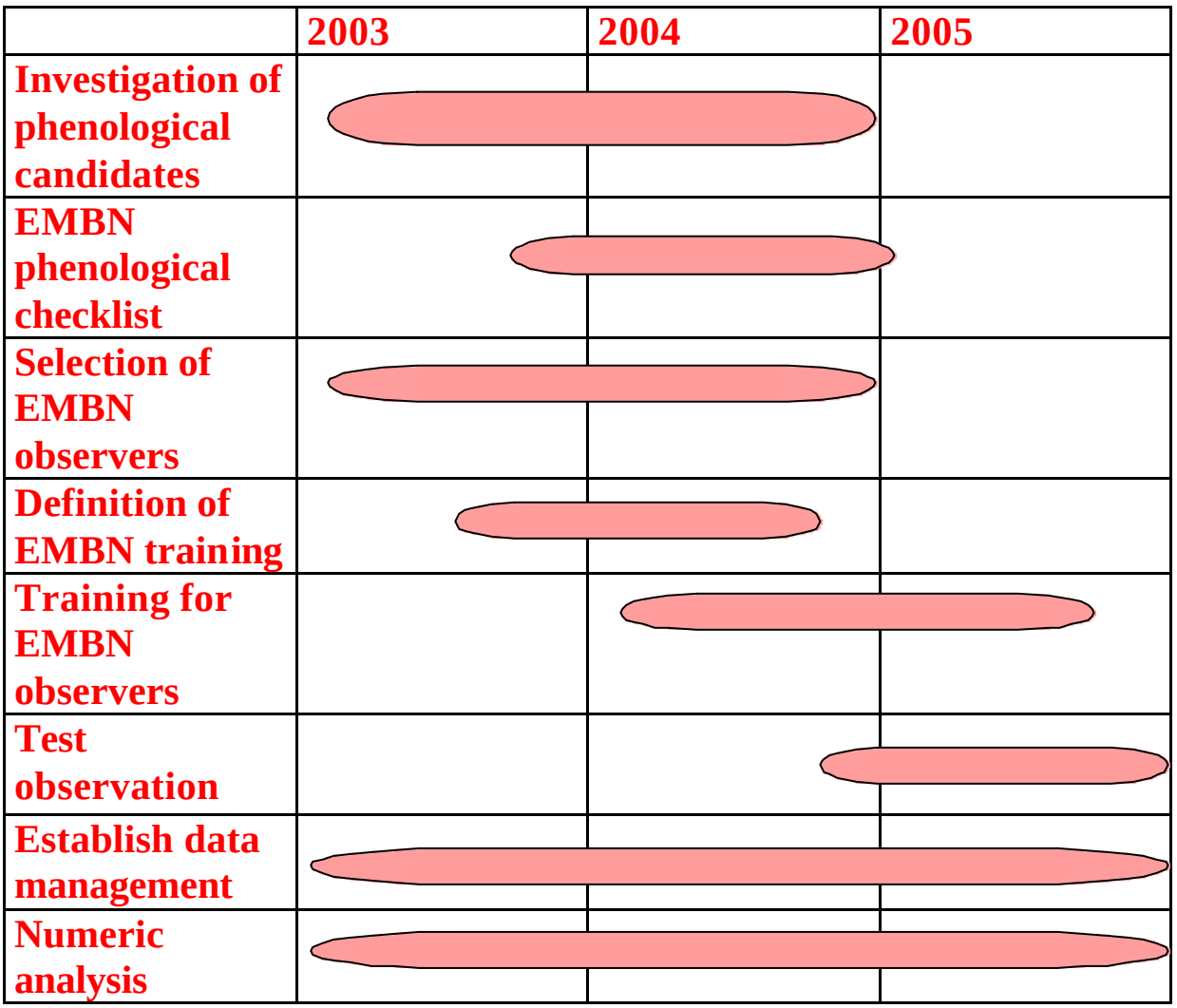
The phenological data management has to be technically as simple and safe as possible. A data bank system will be established which follows the principles:
easy storage of raw data,
precise but partially automated certification,
graded and protected access to data by the participants, the EU, the EMB observers, interest groups.
standardised lasting storage in one or several government agencies.
The preparation of a public dialogue program will be started.

8. Numeric analysis

The scientific analysis of the biometeorological information is based on long documented time-series. This cannot be accomplished in the period of this project but on the basis of the available marine time-series and the terrestrial statistical tools a set of modules will be established that enables the biometeorological analysis of documented and future information.
Marine Biometeorological theory, the options to transfer locally analysed functional relationships on other areas and the definition of principles will be started.

9. Documentation Publication (IT, Film, Print)
The process of the definition of the EMBN checklist, the recruitment and training of the EMBN observers, the observational routines and the data treatment and analysis have to be documented for future modification as scientific communications, as brochures and as posters, as training modules for future EMBN observers and, possibly, as videos for the public.

Time schedule



Documentation Publication IT, Film, Print			

Potential participants should represent the major European marine climatic variance as given in the following sketch.