

First Czech National Meeting to the IGCP Project 335 "Recoveries after mass extinction": aims and outlines

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The session "Patterns and trends in recovery of biotic systems after deep crises" was held in Prague on April 20-21, 1994. The host institution was Geological Institute of Academy of Science. 28 scientists took part in the discussions to four selected topics. The participants represented different disciplines of science. They belong to geologists, paleontologists, biologists, ecologists, environmentalists as well as curators of natural resources. The main goal of the meeting was discussion among the paleontologists and specialists they are monitoring the recent flora and fauna. Various concepts and hypothesis were put in confrontation and many ideas were mutually accepted among the representatives of the different disciplines. Both organizers gratefully appreciate the comments and suggestions they were kindly provided from large scale of Czech institutions. Thanks also to colleagues from Germany, Austria and United States who discussed the scheduled topics advance.

The discussion consists of four blocks: 1. Which are the successful life strategies during the global crises and consequent times of recoveries? 2. How we classify refugia considering their function, openness and perspectives? 3. In which measure we can document an interplay between the phylogenetic history of organisms and their response to the deep crises? 4. How can variability of organisms reflect the stages of crises? These four topics appear to be simple but they embrace, in fact, significant portion of the whole science. Therefore we can hardly expect any definite answers that can be made after one of the national meetings. Although the all science looks very intensively for some effective tools how better understood the processes of coming crisis, this effort is striked by an extreme complexity of the proper task. Additionally, an extremely large number of possible interactions has been documented.

We try to list some ideas that resulted from the mentioned discussion blocks or final brainstorming:

1. Life strategies: Plenty of various life strategies were demonstrated. The orientation towards the development of probability routines has been approved. Besides the evident life strategies they fit to the survival (for example low requirements to nutrition and high tolerance, quick movement capability, adaptive potential) we have discussed many "hidden" strategies. These strategies are active only when the organisms experienced specifically configured crisis inhibitors. Many organisms preferred for long time some specific conditions but they are able to "switch" to other ones that become more fit to survival. Interesting is also the modifying of the reproductive strategies. It was demonstrated on plants and insects.

2. Relicts and refugia: Recent botanists and part of the paleontologists they deal with the attached marine bottom dwellers feel that relicts and refugia can be introduced as two categories. Each of them involves the ecosystem and its background. This is in controversy with the prevailing concept that relict is an assemblage of organisms that occupies the refugium. In the alternative concept the relict is an impoverished remnant of formerly flourished ecosystem while the refugium is an object specific for the survival of the biotic sources. Relict is characterized by survival of several main structures selected from the previous rich spectrum. These surviving remnants are inflexible and they easy extinct due to crisis agents or during

the recovery competition. Controversially, partly opened structure of occupied niches characterizes the refugia. They recruit their inhabitants from generalists and ecosystem individualists. The refugia are characterized by moderately "wrong" conditions. They substitute the rule of some changing platforms between the mature ecosystems and crisis fields.

3. Phylogeny and survival: No simple relations have been stated. Some species are excellently entering the recovery times because they reached important construction or physiological innovation during the late times of the crisis. The first coming has some better chance to occupy the position of the "sovereign of the mountain". The ancient construction proper may be turned into an advantage, especially when joined with non-restricted requirements in respect to the environment. The crisis scenario is controversial with the stabilization scenario. However, both the extreme positions are "dangerous" for the life. Changing among these two positions seems to be the right engine that results in surprising vitality of the Earth life.

4. Intraspecific variability: Several larger sets of data were approached. There is an assumption that variability may decrease before the coming crisis. The tests on relation with other accompanying factors were suggested. Decreasing of variability is puzzling when occurred before the evident cutting of the niche diversity. Similarly to life strategies, only some "permitted" channels were detected for these processes.

5. Brainstorming ideas: Botanists presented the data that many ecosystems are not so strictly bounded into the frame as people usually thought. The other interesting conclusion is that competition is not so strong. Although examples of very strong and evident extinction due to the competition occur, many of situations indicate that organisms "afraid" the right competition and they "look" how avoid the real discrepancy. In passive scenario, we can model that organisms are "pushed" to different niches. After testing of the models on origin of the monotonous disaster populations we have found an exciting analogy. The meadow ecosystem admits probably only one effect how to do it. This is an extreme good of the meadow. It looks surprisingly. We hope that the brainstorming was useful for comparison of different scientific schools and approaches. The puzzling and speculative things may evoke the new testing and data acquisition. Brainstorming has shown also other possible fields of study; for example relation between the extinction/recovery and parasitism.

6. Several participants have submitted their contributions in written form. The contributions submitted until the June 20, 1994 have been involved in this volume.

We hope for further conceptual times in the Recovery investigations. The next meeting is in 1995, at the Faculty of Science, Masaryk University in Brno. J. Kalvoda from Department of Geology & Paleontology has accepted the host role during the next meeting.