

Jerusalem, October 12, 2004

Prof. M. Atkinson

Prof. M. Rosenthal

**Prof. Y.Birk**

Dear members of the International Expert Team;

Re: Your report: Evaluation of Fish Cages in the Gulf of Eilat, dated  
Sept. 20, 2004.

Thank you for the above mentioned report.

After careful reading, I must disagree with many of its findings and recommendations.

Following are the more important comments and reservations:

**1. General:**

1.1. There are recent indications that weakened coral reefs, suffering continuous sub-lethal pollution stresses, may not sustain storm damages as well as healthy ones. The Gulf of Eilat may well be exposed to elevated frequencies and forces of storms due to global warming. Thus, extra care needs to be exercised with management of the Gulf environment, even if no clear-cut changes are visible as yet.

1.2 The framework of the Evaluation requested from you was to:

- a. Assess the carrying capacity of the Gulf of Eilat to pollution, and to
- b. Evaluate the relative amounts and significance of the fish cages as a single point pollution source.

The report obviously covers areas outside this scope, such as the feasibility of growing fish in the Mediterranean, the viability and future of aquaculture in Israel, budgeting of research, establishing an authority for environmental management and enforcement in the Gulf of Eilat, etc. With all due respect, these areas are not within the acknowledged expertise of the IET and therefore should not have been included in your report.

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1.3. The report is supposed to be scientific and to be based primarily on the various studies carried out according to your past recommendations. On this basis you have come to the conclusion that it would be wise to remove the cages from the sea. In page 5 you indicate that “ there are conflicting reports and a clear analysis of existing data and monitoring goals for the reef needs to be established”. This is a classical case for application of the “Precautionary Principle”. Therefore, it is altogether unclear why you have chosen to recommend, several times throughout the report, that the initial time to start removing the cages should begin when funding for R&D becomes available. While the need to transfer the cages is a matter of environmental science, the issue of funding is purely a matter of government and public policy.

### **Referring to the “Statement to the Government” (p.3):**

#### **Findings:**

##### 2.1 Finding No. 2:

While the dispute over the fate of nutrients originating from the fish cages has not yet been satisfactorily concluded, it is still quite clear that a local impact on the environment near the cages is a fact (see also p. 8 of the report). On the other hand, the Princeton model, which is the very basis for your conclusions and recommendations, has not been calibrated nor validated for the near-shore area.

##### 2.2 Findings Nos. 3 and 4:

In your testimony before the Government of Israel you maintained that the relative contribution of the cages to the nutrient budget can well be as high as 15%, so this is not “only a few percent”.

The presumption that the increase in nutrient inventory is a part of a natural cycle is questionable and not adequately founded. For example, no mass balance calculations were carried out to show that nitrogen fixation in the Gulf (or other natural phenomena) could explain this increase. The study by Iluz et al. (2004) shows an increased primary productivity, which is presumably due to nutrients from the cages. You claim, wrongly, that it contains **no numbers**. Strangely, you reverse to say (p. 18) that “ **these numbers** show a doubling of productivity...” Since you recommend caution due to this and earlier reports, it is not sufficient to advise not to increase nitrogen from the farms; instead, immediate and more drastic steps are called for.

##### 2.2 Finding No.5:

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The statement that organic matter from the cages does not influence the reef is in disagreement with your statement (p.8) that “the fish farms affect the environment within several kilometers of the cages”. It should also be noted that, as there is a complete lack of measurements of light penetration and transparency of the water column near the cages (p. 18), no “no influence” conclusion could be drawn on the environmental situation in the periphery of the cages.

#### 2.3 Finding No. 7:

The expression “some disagreement” is inappropriate when referring to coral reproduction near the cages. The only study done with respect to this point indicates dramatically reduced reproduction.

#### 2.4 Finding No. 8:

The study done on fish diseases indicates that fish cages are **an additional source of risk**, beyond that of Nature.

#### 2.6: Finding No. 9:

You have failed to indicate that the source of these “contaminants” is the fish cages. With respect to the possible use of antibiotics, there is obviously a contradiction: the growers claim that “there has not been a single case where the use of antibiotics was necessary”, while at the same time they claim that “if diseased fish occurred, fish were removed and disposed of in an approved manner” Was there or was there not a disease among the fish??

I would like to note that, regrettably, you have chosen to meet with the fish-growers alone. Thus, we could not verify or disagree with their arguments, which were not supported by any technical report or other numerical data. Thus, they remain mere claims, of which we are doubtful. For example, the claim that the fish farms have ISO 14000 certification is, to our knowledge, untrue. See also comment\_2.6, regarding the occurrence of fish diseases. Furthermore, your previous recommendations called for a reduction of 30%, which has not been achieved. The allocated quantities of feed were 4150 t/year, but the actual loads were 4960 t/year (2001) and 4650 t/year (2002). This means that the actual inputs of organic matter and nitrogen from the cages are significantly higher than those assumed in your report.

### **3. Recommendations:**

3.1. Rec. No. 1: The recommendation does not stress, as it should, that the fish cages are the largest anthropogenic source of pollution (as indicated later in your own report) and should, consequently, be treated according to local laws and international conventions. Furthermore, there is virtually no data on nutrient

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fluxes from the Red Sea to the Gulf. A good deal still needs to be learned on nutrient concentrations at the various depths, among other issues. Thus, caution is advisable when evaluating relative proportions of nutrients from the different sources, and more stringent measures are needed than merely avoiding an increase in nutrients.

3.2: Rec. No. 3: In p. 9 your report outlines a time frame of 6-8 years, to develop the know-how of growing fish on land. According to the best of our knowledge, wide scale production of fish in seawater (hundreds of tons/year) is already practiced in Spain. Thus, no long transition period is necessary. Also, commercial amounts of fish are already being grown in Ashdod on the Mediterranean, and there is room for expansion of this operation. It could serve as an interim solution until the infrastructure required for land-based operations is ready. The UNEP/MAP has even published a guideline (2004) providing information on trends and methods of mariculture in the Mediterranean.

Funding is critical to maintaining the business of fish growing. It has nothing to do with the scientifically based need to protect the Gulf of Eilat. In principle, funding of land-based operations is the responsibility of the polluters.

3.3: Rec. No. 4: I have grave doubts about the capability of the proposed artificial reef to function as a trap for organic particles or to quantitatively uptake dissolved nutrients emitted from the cages. Surprisingly, you have not performed even preliminary mass balance calculations. These, I believe, would show the ineffectiveness of this suggestion, at least for the critical short-term period.

I remain,

Sincerely yours,

Dr. Y. Bar-Or  
Chief Scientist

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Cc: Dr. M. Haran, Director General, Ministry of the Environment

Prof. D. Levanon, Chief Scientist, Ministry of Agriculture

Dr. M. Beit, Chief Scientist, Ministry of National Infrastructures