

Whence do we come from? Where are we? Where are we aiming at?

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WHENCE DO WE COME FROM? WHERE ARE WE? WHERE ARE WE AIMING AT?

(Note prepared for the first CIESM-DYNPOP meeting - Tunis - 10-14 September 1994)

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Last week I was at a "first level" course on stock assessment methods held by MRAG (Imp. Coll.) in S.Margherita Ligure for people coming from Italy and Greece, in view of next "second level" courses in Italy and Greece before the end of the year.

Both promoted by DG XIV of EU.

In the preparatory phase, I had been asked to draft a note (a status report) on the situation in Italy as far as statistical data, stock assessment studies, management expectations are in Italy now.

There, (1) I wrote that the present need is not primarily for better methods but for better data.

Such a statement was formulated because it is partly true, and also because I could not provoke too much both promoters and teachers of the stock assessment courses. Today, with a different audience and at the light of the foreseeable scopes of this meeting, may I afford to make another move and say that the situation is more complex than that, and perhaps needs for advancements and developments can be identified just in better data as in methodological developments and in the "applicative framework" of science, i.e. management.

The present paper wants to be a provocative "note of ideas" in order to favour a realistic "prise de conscience" of research people involved in population dynamics studies in the Mediterranean.

We are deliberately trying to introduce here somehow more "dynamics" in the "population" of Mediterranean fisheries biologists.

Let us first try and clarify how we perceive the role of population dynamics studies in the frame of marine sciences.

Pop. dyn. studies can be perceived and regarded under two different perspectives.

- 1) As part of a descriptive and explicatory (i.e. historical) approach to past events, within ecology
- 2) As part of predictive models for the sake of managing living resources, as an applied science

Ideally there is a third "regard", which could be a link between the two above said ones, by means of functioning models.

It does not seem correct that one is making the second type of research when he asks money for the first, and viceversa.

Theoretically, if one is aiming to the third goal he can correctly ask money from both sources of funding, but we doubt such a case exists in the Mediterranean, at least presently.

CONCEPTUAL APPROACH

1) AS PART OF A DESCRIPTIVE AND EXPLICATORY (I.E. HISTORICAL) APPROACH TO PAST EVENTS, WITHIN ECOLOGY.

- OR -

2) AS PART OF PREDICTIVE MODELS FOR THE SAKE OF MANAGING LIVING RESOURCES, AS AN APPLIED SCIENCE.

-- IDEALLY --

3) A LINK BETWEEN 1 AND 2, BY MEANS OF FUNCTIONING MODELS.

MANITAPP - C.N.R. (MAZARA DEL VALLO) RESEARCH LINES

1) ECOLOGY OF THE GULF OF CASTELLAMARE AND ITS ARTIFICIAL REEFS AND COASTAL FISHERIES.

2) DIRECT METHODS (TRAWL-SURVEYS) ON DEMERSAL RESOURCES IN THE CENTRAL MEDITERRANEAN (ALSO: CATCH EFFORT SAMPLING SURVEYS)

3) OPERATIONAL APPROACH TO SMALL PELAGIES AND THEIR ENVIRONMENT (ECHO-SURVEYS, NEW TECHNOLOGIES FOR ENVIRONMENTAL SURVEYING, COMPLEX BIO-OCEANOGRAPHIC MODELS

The Authors of this note are presently involved in the second type of approach for trawlable demersal resources with a number of people in their Institute and outside it, and we obviously have a particular "feeling" for it. Another research group in our Institute somehow is trying the first approach in a particular case-study: coastal fisheries ecology of artificial reefs (and not) in the Gulf of Castellammare.

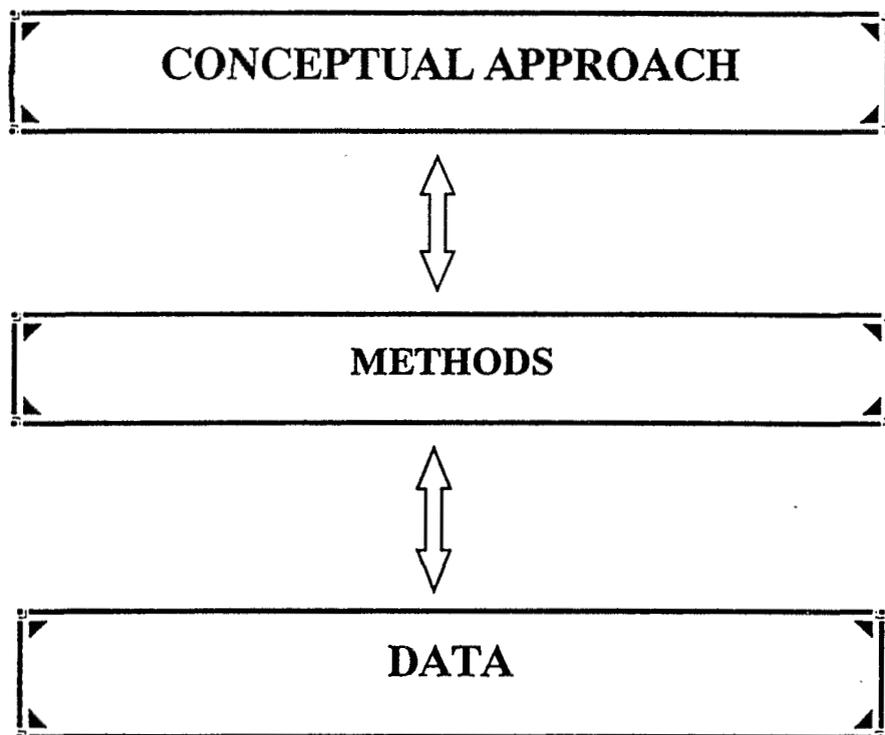
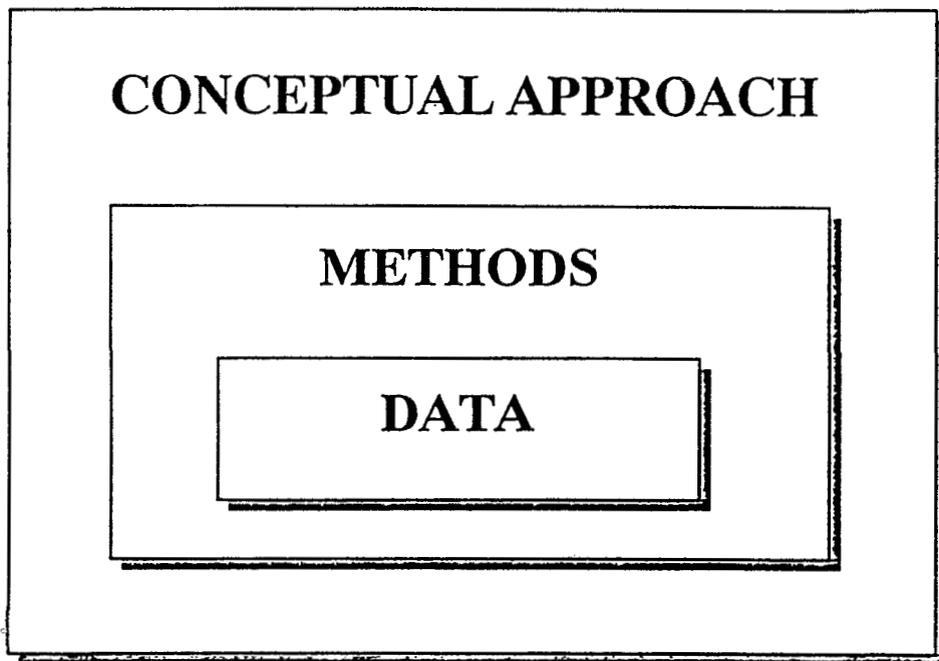
Still another group within our Institute is in the phase, long, painful and ambitious of launching out a research line within the third approach, maybe also but not only as a MAST programme: this still belongs to the future.

It deals with "small-pelagics and environment", and has two complementary, non-contradictory "cotés": ecological modelling on the one side, GIS and echo-survey assisted operative oceanography on the other side.

Whichever the perspective and approach, the collection of basic data, their analysis and the use of the results thereafter cannot be regarded separately: they must be conceived, carried on and conceptually considered globally, as a whole.

Therefore we frankly find some difficulties, the older we get, to construct papers according to the classical rules of "introduction, materials, methods, discussion".

We would like to be able (and allowed!) to think and write following this scheme instead:



Some fifteen years ago we adopted (and suggested nationwide) (2)(3) trawl-surveys as a direct approach to the assessment of Italian demersal resources mainly for two reasons 1) the unavailability of reliable past commercial data and the difficulty, price, and sometimes the impossibility of getting them in the future 2) the hope and wish to be able in a fairly short time to say something more on the exploitation state of main demersals than it had been said in the previous ten years based on production models (mainly, but not exclusively, within GFCM).(4)

Now, after another ten years of work along those lines, we verify what we expected: despite a good statistical design, compatibly with available funds and our efforts, the quality of the data base is poor, both because of lack of precision and because of strong biases.

The true problem is probably that one should be much more worried by methods and the conceptual approach.

We said methods, and not method, because the same conclusion must be drawn if one considers other Mediterranean assessment studies(5) based on commercial data and VPA, just as with direct survey data and analytical methods.

Let us say now that the more one reads in the present scientific or grey literature and the more one speaks with colleague or tries to listen to discussion meetings, the more one gets the impression that we are presently crossing the sea towards a "promised land", but we don't know when and where we'll get.

At the risk of being unpopular, especially among our Italian colleagues, when asked safe, definitive management indications by our s.c. decision makers in fisheries management, we frankly and honestly tried to explain (we don't know how successfully) that "Science is the kingdom of doubts, technology is the kingdom of certainties".

So maybe a further step towards certainty will be contributed by technology, and that seems so now in the context of the third abovesaid research line of I.T.P.P.

Both the already said approaches (i.e. direct methods and analytical models or indirect methods and VPA) belong to the same conceptual approach.

Let's call it "available tools of population dynamics".

The answer to the decision makers' demand will always be "not", unless the possibility stems out in the future to embed in the models we use the driving factors of variation, and in the data base their measurements.

All that, timely enough to obtain the predictions useful for management.

Then, that usefulness does also imply that managers are equipped with administrative tools quick and effective enough to implement decisions.

We do realize this is just "wishful thinking", especially but not only in the Mediterranean and now.

Maybe this is also actually impossible, just as hoping that all the war funds are spent for peaceful research.

The difficulty of the task is not a justification for surrendering: research is by definition challenge and trials, "trial and error".

Can we point out that the most impressive advancements in applied science have been introduced by the development of new instruments?

If, in order to manage, prevision is necessary with good levels of certainty, it may very well be, in fact, that the answer is in technical measurement advancements.

This is the conceptual approach we are trying to promote when dealing with the third type of research I referred to earlier.

It is not "pour cause" that the material there is "small pelagics"; how best could predictive models, new measurement instruments, quickly taken and implemented decisions be developed than dealing with the most highly fluctuating, utterly influenced by the environment and therefore less managed resources of all?

But one could just as legitimately believe that a major help for prediction could be an improvement of the capacity to deal with complexity and biodiversity, not only environmental factors but also interspecific trophic relationships.

This is what we are trying in a natural lab., very beautiful by the way, called "Golfo di Castellammare", not only, as I said, working on artificial reefs but on the entire physical entity of the Gulf: the Gulf of Castellammare is our nice Gulf of Carpenteria, with due differences of opportunities.

How the findings we'll get will be liable for generalization is still to be understood fully but no doubt the Gulf is a representatively meaningful Mediterranean case study.

Altogether, we persist thinking that all our doubts in the Mediterranean are "healthy and wealthy", and that only an honest and open approach to them can be fruitful of further developments.

All honest and open colleagues in the word presently share the same uncertainty.

In fact, world-wide, we are still facing a contradictory situation where major worrying collapses, totally unpredicted (e.g. Cod in Atlantic Canada three years ago) notwithstanding enormous financial and brains' efforts in applied research, do live together with a number of successes.

Maybe one should ask himself whether the first instance is a special case or the second one.

If anybody followed the recent civilized exchange of letters to Science (6) by Ludwig, Hilborn and Walters on the one side and Shepherd, Beddington etc. on the other on exactly the same problem, he would come to the conclusion that this is an "open question".

And he should be happy of that if he only considers this: the pessimistic attitude of Hilborn and colleagues is confuted by people who are successfully applying a special case of the very Hilborn's "adaptive management" (i.e. on the Falklands' squids) (7).

The conditions for applying that approach are probably particularly and exceptionally favourable there and now, we strongly doubt the same conditions are attainable in the Mediterranean, unless, in our context, a condition is reached of C.P.R. (sensu Ostrom)(8) voluntarily managed in a regime of community consensus, as is the case now with clams in Italy(9), better with clams in the Grado lagoon, as was once the case with the Castellon "Plan Experimental de Pesca"(10) in Spain.

What in the meantime?

In the meantime, still striving for advancement of the complex: quality of database, methods and conceptual approach, we don't think much more can be presently achieved in the Mediterranean than using the approximate methods we are all already using and the plentifully suggested by Caddy in his Fisheries Circular(11), as the situation is precisely what he clearly identified elsewhere.(12)

Obviously, being so, the management implications and results will be approximate and weak.

It's also our responsibility if our fisheries managers are not yet able to ask us the right questions: we should suggest them what the right question to be asked should be.

And they haven't yet firm answers by us.

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