

INTRODUCTORY REMARKS

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I don't believe it is necessary for me to review the history of the *Drupella* story. All of you are because you have an interest in the matter and I am sure you are familiar with the background. What I would like to do is make a few introductory remarks on the significance of it all in terms of environmental management.

There are many parallels with the crown of thorns (cot) saga:

1. A natural coral predator about which little was known was discovered to be aggregating in large numbers and feeding heavily to the extent that extensive areas of coral were being killed.
2. The phenomenon was noticed and reported independently at several different localities at about the same time.
3. It was immediately assumed that there had been some kind of ecological disturbance causing an upset of the "normal" predator-prey balance.
4. It was also assumed that the disturbance was human-induced - "woe are we - what have we done - it must be our fault".
5. A range of explanatory hypotheses was proposed, principally :
 - * predator pressure release - probably a fish predator on the snail, the disturbance being attributed to over-fishing.
 - * physical damage to the settlement areas by storm damage, dredging or blasting.
 - * physical disturbance by siltation or flooding with fresh water after storms or change in upstream catchment management.
6. A realization that there was virtually no knowledge base for assessing these hypotheses - subjectively, let alone test them scientifically.
7. A research phase to gather basic information.

It would be ungracious of me to point out that after 25 years of crown of thorns research we are still not much better informed than we were at the beginning. But this in itself brings sharp focus onto one very important lesson - for me anyway. You may not share this view.

It seems to me that the cot saga has shown us that ecological processes in the marine environment are infinitely more complex than we had imagined. Simple explanations with

one to one causal relationships between the organisms involved and the observed phenonema are very unlikely to be true.

We seem attracted to the concept that the natural world should be basically simple and stable and that the odd things that happen are abnormal. But recent chaos theory suggests that events like these may be from sheer coincidence of several chance events. It could even be that the complex factors producing such events are unknowable and unpredictable.

This could lead us to the view that research is a waste of time in terms of producing useful prescriptions for management. Well - I believe that conclusion would be a terrible mistake, although it would be an error for us to imagine that research can quickly lead us to solutions. It is absolutely imperative that we attempt to at least acquire enough information on marine ecosystem functions to lay down some ground rules.

In my view one of the greatest priorities for management-oriented marine research is to establish what the normal state of things is, that is in respect of marine community structure and dynamics. By this I do not mean to imply that I see stability as normal. On the contrary, what we have to establish is the range, frequency and amplitude of natural change in marine ecosystems.

Without that we will remain forever ignorant and unable to even begin to interpret seemingly odd situations like the cot and *Drupella* so-called plagues. We cannot assess whether sudden increase in predator numbers with devastating local or regional affects is natural/normal or unnatural/abnormal. Until we can do that we have no logical right to assume that human actions are responsible.

I am not saying that we should not speculate along those or any other lines. I am saying that we should not allow ourselves to give those speculations any degree of substance. We have to focus on the facts - to begin with the easily observable fact that *Drupella* eat the hell out of areas of coral reef and do vast damage.

As a marine park manager my **first** question is what will happen next? Will the coral regrow? If so, how quickly and will the regrowth community be of the same species composition as before?

My **second** question is will it happen again? And if so, how often? Will more snail recruits keep coming to consume the regrowing coral colonies? Or are the snail population explosions cyclic or episodic and do they correlate with any observable environmental change? These are long-term questions needing years of painstaking monitoring data.

My **third** question is , if the answer to the second is affirmative, can we prevent it? With a loud corollary - *should we attempt to prevent it?*

It is the second and third questions that require an understanding of the cause or causes. These are vital questions. If we couldn't answer such questions then we would have to retreat to the side benches and admit that marine park management is only about managing people. Perhaps that's the way it really is.

The truth is that marine ecosystem management is a very new concept and we have very little idea what the basic tenets are. What this says to me is not that it's all too hard and we should go home and watch Attenborough on TV. It says that there is a hell of a lot of basic work to be done and we should get on with it.

But on a different plane I would like to say that this predator-prey business in marine ecosystems, and phenonema like cot and *Drupella*, are absolutely fascinating. If you like a good detective story get into this one. The fact that the solution is still beyond us only adds spice to the mystery. You get the sensation that if we could just get to the bottom of these mysteries we would have vastly better insights into the wonders of the marine world.

It seems to me that the really interesting mysteries are solved by piecing together the bits of the story one by one until a picture emerges that is recognizable. What I expect to hear and see during this seminar are some of the bits.

We will study them and argue about their relevance and significance and whether any picture is yet emerging. It's early days yet though and I don't think any of us expect too much. We are at the stage where we are still gathering basic information on the scale and scope of the problem - if it is one. The main function of such a workshop is to put up what information we have gathered and see what we can learn from each other. It's one of the nice things about science - finding a common problem to tug at.

I would like to congratulate Stephanie and the others who initiated the workshop and did all the work in getting it together. And to wish you all good luck and good fun, both here and when you go back to your own research programs.