

## **Mariculture Committee (MCC)**

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Chair: Thomas W. Sephton (Canada)

Rapporteur: Ian Bricknell (UK)

The Mariculture Committee met on Wednesday, 21 September 9.00–12.30 and on Friday, 23 September 13:30–18.00.

### **Attendance**

Nine Committee members, five WG Chairs (one also a Committee member), and one Observer attended the meetings. 29 members and others sent their regrets at not being able to attend.

### **Opening and introduction**

The meeting began at 09:00 with attendees, committee members and observers introducing themselves. The Chair presented a brief overview of the Mariculture Committee and its role, function, and structure within ICES for the benefit of those attending.

### **Appointment of Rapporteur**

I. Bricknell was proposed as Rapporteur and accepted by the Committee.

### **Adoption of Agenda and Timetable**

The meeting time table and agenda were circulated prior to the meeting, discussed briefly and adopted. Volunteers were sought to serve on the Awards Committee. Tom Sephton agreed to represent MCC.

### **Arrangements for MCC meeting, and for 2005 ASC**

The MCC meeting was partitioned over two working days:

Part I: Wednesday, 21 September 2005, 9.00–12.30

Part II: Friday, 23 September 2005, 13.30–18.00

### **Committee business**

#### **Reports of Expert Groups**

WG Chairs were requested to prepare short presentations summarising the highlights, significant results, and bringing forward outstanding issues for discussion. For example, progress being made in relation to achieving the ICES action plan or a ToR being suggested for other Expert Groups to consider.

It was noted for the MCC record that, in the future, all WG reports will be reviewed in light of the following criteria:

- 1 ) Were the Terms of Reference properly addressed and completed?
- 2 ) Is the report clear and understandable?
- 3 ) Is the science quality adequate?
- 4 ) Are the conclusions well supported and acceptable?
- 5 ) Linkages to ICES Action Plan, other topics, or work elsewhere in ICES?
- 6 ) Is the work suitable for an ICES publication?

- 7) How should the work be continued?
- 8) Other points to note or query?
- 9) Was attendance adequate?
- 10) Was the range of expertise appropriate or adequate?

### **WG on the Application of Genetics in Fisheries and Mariculture (WGAGFM)**

E. Kenchington (outgoing Chair) presented the report. The meeting was held 3–6 May in Silkeborg, Denmark. There were 19 attendees from 10 countries, with 10 apologies.

Of these, 12 were official members and seven were Chair-appointed experts, including two members of the European Commission Joint Research Centre involved with a programme called Fish Trace.

The meeting addressed five Terms of Reference.

Einar Eg Nielsen, the new Chair of WGAGFM was welcomed. The 2006 meeting is to be held at the Marine Institute, Newport, Ireland in April and the 2007 meeting is proposed to be held at the ECJRC, Ispra, Italy.

#### **ToR a**

Document the evolutionary ability of fish stocks to respond to climate change by reviewing the information on the nature and rates of environmental change.

- a very thorough discussion of the issues surrounding climate change and the ability of species to adapt;
- there is a range of scope for adaptation amongst fish species with respect to thermal tolerance and the physiological limitations are discussed.

#### **ToR b**

Evaluate methods and provide recommendations on the application of mixed-stock and assignment analysis to elucidate stock components, with an emphasis on marine fishes and fisheries.

Review of the various statistical methods commonly used in MSA, and their applications to the date function. It was proposed to compare and evaluate the properties of the different methods, giving examples from Baltic salmon and Atlantic herring, following which a discussion ensued which identified the most likely best performing marine species; 12 recommendations were made.

#### **ToR c**

Synthesize the evidence and methods for detecting local (genetic) adaptation in marine fishes.

This ToR was suggested for the 2005 WG meeting, and prior to the meeting an outline for a position paper was produced. The WGAGFM discussed the outline in detail and concluded that local adaptation in marine fish populations is a crucial topic, of utmost relevance to fisheries management and conservation biology. It was decided to continue work on this ToR c into 2006. The WG developed an extended outline for discussing and reviewing the topic at the 2006 meeting.

#### **ToR d**

Evaluate the usefulness of probabilistic maturation reaction norms as ecological quality objectives (EcoQOs) to send an early warning signal for the negative impact of fishing and other anthropogenic activities.

The outcome was that the WG endorsed the use of PMRNs as EcoQOs and made recommendations regarding the research needed to establish reference points. This ToR compliments the work done by WGECO and provides another metric for protecting genetic diversity.

**Discussion:** If maturation norms are overlooked in maturation biology, aquaculture may be useful in validating models of maturation assuming that aquacultured fish reflecting the genetic model. However, there is a problem as this experiment is very long term, at least 10–15 years.

#### **ToR e**

Evaluate the evidence for genetic erosion and changes in life history characteristics of local stocks due to mariculture activity.

The WG had expected to have more material to synthesize for this ToR, but very little has in fact been published over the few years since it was last addressed. The topic is updated and three research recommendations were made.

#### **Any other business**

Presentation by the European Commission on FISHTTRACE – a database containing information on fish abundance, distribution, etc., with genetic information included. They are exploring the “bar code” of life hypothesis, using CO3 and cytochrome b genes. They received advice regarding the suitability of this gene for the purpose of monitoring biogeography, etc. E. Verspoor has developed a salmon genetic database to identify salmon families.

#### **Discussion**

The ecosystem approach could be important *c.f.* climate change, with an anthropogenic effect of K-R conversion occurring, allowing reduced maturation time. This would allow a faster reaction and adaptation to environmental change. However, R species selection destabilizes ecosystems, combined with fishing pressure, climate change, etc. It was suggested that this observation is a genetic effect and could be irreversible.

#### **WG on Environmental Interactions of Mariculture (WGEIM)**

Presented by F. O’Brien. The meeting was held in Ottawa, Canada, 11–15 April 2005 and attended by 11 participants from seven countries. A number of aquaculture countries were not represented and specific invitations may need to be considered. Four members of this WG are also members of the GESAMP WG. Six Terms of Reference were addressed.

#### **ToRs a and b**

##### *Environmental risk assessment and communication in coastal aquaculture*

The outcome was to increase cooperation with GESAMP WG 31 and produce a template document with detailed case studies (Preliminary draft of “state of knowledge” of the potential impacts of escaped aquaculture turbot, sea-bass, sea bream, halibut, and cod).

So far a template document and 5 case studies have been produced in draft form and a poster was presented at ASC (Davies *et al.* ICES CM 2005/T:21).

This year’s discussions covered turbot and are expected to be finalized this year. The goal is to publish the work, possibly in *Aquaculture*. It has been circulated to WGAGFM for review.

#### **ToR c**

##### *Assessing the impact of various EU initiatives on mariculture*

Water Framework Directive: WFD has been ongoing for 5 years, is very well structured with set time deadlines and an ultimate goal in 2015 of achieving good status for all water bodies. In addition the European Marine Strategy may impact offshore aquaculture.

### **Progress:**

The WFD (implementation fully underway) and aquaculture is considered an environmental pressure and designated as an “at risk” category; however, further characterisation is required. EMS has had a delayed implementation but will impact beyond the boundaries of WFD in offshore areas and may impact offshore aquaculture initiatives.

It is proposed to continue to monitor EU initiatives and impacts on aquaculture. Aquaculture is an “at risk” activity and the risk needs to be quantified as real or perceived. The aim is to publish a document in October 2005.

### **Discussion**

Thanks from the Chair on the diligence in monitoring European Union key issues and the ensuing advice is very much appreciated by advisory commissions. It was suggested that this is kept as an active ToR. F. O’Beirn said that it had been beneficial having both ICES and the national roles contributing from both sides.

### **ToR d**

*Evaluate the recent development over the last 5 years in carrying capacity models for shellfish with a view to proposing an ICES theme session or co-sponsored symposium in this area*

So far four types of models have been discussed:

- Physical
- Production
- Ecological – focus of theme session!
- Social

Action point: Discuss further with Chair of WGMASC.

The group carried out a thorough review of carrying capacity, had discussions about developing a symposium covering ecological factors, but found there was little enthusiasm.

It was not clear how to proceed, although it was felt it was an area worth pursuing, if only in discussion.

Discussion: A question from the floor pointed out that the concept of carrying capacity in shellfish is an issue of interest to WGMASC, so the new Chair of WGMASC is the key in supporting the work that will contribute to this ToR.

### **ToR e**

*Consider and evaluate the possibility of a ‘sustainability index’ concerning environmental interactions of mariculture*

Currently two areas are proposed for the sustainability index which are: 1) Important for managers in order to monitor aquaculture activities, and 2) Review existing indices by monitoring the EU FP6 project recommending indices.

These criteria must be scientifically credible, adaptable and sustainable.

This ToR is very topical and judgement was deferred.

### **Discussion**

The evaluation started in 2004 and is due to finish in 2007; there have been some recommendations on the identification of useful indices.

### **ToR f**

Consider and evaluate the current state of integrated culture systems with a view to assessing the potential of polyculture to mitigate the environmental effects of mariculture.

Progress: Broad range of definitions MTA, polyculture, integrated aquaculture, ecological/sustainable aquaculture:

| ADVANTAGES                    | DISADVANTAGES          |
|-------------------------------|------------------------|
| reduction in net effluent     | technically complex    |
| shared operational resources  | expertise required     |
| intensification of production | greater areas required |
| public perceptions            |                        |

The benefits of culturing species together should be confirmed and research promoted to overcome the technical challenges associated with open and closed/recirculating systems.

### **WGEIM 2006 goals**

To reduce the report size it is proposed to produce sections as stand-alone documents that may be considered as an entity in themselves but which may also be added to increase participation from member countries, especially those countries whose main interest is shellfish and who see the WG as being mainly directed at finfish.

### **Discussion**

It was suggested that escapes from turbot farms is a big issue as the vast majority of turbot culture is carried out on onshore farms. However, it was confirmed that net culture is being explored in some member states and so escapes need to be considered.

*Ecological carrying capacity and other ecological impact of phytoplankton consumption.* Work carried out in the 1970s has not been updated since. The feeling from the floor was that next generation modelling is required.

Fish production statistics are no longer going to be collected by the WG – they were never corroborated by other groups and once submitted were never referred to. They became out of date more rapidly than they were uploaded. This data collection function should now be left up to national groups.

### **WG on Marine Fish Culture (WGMAFC)**

Presented by T. Sephton on behalf of A. Mangor-Jensen who was not able to attend.

The WGMAFC has suffered recently from poor attendance in spite of tremendous success over 15 years. There are worries that the WG will cease to exist if the current situation continues.

Fish welfare is a big issue which needs to be addressed: policies, application and code of practice over the use of animals. WGMAFC has not yet met to address these issues but this could be a major role for this WG in future.

Terms of Reference remain intact from last year but no formal report has been made.

Interestingly, the WGMASC group came into existence because there was not enough time in WGMAFC to do their ToRs justice.

WGMAFC are planning to meet next year, but the venue has yet to be confirmed.

## **WG on Marine Shellfish Culture (WGMASC)**

Presented by A. Bodoy. The third meeting of WGMASC was held in La Rochelle.

It was attended by seven members from six countries (including Spain and Denmark, important shellfish producers). Three terms of reference were addressed:

*ToR a* continued from the previous year: update the synthesis and prepare a publication on the development of shellfish hatcheries within ICES countries. This will examine the technical infrastructure and methods (water treatment, broodstock conditioning, feeding schedules, etc.) of the different hatcheries, the proportion of cultured animals to wild conspecifics being used as broodstock, and the application of genetic tools (e.g., triploids) to develop hatchery strains. A comprehensive review of the species cultured in ICES countries was also presented; as were quarantine and broodstock origins.

### **Outcome**

Progress on this ToR was based on the use of a dedicated questionnaire. A draft version was tested last year, and before the meeting, it was sent to as many hatcheries as possible. Personal contacts ensured a larger return rate. However, several hatchery managers were reluctant to give quantitative data on their production.

### **Recommendations**

WGMASC suggests that MCC considers ways for the collection of data on annual shellfish hatchery production to be implemented at a national level by countries. A questionnaire was presented to be used as a guideline.

“WGMASC suggests MCC to recommend that the shellfish hatcheries should use the FAO manual while taking into account the latest developments in hatchery technology”.

When a national survey on shellfish hatchery production is installed, WGMASC recommends that WGITMO monitors the implementation of the Code of Practice on the Introductions and Transfers of Marine Organisms for hatchery-produced shellfish.

*ToR b*: prepare a state of knowledge report comparing and contrasting the standard methods used to measure stress indicators in shellfish and provide a discussion on how they would be used to diagnose incidents of cultured shellfish mortality – a large problem for farmers through loss of production.

### **Outcome**

*A definition of stress:*

In life, organisms adapt to normal changes, such as temperature, salinity, and oxygen supply. In contrast to this are extreme situations from which the whole population is unlikely to survive, i.e., typically extreme physiological challenge (Akberali and Trueman, 1985). Living in tidal environments or being subject to mechanical actions, such as dredging may lead to adverse situations that are considered as stressors (Marin et al., 2005; Smaal *et al.*, 1991).

Indicators should have the following properties:

- Should allow for simple fast measurements, analysis of complex processes and test results.
- These analyses should be useable by and explainable to non-specialists, such that they can take action to prevent and limit effects.
- Early warning of a problem is essential, e.g. by applying

- a fast specific and sensitive test for known parameters.
- The management tools should be systematic and robust, communicating changes that have the potential to lead to a problem and direct to appropriate action.

### **Recommendations**

The WGMASC recommends that this term of reference should remain active, and be developed for the next meeting. Therefore, intersessional work will be organised under the leadership of David Fraser, with the mandate to stimulate the production of the last point of ToR b, that is” provide a discussion of how (stress indicators) would be used to diagnoses incidents of cultured shellfish mortality”.

*ToR c: Performance indicators and carrying capacity*

### **HAB**

A list of the main impacts of HAB on shellfish culture is given. The group felt that the right competences on this subject were not available.

### **Diseases**

The same remark applies to this item, but the group acknowledged the contribution from WGPDMO on:

- information related to the distribution causes and significance of the summer mortality syndrome in *C. gigas*;
- the effects of contaminants on immune system of shellfish; and
- the applicability of “health indices”.

### **Outcome**

*Performance indicators of carrying capacity*

- 1 ) Indicators must be of the highest scientific credibility and be accepted only after considerable review of the chosen index;
- 2 ) In the development of indicators relating to aquaculture activities it is important to consider them from a managers’ perspective;
- 3 ) Indicators do not only have to be scientifically credible but must also be simple to measure, be cost effective, and have practical applicability to the aquaculturist;
- 4 ) Indicators must be flexible enough to be adapted to the local environment in which they will be used;
- 5 ) The ability of an indicator to be accepted by all sectors would be an invaluable tool. The indicator must therefore have relevance to all sectors and detect the linkages between them.

Seven potential indicators were identified and are listed below:

- 1 ) Growth (individual and population) – both should be reported;
- 2 ) Mortality (during period of production) if available may be useful particularly for contained culture operations (e.g., for protected culture, clams, oysters);
- 3 ) Production time to harvest size – it is important to note whether there is a minimum acceptable size or if there are legally set sizes for the aquaculture product;
- 4 ) Yield per production area – this would need to be standardised in terms of weight, volume, and production area (spatially and temporally);
- 5 ) Meat content – for the producer the important statistic might relate to the yield at harvest;
- 6 ) Fouling – the abundance or coverage degree of fouling organisms should be estimated and related to the location, depth, density, and size of culture organisms;

- 7) Predation – does the abundance of predators relate to location, depth, density, and size of culture organisms? Estimates of lethal or sub-lethal predation might be useful.

### **Recommendations**

WGMASC recommends to MCC that a theme session at ICES ASC 2006/7 is dedicated to recent advances in the assessment of carrying capacity and related management tools used in shellfish culture. This session will be jointly sponsored by WGMASC and WGEIM.

WGMASC recommends to MCC that a comparative study of different management systems is carried out with a view to identifying and testing the response of indices under different production conditions and management regimes. The goal will be to identify the key indices.

WGMASC recommends to MCC that the stakeholders should be consulted on the development of carrying capacity models so as to provide valuable input into potential constraints and assessing the value of selected performance indicators. The stakeholders should include industry members/representatives, conservation interests, regulatory representatives, and academia.

WGMASC recommends to MCC that the HAB and Disease sections be completed intersessionally and approved in 2006 with a view to closing this term of reference.

### **Discussion**

The WG commented that recommendations should be made to the parent committee and not directly to ICES.

A question was posed whether stress indicators were aimed at disease only or whether disease and environment, etc. were monitored jointly. There was an additional proposal for different indicators for different species.

### **WG on Pathology and Diseases of Marine Organisms (WGPDMO)**

An overview for 2005–2006 was presented by T. Lang. The WGPDMO is a long-standing WG and held its first meeting in 1976.

Its focus is on wild and farmed marine organisms, finfish, and shellfish, but not marine mammals and birds.

The meeting was held from 8 to 12 March at IFREMER, France, attended by 23 delegates from 12 member countries + Lithuania. The WG was especially pleased to have three experts from Russia in attendance at the extremely well organised meeting.

Eleven ToRs were addressed. Background documents were prepared and disseminated prior to the meeting.

*The following topics were covered:*

- New disease trends in wild and farmed fish and shellfish – countries were asked to submit national reports prior to meeting, including countries not represented at the meeting;
- Specific diseases/pathologies in farmed fish/shellfish – e.g., heart and skeletal muscle inflammation (HSMI) in salmon, plankton-related mortalities in farmed fish, summer mortality syndrome in oyster (not only a problem in oysters in France, but also in blue mussels in other countries);
- Interactions between wild and farmed fish – sea lice and management measures (this is very political);



- Biological effects of contaminants – effects on the immune system of fish and shellfish, guidelines for integrated chemical and biological effects monitoring, QA;
- Environmental assessments – availability of ICES disease data, development of ‘health indices’ in wild fish as ecosystem health indicators, effects of diseases on wild fish populations, Baltic Sea Regional Project (BSRP) (data in the ICES database is submitted by countries and used for environmental assessment. The WG is currently interested in disease at the fish level, but will be looking at the population level in the future);
- ICES publications (WGPDMO website, Environment Report, Disease Leaflets, *TIMES* papers) – developing statistical methods to assess disease data.

WGPDMO 2005 products were transferred to *ICES Advice* through ACME and these reports consisted of:

- Trends in wild and cultured fish, molluscs, and crustaceans (*National Reports by Member Countries*);
- Review of ‘health indices’ used for the interpretation of data obtained from biological effects monitoring activities and assessment of their applicability in relation to fish disease monitoring (W. Wosniok, K. Broeg, and S. W. Feist);
- Review of effects of contaminants on the immune system in fish and shellfish (K. Broeg, T. Renault, M. Auffret, and B. Gagnaire);
- Report on the distribution, causes and significance of the Summer Mortality syndrome in the Pacific oyster (*Crassostrea gigas*) and in other bivalve species (T. Renault, S. Ford, and J. F. Samain).

WGPDMO has collaborated with SGEH/BSRP in 2005.

An **ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea [WKFD]** (Co-Chairs: Thomas Lang, Germany, and G. Rodjuk, Russia) will meet for 7–10 days in December 2005 onboard RV Walther Herwig III to:

- a) provide training and inter-calibration related to methodologies applied in fish disease monitoring in the Baltic Sea;
- b) further develop and assess health indicators and indices appropriate for monitoring and assessment purposes;
- c) establish a closer collaboration between institutes involved in fish disease monitoring in the Baltic Sea;
- d) build the basis for incorporation of fish disease surveys into the revised HELCOM monitoring programme.

WKFD will report shortly for the attention of the Baltic Committee (and MCC, ACME).

This project is sponsored by World Bank, to provide eastern Baltic countries with funding so they can participate in international monitoring. Focus is on the eastern countries as they have most need for training.

There are at least eleven ToRs for next year’s meeting.

The next meeting is to be held at ICES Headquarters in Copenhagen 7-11 March 2006.

## Discussion

It was suggested that there is an overlap between WGPDMO ToR health indicators and those of MGMASC; if this is the case how can the overlap be eliminated, or can it be used in synergy? Conversely this can be seen as an advantage and there is good communication between

groups with exchange of material. It was also noted that there was good communication with the contaminants group.

It was proposed that a method to formalise links between the different WGs be explored. The Chair suggested that the best way of doing this was face-to-face discussions between the WG Chairs at forums such as the Annual Science Conference.

## **Consultative Committee and Mariculture Committee business**

### **ConC Discussion paper on the Role of Science Committees and Expert Groups**

A letter introducing the subject was sent to all MCC members and WG Chairs prior to the ASC. In essence, given that ICES has renewed itself over the last few years, two basic questions were posed:

- Do we have the right mix and composition of WGs to serve the new mandate of ICES?
- Do we need the Science Committees like MCC in a new structure?

There will be a full-scale review of WG roles and responsibilities in light of ICES Strategic Plan and the general move towards an ecosystem approach (e.g., WGREGNS). We are both a marine science and an advisory organization composed of a bottom-up assemblage of basic Expert Groups. Part of the reason for this discussion is the simple fact that our own MCC, along with a few other Science Committees, has not been functioning the way it was envisioned with the restructuring of ICES. We know that the WGs are fully functional and that the WG Chairs form the main body for the discussion of all of our MCC ideas. The MCC has not made a significant contribution for at least five years, and consequently, it may be time to restructure the role of Science Committees as a whole. The WGs do require a coordinator of some sort to represent them at ConC, but probably not an elected Chair of a non-functioning Committee composed of nationally appointed members. Where does that leave us? The discussion ensued.

It was pointed out that members of the Mariculture Committee are nominated by the Delegates. There should be 28 members in attendance, yet only 7 or so regular members turn up at Annual Science meetings. It was also pointed out that three 3 MCC members have retired but are still on the MCC members list as the Delegates have not yet replaced them.

### **Discussion**

Apart from stock assessment groups most WGs only report to a scientific committee.

WGs are considered to be the ICES stronghold. MCC is not the only committee suffering from this malaise. Many other committees have excellent support for their WGs, but poor support for their committee work. WGs engage in science, whereas the committee is the layer of middle bureaucracy that is intended to help the WGs, providing steering and feedback. Other committees have little or no interaction, and people asking for feedback is rare – they get it straight from the WGs, not the associated committees.

Letters were drafted and sent out by the MCC WG Chairs regarding the future role of the Committee, to which no reply was received. The letter asked how to coordinate expert groups, how to work with them, and how to deal with the output. The Committee itself did not respond formally, but the advisory group proposed a response from the advisory committee, a draft of which now exists from WG on the Marine Environment. The letter asked if the Committee has the correct mixture of WGs; the general belief is that this is the case. Some are more active than others, and there may be scope for an expansion.

Do we need other working groups to collaborate with us? Probably – algae blooms, introductions of exotic species, and ballast water issues were all identified as potential collaborative working groups.

Need a mechanism with WG Chairs to get input to consultative committee. Do we need another intermediate committee or a coordinator? There is a balance of delegates from countries.

The biggest change is that all WG Chairs are now *ex officio* (non-voting) members of their respective committees, in addition to the 2 full members from each member state.

It has been proposed that a coordinator may be a better way to deliver the product. WGs propose ToRs, the Mariculture Committee reviews these and presents them to the Consultative Committee, who always looks at the end product. The Chair of the Consultative Committee needs for Delegates to approve ToRs – this can take 5–6 months. A better way of interacting and getting feedback is required. It was proposed to eliminate the science committees and replace them with a coordinator, but it must be ensured that WGs are somehow connected to the ConC.

Two WGs within MCC have non-mariculture functions. If ICES moves to an ecosystem approach the role of coordinator might be considered a good idea. Especially if it includes both fisheries and aquaculture components; after all, fisheries is just one component of the ecosystem.

Would the WGs work better with this approach? Groups of experts are needed at the WG level. Specific issues may benefit from open door policies, allowing experts from other WGs to participate. This could involve focused discussions.

It was agreed that there are advantages of meeting face-to-face with other Chairs within MCC, forming collaborative links, etc., even between different areas of expertise. MCC may be seen as being slightly restrictive; it might be beneficial to interact with a broader spectrum of WGs.

The possibility of holding meetings of WGs outside the remit of ICES was discussed. It could include forward planning and ToR development. There were doubts about the efficiency of this idea. A desire to stick to the science committees was expressed, albeit with some rearrangement/restructuring. Chairs acting as *ex officio* members to the committee may attend the Annual Science Conference. It may not be possible to deal with all issues without the science committees, e.g. peer review. In addition, Delegates are reluctant to implement change, especially if there are cost implications.

Advice, as the output from advisory committees is paid for by clients, resulting in short turnaround work, whereas the work of the science committees is longer term.

A reluctance to support 100 WGs at one meeting was expressed. The suggestion of adopting a geographic approach was suggested, but how this would function was not made clear. The ToRs of WGs are primarily self-generated, but the presentations of the work of various WGs may lead to other ideas that are subsequently taken up or transferred to other WGs.

It was estimated that MCC meetings had 60% attendance by WG Chairs. It is noted that government employees attend more, because they may receive funding to do so, while there is less representation from academic institutions. This may be due to the lack of funds to go to the Annual Science Conference as attendance at ICES meetings for WG Chairs is currently self-funded. The possibility of ICES providing funds for WG Chairs to attend appeared to have general support. It was proposed that all WG Chairs be provided with sufficient money to travel to attend meetings. This proposal was supported by the Committee.

Interactions between Committees and the MCC are good at the moment; there are doubts about the success of links with less relevant groups. Small structures are considered better,

science committees can play this role better. It was noted that in the case of MCC it is easier because there are only 5 WG reports to read and edit.

There are proposals to merge the advisory committees into one committee. At the MCAP meeting it was proposed to hold a joint MCAP/ConC meeting to discuss the entire structure. Input from WG members is desired, both at science committees meetings but also throughout the year. The Chair thanked the ConC Chair Harold Loeng for his time and effort in participating at each science committees meeting.

It was proposed that there might be a better place for the science committees to function between the advisory committees and WGs.

The issue of committee members having to judge so many different WGs was raised, with doubts over the ability of members to offer advice on such a broad range of areas. The need to keep a certain level of competence was expressed. Providers of advice may be invited to the advisory committee meeting to see how the advice is incorporated into reports. This would give more involvement in the whole advisory process. A single advisory committee structure may be too cumbersome. It would be beneficial for WGs to realise their full roles and responsibility.

The desire for WGs to remain as they are was expressed, with stricter internal review process and the ability to evaluate the jobs. science committees may need restructuring to implement an ecosystem approach. The remits need to be clearer, to review the WGs and identify new topics relevant to ICES. There may be scope for joint meetings to reflect common areas of interest.

WG participation is normally high. The structure of MCC could be improved, allowing new activities for fisheries teams, with realignment of WGs to encompass a broader area. The low attendance at committee member level is due to conflicting demands of middle/senior managers. Eight (28%) Committee members out of the full compliment is considered good attendance; interestingly, what is considered to be a quorum is not well defined.

The feedback mechanism to the WG Chair and on to WG members needs to be improved. There is capacity for the ToRs to be changed by ConC after proposal by MCC – reduction in unrealistic workloads to slim down ToR lists; WGs may be dissolved if their ToRs are not sufficiently enlightening about the validity of the group's work. There is need for this feedback to happen much quicker than at present, e.g. proposed instant feedback via email, etc.

The peer review process is mainly an editorial function with the experts preparing the work. In some cases the information is disregarded as it cannot be used. Context also needs to be monitored as, indeed, how it can be interpreted. Advisory committee experts may say they do not have enough material to generate a report. There should be increased feedback from advisory committees to WGs so they can see the relevance of their work.

All WG reports are reviewed by science committees.

Critical mass – five WGs attract small numbers to the MCC meeting, the diversity within MCC is too small to attract some people. Attendance can be low when ICES meetings clash with other more specialist meetings. Increasing the relevance of ICES themes to mariculturists would help attract more people. In addition, delegates appoint some people without their knowledge and so they may not be able or disposed to attend. Surveying people at WG level to generate a list of interested parties prior to appointment may result in increased attendance.

## **Additional presentation**

### **Proposal for Fisheries Management in Marine Protected Areas**

Support and approval for a three-year project was sought, to set up a WG, study groups, workshops, etc.

#### **Background**

- Fauna-Flora-Habitat directive of the EU (Directive 92/43/EEC): the first comprehensive legal instrument for the protection of habitats and species in the European Union;
- The Special Areas of Conservation (SACs) and Special Protected Area (SPAs) of the Bird Protection Directive (79/409/EEC);
- Forming the European network of protected areas NATURA 2000;
- In the Exclusive Economic Zone (EEZ) in the North Sea and the Baltic ten Marine Protected Areas were reported to the European Commission in May 2004. A management scheme should include maintenance and development plans for human activities, such as dredging, disposal, research, and is required to be set up at a national level;
- Fisheries are not restricted due to EU regulations in the EEZ, therefore a management concept is required for fisheries;
- A deterioration of habitats and home ranges for species is to be avoided.

#### **The central questions of the project are:**

- 1 ) to what extent do the fishing activities in the Marine Protected Areas represent a significant interference (in the sense of the NATURA 2000 concept);
- 2 ) to what extent do they need regulation; and
- 3 ) how should the regulations be balanced with the requirements of NATURA 2000 and fisheries.

The primary targets of the NATURA 2000 (closed) areas are to protect habitats and species, but, at the same time, management measures under NATURA 2000 can have a positive effect on the commercially exploited fish stocks. Closed areas are no new concept in fisheries management. In contrast, they are approved management instruments to protect stocks and fisheries. Their target, however, is to optimize the fisheries yield, and thus they are different from the targets of nature conservation. Benefits for both fisheries and environmental quality are expected if both targets can be successfully harmonised.

Support and approval for the project was sought, and the Chair supported the motion.

Part one of the MCC annual meeting was adjourned at 12:25 to reconvene at 13:30 on Friday 23 September 2005.

## **Election of Chair for Mariculture Committee 2006–2009**

The General Secretary reviewed the election procedure for all those present and then opened the floor for nominations. The election was initially declared invalid (9 members from only 7 countries) and further delegates were sought for the election. The election was postponed until 15:00 (12 members from only 11 countries). Nominations were received for Ian Bricknell (UK), reviewed and a short list generated. The election by secret ballot was conducted and Ian Bricknell was duly elected as the Chair elect (11 for, 0 against & 1 abstention)

## **Forthcoming Symposia and Theme Session Topics**

As noted in last year's MCC Report, ConC was advised of a number of conflicting aquaculture science conferences and symposia occurring within the same timeframe as the Annual Science Conferences (ASC) in 2005 (Aberdeen) and 2006 (The Netherlands). For example, EAS, WAS, National Shellfish Association, and the European Marine Biology Association have conferences and symposia that will attract many who might otherwise attend the ASC. ICES is investigating the possibility of co-sponsoring sessions as part of other aquaculture conferences and events in order to maintain ICES visibility in mariculture.

### **2006 ASC, The Netherlands, and supporting resolutions**

None received from MCC or WGs reporting to MCC.

### **2007 ASC, Finland, and supporting resolutions**

Theme session proposed by the two working groups WGEIM and WGMASC:

“Ecological carrying capacity in shellfish culture”

Plenary issues will be supported by ICES, proposed by the Chair, and supported by the floor.

#### **Discussion**

Other topics for theme session are required. It is sufficient for other theme session proposals to be dealt with at the ConC meeting in May 2006. A call from the floor asked where theme sessions for 2008 might be suggested.

## **Review Draft Resolutions and WG ToRs**

A discussion and review of the proposed ToRs for each WG was completed. The MCC was particularly careful to review the ToRs for concrete deliverables and to highlight those changes or new ToRs that we want brought to the attention of the Delegates and Bureau so that they fully understand the importance of ratifying the ToR. Venues and meeting dates were also verified where possible. Each ToR was also viewed for cross links or redundancy to other WG ToRs.

#### **Discussion**

The floor reminded the meeting that ICES prefers “review” and “report on” rather than just “review”. The Chair confirmed that these are ongoing review tasks; however, it was agreed that the wording should be changed to reflect ICES guidelines.

Welfare is considered a top priority by ICES and ICES recognise the need to produce a document on aquaculture animal welfare. T. Lang would like WGPDMO to report to the Marine Habitat Committee; this was supported by the Chair.

## **Any other business**

The proposed 2007 theme session on “Ecological carrying capacity in shellfish culture” is an area where modelling has become outdated. This session is intended to bring about the improvement of models, especially in relation to polyculture. Economic models will also be considered to enable the role of mariculture and its importance regarding ecological impact and economic interests to be evaluated.

The “Blue questionnaire” was completed by MCC as requested.

A recommendation from the floor pointed out the necessity of members and WG Chairs to use the ICES website. It is often felt that ICES business is not well disseminated, and it was felt

from the floor that the MCC should ensure rapid and easy access to the work of and information flow in ICES. WGs should be made aware that the advisory process is managed through the advisory committees and not through the WGs, which can only make recommendations.

The MCC thanked the outgoing Chair for all his work and help during his term of office.

## **Close**

The meeting closed at 14:50 on 23 September 2005.