

COST Action FA1004 Conservation Physiology of Marine Fishes

Minutes of the Final Conference on Conservation Physiology of Marine Fishes.

Aquarium Mare Nostrum, Montpellier, 19 – 20 May 2015

The programme of the conference is shown in Annex 1.

The **objectives of this conference** were to

1. present the state of the art of research in conservation physiology of marine fishes
2. present prospects for the use of physiology for management
3. use this as a context for a round-table discussion for key issues of how physiological research can be relevant for management
4. provide opportunities for networking
5. hold a final Management Committee meeting

The list of delegates attending the Montpellier conference is carried in Annex 2.

General Overview (David McKenzie)

On Tuesday May 19th, the day started with a welcome by David McKenzie (Action Chair), who described the history of the Action and the path it had followed to reach this Final Conference. The programme per se then started, as described in Annex 1.

Two invited speakers from North America kicked off the conference with talks about a textbook example of how physiology has been used in support of management (Pacific salmon, Dave Patterson, DFO Vancouver) and how physiology is being used to understand effects of capture on large pelagics (tunas and billfishes, Andrij Horodysky, Hampton University). Members of the Action then gave a series of excellent talks which moved, as the day progressed, from physiology to applications for physiology in modelling. The session was very dynamic, and the audience participated actively with questions. The day concluded with a pecha-kucha session where ECIs gave short, 2 min, talks describing their posters, followed by a very lively poster session.

On Wednesday May 20th, the session was chaired by Julian Metcalfe (MC UK, WG3 leader) and started with an authoritative description of how physiology had been incorporated into the 5th IPCC report, and a couple of very interesting examples of wide-scale modelling approaches to predict effects of global warming on fisheries and foodwebs. This was followed by a series of talks on how to make physiology, or research in general, relevant to management. The programme speaks for itself and the session remained vibrant with much audience participation in questions.

The Conference concluded with a round-table discussion, where participants formed into five large groups and debated a series of questions, as shown on the programme. Each group had a facilitator and a note-taker. The discussions went very smoothly, and were open, lively and constructive. Notes are currently being compiled by Julian Metcalfe. The Conference was closed by David McKenzie at 17:00 on May 20th.

Almost 100 people attended the Conference, which included almost 30 ECIs and 20 persons that have some role in providing advice to management, or which represent

fisheries associations, local government, or EU Directorate General for Maritime Affairs and Fisheries (DG Mare). The proceedings of this conference will be published as a Special Issue of the journal *Conservation Physiology*, edited by Steven Cooke. Prior to the meeting, we received almost 20 propositions for submission of research, review or perspectives articles, with a deadline for manuscript submission of 31/07/2015.

On Thursday 21st May, a final Management Committee meeting was held at Le Yam's Café, Place de la Comédie, Montpellier, at 09:00, chaired by David McKenzie. The minutes of this meeting are carried overleaf. At this meeting we discussed the next step for the network put in place by the COST Action.

Remember to visit and update our **Facebook interest group, Conservation Physiology of Marine Fishes** [here](#).

Minutes COST FA1004 Management Committee Meeting
21 May 2015, Le Yam's Café, Place de la Comédie, Montpellier.

Present:

Gudrun de Boeck (BE)
Pedro Guerrero (PT)
Bojan Hamer (HR)
Christian Jørgensen (NO)
David McKenzie (Chair, F)
Julian Metcalfe (GB)
Basile Michaelidis (HE)
Göran Nilsson (NO)
Angel Perez-Ruzafa (ES)
Erik Sandblom (SE)
John Steffensen (DK)
Lorna Teal (NL)
Jonathan Wilson (PT)

Not present but provided notes for discussion:

Paolo Domenici (I)
Hans-Otto Pörtner (DE)
Tobias Wang (DK)
Rod Wilson (GB)

Chaired by David McKenzie

The **objectives** of this meeting were to:

1. review progress of the Action
 2. make plans for the future
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1) Progress

Successes

All MC members were very enthusiastic about the Action: how it had galvanised marine fish ecophysiologicalists across the EU and created an exciting dynamic of interdisciplinary and international collaboration among physiologists, modellers and ecologists. The networking was generally agreed to have offered all participants a very enriching experience and had created many novel collaborations, not least through the 22 STSMs that were performed. There was a shared sentiment that the Action had made marine fish ecophysiology more visible within the marine fisheries community, and that modellers were very interested in the potential for physiology to reduce uncertainty in their models.

The Action had also allowed us to understand how to make physiology relevant – that our end-users were typically fisheries ecologists rather than policy makers per se, and that physiology should have a role, ultimately, in models that can upscale from effects of the environment on individuals to community-level biodiversity.

Ongoing challenges

There was, nonetheless, a shared sentiment that funding a large-scale EU project remained a challenge. Although various bilateral international projects were underway financed by

national agencies, we had not managed to obtain any FP7 or H2020 projects, despite two major proposals (CriSeas and FishNet).

At present there are no accessible calls in H2020. The extremely broad nature of calls and the need to answer all items within these, makes it difficult to fund enough physiology. This is because of the expense of performing animal experimentation (animal holding facilities, personnel), on enough indicator species at enough life stages, and over seasonal cycles. This research is vital, however, to parameterise models that give real predictive power, to inform policy based on robust scientific evidence.

The database

The existence of the physiological database is an important outcome of the Action, allowing us to make progress in demonstrating how physiology can be integrated into models for management and projection. There appear to be data available for up to 40 species of marine fish, in terms of effects of temperature on aerobic scope (hence also standard and maximum metabolic rates), specific dynamic action and growth, and for many more in terms of their sensitivity to hypoxia (via the critical oxygen tension). These databases are still, in fact, being populated at present (growth and aerobic scope elements).

2) Plans

Item 1: Position Paper. It was agreed that we would put together a Position Paper which presented arguments, and case studies, as to why fish ecophysiology warrants more funding and support. This would be submitted to national funding agencies and DG Mare. It was suggested that we could call this the *Montpellier Declaration*, and publish it in a suitable journal. Paolo Domenici (vice chair) will take the leading role, supported by David McKenzie and any MC members that wish to contribute. Work on this will begin when we have finished our submissions for the Proceedings of the Final Conference!

Item 2: Further networking and project proposals. There was some discussion of the potential to put another COST Action into place, which would represent a clear departure from FA1004 but have its roots within our network. Coastal fisheries, and the ecosystems that sustain them, were proposed as a potential area where networking at an EU level was necessary. These are currently managed nationally and are under increasing pressure in a changing world. It was agreed that Gudrun de Boeck and Lorna Teal would be lead proposers for any such Action.

Item 3: Database. It was agreed that the database should not be made public (e.g. on DRYAD) until Action participants had had an opportunity to use it themselves. Initial users would have a critical role in validating the data. The database will be given a DOI so that it can be cited when used. Once the database is ready, Action participants should contact David McKenzie with proposals for how to use it so that, when applicable, common ideas can be brought together.

Annex 1 Programme (A5 leaflet)

How the Roundtable will work:

The roundtable session will involve in-depth communication in relatively small groups. There is no specific agenda to follow but some key issues have been identified to serve as the focus (see below).

Discussions are informal but will be guided by a facilitator who will ensure discussion flows, has equity of participation, runs to time, etc. A separate note-taker will capture the key points raised and outcomes reached.

There is no pre-determined outcome, nor prescriptive sense of where discussions should go, provided all is relevant to the topic of the roundtable.

Everyone has equal status and we encourage you to speak freely, contributing your varied and valued experience and expertise.

Structure of the roundtable:

Julian Metcalfe will give an introduction to the roundtable and details on structure etc. There will be 5 roundtables each with approximately 20 participants, plus facilitator and note-taker.

The participants will already have been allocated to ensure a good mix of people, experience and regional influence.

Each group then discusses for a maximum of 1.5 hours (within the 2 hour timeslot – i.e. about 15 minutes per issue).

List of key issues:

- 1) What priority management issues should be addressed by researchers in conservation physiology?
- 2) How can conservation physiology help us bridge the knowledge-action boundary and enable managers to act?
- 3) What are the barriers to knowledge exchange between scientific research and advisory processes with respect to climate change and how can we overcome them?
- 4) Can purely curiosity-driven research in physiology be useful for conservation and conservation policy?
- 5) How can we refine policy/management issues so they can be more readily reflected into scientific questions and research proposals?
- 6) How can we simplify the outcome of conservation physiology research so that its relevance can be more easily appreciated and understood by policy advisors, managers and conservationists?

Conservation Physiology of Marine Fishes Current Status and Prospects for Policy 19 & 20 May, 2015



COST FA1004 Final Conference: Provisional Programme

Tuesday 19 May 2015: State of the art

Chair : David McKenzie (UMR Marbec, Montpellier)

Time	Speaker	Title
08h30	David McKenzie	Introduction : Conservation physiology of marine fishes
08h55	David Patterson (DFO Canada)	Conservation physiology, science advice, and Fraser sockeye salmon management
09h20	Andrii Horodysky (Hampton University)	Conservation physiology on the high seas: Linking environment to ecology in pelagic fishes
09h45	Tom Catchpole (CEFAS Lowestoft)	Using physiology to inform on survival of discards in marine fisheries
10h10	REFRESHMENT BREAK	
10h40	Tobias Wang (University of Aarhus)	Oxygen Capacity Limited Thermal Tolerance: does one size fit all?
11h05	Göran Nilsson (University of Oslo)	Confused fish in a carbonated ocean
11h30	Dave Righton (CEFAS Lowestoft)	Habitat quality as perceived by a marine fish, inferred from biotelemetry
11h55	Rod Wilson (University of Exeter)	The contribution of marine fishes to global carbon cycles
12h20	LUNCH	
13h50	Christian Jørgensen (Uniforsk Bergen)	Prosper or perish – modelling effects of climate warming on Atlantic cod
14h15	Paolo Domenici (CNR Oristano)	Predicting thermal habitat suitability in competing native and invasive fish species
14h40	Jaap van de Meer (VU Amsterdam)	Modelling energy budgets in agent-based models
15h05	Lorna Teal (IMARES Wageningen)	Dynamic energy budget models in applied fisheries research: Effects of climate change on fish habitat
15h30	REFRESHMENT BREAK	
16h00	PECHA KUCHA SESSION	
16h45	POSTER SESSION	
18h30	END OF SESSION	

Wednesday 20 May 2015: Prospects for Management

Chair : Julian Metcalfe (CEFAS Lowestoft)

Time	Speaker	Title
08h40	Hans-Otto Pörtner (AWI Bremerhaven)	Climate change impacts on the world's oceans: A sectoral analysis by IPCC AR5
09h05	Miranda Jones (U. of British Columbia)	Vulnerability of global marine fishes to multiple climate stressors
09h30	Hattab Tarek (University of Picardy)	Forecasting changes in the food-web structure of coastal marine assemblages
09h55	REFRESHMENT BREAK	
10h25	Myron Peck (University of Hamburg)	Integrating physiology into models for management and projection
10h50	Keith Brander (DTU Aqua, Copenhagen)	Reliable fisheries projections require better representation of processes
11h15	Steven Cooke (Carleton University)	Individuals matter in an Ecosystems Approach to Fisheries
11h40	Silvana Birchenough (CEFAS Lowestoft)	A traits-based approach for conservation physiology of marine fishes
12h05	LUNCH	
13h30	Barbara Livoreil (Foundation for Biodiversity Research)	Evidence-based approaches for integrating science into conservation policy
13h55	Julian Metcalfe (CEFAS Lowestoft)	An introduction to the round table : making the physiology of marine fishes relevant to conservation policy
14h20	Round Table	
15h20	REFRESHMENT BREAK	
15h50	Round Table	
16h50	David McKenzie	Concluding remarks
17h00	END OF CONFERENCE	

Annex 2

Attendance List

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