PROCEEDINGS OF THE THIRD GID - PARMENIDES CONFERENCE ALEXANDRIA, EGYPT - JUNE 2010

MEDITERRANEAN WEALTH & DIVERSITY
BIOLOGY & CULTURE

Éditions Faustroll

"A Mediterranean Science Area"

GID – PARMENIDES

PARMENIDES IS A PROGRAMME OF THE
INTER-ACADEMIC GROUP FOR DEVELOPMENT

MEDITERRANEAN WEALTH AND DIVERSITY ; BIOLOGY AND CULTURE

PROCEEDINGS OF THE THIRD GID-PARMENIDES CONFERENCE

BIBLIOTHECA ALEXANDRINA, EGYPT

JUNE 21-24, 2010

ÉDITIONS FAUSTROLL
CLAUNAY
2011

With the support of

the French Ministry of Foreign and European Affairs,
the Agence Française de Développement,
the UNESCO French National Commission ,
the Cino del Duca Foundation,
the Institut de France,
the UNESCO,
the French Embassy in Cairo,
as part of the Franco-Egyptian 2010 Year
for Science and Technology

ISBN 2-915436-21-5

Édition originale

Adresse postale :
12, av. Simon Bolivar
75019 – Paris
www.faustroll.net

Dépôt légal : novembre 2011

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Book Symposium:
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Gérald Grunberg, BnF;
Jean-Luc Lory, FMSH;
Jean-Louis Lebrave, CNRS-ENS

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Dr. Andreu Claret, Director of Anna Lindh Foundation
Pr. Catherine Bréchignac, French Ambassador for Science, Innovation and Technology (France)

Pr. Michèle Gendreau-Massaloux, Representative of the "Union pour la Méditerranée" (France)
H. E. Prof. Dr. Hany Helal, Minister of Superior Education and Research (Egypt)

Inaugural Conferences

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Rapporteurs: Placido Plaza, Jean-Paul Lanly

Participants:
Christophe Du Castel (AFD/FFEM)
Gérard Bégni (CNES)
Hala Barakat (CultNat, Egypt)
Mohamed Sabir (Morocco)
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Mohamed Larbi Chakroun (Tunisia, AIFM)

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Participants:
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Nureddin Esarbout (Libya)
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Presidents :
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Moderators:
Pr. Yehia Zaky (Bibliotheca Alexandrina)
Pr. André Capron (President of GID)

Gemma Aubarell (Anna Lindh Foundation)

Gilles Boeuf (Unesco, Int. Year of Biodiversity)

Catherine Bréchignac, Ambassador for Science, Innovation & Technology (Acad. des sciences, Fr.)

Yasser El-Shayeb and Hedi Haddada (Année 2010 franco-égyptienne des S&T)

Maged M. Al-Sherbiny, Vice-Minister of Superior Education and Research (Egypt)

Jean-Hubert Moulignat (AFD, Cairo)

Alassane Dialy Ndiaye (Vice-President, Académie nationale des S&T du Sénégal)

Jean Félix-Paganon, Ambassador of France in Egypt

Marc Franco, Ambassador of the EU in Cairo

Placido Plaza (Centre International des Hautes Études Agronomiques Méditerranéennes)

Yannick Prost (Union pour la Méditerranée)

Mohamed Saket (FAO, Regional Office in Cairo)

Tarik Shawki (Unesco Office, Cairo)

Philippe Taquet (Académie des sciences, Fr)

Closing Remarks: Yehia Zaky, André Capron

Welcome Addresses

Message de Monsieur Henri Guaino, Conseiller Spécial du Président de la République Française, à l'occasion de l'ouverture de la troisième Conférence scientifique méditerranéenne du GID, sur « La richesse et la diversité méditerranéennes ; biologie et culture »

Le 22 juin 2010

Mesdames, Messieurs,

Avant tout, je voudrais saluer l'heureuse initiative du Groupe Interacadémique pour le Développement qui, pour la troisième année consécutive, organise ces rencontres qui sont devenues l'un des grands rendez-vous de ceux qui se passionnent pour la Méditerranée et pour son avenir.

En choisissant pour thème cette année « La Richesse et la diversité méditerranéennes; biologie et culture » vous montrez en témoins et en acteurs de la science en mouvement que l'*Union pour la Méditerranée* reste un projet vivant et un besoin pour tous les peuples de l'Europe et de la Méditerranée.

Au départ de l'*Union pour la Méditerranée*, il y a une ambition, celle de faire émerger et de permettre la réalisation de projets concrets, à dimension régionale, pour tisser des solidarités concrètes de plus en plus étroites entre les peuples.

Avec ses 19 Académies des sciences et ses représentants de 27 pays méditerranéens, le Groupe Inter-académique pour le Développement, présidé avec talent et détermination par le Professeur André CAPRON, incarne l'excellence scientifique au service du progrès social. Votre programme ambitieux sur les dimensions socio-culturelles des avancées de la recherche donne ses premiers résultats.

Votre première Conférence portait sur l'environnement et le développement durable, et plus particulièrement sur les problèmes de l'agriculture en Méditerranée, des ressources halieutiques, de l'effet du changement climatique et de l'adaptation des politiques publiques aux changements en cours. Les recommandations que vous avez formulées ont été entendues puisque, lors du Sommet de Paris le 13 juillet 2008, les Chefs d'État et de Gouvernement de l'*Union pour la Méditerranée* ont largement suivi vos propositions pour définir les priorités autour desquelles allaient se construire les projets concrets de l'UPM.

Aujourd'hui vous regroupez les Académies méditerranéennes au sein d'un réseau : l'Euro Mediterranean Academic Network, EMAN, qui vient de se doter de statuts et qui a tenu sa première Assemblée générale hier.

Vous avez organisé en octobre dernier, à l'Accademia dei Lincei à Rome, une deuxième grande rencontre sur la santé en Méditerranée. Pour la première fois, une vision partagée sur les maladies génétiques et leurs facteurs héréditaires et environnementaux, ainsi que sur les maladies infectieuses et émergentes a été formalisée. Réputée pour sa gastronomie, la Méditerranée est hélas aussi victime de certaines habitudes alimentaires et diététiques qui favorisent une recrudescence alarmante des pathologies métaboliques et cardio-vasculaires. Là encore un réseau de spécialistes est né, capable d'inspirer les décisions des autorités sanitaires des deux rives.

Aujourd'hui s'ouvre votre troisième conférence. Vous avez choisi de la tenir à la Bibliothèque Alexandrine qui est membre du GID et qui symbolise magnifiquement la diffusion des savoirs en Méditerranée.

Les travaux de cette rencontre s'articuleront autour d'une trilogie emblématique : l'arbre, le poisson et le livre et permettra ainsi d'aborder les problèmes scientifiques, économiques et culturels liés à la préservation de la diversité, ainsi qu'à la sauvegarde des espèces et des cultures. Veiller sur les arbres, sur les poissons, sur les livres, ce n'est pas seulement aider les peuples à vivre, c'est respecter l'histoire et l'imaginaire qui sont liés à ces symboles depuis des siècles en Méditerranée.

Les grandes religions monothéistes méditerranéennes sont des religions du livre. Elles dessinent arbres de la connaissance et arbres de vie ou, pour les musulmans, oliviers des bienheureux, symboles de la félicité des élus.

Quant au poisson, n'a-t-il pas été, pour les premiers chrétiens, signe de reconnaissance ? Ainsi le présent respecte-t-il la trace du passé, ainsi les avancées de la science servent-elles l'*Union pour la Méditerranée*, cette politique de civilisation qui se construit à la fois par la volonté des Chefs d'État et de Gouvernement et par l'engagement des sociétés civiles, dans lesquelles vous tenez un rôle éminent.

Les temps anciens, où le savoir pouvait être encyclopédique et l'autorité politique lui être naturellement associée, sont révolus. La démultiplication des secteurs de recherche, les exigences de la démocratie, la complexité des problèmes des sociétés contemporaines ont séparé les fonctions. Mais les scientifiques restent des éclaireurs nécessaires, et leur dialogue aide les responsables à conduire une politique efficace et juste, dans tous les secteurs. Vous apportez la preuve que l'espace scientifique méditerranéen peut se construire dans la sérénité, loin des turbulences et des conflits, et les projets de recherche que vous épaulez donnent des métiers à des jeunes qui savent se regarder les uns les autres avec confiance, pour améliorer la condition de chacun.

Déjà une quatrième conférence se dessine sur la question de l'eau dans son rapport à l'environnement et aux questions de santé publique : elle apportera des recommandations utiles à la prise en charge, par les gouvernements méditerranéens, de cet enjeu majeur pour le développement et la vie.

Je souhaite que les travaux de votre prestigieuse assemblée reçoivent tout l'écho qu'ils méritent. Dans l'*Union pour la Méditerranée* vous représentez pour moi, au milieu des menaces et des tempêtes, les lumières de l'avenir car la recherche doit tenir en Méditerranée et partout dans le monde le rôle d'un puissant moteur de la croissance, non seulement en termes économiques et pour l'emploi, mais également en matière de développement des capacités de l'homme à inventer son propre avenir, par la connaissance et pour la paix. A cet égard, les Académies peuvent à la fois être source d'inspiration, de diffusion et d'appui par leur hauteur de vues et leur liberté.

Je vous remercie.

Alexandria, 22 June 2010

« No matter how small, all have an important rôle to play »

It is with great pride that the New Library of Alexandria (Bibliotheca Alexanddrina) welcomes you to the 3rd Scientific Conference of the Mediterranean (GID-Parmenides).

The Bibliotheca Alexandrina is devoted to recapturing the spirit of openness and scholarship of its illustrious predecessor. It is within this context that we are hosting the present meeting.

The theme "Mediterranean Wealth and Diversity; Biology and Culture" is highly symbolic, yet it is ever present in our daily life. Re-emphasizing biodiversity is a commitment that we owe to future generations.

We wish all the success to this endeavour.

Ismail Serageldin
Librarian of Alexandria
Director of the Bibliotheca Alexandrina

« No wonder that the Mediterranean Sea has so early been one of the living centres of the Universe, the it has spread its influence through the surrounding massive continents which in turn echo to it. »

Fernand Braudel – *La Mémoire de la Méditerranée*

The Inter-Academic Group for Development (GID) pursues and enhances its contribution to the creation of the Mediterranean Science Area.

After Paris (Sustainable Development and Environment, June 2008) and Rome (Science and Health in the Mediterranean: Genes and Environment, October 2009), Alexandria welcomes the Third Parmenides Conference: « Mediterranean Wealth and Diversity: Biology and cultures ».

The GID shares with the Bibliotheca Alexandrina, the great honour and the pleasure to warmly welcoming you to this 3rd and important meeting of « Knowledge Societies » in the Mediterranean region, and to thank you you for your participation in this new step of shared development.

Professeur André Capron
Member of the Académie des sciences - Institut de France
President of the GID

Inaugural Conferences

Presidents:
Yehia Zaky (Egypt),
Maurizio Brunori (Linceo, Italy),
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Albert Sasson (Acad. Hassan II, Morocco)

André Capron:
Diversity: driving force of Development in the Mediterranean region

Philippe Taquet:
From Tethys to the Mediterranean Sea

Diversity: driving force of Development in the Mediterranean region

André Capron
(Acad. des sciences, President of GID)

Mister President,
Your Excellencies, Ambassadors and Ministers,
Dear Colleagues and Friends,
Ladies and Gentlemen,

It is indeed for me a great privilege to open the Third International Parmenides conference of the Interacademic Group for Development (GID), devoted to ***"Mediterranean Richness and Diversity: biology and culture".***

Before commenting the specific goals of this meeting, let met briefly summarize how the GID was born and what are its activities. Everybody will agree that beyond its specific and often spectacular progress, science has acquired two new dimensions during the 20th century: the confirmation of its fundamental role in socio economical development and the building of knowledge based societies, from Dubai to Shanghai, from Pretoria to Tallinn, from Singapore to Bangalore, the novel relation between Science and Development have given to the "Golden Triangle" made by Education, Research and Innovation a particular strategic importance.

Secondly, the development of new relations between Science and Society, based on the increasing evidence that the share of knowledge and scientific development cannot rely any more on *"passive merchandising"* practices but on appropriation strategies including socio-cultural specificities.

In this regard, beyond the universality of knowledge, integration of its regional dimensions and of cultural and biodiversity is an essential condition of its appropriation and of its diffusion.

Resting on modern technologies and new tools of communication, these strategies aim at bringing together, with two common goals, progress of well-being and social integration, the worlds of education and science and community and family structures.

In this general context and in several countries (USA, UG, France, Italy), the role of Academies has increasingly appeared as an important element of animation and of coordinated interdisciplinary dimensions of the major challenges of development.

Warrant by essence of scientific excellence, natural crossroads of interdisciplinary dialogue, but also reflecting national and regional socio-cultural dimensions, Academies constitute privileged forums of interactions and exchanges between Science and Politics particularly at an international level, because of their political and economical independence, their autonomy and their legitimacy. In this regard, the emergence of the concept of *"Diplomacy of influence"* has contributed to make science an important stake of the political influence of many industrial countries.

At the same time, the increasing weight of the major challenges of development (Agriculture, Food, Water, Health, Energy, Environment and so on) and the spectacular emergence of some essential priorities – pandemies (HIV,SARS, Swine Flu), food resources, energy and water resources – have led to new integrative approaches of development strategies, making more than ever, an imperious necessity of interdisciplinary integrated science policies.

On these general grounds, in 2006 was born the project of the Interacademic Group for Development (GID). Initially constituted by a founding nucleus of five national French Academies (Sciences, Medicine, Political Sciences, Agriculture and Technology), the GID was very soon joined by the Accademia Nationale dei Lincei, the Academy of Hassan II of Morocco, the Bibliotheca Alexandrina (Egypt) and the National Academy of Senegal.

19 Academies have now expressed their wish to be associated to this project and to join the Euro Mediterranean Academic Network (EMAN) created after a founding meeting in June 2008 in Paris. Statutes of the network have been approved in December 2008 and the first general assembly has been held the 21st June at the occasion of this Conference.

During the last 3 years, GID has initiated and developed 4 important activities.

1 – An ***International program devoted to Women Health Education*** (WHEP) through an interactive website (whep.info) which has received more than160 000 visitors in the last 3 years and appears in developing and emerging countries as an efficient tool for the promotion of women leadership in health.

2 – ***The Avicenne program*** dedicated to educational strategies integrated in their socio cultural context.

3 – ***A program "Science, Profession and Society"*** aiming though a series of dedicated seminars to promote scientific and technical excellence of managers of development.

4 – In 2007 taking into account ***the important participation of academies of Mediterranean region*** to the GID initiative, it was

decided to focus GID action on the development of a Mediterranean Science Area and the creation of the Parmenides program.

Two major events have materialized the birth of this initiative: the creation of the EMAN network already mentioned and the organisation the Parmenides Conferences.

The first Conference took place in June 2008 at Institut de France in Paris and has brought together 150 participants representing 23 Mediterranean countries and 17 Science Academies. Under the general title ***"Environment and sustainable development in the Mediterranean Region"***, 3 main workshops have been organised dealing with Agriculture and sustainable development, halieutic resources and environment, impact of climate changes and adaptation. Specific recommendations have been issued and forwarded to heads of states and Institutions participating to the first Conference of the Union for Mediterranean (July 2008).

The unanimously recognised success of the first conference has encouraged the organisation of the second GID Conference which was organised in Rome by the Accademia dei Lincei from 12 to 14 October 2009.

Devoted to "Science and Health in the Mediterranean Region" with a special focus on genes-pathogens and environment, 3 main symposia were dedicated to genetic diseases, hereditary and environmental factors in chronic diseases, epidemiology of infectious and emerging diseases.

The first opportunity of a shared regional vision of the major health challenges took place in a particularly relevant context.

The Mediterranean Region, reputed over the world for its exemplary diet is paradoxically becoming one of the regions of the world with the highest increase of the incidence of metabolic and cardio vascular diseases.

A dramatic change in life styles and food habits, a real loss of diversity has generated the emergence of diabetes, obesity, cardio vascular diseases, asthma in the Mediterranean and the Gulf Countries.

The outcomes of this conference have been particularly rewarding:

- The emergence of a Mediterranean Network Bio-Med-Health has been elaborated.
- The conclusions and recommendations of the meeting have inspired the discussions of a recent International Conference of the Ministers of Health of the Mediterranean countries.

We are opening today the Third Parmenides Conference ***"Mediterranean Richness and Diversity, biology and Culture".***

During the last 15 years, a particular emphasis have been given to the "Culture of sustainability". Because cultural diversity and biodiversity are both long term values, "sustainable diversity" is an essential factor of sustainable development.

Respect for biological diversity implies respect for human diversity. Both elements are fundamental to stability and durable peace.

Cultural diversity as a source of innovation, creativity and exchange is the key to a mutually enriching future for mankind.

In many instances, the perceived separation between biological diversity and cultural diversity obscures the reality that both diversities are mutually reinforcing and mutually referent. Human action with respect to the environment for instance, including management itself is a social act and an expression of culture. It is now clear in this respect that the understating of the key role player by both cultural and biological diversity is essential to any strategy of sustainable development. More recently, emphasis has been given to the relations between the loss of diversity and poverty.

It is with this idea in mind that we suggested that diversity should constitute the third pillar for the edification of the Mediterranean Science Area.

Because common actions for safeguarding both forms of diversity have to be undertaken through a comprehension approach based on

the understanding that cultural and biological phenomena should not be dissociated, as it is too often the case, we deliberately privileged for this conference, a global approach.

In order to keep within the fundamental objectives of GID and to reach some precise and practical recommendations, we decided to select, because of their relevance to sustainable development and their representative value of the forms of diversity, 3 objects:

The tree and wooded areas

The fish

The book

which will be the focus of the scientific presentations and discussions during 3 corresponding plenary symposia ,followed by specialised round tables which will be run in parallel.

A particularly important session will end this conference on Thursday morning and we will have the privilege to welcome for a conclusion round table, distinguished representatives of national and International Agencies for development and, according to the goals of GID, to confront updated scientific knowledge to the reality of social expectations and the complex dimensions of economical governance.

We hope that these recommendations will contribute to improve our understanding for the development of sustainable diversity.

I would like to express at this stage, my deep gratitude to all my friends and colleagues who have made possible the organisation of this meeting:

- In Paris – Jacques FRÖCHEN, Secretary General of GID and Francis SEGOND, Director of Communication
- In Alexandrie – Yehia ZAKI, Omnia DARWISH and Marwa ABDELASSOUD

Special thanks for their friendly support have to be addressed to all the members of the Scientific Committees particularly to the Chairmen of the 3 symposia: Philippe TAQUET, Jean-Paul LANLY,

Gilles BOEUF and Michel PETIT, Michele GENDREAU-MASSALOUX, Gerald GRUNBERG, Jean-Luc LORY, and to all distinguished colleagues from the Union for Mediterranean, French Agency for Development, European Union, Unesco, FAO, Anna Lindt Foundation.

Let me wish you all a most pleasant and successful meeting.

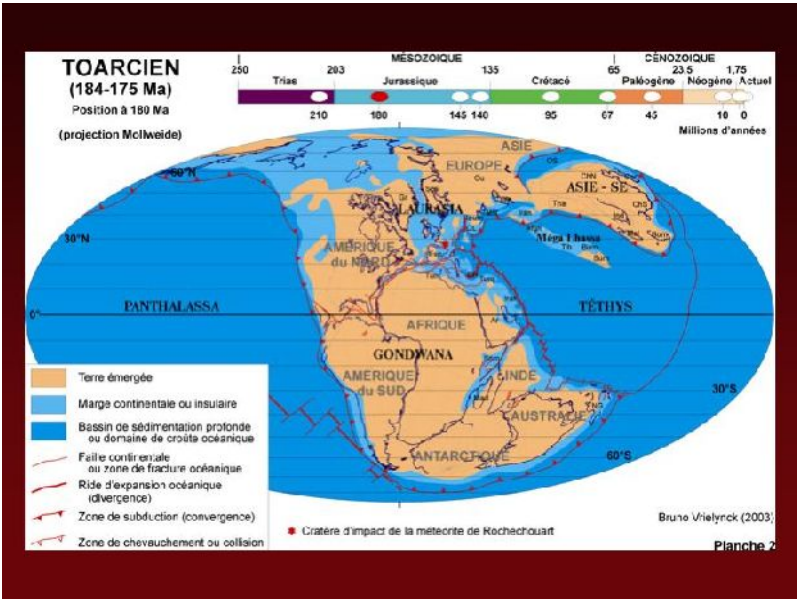
De Téthys à la Méditerranée

Philippe Taquet
(Acad. des sciences, Muséum d'Histoire Naturelle)

Nous allons débattre durant ces journées de l'avenir de l'espace méditerranéen, de l'avenir du poisson, de l'arbre et du livre dans cet espace qui nous est si précieux. Dès lors, il n'est pas inutile de jeter un regard sur le passé, sur l'histoire lointaine ou proche de cet espace. Ce regard rétrospectif nous permettra je crois, de mieux appréhender le présent, mais peut-être aussi d'envisager l'avenir avec des perspectives originales.

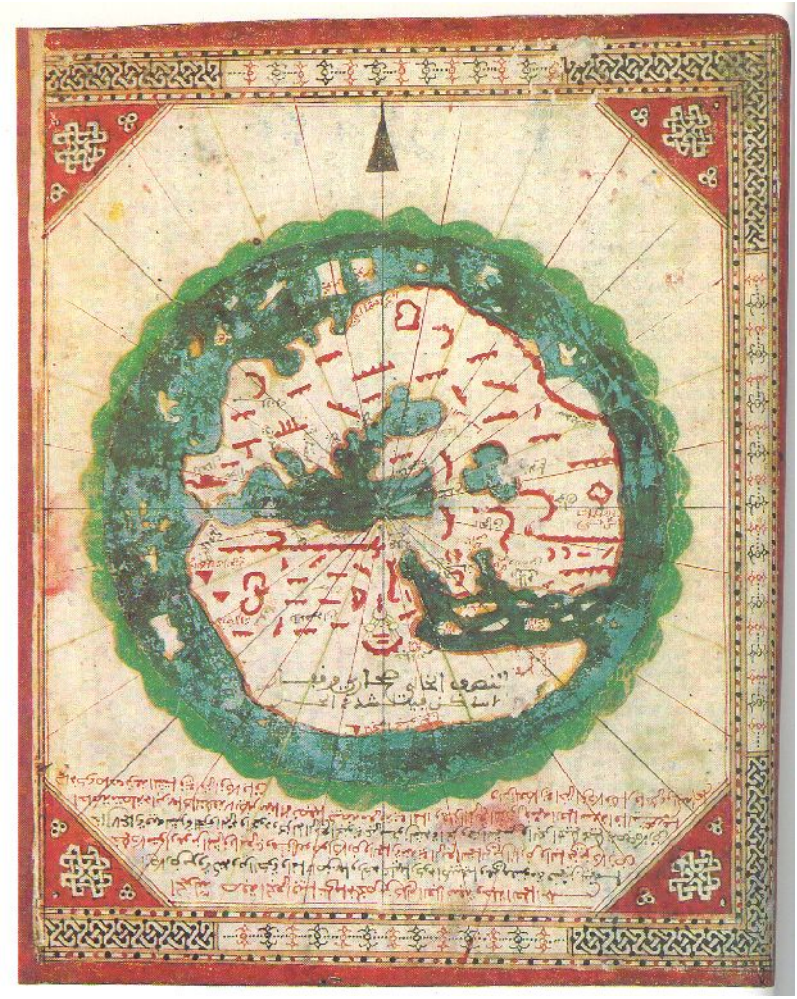
Le monde méditerranéen trouve son origine dans les temps géologiques, il y a plus de 180 millions d'années, lorsqu'au Toarcien, période géologique qui se déroule au Jurassique inférieur entre 184 et 175 millions d'années, un océan se forme entre deux supercontinents, la Laurasia au Nord et le Gondwana au Sud. Cet océan

a été nommé par les géologues la Téthys, nom tiré de la mythologie grecque. Téthys était la fille d'Ouranos (le Ciel) et de Gaïa (la Terre). Tethys épousa Okeanos (l'Océan) et vécu en son palais. Laurasia et Gondwana sont soudés au niveau de l'Amérique du Nord et de l'Amérique du Sud et la Téthys des géologues occupe un grand espace au niveau de l'Europe et de l'Afrique du Nord tout en étant largement ouverte vers l'Est.



Il y a 145 millions d'années, les deux super-continents commencent à se séparer, le Nord se sépare du Sud (déjà !) et la Téthys progresse donc vers l'Ouest. Il y a 95 millions d'années, au cours du Crétacé, cette Téthys comprend de larges aires marines peu profondes qui s'étendent sur l'Europe et sur le Nord de la plate-forme africaine, déposant des sédiments calcaires. A la fin du Crétacé, il y a 65 millions d'années, L'Afrique s'est séparée de l'Amérique du Sud, tandis que l'Inde a commencé son long voyage à travers l'océan indien. Elle entrera en collision avcc le continent asiatique donnant ainsi naissance à la chaîne himalayenne. Il y a 45 millions d'années, c'est-à-dire au cours de l'ère tertiaire, l'aire Téthysienne a

pris la forme que nous connaissons aujourd'hui sous le nom de Méditerranée. Mais il y a 10 millions d'années, la Mer Rouge n'existe pas encore, l'Afrique est encore soudée à l'Arabie Séoudite.



Cet espace méditerranéen entourant une mer presque complètement fermée sera exploré et cartographié par des peuples qui joueront un rôle déterminant dans la naissance de la civilisation. Les

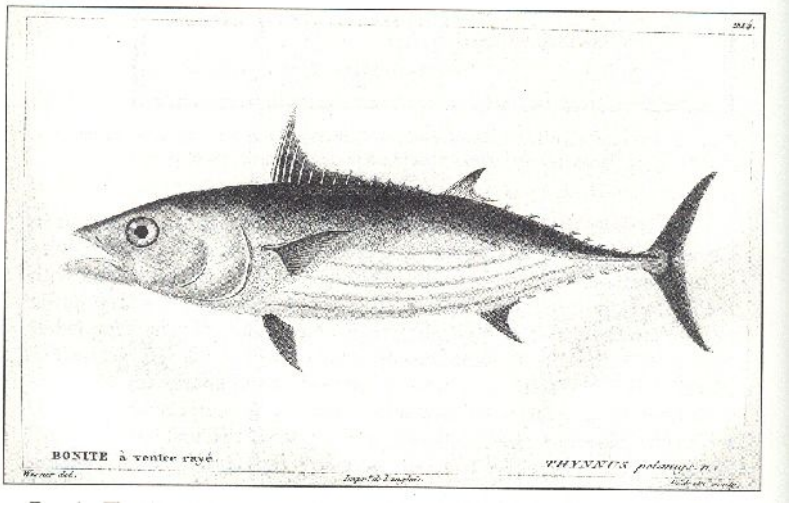
premières cartes, les portulans, datent du 9ème siècle. Parmi eux, celui justement célèbre de Ali Ibn Ahmad Ihn Muhammad al Sharqi de Sfax en Tunisie, trace très convenablement le pourtour de la méditerranée.

Plus précis, le portulan de De Mariolle en 1537 localise tous les ports et les points remarquables que les navigateurs sont susceptibles de rencontrer au cours de leurs voyages. En 1764, les progrès de la cartographie sont patents losqu'on examine la carte du port d'Alexandrie dans le petit atlas maritime de Bellin, avec le détail des profondeurs des fonds marins. Aujourd'hui, avec les satellites, les cartes sont d'une extrême précision, et l'usage du Web permet en quelques clics d'avoir une vue aérienne rapprochée d'Alexandrie et de distinguer les détails du toit et de l'architecture de la Grande Bibliothèque…jusqu'à presque distinguer les congressistes réunis ce jour dans la grande salle des séances !

Au cours des temps géologiques, la surface, mais aussi le niveau de la mer Méditerranée ont changé à maintes reprises. Le Britannique Charles Lyell, l'un des fondateurs de la Géologie a pu prendre l'exemple des colonnes du temple romain de Sérapis à Pouzzole près de Naples, comme preuve des variations du niveau de l'eau : sur ces colonnes sont en effet incrustées des coquilles marines à plusieurs mètres de hauteur. Elles témoignent d'un temps où le temple était submergé par la mer. Les dépôts de sédiments marins calcaires que l'on trouve sur le pourtour méditerranéen témoignent de l'histoire de la Téthys puis de la Méditerranée ; ces sédiments renferment de magnifiques poissons fossilisés, comme ces raies que l'on trouve au Liban dans des couches du Sahel Alma âgées de 100 millions d'années. L'un des sites fossilifères les plus célèbres pour sa richesse en poissons fossiles est celui de Monte Bolca dans le Nord de l'Italie, non loin de Vérone. Des centaines de poissons ont péri lors d'une éruption volcanique il y a 50 millions d'années et leurs cadavres ont été parfaitement conservés dans une boue calcaire très fine qui a préservé tous les détails de leur anatomie avec parfois les taches de couleur présentes sur leur peau. La faune ichtyiologique du Monte Bolca témoigne de l'existence à cette époque d'une mer chaude, tropicale et de la présence de récifs coralliens.

L'abondance des poissons se retrouve aujourd'hui dans la Méditerranée, pour le plus grand bonheur des peuples vivant sur ses rivages et pour qui la pêche a toujours constitué une ressource essentielle. En témoignent les figures de poissons présentes sur les monnaies puniques, phéniciennes datant du 2ème et du 3ème siècle et trouvées à Cadix en Espagne. Les vélins du XIVème siècle représentent la diversité des êtres vivants et des monstres marins qui peuplent la Méditerranée, puis au XVIème siècle le Français Pierre Belon mène une expédition scientifique de 1546 à 1549 pour étudier les faunes marines. Il donne sur de belles gravures sur bois les figures des poissons qui ont du sang et de ceux qui n'ont pas de

sang. En 1554, l'Italien Salviani publie un traité d'Ichtyologie qui est l'un des premiers livres de zoologie illustré de gravures sur cuivre, tandis que le Suisse Conrad Gessner rédige en 1558 une encyclopédie comprenant 737 gravures sur bois, une véritable somme sur les poissons. En 1810, le Niçois Antoine Risso fait paraître une Ichtyologie de Nice ou histoire naturelle des poissons des Alpes maritimes qui inventorie une partie de la faune méditerranéenne. Il reviendra au naturaliste français Georges Cuvier et à son collaborateur Achille Valenciennes de publier en 1828 dans les 22 volumes d'une Histoire naturelle des poissons, 5000 espèces différentes, une encyclopédie qui totalise toutes les connaissances publiées sur les poissons depuis l'antiquité. Aujourd'hui, les informations sur les faunes de poissons de la Méditerranée sont rassemblées dans des banques de données appelées GICIM ou FISHBASE consultables sur le WEB, et qui apportent une aide précieuse à la gestion, mais aussi à la préservation des faunes. On sait que le thon rouge méditerranéen est aujourd'hui menacé par la surpêche et que des mesures sont nécessaires si l'on ne veut pas assister à l'extinction de cette espèce.



L'arbre, l'olivier, le chêne, le cèdre ou le palmier ont été célébrés par les peuples méditerranéens. Les paléontologues qui se plongent

dans l'histoire du passé de la terre et de l'évolution de ses faunes et de ses flores, savent que les plus anciennes plantes terrestres peuplent les continents depuis le Silurien il y a 430 millions d'années. Les premiers troncs connus, puisque c'est le tronc qui fait l'arbre, ont été récoltés dans les couches du Dévonien (395 millions d'années) du Sud marocain. De grands arbres fossilisés, silicifiés, parsèment les couches du Crétacé du Sahara. Ils appartiennent à des espèces proches des Araucarias (Araucarioxylon) et ont poussé à l'époque des Dinosaures. Jusqu'à la période du Crétacé inférieur, il y a 110 millions d'années, l'espace terrestre méditerranéen est couvert de forêts de Gingko et de conifères, Puis apparaissent les plantes à fleurs, et avec elles la végétation change profondément ; les arbres qui nous sont familiers vont peu à peu s'épanouir et avec eux les insectes pollinisateurs, abeilles et papillons. Le Caroubier et le Ficus sont connus dans des couches datant de 50 millions d'années. Les arbres sont chers au cœur des méditerranéens, et certains ont été protégés des vicissitudes des temps comme ce chêne de 10 mètres de diamètre présent en Espagne, cet olivier du Maroc vieux de 1000 ans, ce platane d'Orient planté par Buffon en 1747 au Jardin des Plantes à Paris.

La fibre végétale sera très tôt utilisée par les peuples méditerranéens : le papyrus permettra aux habitants de l'Égypte antique de conserver sur des rouleaux les textes de leurs lois ou les textes sur les morts. Puis l'assemblage de papyrus dans la ville de Byblos donnera naissance au livre (Biblion) et aux premières bibliothèques. Le livre irriguera alors toute la pensée du monde méditerranéen : traité d'anatomie arable du XVIIème siècle reprenant un traité d'Al Biruni du Xème siècle, traité de sciences naturelles par Ibrahim Efendi édité à Marseille en 1850, livre de la lampe de nuit (le ver luisant) dans les selles des chevaux ou traité d'équitation de Yusuf fils de Haj al Hesbani publié à Beyrouth en 1881. Aujourd'hui, les éditions électroniques jouissent de la faveur du public pour des raisons à la fois pratiques et économiques. Elles ont l'avantage de permettre la consultation à distance et gratuitement de tous les ouvrages précieux édités dans le passé et dont un grand nombre est préservé dans la Bibliothèque d'Alexandrie, tout comme dans plusieurs bibliothèques patrimoniales du pourtour méditerranéen.

Le paléontologue, cet historien de la terre, peut donc en un raccourci saisissant retracer l'histoire de l'océan Téthys à la mer Méditerranée. Il peut montrer ainsi combien le passé a façonné le présent, combien les pages de l'histoire de la vie déposées dans les sédiments, si chères aux peuples de l'espace méditerranéen, permettent de comprendre le peuplement marin actuel ou la végétation terrestre. Il peut enfin souligner l'évolution et la fragilité des écosystèmes sur une terre en perpétuel changement, écosystèmes dont l'homme doit prendre le plus grand soin.

3rd Mediterranean Scientific Conference
GID - Parmenides - Alexandria 2010
Mediterranean Wealth & Diversity; Biology & Culture

L'Arbre - The Tree

The Tree

SYMPOSIUM

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Hala Barakat (Egypt)
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Américo Mendes (Portugal)
Chadi Mohanna (Lebanon)
Placido Plaza (CIHEAM)

Introduction:
Sandro Pignatti (Linceo, Italy)

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Mohamed Saket & coll. (FAO, Bureau régional -Proche-Orient et Afrique du Nord-, Cairo)

2. Biodiversity of Woody Ecosystems:
Jacques Blondel (CEFE, France), in collaboration with Yves Birot, François Lefèvre, Frédéric Médail

3. Forest and Wooded Areas: Economics and Policies (Goods and Services):
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Pere Riera (Spain)
Hamed Daly-Hassen (Tunisia)
Jean de Montgolfier (Plan Bleu)

4. Institutions and Governance:
Abdeladim Lhafi (Morocco)

Conclusion:
Chadi Mohanna (Lebanon)

WORKSHOPS

The Future of the tree in the Mediterranean: Management, Conservation and Development of Tree and Wooded Areas: New Approaches and Technologies

President:
Ibrahim Nahal (Syria)

Rapporteurs:
Placido Plaza,
Jean-Paul Lanly

Participants:
Christophe Du Castel (AFD/FFEM)
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Mohamed Sabir (Morocco)
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Introduction

Sandro Pignati
(Linceo, Italy)

The Mediterranean zone is characterized by a climate with mild winter and dry summer. Such conditions are evident in 5 regions of the world (Mediterranean type ecosystems). Under these climate conditions the vegetation develops evergreen woodlands, with the structure of forest or matorral.

Fire is a natural factor of the ecosystem, producing a cyclic succession and the vegetation alternatively consists of woodland or low shrubs (garrigue, phrygana). Woodland has a maximum of biomass, stability and soil protection, but biodiversity is concentrated in the post-fire vegetation.

The woody flora of the Mediterranean is rich in palaeotropical elements, whereas the vegetation of garrigue has affinity to the western (Macaronesian) and eastern (Turanian) floras; polyploids are often prevailing, as a consequence of recent human impact.

In the present condition, the forest mantle of the Mediterranean countries is largely depleted and this leads to increased risk of desertification, even in the coastal regions of South Europe. Reforestation is an imperative; indeed, methods of sustainable management as well as the coexistence of forest and garrigue in an integrated ecosystem have to be applied.

Re-greening of Mediterranean landscapes will give rise to heavy economic problems in the short term and midterm, but the progressive depletion of forests in the long term, and with the perspectives of climate change, will be a major threat for the stability of Mediterranean countries.

1. Assessment and Monitoring of Mediterranean Woody Formations

Forests and Range Resources around the Mediterranean

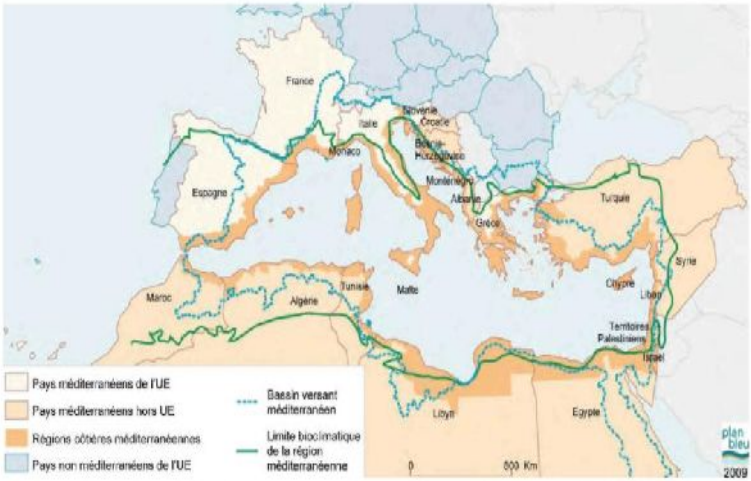
Prepared by **Mohamed Saket**, Senior forestry Officer, FAO, RNE & **Malek Hayder**, Consultant, FAO, RNE

With contributions by **Christophe Besacier**, Forestry Officer, FAO Forestry Dpt. & **Paolo Ceci**, Consultant, FAO Forestry Dpt.

The bioclimatic zone of the Mediterranean extends to the entire coastal strip of the basin. It covers parts of the following coastal countries: Portugal, Spain, United Kingdom (Gibraltar), France, Monaco, Italy, Malta, Slovenia, Croatia, Bosnia-Herzegovina,

Montenegro, Macedonia, Albania, Greece, Bulgaria, Turkey, Cyprus, Syria, Lebanon, Israel, Palestine, Jordan, Egypt, Libya, Tunisia, Algeria, Morocco. The map of figure 1 shows the extent of the area. The Mediterranean has watersheds of different extent. It includes the Nile watershed in the south, substantial parts of the Alps and the Rhodopes Mountain in the north.

Figure 1. Map of Mediterranean countries



Source: State of the environment and development in the Mediterranean - 2009, Plan Bleu

The Mediterranean forest and range [1] ecosystems (see Box 1) are generally characterized by a remarkable set of features and an exceptionally large variation of environmental conditions that make them naturally and aesthetically attractive. Moreover, the Mediterranean forests contain an array of plant and animal species diversity with relatively high genetic variability. This region is one of the world's biodiversity hot spots. Its mosaic of forest landscapes contributes greatly to the outstanding biological richness and mul-

[1] The term of range and rangelands are used to reflect the importance (socially and economically) of this vegetation type and ecosystem in many countries particularly in the south and East of the Mediterranean. Rangelands can be with or without woody formations

tiple values which attract the many tourists that visit the Mediterranean every year. These Mediterranean forest landscapes also contribute to poverty alleviation, the socio economic development of rural areas, food security of local people and the preservation of the multiple environmental services considered today by the international community as of global importance (biodiversity, landscape quality, preservation of water resources and fight against land degradation). Despite their apparent fragility, Mediterranean forest landscapes have been shaped by human activities and have demonstrated for several centuries their strong resilience to changes of anthropogenic origins. However, today they are facing a threat of unprecedented magnitude which they will have to adapt to in the coming decades.

Box 1: Terms and Definitions

Forest: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.

FAO FRA -Working Paper 83/E, 2004

Other wooded land: Land not classified as Forest, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds *in situ*; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.

FAO FRA -Working Paper 83/E, 2004

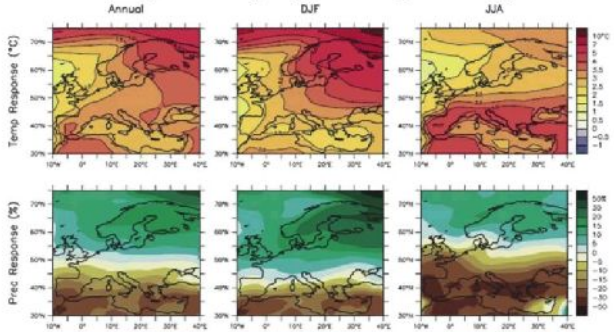
Rangelands: Land not classified as Forest or other wooded land, spanning more than 0.5 hectares, with natural grassy vegetation used for browsing by livestock. It does not include land that is predominantly under natural or manmade natural woody vegetation, crops or urban land use.

Definition for the purpose of this paper

Climate change is expected to have significant, if not severe, impacts on Mediterranean ecosystems (See figure 2) while at the same time the population of the Mediterranean region will increase significantly by 2050. IUCN estimates that worldwide the current species extinction rate is between 1,000 and 10,000 times higher than it would naturally be. According to the same source, the main drivers of this loss are converting natural areas to farming and urban development, introducing invasive alien species, polluting or over-exploiting resources including water and soils and harvesting

wild plants and animals at unsustainable levels. This raises crucial questions. What can be done to ensure that Mediterranean forest landscapes adapt to new social, economic, environmental and climate conditions so that they can continue to provide goods and services on which people depend? How can regional cooperation in this area located at the crossroads of Africa, Europe and Asia help countries respond effectively to the new challenges posed by climate change? How can the Mediterranean region, which is particularly hard hit by global climate change, become in some ways, a laboratory to develop, test and disseminate best practices to promote adaptation of forest ecosystems to climatic changes and other pressures during the twenty-first century?

Figure 2: Simulated temperature and precipitation changes over Europe for the A1B scenario

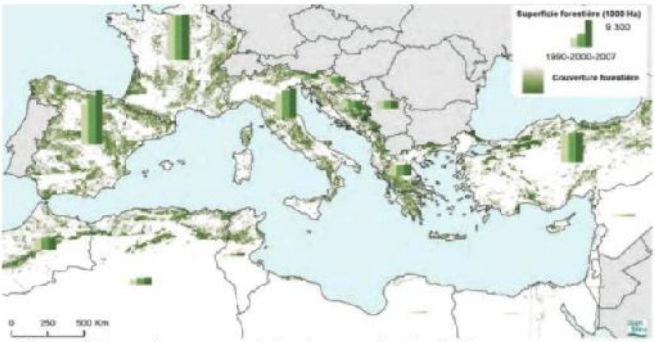


Source: IPCC 4th assessment report 2007: Simulated temperature and precipitation changes over Europe for the A1B scenario. Top row: annual mean; winter (DJF); summer (JJA); temperature change between 1980 to 1999 and 2080 to 2099 averaged over 21 models. Bottom row: same as top, but for fractional change in precipitation.

In the countries to the north of the Mediterranean, natural land ecosystems are seeing the more or less vigorous return of forests (See figure 3), due to the abandonment of marginal agriculture lands and to reforestation campaigns. To the South, particularly in the Maghreb, the ecosystems are still exposed to increasing anthropogenic pressure of clearing and cultivation of marginal lands, overexploitation of firewood and overgrazing. The south Mediterranean forest and range ecosystems fall mostly in the semi-arid with often poor soils and scarce water. Due to the reigning environmental and climatic conditions, these ecosystems are particularly fragile and

vulnerable and one of the most endangered in the world. Many native plants and animal species have become extinct or endangered.

Figure 3: Forest cover around the Mediterranean



Source: State of the environment and development in the Mediterranean – 2009, Plan Bleu

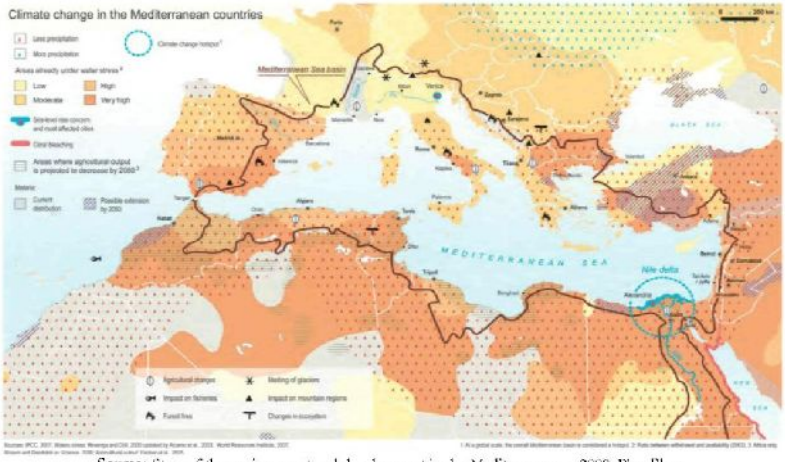
based on data of Forest Resources Assessment of FAO (FRA 1990 – 2000 - 2005)

The predictions on climate change shown in Figure 4 below announce that the region will likely enter into an era of severe water stress due to predicted decrease of annual precipitations, especially to the south but also in some parts to the north of the Mediterranean. The natural ecosystems will likely suffer most. These predictions of climate change, if will be verified true, and the increasing demand of the ecosystems goods and services depict a bleak future for forests and rangelands.

Although all countries in the region have routinely collected national data from surveys on country demographics and agricultural statistics, very little effort has been made in looking at the data from an integrated perspective that combines forestry and rangelands information with other relevant statistics to get a full picture of the land use systems and their trends. An integrated system of data serves as an effective tool for planning both at the national and regional level. Food security analysis may require a diverse system of measurement and cannot be adequately analyzed only through the crop forecast survey, post harvest survey and the living conditions survey. An integrated instrument that looks at all aspects such as land use systems, forest and rangelands resources, and other bio-

physical characteristics of the environment could help understand the environmental and livelihoods issues such as poverty alleviation and food security concerns in the countries of the region and their trends.

Figure 4: Climate change in the Mediterranean countries



Source: State of the environment and development in the Mediterranean – 2009, Plan Bleu

This paper includes a section on the state of knowledge about forests and range resources in the Mediterranean countries and a section on the reasons behind the scarcity of information about these resources. It also includes the main conclusions and recommendations with, in particular, the proposal for a new regional process to fill information gaps: the State Of Mediterranean Forests.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium I – the Tree/Mohamed SAKET.pdf. The slides accompanying this presentation are also available on the CD-ROM.

2. Biodiversity of Woody Ecosystems

Biodiversity of Mediterranean woodland ecosystems in a changing context : understanding for managing

Jacques Blondel (CEFE, France), with
Yves Birot, **François Lefèvre**, **Frédéric Médail**

The Mediterranean basin which is located at the crossroads of three continents is characterized by highly specific features including i) a dense human population (*ca.* 460 million people), ii) contrasted climatic conditions, iii) an exceptional diversity of landscapes, and iv) an unique historic and cultural legacy. As a result of its geographical location and habitat diversity, this region is one of the 34

biodiversity hotspots so far identified around the world but it is also facing hot challenges in relation to environmental and developmental issues. In this unique and original eco-region, and in particular on its southern and eastern rim, local economy still depends to a large extent on natural resources. In a context of a marked demographic expansion, climatic uncertainty, energy crisis and other components of global change, the question of meeting needs of human populations is a crucial matter. How to provide sustainable basic needs such as water and food? How to preserve soil resources and fertility? More generally, how to provide the broad range of goods and services that ecosystems generate for the well-being of humans, which in turns raises the question of how to balance the needs between humans and ecosystems through integrated land-use planning and management?

Mediterranean woody ecosystems, forest, various types of matorrals and rangelands, are characterized by a high level of diversity from genes to landscapes. This diversity is a key driver of ecosystem evolution and resilience. Nowadays, nobody would claim that such a biological diversity should be kept in unchanged. This would be both impossible and undesirable. A crucial challenge is to better understand ecological and evolutionary processes, to use them and/or to enhance them for adapting woody ecosystems in the context of rapidly changing ecological conditions by making them more resistant and resilient. The aim of this paper is to address some relevant issues related to: i) the Mediterranean woodland ecosystems as biodiversity hot spots in a changing climatic context; ii) the spatio-temporal dynamics of woody ecological systems in response to climate and land-use changes; iii) the genetic diversity of woody plants as a background of evolutionary processes as a response to habitat and climatic heterogeneity, and iv) investigate some challenges and opportunities for improving woodland ecosystems and their diversity. [...]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium I – the Tree/Jacques BLONDEL.pdf. The slides accompanying this presentation are also available on the CD-ROM.

3. Forest and Wooded Areas: Economics and Policies (Goods & Services)

Biens et services fournis par les espaces boisés méditerranéens : économie et politique

Américo Mendes (Portugal) ; **Pere Riera** (Spain) ;
Hamed Daly-Hassen (Tunisia) ; **Jean de Montgolfier** (Plan Bleu)

La communication présentée par Jacques Blondel vous a exposé l'importance exceptionnelle de la biodiversité des espaces boisés méditerranéens. Cette biodiversité constitue une richesse qui est utilisée depuis des millénaires par les civilisations qui se sont succédé autour de la Méditerranée, en leur procurant des usages, des biens et des services très divers, souvent non marchands. Mais

cette richesse est également confrontée à des risques nombreux, comme celui de la désertification dont Louhichi Brinis vient de vous entretenir.

Face à ces richesses et à ces risques liés à la biodiversité des écosystèmes boisés, le rôle des économistes est de contribuer à une meilleure compréhension de l'état actuel de ces espaces, à une meilleure évaluation des richesses et des risques, et à une meilleure prise en compte de ceux-ci par les acteurs sociaux, dans les processus de décision et de gestion, en vue d'un développement plus durable. Le but de cette communication est de présenter les grandes lignes de ces apports des économistes. Leur traduction en termes institutionnels de gouvernance sera ensuite approfondie dans la communication d'Abdeladim Lhafi.

[...]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium I – the Tree/Jean de MONTGOLFIER.pdf. The slides accompanying this presentation are also available on the CD-ROM.

Résumés of individual papers

3.1 Hamed DALY-HASSEN
(INRGREF, Tunisia)

Des estimations des VET des biens et services des forêts ont été réalisées pour plusieurs pays du Sud et de l'Est de la méditerranée pour l'année 2001 (Merlo et Croitoru (Eds.), 2005) en utilisant différentes techniques d'évaluation. Néanmoins, la rareté ou le manque de données de plusieurs bénéfices ont conduit à des sous-estimations. Les VET obtenues par ha de forêt sont assez élevées (de 138 à 215 €) dans certains pays comme la Tunisie et le Liban, et moyennes (de 30 à 89 €/ha) dans d'autres pays. Les valeurs liées à la production fourragère et autres produits non ligneux constituent plus de la moitié des VET dans tous les pays où les données sont disponibles sauf en Turquie. La protection de bassins versants est aussi l'un des principaux bénéfices des forêts en Syrie (82% de la VET estimée) et dans les trois pays du Maghreb (19 à 46% de la VET). L'intégration des coûts liés à la dégradation des forêts et notamment ceux liés à l'usage intensif des ressources par la population locale, réduisent les VET d'une proportion qui pourrait atteindre 25% (cas du Maroc). Ces résultats soulignent l'importance des forêts pour les communautés locales et la société dans son ensemble, qui nécessitent par conséquent une gestion durable basée sur un compromis entre les usages forestiers des communautés locales et les bénéfices environnementaux, en ayant recours notamment à des incitations économiques et des arrangements institutionnels.

3.2 Pere RIERA
(University Barcelona, Spain)

The discipline of economics has developed different methods to estimate the value of forest goods and services to society even if a market is missing for such goods and services. The most widely applied in the family of methods is the "stated preference" ones, and in particular contingent valuation and choice experiments. Also popular are the "revealed preference" methods, mainly the travel cost and hedonic pricing methods. Stated preference methods are able to capture both use and non-use values, while revealed preferences typically capture use values only. Also, revealed preferences need to be applied ex post, i.e. the change has to be observed in an already existing market. This limitation does not apply to the stated preference methods. Sometimes, forest valuation accounts for the different values separately and aggregate them in a total economic value fashion. This practice has to be taken with care due to potential aggregation and double counting problems.

3.3 Jean de MONTGOLFIER
(Plan Bleu)

Les espaces boisés méditerranéens ont été utilisés et façonnés depuis des millénaires par les civilisations qui se sont succédé autour de cette mer. Elles en ont tiré des usages, des biens et des services très divers, souvent non marchands, qui ont grandement varié au cours du temps. Les économistes ont développé diverses méthodes pour les évaluer.

Cette communication présente les principes de ces méthodes, puis expose des exemples d'évaluation, pris dans différents pays au sud comme au nord du bassin. Elle conclut à la nécessité d'une meilleure prise en compte des richesses et des risques dans les processus de décision et de gestion, comme appui d'une meilleure gouvernance, en vue d'un développement plus durable.

Des exemples dans les pays du Nord

Pour ce qui est des valeurs d'usage directs, dans la plupart des pays du Nord c'est la production de bois qui prédomine (Merlo et Croitoru, 2005). Deux exceptions importantes sont le Portugal avec sa production de liège comptée dans le groupe des produits non ligneux, le Midi de la France avec une valeur estimée relativement grande pour les usages récréatifs des forêts et la Grèce et l'Albanie avec la production fourragère.

Cette production est loin de l'importance qu'elle avait avant le processus de dépeuplement des zones rurales. Donc, dans la plupart des espaces forestiers du nord, les connections entre agriculture et élevage et la production forestière sont beaucoup moins fortes que dans les pays du Sud. Si dans les pays du Nord il y a moins de problèmes de dégradation forestière liés aux conflits avec l'agriculture et l'élevage pratiqués par les populations qui vivent dans les espaces forestiers, il y a plus de problèmes qui sont la conséquence du dépeuplement des zones forestières. Le principal de ces problèmes est le risque d'incendies. Pour ce qui est des valeurs d'usage indirects et des valeurs de non usage, les estimations fragmentaires disponibles donnent les indications suivantes (Merlo et Croitoru, 2005) :

- La protection des ressources en eau et la biodiversité sont, probablement, parmi les biens publics les plus importants produits par les forêts des pays du nord ;
- La séquestration de carbone est relativement moins importante que ces deux autres services.

Pistes de recherches de développement en matière d'économie et de politiques

Pour qu'il y ait une gestion durable des espaces forestiers méditerranéens il est nécessaire de mettre en place des mécanismes d'inci-

tation des propriétaires forestiers privés ou des populations qui utilisent ces espaces forestiers qui soient cohérents avec cet objectif. Ces mécanismes doivent d'une manière ou d'une autre avoir pour résultat un accroissement du revenu des propriétaires privés ou des populations qui vivent de la forêt, à condition qu'ils s'engagent dans des actions contribuant à la gestion durable des forêts. Ces mécanismes peuvent inclure les instruments suivants :

- Création de marchés pour des produits forestiers pour lesquels il est possible d'établir des droits de propriété privé et qui n'ont pas encore un marché bien organisé ;

- Mise en place de systèmes de différentiation qualitative de certains de ces produits marchands (certification, appellations d'origine contrôlée, etc.) ;

- Soutien à l'organisation associative des propriétaires forestiers ;

- Co-financement public de la production de biens publics forestiers, par exemple, en faisant appel à la fiscalité « verte » (exemples du Fonds Forestier Permanent du Portugal et de la « taxe verte » en Coratie) ;

- Approche territoriale type LEADER combinant initiatives volontaires privées et incitations publiques pour la mise en réseau des agents économiques capables de développer de façon coordonnée le potentiel économique multifonctionnel d'un espace forestier ;

- Coordination verticale d'actions privées et publiques au niveau de filière pour certains produits, comme le liège, qui sont la base d'activités industrielles soumises à forte concurrence de produits substituts.

4. Institutions and Governance

Espaces boisés : institutions et gouvernance

Abdeladim Lhafi
(Haut Commissaire aux Eaux et Forêts
et à la Lutte Contre la Désertification, Morocco)

La mise à niveau de la gouvernance des espaces boisés méditerranéens est envisagée à travers les clefs d'entrée de cinq grands ensembles de rupture : i- la sensibilité des espaces méditerranéens à la désertification et l'analyse des liens de causalité entre les déterminants structurels et les facteurs favorisants. ii- les tendances lourdes des changements climatiques, leurs expressions et leurs influences sur les écosystèmes méditerranéens. iii- les tensions socio-spatiales et les relations conflictuelles vocation-utilisation des sols.

iv- la rupture des ressorts de régulation traditionnelle de gestion des espaces. v- les interactions entre les équilibres des écosystèmes naturels et les options de développement des espaces ruraux et forestiers.

Ces ruptures appellent de nouvelles approches dans les conceptions :

i) du territoire, comme unité de développement.

ii) du développement intégré en logique inversée par rapport aux plans de développement sectoriel.

iii) de la gestion de l'espace dans les méthodes, le mode de valorisation des ressources naturelles, les leviers d'incitation et les modèles organisationnels. iv- l'analyse des paramètres et des indicateurs de développement durable, comme outils de définition des politiques publiques de développement et de leur évaluation.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium I – the Tree/Abdeladim LHAFI.pdf. The slides accompanying this presentation are also available on the CD-ROM.

Workshops

Ligneux et désertification en Méditerranée

Gérard Bégni
(CNES, France)

Desertification is officially defined as an irreversible degradation of the quality of soils (see Box 1). Such soils are no longer suitable to feed people, either directly through edible vegetable species (extensive or intensive agriculture, irrigated or not) or indirectly through travelling livestock farming.

The image of '**desert progression'** has been for long mistaking about desertification mechanisms. This plague should rather be compared with a severe skin illness of the Earth, which stretches step by step from some blotches and can be locally cured.

The causes of desertification intricate natural evolutions and anthropic pressures in a systemic, non linear way. Choke and change points bookmark irreversible trajectories in the ecosystem evolution.

Some main **natural causes** of desertification have to be highlighted. Intense drought dry up the soil surface, bringing ground wetness deeper and deeper. Frequent extreme rainfall episodes may cause severe water erosion in vulnerable downstream areas. Wind erosion may affect both the area where it occurs and remote areas where sandy infertile deposits are carried out. Some of these sandy winds may blow across the Mediterranean (see fig. 2). Projected climate change in semi-arid Mediterranean regions is a hindering factor: the overall trends are rainfall decrease, temperature increase and greater occurrence of extreme events.

The many **anthropic causes** of desertification are as complex as human behaviour can be. The basic phenomenon is a set of additive pressures upon ecosystems, which pushes them out of their resilience capacity. Some of them have to be highlighted. An excessive use of poor soils removes their nutriments. Joint irrigation and excessive use of fertilizers and pesticides leads to both soil and ground water table salinization – which in turn, when pumped out in other places, can bring geographical extension of soil salinization on the long run. Cooking, building, commercial use of wood can cause logging. Bush, shrubs and trees slash and burn practices are supposed to bring new nutriment but may cause desertification too – and forest fires are often accidental or uncontrolled. Overgrazing joint to sedentary overexploitation and logging makes bare soils, which are exposed to wind erosion (salinized particles my be blown off and spread out in large areas).

Some local desertification phenomena closely mix independent natural and anthropic causes. So, sea level rise in coastal zones can lead to ground water table salinization, especially in large deltas (Nile, Ebro, Rhone) while irrational use of pesticides and fertilizers can worsen this phenomenon and add more toxic products. But most often intricate coupling effects are at work. Among many examples, overgrazing makes bare ground quite vulnerable to erosion. After slash and burn, the specific Mediterranean rainfall

regime may wash out the fertile ashes that were expected to regenerate soils.

Trees form an important part of all ecosystems, from boreal and humid to arid and semi-arid regions. Within Mediterranean ecosystems, they interact with other vegetal and animal species in quite complex and specific ways. They strengthen the ecosystems resilience and greatly contribute to the services that they offer. Breaking off these interactions can cause irreversible degradation by leading these ecosystems out of their resilience domain. When addressing desertification phenomena in the Mediterranean, one must take into account both high economic value trees, more usual economic value trees (cedars, oaks, pines, cypresses) and more "modest" vegetal species. Shrubs, bushes and scrublands which associate various vegetal species have to be addressed with trees, as well as graminaceous species of steppes in which no trees can be found. Their covering properties play a crucial role in many Mediterranean regions. Interactions between all these vegetal species and desertification processes are very numerous and diverse. Therefore, a perfect knowledge and understanding of these anthropo-ecosystems and the services that they offer is needed.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium I – the Tree/Gerard BEGNI.pdf. The slides accompanying this presentation are also available on the CD-ROM.

Rôle des ONG dans la connaissance, la gestion et la promotion des forêts méditerranéennes

Mohamed Larbi Chakroun
(AIFM, Tunisia)

Les ONG sont de plus en plus présentes sur la scène publique ; leur taille, la diversité des causes qu'elles défendent et leurs modes d'action en font des acteurs de plus en plus influents. En région méditerranéenne, l'aménagement administré des forêts privilégiant la production ligneuse a montré ses limites : pression anthropique au Sud, sous-exploitation au Nord et des demandes de plus en plus pressantes des citadins.

Les conflits d'intérêts entre sylviculteurs, écologistes, chasseurs et citadins a donné naissance depuis une trentaine d'années à de nombreuses associations scientifiques, techniques ou environnementales qui, grâce à leur capacité de négociation, de persuasion et d'information, ont permis d'envisager une gouvernance concertée et un développement durable des espaces boisés méditerranéens, en conformité avec les conditions socio-économiques de ces espaces.

Other interventions

Ahmet Senyaz
(Ministry of Environment and Forestry, Turkey)

Mediterranean forests have an important role in providing multiple goods and services. On the other hand, several challenges such as combating climate change, fighting with forest fires, protecting unique forest ecosystems and managing Mediterranean forests in a

sustainable way have always been on the agenda. Meeting these challenges requires sound management practices based on scientific research and information. Forest research in the Mediterranean region is handicapped by its fragmentation, occasional outdating and isolation. In order to overcome this obstacles research cooperation between countries in the region should be enhanced. Mediterranean Forest Research Agenda (MFRA) was formulated to highlight the main pan-Mediterranean forestry challenges as well as the scientific priorities, objectives and outcomes to address them. MFRA aims at networking and coordinating research at Mediterranean level, requiring a coordinated effort by the research community and related stakeholders to utilize in an efficient and effective way the available international and national research funding resources.

[...]

The slides accompanying this presentation can be found on the CD-ROM.

Mohamed Sabir
(École Nationale Forestière d'Ingénieurs, Morocco)

The slides accompanying this presentation can be found on the CD-ROM.


3rd Mediterranean Scientific Conference
GID - Parmenides - Alexandria 2010
Mediterranean Wealth & Diversity; Biology & Culture
Le Poisson - The Fish

The Fish

SYMPOSIUM

President:
Giorgio Bernardi (Italy)

Rapporteurs:
Nadia Ounaïs (Monaco)
Denis Lacroix (France)

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Gilles Boeuf (President, Muséum national d'histoire naturelle, France)

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Denis Lacroix (Ifremer, Agropolis International)
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Nadia Ounaïs (Director, IOM)
Michel Petit (Académie des sciences and IOM)

WORKSHOPS

The Future of Fish in the Mediterranean:

President:
Giorgio Bernardi (Italy)

Rapporteurs:
Nadia Ounaïs,
Denis Lacroix

Workshop 1: *Management and Exploitation of Marine Resources*

Workshop 2: *Environment and preservation of Marine resources*

Participants:

Institut of Naples (Italy)
Michel Petit
Nureddin Esarbout (Libya)
Amir Ibrahim (Syria)
Denis Lacroix (Ifremer-Agropolis)
Omar El-Magsodi (Libya)
Ridha Mrabet (Tunisia)
Chafika Rebzani Zahaf (Algeria)

Introduction

"The Mediterranean Sea: not only a piece of the Atlantic Ocean, much more!"

Gilles Boeuf
(President, Muséum national d'histoire naturelle, France)

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium II – the Fish/. The slides accompanying this presentation are available on the CD-ROM.

1. Aquaculture in the Mediterranean

Integrated coastal zones management: a case study with the Croatian aquaculture

Ivan Katavic
(Institute of Oceanography and Fisheries, Split, Croatia)

Competition for the space in the coastal area has become one of the most important factors determining sustainable development of any coastal activities. The increasing concentration of urban conglomerations, industry and tourism development lead to coastal modification as well as water quality changes, including eutrophication, microbial pollution, and increased chemical contamination. Consequent environmental degradation and resource depletion in coastal areas will have economic repercussions for sectors directly related to marine ecosystem, threatening, at the same time, human health and well-being. Furthermore, such an environmental pres-

sure can make the process of site selection and site management for aquaculture quite tough because of its high dependency on ecosystem good health. A balance must also be achieved with other users of natural resources in a coastal area where development of one sector should not diminish or degrade potential development of other sectors.

Along the eastern Adriatic that belongs to Croatia there is a long tradition of aquaculture, both fish and mollusks with development potentials that are not fully released yet. This environment has certain characteristics that need to be taken into account when reviewing the possible use for aquaculture. Namely, a highly diversified coastal morphology and generally phosphorous-limited primary productions are the main characteristics of the eastern Adriatic coast. Most of the farms consist of floating sea-cage on-growing units placed near shore having limited land operations for hatcheries and pre-growing units. Closeness to the shore implies greater risks of environmental disruption as well as a larger concentration of different use in the area traditionally used for fisheries, tourism, maritime transport, industry and urban development.

Recent expansion of aquaculture in Croatia has opened many questions related to environmental integrity of coastal areas. As in the most of neighbouring Mediterranean countries the main obstacles for marine aquaculture development was spatial positioning. Finally, the governmental authorities have recognized that the problem of space for aquaculture is a truly basic problem which must be dealt within integrative concept. It is believed that a careful selection of sites where aquaculture could be done, with precise definition of their environmental carrying capacity may contribute to the preservations of coastal marine environment and to the reduction of the conflicts with other coastal activities.

After a political decision, the ICZM project secured participation of stakeholders by involving all relevant ministries and institutions. The project also enjoyed an active participation and experience gained by the Norwegian experts. The Greece experience, USA and Australian achievements in aquaculture planning and development were also welcomed as to learn from others' experience and not to commit mistakes that have happened already. The intention was to

share the competencies from the international and national scientific milieu and to apply them to the local levels in a way to secure a feed back process which can help in selection of potentially suitable areas for aquaculture under variety of environmental and socio-economic conditions.

Following the political decision being taken and an administrative framework that was created, the first step was to summarize what was known about the issue and then to undertake research on the subjects needed further clarification. The environmental site suitability indicators for sustainable aquaculture development were identified and a "Guideline to Marine Aquaculture Planning, Integration and Monitoring in Croatia" formulated procedures for aquaculture planning and integration, and proposes solutions to release development potentials for aquaculture while reducing negative impact on environment.

It is believed from the very beginning that the social acceptability of such approach would be easier if positive effects will be demonstrated. At the regional level Zadar County is, so far, the only coastal county applying ICM principles in Croatia. This area has very attractive coastal zones and its economy is predominantly based on two activities: tourism and fisheries with focus on marine aquaculture. As a competition for space has become very serious problem for future planning, ICM is recognized as an appropriate solution for the prevention of the further conflicts.

Detailed CZM plans have been drafted, while in-depth study was undertaken in order to determine which areas would be suitable for variety of aquaculture (finfish, tuna farming, shellfish). When undertaking such study, the County took into account all existing and planned coastal users, their impact and development potentials, the geographical and bio-physical properties of the area by implementing the criteria to accommodate variety of aquaculture technologies and species being cultured. Numerous environmental descriptors pursuant to the Marine Fisheries Act were analyzed, such as type of sediments, structure and composition of benthic communities, depth, wave height, salinity, turbidity, chlorophyll, DO, and other factors desirable for individual species (bass, bream, tuna, shellfish). The selected descriptors care both of the protection of the en-

vironment, as well as of the safety of the farmed installations and cultured organisms. Physical plans were developed and zones for marine aquaculture were determined on the ICM principles. Data on zone characteristics, species, technology, approximate capacity, etc, were made available to decision makers. Critical parameters for monitoring have been defined for all the aquaculture activities in specific areas. After a few years of experience it became very clear that despite the optimal technical framework a political decision and personal awareness are the key factors for ICM success.

Even though the ICZMP has been focusing on marine aquaculture, it has clearly established the position of the Republic of Croatia towards the future management of its coastal resources. Such integrative approach may at the same time facilitate a wide range of investment opportunities for local, national and international investors, respectively. The international networking Team that is created through ICZM project may assist in coastal area management plan of many countries that are willing to use their coastal resources in the most sustainable way. The achievements of the ICAM implementation in Zadar County are to be interpreted with a precaution due to its experimental character. However, without such an exercise it would be difficult to connect current and past actions and thus to learn what has failed in previous management cycles at each particular site. The process will be efficient and effective when it becomes applicable and reproducible in other sectors and variety of coastal scenarios that are linked to specific biophysical, socio-economical and cultural coastal environment.

[…]

The slides accompanying this paper can be found on the included CD-ROM under the following directory: /Symposium II – the Fish/slides/.

Aquaculture in the Mediterranean: a Foresight Analysis

Denis Lacroix
(Ifremer, Agropolis International)

Aquaculture and fisheries in the Mediterranean supply an increasing part of fish in the diet of most of the countries of this region. Decision makers and public as well are aware of the numerous issues linked with the evolution of these two activities : marine environment quality, biodiversity erosion, pollution, decline of the image of fish in some countries…

The Degest method ("Trends and impacts") allows to assess the impacts on fisheries and aquaculture for few mega-trends of the major factors of evolution of this region (Demography, environment, governance, economy, society and technology).

Results show that clear and solid recommendations can be selected. This analysis reveals also that fisheries and aquaculture have common constraints but also interesting complementarities to be improved.

[…]

The slides accompanying this paper can be found on the included CD-ROM under the following directory: /Symposium II – the Fish/slides/.

L'aquaculture en Egypte: l'explication d'un succès, les attentes pour le potentiel et les risques

Sherif SADEK
(Vice-president of the Egyptian Aquaculture Society – EgAS)

En 1984, l'aquaculture égyptienne était estimée à 29.244 tonnes, soit 25% de la production halieutique totale pour cette année. En 2008, elle atteignait 693.815 tonnes, soit 65% du total de l'année. Il y a trois décennies, tilapia et mulet étaient les principales espèces élevées dans des bassins en terre vaste. Aujourd'hui, dix poissons (Tilapia spp. ; mulet spp. ; carpe spp. ; poisson chat ; bagrus bayad ; anguille ; daurade ; loup; maigre et sole), et trois espèces de crustacés (Macrobrachium rosenbergii, Penaeus semisulcatus et P. japonicus), jouent un rôle important dans la production aquacole égyptienne. Le tilapia du Nil représente 55%, les mulets spp. 30%, les carpes spp. 10% et les autres espèces (poisson chat, daurade, loup, maigre, anguille et crevette) 5% de la production aquacole totale.

La carte de l'aquaculture égyptienne a montré que les activités de pisciculture sont plus concentrées dans les sous-régions du delta du Nil, soit 98% des ressources en eau à usage non agricole. D'autres fermes produisent très peu de poissons sur les 2 % restants de la superficie disponible, en Haute-Egypte et sur les côtes de la mer Méditerranée et de la mer Rouge. Le secteur privé représente

98,7% de la production totale de l'aquaculture et le secteur public contribue seulement à 1,3%. Le secteur public contribue plus avec la production des alevins, d'aliments artificiels, des services de vulgarisation et de soutien à la recherche. Le nombre d'alevins de poissons actuellement produits à partir des écloseries a augmenté depuis quelques années, pour atteindre 347 millions d'alevins en 2008 – dont 95,6% de nouvelles espèces (le tilapia du Nil, les espèces de carpes et 4,4% de poissons de mer (dorade, bar, sole et mulet). Le secteur public représente 62,0% de la production totale des alevins et le secteur privé 38,0%.

Le GAFRD en 2009 a signalé que les systèmes actuels de la culture portent principalement sur des élevages de poissons dans les étangs, soit 86 % de la production aquacole égyptienne totale, tandis que l'élevage en cages représente 10 %, 4 % étant consacrés à la production de carpes communes de rivière et de tilapia élevés en réservoirs. En Egypte, plus de 90 % des poissons d'élevage sont produits en culture extensive et semi-intensive, dans des étangs, sur une surface d'environ 146 mille ha. La production annuelle par hectare est fluctuante dans les étangs de polyculture extensive (de 0,5 à 1 tonne/ha). Pour la monoculture semi-intensive et la polyculture des systèmes de production en bassins de terre, cette production varie de 4,5 à 20 tonnes/ha.

L'aquaculture égyptienne est lourde de dangers potentiels. Un document du GEFARD en établit la liste touchant l'exploitation, l'environnement, la sécurité alimentaire et la santé publique. Ce document passe en revue les risques majeurs et les risques associés à l'industrie de l'aquaculture et offrait des stratégies pour leur gestion et de contrôle. Les principales contraintes au développement sont la disponibilité et la qualité des ressources tant en eau douce que saumâtre. La nouvelle politique de l'irrigation pourrait réduire à 60% la superficie actuellement disponible pour l'aquaculture. D'autres contraintes sont la disponibilité des terres et des alevins. Ce qui laisse l'aquaculture égyptienne tributaire d'importations.

2. Aliens (invasive species) in the Mediterranean

Environmental genomics: a tale of two fishes

Giorgio Bernardi
(President of IUBS, Italy)

Authors: Giuseppe Bucciarelli, Miriam Di Filippo, Domenico Costagliola, Fernando Alvarez-Valin, Giacomo Bernardi, and Giorgio Bernardi

The influence of the environment on two congeneric fishes, Gillichthys mirabilis and Gillichthys seta, that live in the Gulf of Mexico at temperatures of 10°- 25°, and up to 42°- 44°, respectively, was addressed by analyzing their genomes. Compared to G. mirabilis, G. seta showed some striking features: (i) extremely fast substitution rates in mitochondrial genes, indicating a divergence

time of less than 0.66-0.75 million years ago; (ii) an expansion of a GC-rich minisatellite in the gene-rich regions of the nuclear genome; (iii) a decrease in DNA methylation; (iv) ratios of non-synonymous/synonymous changes (Ka/Ks) suggesting that some genes may be under positive selection; (v) high ratios of transversions over transitions and of AT to GC over GC to AT. These observations (i) indicate that the environment can rapidly mould the genome through natural selection and (ii) provide a model for the genome changes that accompany body temperature increases, as found after the emergence of homeothermy.

INTRODUCTION

Classically, sequence changes in the genome were visualized as resulting from point mutations and recombination. We found, however, that the vertebrate genomes underwent massive regional GC increases at the emergence of homeothermy (Thiery et al. 1976; Macaya et al. 1976), and proposed that these changes were due to the need of maintaining the thermodynamic stability of DNA, RNA and proteins (GC-rich codons preferentially encoding aminoacids that stabilize proteins) at the higher body temperature of warm-blooded vertebrates (Bernardi and Bernardi 1986; Bernardi 2004, 2007). This "thermodynamic stability hypothesis" was supported by finding that compositional changes affected only the gene-rich and not the gene-poor regions of the genome. Indeed, the gene-rich regions (the "genome core" see Bernardi 1993) are characterized by an open chromatin structure (Bernardi 2000; Saccone et al. 2002; Di Filippo and Bernardi 2008) and need an increased GC level to be stable at 37°- 40°, whereas the gene-poor regions (the "empty space", or "the genome desert" Bernardi 2004) are embedded in a closed chromatin structure (Saccone et al. 2008) which can by itself stabilize DNA.

A critical test to demonstrate that an environmental factor, such as temperature, can affect the structure of the genome is provided

here by comparing the compositional patterns, the DNA methylation, and the nucleotide substitutions in the nuclear and the mitochondrial genomes of two congeneric goby fishes that live at very different temperatures (Huang et al. 2001; Fields et al. 2002). The sister relationship of these two species solves the problem we were confronted with in our initial work (Bernardi and Bernardi 1986) on the Death Valley pupfish, Cyprinodon salinus, and the Lake Magadi tilapia, Oreochromis alcalicus grahami, which showed regional GC increases in their genomes, but could only be compared with evolutionarily distant species.

The long-jawed mudsucker G. mirabilis inhabits salt water creeks in coastal California, Baja California, and the northern Gulf of California. The short-jawed mudsucker G. seta, a paedomorphic variant of G. mirabilis (Barlow 1961), is restricted to the uppermost tide pools, that are reached by sea water only rarely at the highest spring tides, in the northern Gulf of California. While G. mirabilis lives at 10°- 25°C, G. seta experiences temperatures that may reach 42°- 44°C, among the highest temperatures encountered by any fish (Nelson 2006) and hypoxia. G. mirabilis was previously studied in its hypoxia-induced gene expression (Gracey et al., 2001) and its response to heat stress (Buckley at al. 2006; Hochachka and Somero 2002; Cossins and Crawford 2005).

In this study, we used two experimental approaches, working at the genome level and at the level of orthologous genes, respectively.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium II – the Fish/.

Overview of fisheries in the Mediterranean: status and prospectives

Bastien Mérigot
(IFREMER-IRD-UM2, France)

This presentation will first deal with the status of the main stocks of exploited fish groups in the Mediterranean Sea (ie. demersal, small and big pelagic fishes; mono-specific approach: each species considered separately). Recommendations made by institutions of Mediterranean countries to try to reach a sustainable exploitation of these resources will then be presented. Secondly, the study of the diversity of fish settlements and its structuring factors will be emphasized (multi-specific approach: several species considered simultaneously). It will be highlighted the importance of identifying a "short-list" of complementary indices to monitor the diversity of these settlements at different scales of space and time in the Mediterranean Sea.

The slides accompanying this paper can be found on the CD-ROM under /Symposium II – the Fish/slides/.

Interactions of Aquaculture with the Environment

Ricardo J. Haroun Tabraue
(Universidad de Las Palmas de Gran Canaria, Spain)

In the Mediterranean basin there is a long tradition of aquaculture, mainly fish and molluscs, based in coastal areas. Actually a large number of species are cultured, either in land-based or sea cages systems. However, intensification of aquaculture practices has revealed a spectrum of environmental problems in nearby natural ecosystems. Nowadays, public perception is that aquaculture is considered as a potential aquatic environment polluter.

Many environmental pressures related to the aquaculture sector can be avoided with development of good practices to support responsible and sustainable products from aquaculture. Therefore, aquaculture has attracted attention of diverse societal groups, from governmental authorities to NGOs and other private sectors in order to re-address the sector production towards a more responsible

and sustainable process. In this contribution, we shall review the state of the art on major interactions between aquaculture and the marine environment.

The slides accompanying this paper can be found on the CD-ROM under /Symposium II – the Fish/slides/.

3. Marine Bio- and Chemo-diversities

Marine biodiversity as a reservoir for pharmaceuticals and research models

Gilles Boeuf
(University Pierre & Marie Curie/CNRS, Laboratoire Arago)

Oceans contain the greatest living volume of the "blue" planet, with approximately 275,000 living species that have heretofore been described. This represents some 15% of the known species on the planet, but the marine biomass is very great. Life first appeared in the oceans more than 3.8 billion years ago and they are the site where events took place that would determine the course of life on the planet, ranging from the development of the cell nucleus to sexual reproduction, multi-cellular organisms and the capture of organelles. Of the 35 animal phyla currently listed, 14 are exclusively marine phyla and have never left the ocean. Today, oceans and seas

offer to the human more than 160 million metric tons of living resources (in fact including both fisheries and aquaculture exploited from all aquatic environments). Specific diversity and ancestral roles, in addition to organisational models and original behaviours have made marine organisms excellent reservoirs for identifying and extracting molecules with potential pharmacological or cosmetic use (currently over 15,000) and/or to make especially relevant models for both fundamental and applied research. Relationships between the ocean and public health exist at many different levels, including: physical, chemical, biological and physiological. Some marine models have been the source of essential discoveries in life sciences and Nobel Prize-winning research in physiology and medicine: the discovery of phagocytosis; the anaphylactic shock reaction; transmission of nerve impulses; the molecular basis for memory; the discovery of cyclins in cancer research; the control and the development of the eyes; the role of membrane neurotransmitter receptors; the fundamentals of specific immunity; and many more. Marine models are essential to understanding the ancestral roles and mechanisms of many human systems and sometimes in deducing the applications for effective treatments. The ocean provides humankind with renewable resources, which are very threatened today and which must be more adequately managed in preserving ocean ecosystems, stocks and biodiversity.

The slides accompanying this paper can be found on the CD-ROM under /Symposium II – the Fish/slides/.

Conclusion

Public aquariums and scientific centers: key areas for the knowledge and protection of species and aquatic areas.

Michel Petit
(Président du Conseil d'Administration IOM)
and **Nadia Ounaïs**
(Directeur Opérationnel IOM)

Aquariums, Science Museums and scientific centers represent a unique space to discovering and understanding the aquatic environment. Sought after by tourists and the general public, the 315 private and public sector aquariums spread all over the world receive 450 million visitors each year. They play an unequalled role

in environmental education and in raising awareness of current major issues (climate change, water management, the management of biodiversity and aquatic resources, human impact, etc.) Thanks to large-scale scientific input, they make a significant contribution to the knowledge of the biology of the many species they present (fish, invertebrates, mammals, birds, reptiles, amphibians, plants) and the existence of a worldwide network of projects allows them to participate effectively in conservation plans for the most threatened species and habitats. Benefitting from their very good image, like the Oceanographic Institution, many establishments now see their key role as discussion forums between scientists and the various forces in society (general public, NGOs, political and economic decision-makers, media). They can also initiate new individual, local or world-scale initiatives, as seen in World Oceans Day, recognized by the United Nations in 2009.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium II – the Fish/. The slides accompanying this presentation are available on the CD-ROM.

Workshops

Marine biodiversity of algerian centre region

Chafika REBZANI ZAHAF
(USTHB, Algeria)

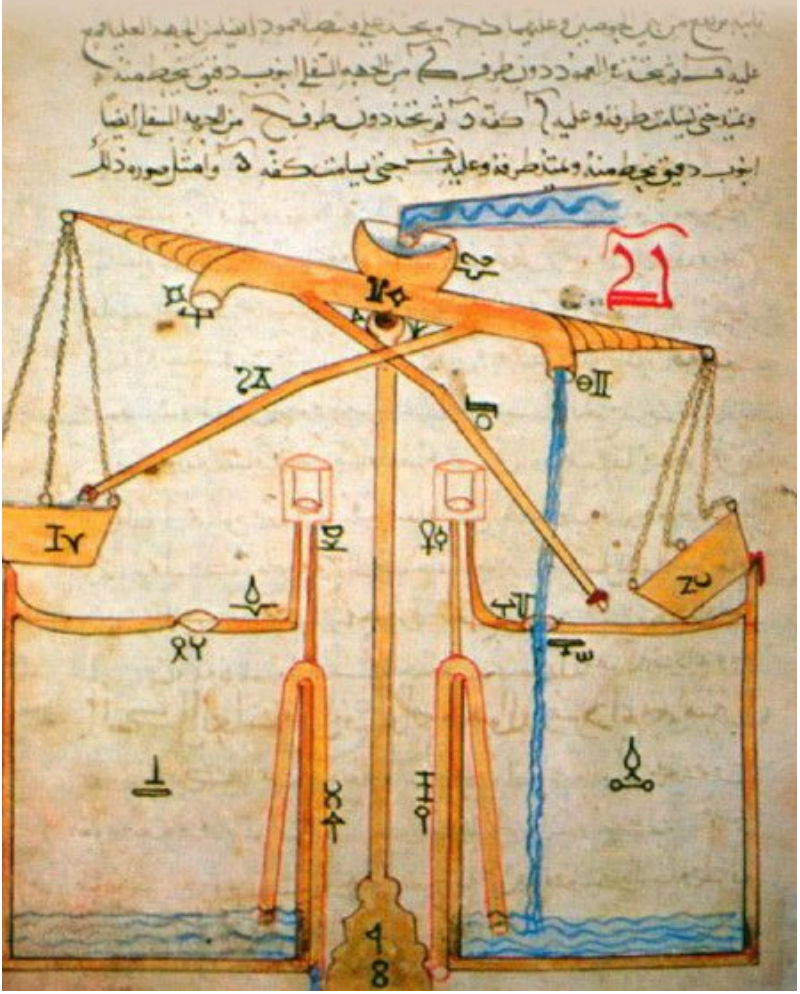
The approach of the marine biodiversity in the Algerian Centre region is studied in the laboratory of which two are presented.

The macrobenthos communities was studied in the port of Algiers. The faunistic composition was assessed according to the ecological significiance of species or groups of species as determinants of pollution. Seven areas of decreasing pollution are identified in the Algiers'port and each basin is characterised by particular levels of organic pollution and by particular species or groups of species.

Vermetid reef community and Cystoseires and their flora and fauna associated are bioindicators of the quality of waters, and are studied to Tipaza on the West by Algiers (60Km). This biocénoses shelters a flora and a fauna diversified serving as place of spawning area and as nursery for many animal species. Data sheets of ecological evaluation were realized for every study; these forms synthesize the scientific data collected for documents of protection and conservation in aid of administrators.

3rd Mediterranean Scientific Conference
GID - Parmenides - Alexandria 2010
Mediterranean Wealth & Diversity; Biology & Culture

Le Livre - The Book



The Book

SYMPOSIUM

Presidents:
Ghislaine Glasson Deschaumes (France)
Azza El-Kholi (Bibliotheca Alexandrina, Egypt)

Rapporteurs:
Manar Badr (Bib. Alexandrina)
Arnaud Beaufort (BNF, France)
Azedine Beschaouch (Tunisia; Acad. des inscr. & belles-lettres, France)

Introduction:
(Bibliotheca Alexandrina)

1. Life and Death of Books:
Arnaud Beaufort (BNF, France)
Azedine Beschaouch (Tunisia & France)
Jacques Jouanna (Acad. des inscriptions & belles-lettres)
Pepa Michel (National Library of Spain)

2. The translation, an Essential Element of Diversity:
Sameh ElAnsary (Egypt)
Barbara Cassin and
Ali Benmakhlouf (France)
Yohanan Friedmann (Israel)
Ghislaine Glasson Deschaumes (France)

Conclusion:
Azedine Beschaouch (Tunisia)
Jacques Jouanna (France)

WORKSHOPS

The Future of the Book in the Mediterranean:

President:
Sahar Hammouda (Egypt)

Rapporteurs:
Manar Badr,
Arnaud Beaufort,
Azedine Beschaouch

Participants:

Publishing / Displaying the Book

Omar Berrada (Morocco)
Savaş Kılıç (Turkey)
François Terré (Ac. des Sc. Morales et Politiques, France): *Publishin Law Books*

Scanning the Book: Digital and Biblio-diversity

Franco Niccolucci (Cyprus)
Pepa Michel (Nat. Libr. Spain)
Dov Winer (Minerva, Israel)

1. Life and Death of books

A new account on life, death and survival of books in the Mediterranean in the second century AD:

Galen of Pergamon and the burning of public and private libraries in Rome, in 192 AD

Jacques Jouanna
(Académie des inscriptions et belles-lettres, France)

L'œuvre conservée de Galien, le médecin le plus célèbre de l'Antiquité après Hippocrate, est immense, même si l'on retranche les traités qui sont inauthentiques. Son œuvre qui n'est pas seulement médicale, mais aussi philosophique contient des renseignements nombreux et précis sur l'histoire du livre dans le bassin méditerranéen. C'est par exemple Galien qui nous renseigne sur la façon

dont les œuvres des tragiques athéniens Eschyle, Sophocle et Euripide sont venues d'Athènes à Alexandrie sous les Ptolémées.

Galien, né à Pergame, était venu s'installer à Rome où il fit deux séjours. Or lors de son second séjour, il fut victime de l'incendie de Rome en 192 où sa bibliothèque fut totalement incendiée en même temps que les bibliothèques du Palatin. On le savait par quelques allusions dans son œuvre conservée.

Mais la redécouverte d'un traité entier de philosophie éthique de Galien par le laboratoire Médecine grecque de Paris-Sorbonne /CNRS (UMR Orient et Méditerranée) intitulé « Ne pas se chagriner » offre un nouveau témoignage de grande importance sur le contenu de la bibliothèque de Galien. Quel rapport peut-il y avoir entre le thème moral de l'absence de chagrin et l'histoire du livre ? C'est en réalité une lettre que Galien, résidant à Rome lors de son second séjour, écrit à un ami de Pergame qui lui avait fait part de son étonnement et lui avait demandé pourquoi il ne s'était pas chagriné alors qu'il avait perdu dans son dépôt de la Via sacra la totalité des ouvrages qu'il possédait à Rome lors de l'incendie. Galien explique dans la seconde partie de la lettre les raisons pour lesquelles il a toujours maîtrisé dans sa vie le chagrin, répondant ainsi à la question de son correspondant. Mais dans la première partie, pour renforcer l'admiration de son correspondant, Galien procède à un bilan de tout ce qu'il a perdu de plus précieux ménageant une gradation savante dans la gravité des pertes : argent et or ; médicaments ; instruments chirurgicaux ; livres. L'objet de la communication sera de présenter tout ce que l'on apprend sur le contenu de la bibliothèque d'un médecin érudit (lecteur et auteur) et de mettre en valeur les grandes questions qui se posent sur le livre : présentation du livre (rouleau ou codex ?) ; copie du livre ; édition et destination du livre ; conservation et diffusion du livre à Rome, et de Rome à Pergame, par l'intermédiaire de la Campanie.

[...]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium III – the Book/.

Vie et mort des livres

Pepa Michel
(Sous-directeur géneral adjoint, National Library of Spain)

La technologie de l'information a provoqué des changements significatifs au sein de notre société. Les changements sont tellement nombreux et rapides que cette période historique a reçu le nom de l' ère de l'information et notre société, celui de la société du savoir.

Presque sans nous en rendre compte, nous avons modifié nos habitudes, par la consommation de contenus numériques dans notre vie quotidienne. La culture numérique s'étend à un rythme effréné et touche de plus en plus de personnes. Elle génère beaucoup de richesse et s'ouvre à de multiples possibilités.

Cette transition, du monde physique au monde numérique, s'accélère de plus en plus. De meilleurs supports, du point de vue quanti-

tatif et qualitatif, sont créés pour la diffusion des secteurs qui produisent des contenus numériques, comme la musique, la photographie, les jeux vidéo, la télévision, les réseaux sociaux, la publicité, la presse et les livres.

De telle sorte qu'en 2007, une année dominée par une conjoncture mondiale économique difficile, cette industrie a atteint un chiffre d'affaires de plus de 600 milliards d'euros.

Ces changements, provoqués par les progrès technologiques, ont des répercussions au sein de l'industrie de l'édition, du livre et de la lecture. On assiste à l'apparition de l'impression numérique, des librairies virtuelles et des livres électroniques, qui élargissent le concept de livre, qui avait toujours été lié au secteur de l'imprimerie. De plus en plus d'éditeurs traditionnels constatent le potentiel de la publication numérique et mettent en place les efforts nécessaires afin de s'assurer une place dans ce marché en pleine croissance.

Depuis l'apparition des livres numériques, le concept de livre a été redéfini, étant donné qu'il ne peut plus être considéré uniquement comme une œuvre imprimée ou manuscrite, formée par un ensemble de feuilles reliées entre elles. Désormais, le matériel à même de stocker et de transmettre un certain ensemble d'informations peut être aussi bien tangible qu'intangible.

Le concept de lecteur -de lecteur cultivé- est également en train de changer en cette ère numérique, du fait de la nécessité d'acquérir la culture technologique suffisante pour comprendre le fonctionnement du format numérique : il est nécessaire de comprendre l'organisation de l'information, la façon et les endroits où la trouver, la manière d'interagir avec elle et la manipulation de certains appareils et outils. Le contenu a été séparé du support.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium III – the Book/

Numérique et bibliodiversité

Arnaud Beaufort
(Directeur général adjoint Bibliothèque nationale de France)

La révolution numérique laisse entrevoir un développement sans précédent de nos possibilités d'accès à la connaissance et aux biens culturels. L'horizon autrefois posé comme idéal par la Bibliothèque d'Alexandrie, horizon de totalité et de diversité, semble désormais être à portée de main : le numérique apporte des réponses nouvelles aux défis que Démétrios de Phalère et Ptolémée Soter entendaient relever - défis de la collecte, de l'exhaustivité, de la conservation et de l'accès aux savoirs...

Cette nouvelle ère impose aux bibliothèques de repenser non pas leurs missions qui, elles, demeurent intactes au fil du temps (collecter, conserver, communiquer le patrimoine écrit), mais les modalités techniques, financières, pratiques et politiques selon lesquelles

elles les remplissent : l'articulation entre la permanence de ces missions et la prise en compte des bouleversements induits par le numérique constitue un enjeu primordial pour les bibliothèques.

2. The Translation, an Essential Element of Diversity

Translations from Arabic into Hebrew and from Hebrew into Arabic

Yohanan Friedmann
(Israel Academy of Sciences and Humanities)

Let me start by thanking the organizers for inviting me to this fascinating symposium. Reading translated works produced in a neighbouring cultural area is probably the most feasible way to get acquainted with an adjacent culture. It would of course be better if many people knew the language of the "other", but this is not a really feasible proposition when one speaks of real knowledge and not of the ability to conduct basic conversation for purposes of

tourism. When discussing translations from Arabic into Hebrew and vice versa, it is appropriate to start this survey with the translations of the Jewish and Muslim scriptures. This process started in the 10th century when Saadia Gaon, known in Arabic as Saadia (or Sa`īd) b. Yūsuf al-Fayyūmī (882-942 AD), who was born in Egypt and lived most of his productive life in Iraq, translated the Torah into Judaeo-Arabic, this is to say Arabic written in the Hebrew script. This is how the first two verses of Genesis sound in 10th century Judaeo-Arabic: *awwal ma khalaqa Allah al-samāwāt wa al-arḍ. wa al-arḍ kānat ghāmira wa mustabḥara wa ẓaām 'alā wajh al-ghamr wa rūḥ Allah tahubbu 'alā wajh al-mā'.*

Moving to translations of the Qur´ān into Hebrew, these started in the early modern period (17th and 18th centuries); though these translations were not made from the original Arabic, but rather through the mediation of Latin or other European languages. The first Hebrew translation of the Qur´ān from the original Arabic was made by the Jewish German scholar Herrmann Reckendorf (1825-1875) and published in Leipzig in 1857. Then we had two more modern translations in the 1930s (by Yosef Yoel Rivlin) and in the 1970s (by Aharon Ben Shemesh). In 2005 a new scholarly translation of the Qur'ān into contemporary Hebrew was published by Uri Rubin, professor of Arabic at Tel Aviv University. Yosef Yoel Rivlin also translated into Hebrew the standard biography of the Prophet Muḥammad (*al-sīra al-nabawiyya*) by Ibn Hishām and parts of the *Thousand and one nights* .

We also need to mention several works written in Judaeo-Arabic in the mediaeval period and translated into Hebrew. Yehuda ha-Levi (1075-1141) wrote *Kitāb al-radd wa al-dalīl fī naṣr al-dīn al-dhalīl* ("The book of refutation and proof in support of the despised religion"). The book's framework relates to a tradition about a religious disputation between Jewish, Christian and Muslim sages at the court of the Khazari king in the 8th century; as a result of this disputation the king embraced Judaism. This framework allowed Ha-Levi to present his arguments in favour of Judaism in its polemics with Christianity and Islam. The book was translated into Hebrew by Yehuda Ben Shaul Ibn Tibbon (d. 1190). Another major work of medieval Jewish philosophy, written in Judaeo-Arabic by

Moshe ben Maimon, Mūsā b. Maymūn in Arabic and Maimonides in Latin (d. 1204) for the benefit of Middle Eastern Jews whose main language of communication in the medieval period was Judaeo-Arabic. The work's original name in Judaeo-Arabic is *Dalālat al-ḥā'irīn* , "Guide of the perplexed." It was translated into Hebrew by Shmuel Ibn Tibbon under the title of *Moreh Nevokhim* for the benefit of European Jews who did not know Arabic (12th century). There is also a modern Hebrew translation by Professor Michael Schwartz of Tel Aviv University.

Let me now say something about recent translations from Hebrew into Arabic, mainly in Egypt. I had very little time to prepare this and the list is probably not complete and there are more items in the modern novels category. My list includes 17 items. 6 are modern novels or literary analyses, 5 deal with Israeli or Middle Eastern politics, 3 with Jewish religion or related matters and 3 with Jewish history. In 2001, the *Markaz al-dirāsāt al-sharqiyya* of Cairo University published an Arabic translation of a volume of studies related to the Cairo Geniza, edited by Mordechai Akiva Friedmann of Tel Aviv University. I would also like to mention in particular a translation into Arabic which was published in Israel in 1966 at the initiative of the Hebrew University and includes an anthology from the prose and poetry of Haim Nahman Bialik, who died in 1934 and is considered the national poet of Israel. The translation was produced by the Israeli Arab poet Rāshid Ḥusayn. I would like to read a few lines in which Bialik speaks about the sources of his poetry, in a poem entitled *lo zakhiti ba-or min ha-hefqer* , "I have not found my light on the street". Here is the Hebrew original:

lo zakhiti ba-or min ha-hefqer
gam lo ba li bi-yrusha me-avi
ki mi-sal`i ve tsuri niqqartiv
ve hatsavtiv mi-lvavi.

In Arabic:

ṣaddiqūnī lam aḥẓa bi-'l-nūri 'afwan
ana ayḍan min wālidī mā warithtuh

min ṣukhūrī ’ntaza`tuhu min jalāmīdī
wa min manjami fu’ādī ’qtala’tuh

And in an English translation by Atar Hadari (slightly modified):

I have not found my light on the street
nor did it come in bequest from my Dad
but from my store and rock I picked it
and carved it out of my heart.

[…]

The complete version of this paper can be found on the included CD-ROM under the following directory: /Symposium III – the Book/

Translating, cultivating knowledge

Ghislaine Glasson Deschaumes
(Directrice de la revue *Transeuropéennes*)

To translate is to cultivate diversity, it is to raise the common starting from differences, between differences, and not to transmit messages from an inside to an outside. We translate between modes of representation, imaginaries, domains of knowledge, practices of knowledge. To translate is also - by the same gesture - to put the relationship to alterities into movement, in a logic of border-crossing and setting free. At a time when a certain international vocabulary of co-operation predominates, a vocabulary which it would be wrong to think goes without saying, translation puts to work these differences, which do not allow themselves to be heard or under-

stood easily. It is by starting from translation that we can begin to act together in the Mediterranean - in a real equality of exchange, a reciprocity in every sense - to produce knowledges by fertilization and pollination. Thus it is that today books - all books, and not only those from one side of the Mediterranean - can be shared. All things considered, it is to give oneself the means to develop a durable culture…

Workshops

The strait fair
(Le salon international du livre de Tanger)

Omar Berrada
(Écrivain et traducteur, France)

The Tangier International Book Fair, of which i curated the 12th edition in 2008, was born in the 90s. What is the import of a book fair in a medium-sized town on the Mediterranean, haunted by a recent literary past but which seems to have forsaken books altogether, a town with 3 bookstores for a million souls? Rather than an actual (commercial) book fair, the Tangier event is akin to a 5-day conference with 50 participants of diverse obediences (writers, thinkers, academics, artists), whose publishers are granted a free

booth. The point is to carve a space for dialogue, to provide an opportunity for new encounters between an audience and a group of intellectuals across cultures and disciplines. Therefore what is at stake is not so much publishing/displaying 'the' book, but rather figuring out how to share and circulate a few chosen books so that such a short event may cristallize an array of inquiries in touch with the world at large.

The Increase of Diversity in Turkish Publication

Savaş Kılıç
(Metis Publishing, Turkey)

My contribution is focused on the diversity in the publishing industry of Turkey, as a characteristic of its cultural milieu, since the Ottoman Empire until now.

To illustrate my thesis, I rely, on the one hand, on the fact that the Süleymaniye Library of Manuscripts has an immense collection and, on the other, focused publications on individual book possession in the Empire. As to the contemporary epoch, the official statistics announced by the local ISBN Agency shows the exact measure that the publicational diversity in the country attains to.

Finally, I try to outline some possible effects - notably that of secularization - that translation exercises on free thinking in Turkey.

Le Droit du livre

François Terré
(Académie des sciences morales et politiques, France)

Le droit du livre intéresse directement les relations entre les États de la Méditerranée, et cela pour plusieurs raisons : le droit d'auteur, l'édition et la diffusion du livre. Cet ensemble ne concerne pas seulement la reconnaissance des droits des auteurs et des inventeurs, mais l'esprit qui, dans le domaine du savoir, inspire la reconnaissance et la protection des créations intellectuelles. Il existe, en effet, de par le monde, deux philosophies possibles : l'une s'attache à l'apport au domaine de l'humanité, l'autre à la considération des protections individuelles des propriétaires des choses de l'esprit. Cette dernière inspiration fait problème en termes de développement scientifique et culturel et explique l'ordonnancement des activités des éditeurs et des diffuseurs de livres, là où il est souvent délicat de distinguer les exigences humanitaires du progrès et du développement et – ce qui en est la condition même – l'activité inépuisable de l'esprit humain.

Digital Libraries in the Mediterranean region: problems and approaches

Franco Niccolucci
(The Cyprus Institute, Nicosia, Cyprus)

The recent European project STACHEM analyzed the extent of digitization of Cultural Heritage in the Eastern Mediterranean region,

and surveyed existing research infrastructures in this field, considering both tangible heritage, such as monuments and museum collections, and libraries and archives.

The lecture will present and discuss the results of the final report, starting from here to propose policies and initiatives improving and supporting such digital activities, taking into account the peculiarity of the region and of its outstanding cultural assets.

Europeana and the Mediterranean Region: issues and perspectives

Dov Winer
(MINERVA Coordinator, National Library of Israel)

The speech will illustrate the current development of the Europeana project with a focus on the Mediterranean Region. The forthcoming release of the first operational version (the so-called "Danube" release) is an opportunity for analyzing the project development and the resulting challenges for Mediterranean countries, as well as the progress of digitization activities in the Region.

Conclusions & Recommendations

1st Symposium: The Tree

Conclusions

The Mediterranean region is one of the world's biodiversity hotspots. Its forests and other wooded ecosystems are a major repository of this biodiversity. These ecosystems have been shapped by the utilization which the many Mediterranean civilisations and societies have made of them throughout history, and they embody the related cultural values. They are highly specific compared to forests of the other regions of the world.

In addition to the biodiversity they contain, and the cultural values they convey, Mediterranean forests and other wooded ecosystems provide a wide range of goods and services, timber and other marketable commodities often not being the main ones. Their non wood marketable products (cork, pine nuts, aromatic plants, etc.) are important, as well as services with some marketability possibilities, such as recreation. However, forest owners and local populations are often not getting their reasonable share of the potential benefits from these market possibilities, and not participating fully in the definition and implementation of resources management strategies.

These ecosystems also produce important public goods other than biodiversity and cultural values, such as water protection - of vital importance in a region suffering from aridity and drought -, and landscape quality - essential, among other things, for sustaining touristic activities.

All their environmental, economic, social, and cultural values are at risk, since they are affected by some severe and durable threats, the impact of which is aggravated by climate change.

In the Northern rim, abandonment of agriculture and rural depopulation allow for their expansion in the hinterlands, but result in the discontinuance of some forest management activities once complementary to farming, a situation which increases the risk of fire. In the hinterlands of the Southern and Eastern countries, their area is either stabilized, or still decreasing due mostly to the expansion of agriculture; and their quality is degrading more or less rapidly almost everywhere as a result of various forms of overuse or inappropriate use (overgrazing, overexploitation for fuelwood and charcoal, etc.). This is also the part of the Mediterranean region which is the most vulnerable to climate change. Furthermore, in the littoral areas of all Mediterranean countries, forests and other wooded areas are being cleared to give way to rapid and largely unplanned urbanization.

Protecting and sustainably managing these ecosystems is the way to maintain and enhance all their values. This is the more necessary as their degradation (and the resulting loss of their biodiversity) in several southern and eastern Mediterranean countries is both a cause and a consequence of poverty. Unfortunately, issues related to forest and other wooded areas are low on public policy priorities, at national, and hence, international levels. Their sustainable management does not benefit from the necessary human and financial resources. Related to the very low attention paid to these areas in public policies is the absence, with a few exceptions, of adequate instruments to internalize the related externalities.

This unfavourable situation is compounded by insufficient knowledge on the situation and evolution of the resources of these ecosystems, their biodiversity and functioning, and on the biophysical

and socioeconomic factors influencing them; as well as on the full range of goods and services they provide in terms of quantities produced and of economic valuation, this lack of knowledge being more serious for the non wood products and the public goods.

Recommendations

The PARMENIDES III Conference recommends to Mediterranean Countries :

for a better recognition at national and international levels of the wealth, diversity and specificity of public goods and services provided by Mediterranean woody ecosystems, and, more generally, of their significant contribution to sustainable development:

to support the work of their research community aiming at a better characterization and evaluation of this contribution, and in particular to share in such cooperative initiatives as:

- the 'State of Mediterranean Forests' (SOMF),
- the Mediterranean Forests Research Agenda (with its emphasis on social sciences),
- the European education programmes at MSc level MEDfOR [1] ;

for a clearer definition of linkages between biophysical and socio-economic aspects and of the drivers of land resources degradation and desertification, and for improved forecasts:

to opt for more comprehensive and integrated methods of land use assessment and monitoring including all resources in forests, other wooded lands and rangelands, and their contribution to human well-being;

for a better knowledge and the sustainable management of the biodiversity of Mediterranean woody ecosystems in the context of global change:

to develop a network of long-term study areas for monitoring biodiversity and ecosystem functions and services at various scales, from regional (using low and medium resolution satellite sensors) to local (e.g. RENECOFOR [2] in France);

to develop research on the impact of the main factors of change in the composition and structure of woody ecosystems (climate, land use, etc.);

to acquire the knowledge needed to anticipate and mitigate the impact of global change by

- assessing phenotype variation of tree populations,
- fostering evolutionary processes (response to new selection regimes);

to promote forestry practices diversifying the genetic structure of forest stands to make them more resistant to global change;

for a better assessment of the economic significance of Mediterranean woody ecosystems:

to support initiatives and projects for

the economic valuation of the full range of goods and services provided by Mediterranean woody ecosystems, and for improving their marketability;

for a better use of the knowledge thus enlarged on the socio-economics of these ecosystems, and of international cooperation opportunities:

to develop, and include in the relevant policy instruments, new financial and other mechanisms

- of accounting and internalization of the externalities of these ecosystems (fiscal and other financial incentives, credit lines at international and national levels, etc.), and
- of adaptation to forest risks (insurances, fire prevention and control, interoperability and sharing of national fire control means, etc.);

for maximizing the benefits of multiple goods and services provided by Mediterranean woody ecosystems in a sustainable way:

to implement integrated land management strategies based on participatory approaches on a land unit basis; and, to this end,

to provide support to concerned organizations formed on a voluntary basis (forest owners unions, local NGOs);

for facilitating the funding of the protection and sustainable management of Mediterranean woody ecosystems:

to ensure that the specific needs of arid and semi-arid zones are catered for in the international negotiations on climate change, particularly those of the Global Partnership on REDD+ [3], and of other mechanisms such as the World Bank FCPF [4], the Global Environmental Facility, etc.;

for enhancing the priority assigned at national and international levels to the protection and sustainable management of Mediterranean woody ecosystems:

to set up a process at ministerial level somehow similar in structure and functioning to the MCPFE [5] for Europe, or to the COMIFAC [6] for Central Africa, which have proven effective in improving forest conservation, development and management and the cooperation in these fields. Such a process could be attached in due time to the UfM.

2nd Symposium: The Fish

Introduction

The GID is an assembly of scientists who want to preserve their freedom of decision and their rigor in the expression of diagnosis and recommendations (eg, tuna is not "a soon extinct species", it is "overfished")

Diagnosis

- Time does not work for the evolution of aquatic ecosystems (the "fish") in the Mediterranean; on the contrary. Acting is therefore an emergency. This action makes sense only if it is collective
- Decision makers do not always have reliable and recent data at their disposal but a quality expertise exists which can be mobilized to complement the official authorities.

- Food supply is an issue of growing importance in many Mediterranean countries and scenarios of future chronic crises should not be set aside by decision makers (increasing overall deficit of protein). However, the aquatic resources (fisheries, freshwater and marine aquaculture) can significantly contribute to reduce the actual dependence on imported food.

- Fishing is now limited and will remain so. Aquaculture has a potential to rise but under several conditions.

- Many fish populations are at risk of irreversible collapse if fishing exceeds some thresholds.

Action Recommendations

Fishing will keep a steady production capacity if the conditions for its management are rigorous and shared, hence the importance of scientific diagnosis and follow-up actions, training and supervision. Increased vigilance is required in this area with an improved dialogue between fishermen, biologists and policymakers. This long-term work concerns not only fishermen, from the stage of awareness of their responsibilities in the balance of aquatic ecosystems, but also a daily management of their fishing areas.

Aquaculture can be a complement to fishing if it develops the culture of species of lower trophic levels such as molluscs, omnivorous fish (eg, the recent success of Egyptian aquaculture) and microalgae for multiple uses: oil, protein, trace elements…

The sustainable integration of these two activities in a fragile and coveted space comes necessarily through an integrated management of the ecosystem involving all the concerned persons. One of the tools of this management is a set of relevant indicators, accepted by all countries. A specific work of selection, negotiation and co-construction is therefore necessary.

Finally, the use by biotechnologies of molecules of marine origin is also an interesting field, although not well known. Research should play an increased role in this area.

In general, this evolution has to be considered according to two scales, the first including the whole Mediterranean and the second involving the homogeneous territories which enable the synergy of all actors of specific projects.

Two examples of actions:

Tuna is an emblematic example. It is overfished, but two ways of improvement actually exist: a more rigorous management of fishery (there are some success stories) and its breeding while controlling all possible impacts.

Marine biodiversity will be affected by global change. It must be the aim of an ambitious policy including, for example, the development of many marine protected areas, regularly distributed throughout the Mediterranean.

Tools

Strengthen the existing regional networks and those to be created in the fields of research, training, information and communication

Harmonize legislative and regulatory measures concerning the sea (such as pollution standards) for all Mediterranean countries.

Develop a collective eco-citizen consciousness by increasing the public awareness and its education

3rd Symposium: The Book

Introduction

The future of the Book in the Mediterranean Region constituted the subject of an in-depth review in Workshop 3 which followed Symposium, dedicated to presentations about two complementary subjects:

- Life and death of books (4 presentations)
- Translation, major component of diversity (4 presentations)

In the course of Workshop 3, two presentations treated the subject "Publishing the book / Showing the book" and one handout about the publishing of legal books was distributed.

Three further presentations were concerned with the issue of "The Digital and Biblio-Diversity".

The following recommendations are inspired by the presentations and the discussions of both Symposium 3 and Workshop 3.

Recommendation 1

Taking into consideration

the importance of books in the Mediterranean area of science and, more particularly, its role in the transmission of ancient knowledge since Antiquity,

the 3rd GID Conference recommends:

a) that the national, regional and international institutions as well as the scientific and cultural foundations support the implementation of programs for collecting, editing and/or translating Greek and Latin manuscripts;

b) that special attention be given to written documents dating from Antiquity and preserved in libraries, museums and archives in North Africa (Morocco, Algeria, Tunisia and Libya) concerning their collection, preservation and publication.

Recommendation 2

Taking into consideration that

a) translation constitutes a pillar of cultural diversity

b) diversity fosters cultures and thereby contributes to the creation of a new geoculture;

c) the language of the Mediterranean Region is also translation;

and also considering that language, in its obvious diversity, is not only a means of communication, but also a cultural media;

the 3rd GID Conference recommends:

1) that academic institutions connected in the framework of EMAN periodically establish a list of works to be translated, as a priority, into the languages of the Mediterranean Region;

2) the establishment of a sustainable, multilingual and updated information system, about the works being translated in the Mediterranean Region.

Recommendation 3

Taking into consideration

a) that the digitization of books (as long as copyright laws allow it) provides security for books - with regard to physical risks - and allow to multiply access to them;

b) the importance of cooperation between libraries in developing collective or complementary corpora;

c) the needs in terms of circulation of ideas among the member states of the Union for the Mediterranean;

d) the technological innovations that allow various sharing options (open platforms, such as Europeana, open standards, etc.).

the 3rd GID Conference recommends

to encourage and promote the dissemination of digital cutural content at all levels, in particular between the cultural institutions of the Mediterranean Region.

Conclusion

As much as book history and its destiny, we must pay continued attention to the book chain, with all its components (protection of copyrights, publishing, circulation through book fairs, book stores, libraries and the media; translation and training).

Interest in books is not only a scientific, educational or cultural activity based on the synergy of partners actions for the methods and assistance, it is also an important activity in favour of development.

The book, as a fact, contributes in its own way and by its unrivalled contribution to the efforts of development.

Postscript

The Third GID-Parmenides conference, dedicated to the "Mediterranean Wealth and Diversity, Biology and Culture" was held at the Bibliotheca Alexandrina (Alexandria, Egypt) from June 21 to 24, 2010.

It brought together 120 scientists and literary personalities from 17 countries and 22 academies of the Mediterranean area.

Biodiversity and cultural diversity are now recognized as essential components of sustainable development.

Biodiversity and cultural diversity, which have long been – and still are – treated separately in their finalities while differing in their object, do appear to be closely interdependent and complementary in their key aim: the preservation of plurality.

The preservation of biodiversity is often linked to cultural practices and traditional knowledge.

Organized and conducted with this Interactive determination, the Conference, deliberately setting aside general approaches, focused its considerations on three themes as symbols of history, culture and core issues of Mediterranean development: *the Tree, the Fish* and *the Book*.

The very high standards reached during the lectures and the round table debates have given to this dialogue between science and culture a genuine and original character. They have also contributed to take a new and fresh look, illustrated by the final recommendations and their many suggestions for concrete actions.

Let us express the hope that the exemplary nature of this meeting is the mark of a new willingness to integrate the preservation of diversity in future development strategies.

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PARMENIDES

Groupe Inter-académique pour le Développement
Inter-academic Group for Development

PROCEEDINGS OF THE THIRD GID - PARMENIDES CONFERENCE ALEXANDRIA, EGYPT - JUNE 2010

Biodiversity and cultural diversity are now recognized as essential components of sustainable development.

Biodiversity and cultural diversity, which have long been – and still are – treated separately in their finalities while differing in their object, do appear to be closely interdependent and complementary in their key aim: the preservation of plurality.

The preservation of biodiversity is often linked to cultural practices and traditional knowledge.

Organized and conducted with this Interactive determination, the Conference, deliberately setting aside general approaches, focused its considerations on three themes as symbols of history, culture and core issues of Mediterranean development: the Tree, the Fish and the Book.

The very high standards reached during the lectures and the round table debates have given to this dialogue between science and culture a genuine and original character. They have also contributed to take a new and fresh look, illustrated by the final recommendations and their many suggestions for concrete actions.

Let us express the hope that the exemplary nature of this meeting is the mark of a new willingness to integrate the preservation of diversity in future development strategies.

André Capron
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Président du GID