BELGIUM STRANDING NETWORK

T.Jauniaux

The name of the Belgian stranding network is MARIN for marine animals research & intervention network.

I expressely choose the picture to illustrate that it is possible to make science and research on stranded marine mammals also larger than a fin whale. The animal on the picture was infected with a morbillivirus as shown on the microscopic slide with red dots corresponding to morbilliviral inclusions. It was possible to necropsy, to collect samples and analyze them only because the stranding network was working efficiently and well coordinated. Today, my presentation will be essentially based on dead marine mammals as very few are stranded alive.

Slide 2:

Slide 3:

Here is the map of the North Sea and the area of our interest which is the southern continental coastline. The network started investigations in nineteen ninety, only along the Belgian coastline. After, in nineteen ninety five, it extended southward along the northern France coastline, covering now more or less two hundred and twenty kilometer. It is rather small but situated in a "strategic area" because it is the most narrow passage between North Sea and the English Channel.

Slide 4:

Between nineteen ninety and two thousand and four, three hundred and fifty eight marine mammals stranded along the coast of Belgium and northern France. All were necropsied. Forteen different species were identified and harbour

porpoises and harbor seals were most frequent species. As I will illustrate after, the temporal distribution for the stranding is very heterogenous. Indeed, eighty percent of the animals stranded between two thousand and now.

Slide 5

Slide 6:

The objectives of the stranding network were and are still based on the following points. As all of us know, marine mammals are considered as bioindicators of the marine ecosystem. When the first marine mammals stranded on the Belgian coastline were analyzed, at the end of the eighties, the only investigation done was for toxicology and as you can imagine they had very high level of contaminants. After, when the network started to work in collaboration with pathologists, it appeared that most of them had severe lesions like chronic emaciation, pneumonia and severe parasitosis. One of the objectives of the network was to clarify the relationship between the lesions and contaminants. One of the other objectives was to clarify the impacts of human activities such as fishery or tourism. To reach such objectives it was clear that only a multidisciplinary approach could help to understand the cause of death of marine mammals. Finally, such objectives were and are still priorities of some international agreements ratified by Belgium such as ASCOBANS and the North Sea conferences.

Slide 7

In summary the main objectives of the network are to perform necropsies of all stranded animals, with a detailed description of lesions and their etiology, to develop and maintain tissue banks for microbiology, serology, and other

investigations, to analyse a maximum of contaminants including new toxics such as flame retardants or dioxines, try to link those results with lesions to clarify the role of pollution, to improve knowledge concerning biology and life history of marine mammals, to identify the impact of human activities and to develop theories of strandings specifically for the Belgium and northern France coastline and finally to open the door for the development of new methodologies such as proteomics and in vitro tests with marine mammal tissues.

Slide 8

Slide 9

How does the network function. When a stranding occurs, municipal authorities are contacted and call the natural history institute of Belgium which is responsible for the administrative and logistical coordination. After the person responsible will call the university of Liege, in charge of the scientific coordination. There are two possibilities. When animals are still alive, cetaceans are sent to a rehabilitation center in the Netherlands for cetaceans and in Belgium for pinnipeds. Until now, no animals have been euthanized. When animals are dead, small cetaceans and pinnipeds are transported to the department of pathology where the necropsy is done, priority being given to fresh animals. When they are not well preserved, they are frozen. A maximum of samples are collected. For large cetaceans, necropsies are done on the beach and samples are collected for the tissues banks. After the necropsy, following the pertinence of the event, it is important to thank the authorities and volunteers, and to give a first information to public and media. Concerning by-catch, unfortunately, up to now, it has been impossible to develop collaborations with fishermen for by-caught animals and it is only diagnosed by the necropsy.

Slide 10

Always concerning organization MARIN is financially supported by annual grants from the Belgian state and many student's works are covered by extra grants. We also obtained supports by international collaborations as for example the BIOCET programme. Here is the list of laboratories which collaborate with the Belgian network, most of their representatives being present in these room. And I am taking the opportunity to thank them for very good, profitable and bilateral collaboration

Slide 11

Slide 12

Very quickly. When the network start, no protocol and nothing specific for the Belgian and northern France coastline had been published. In nineteen ninety nine, with Manuel we published a guide concerning sperm whales necropsy including all logistical considerations and in two thousand and two, a more complete guide was published, unfortunately in French, concerning procedures in case of marine mammal strandings. In my present talk, I am considering now only necropsies. The main task for necropsy is to perform the necropsy with a pathologist or someone with a very good expertise in pathology. Necropsy is not only a collection of samples. In Belgium, most necropsies are done within the department of pathology with the help of the students of the Ceto-club group. With new scientific methods including PCR as diagnosis tool or proteomics, it would be interesting to update the procedure for necropsy that was firstly described by Thijs and Manuel in ninety one.

Slide 13

Slide 14

It is not always easy to identify difficulties and particularly to find solutions to solve them. I think that you can imagine that the first difficulty is concerning financial support. Indeed, during the eleven years, from nineteen ninety to two thousand and one, the network was completely covered by the Belgian state by 4 successive research programmes covering all the costs including three scientists. That was a rather good situation But for the last 4 years, we only obtained annual grants from the Belgian state, covering only the position of the pathologist (so, my position) and every year, we have to justify the necessity to maintain such a network. Other scientists associated with the network must find other sources of subsides for their research. That is generating a lot of stress. That will introduce the second point concerning difficulties. It is concerning those collateral research programmes and student works. Frequently, I am contacted by students wishing to work on the biology or the pathology on stranded marine mammals and they asked me to supervise their study. And for four years, I have always said no because they are contacting me in April, May or June to start their works in January of the following year and with an annual grant, is impossible to predict if the network will still be present. That is frustrating.

Another difficulty is to develop international collaborations because is is rather complicated to obtain financing from international institutions. The last three points concern the relationship between people of the network and personal interactions. Finally, up to now it has not been possible to obtain information from fishermen.

Slide 15

Slide 16

But, the network is necessary and with the present graph it is impossible to understand why MARIN is not stabely financed. Indeed, the number of strandings have increased every year since nineteen ninety eight, mostly for harbor porpoises and harbor seals. Last year, for the two hundred and twenty kilometer of coastline, seventy seven animals were ashore.

Slide 17

In addition, original scientific findings were discovered thanks to the network's laboratories, such as the first evidence of morbillivirus disease in fin whales or the persistence of distemper among seals in ninety eight or the relations between some lesions and contaminants.

Results have been published in peer reviewed journals or communicated during conferences. The results are also used for political decisions and the establishment of new legal dispositions. For example, since two thousand and one, the diagnosis of by-caught made at the necropsy increased from 20 to forty five percent and now, the politicians are discussing, with our collaboration, to limit fishing activities using bottom set gillnets within Belgian waters.

Results are also communicated through national reports for international conventions such as ASCOBANS or for IWC. We are also trying to disseminate the information to the general public with media communications or by the organization of national workshops such as the next one to be held in Brussels in September. Finally, data concerning stranding and observation are available on an open website at the present address. Sorry, the content is in French and in Dutch, but in a near future information will also appear in English

Slide 18

For the future objectives, the first one will be to stabilize the network. We are trying to make politicians sensitive to the importance of the research done. We

should consider that such networks are a major tool to monitor marine mammals health in the concept of top predator, indicator of the quality of the marine environment. We are not considering only individuals but also populations. And to make such a survey, it is necessary to have stable long term study, impossible with annual grants.

We wish also to continue to develop new technologies like in vitro tests in association with proteomics allowing identification of biomakers specific of selected pollutants such as dioxines;

We should obtain collaborations with municipalies and fishermen to obtain data about marine mammal sightings or capture and later to make them sensitive enough to bring back by-caught animals.

One of the main objectives will also be to maintain and develop collaborations to exchange data, tissues or expertise. I know, it is an old dream but it is impossible to be a specialist in all categories, so why not to create tissue banks and to exchange them to have laboratories with a expertise in a specific topic, method or tissue. For my own experience, I am very interested by histopathology! The first step to reach such an objective could be to have a standardization concerning necropsy and sampling, by updating the protocol of the first pathology workshop.

Slide 19

I wish to thank all volunteers, the list is too long to name all of them, working along the Belgian and northern France coastline, the student of ceto club and the members of the centre de recherche sur les mammifères marins and finally I thank you for your attention.