

COMMISSION ON OCEAN POLICY

EDUCATION

Jean-Michel Cousteau

Good afternoon. Thank you for the opportunity to testify before you today on what I consider one of the most important topics facing us today—creating an ocean ‘literate’ society. My experiences as President of Ocean Futures Society, and as a member of the Board of Trustees for the National Marine Sanctuary Foundation, lead me to believe that children are the hope for our future. And this is exactly where I believe a major investment must be made.

The sea and its mysteries fascinate most people and this interest can be used to engage students to think about how they are connected to the sea and how the ocean plays a role in our collective future. I believe that young people can be given the inspiration and tools to understand the value of the ocean and become stewards of its resources and in the process build sustainable human communities.

First, we need people with a solid understanding of how the ocean works and how the ocean is connected to their lives. In order to sustainably manage our ocean resources, we must first create an informed public who understands the value of the sea and who is willing to support responsible governance. Over-exploitation of fish and shellfish, pollution, the loss of species and habitats, and mismanagement of on-land resources, resulting in such things as nutrient enrichment of coastal waters with associated harmful algal blooms, are undermining the ability of the sea to provide goods and services for humans. I believe having people, particularly young people, who feel connected to the ocean is essential to protecting and managing ocean resources wisely. I emphasize connections because ultimately the cause of ocean problems is us - our state of mind, world view, beliefs and behavior.

Ocean awareness and education are necessary, but in themselves, they are insufficient to change behavior. In my opinion the solution is not to engage in an eternal mode of crisis management, searching for quick fixes to each problem as it arises, but to avoid the problems in the first place. This requires our embracing a completely different perspective of man's relationship to his surroundings and a different approach to education. This is far larger than teaching people about the parts of the system or a scientific search for new technology. I'm talking about an integrated approach where the parts are integrated into a holistic understanding of how ocean ecosystems work. This is a functional approach where the value of species and communities are shown according to the work they perform in keeping ecosystems functioning and where the benefits to humans are made clear. This brings me back to our worldview, beliefs, and behavior. I'm talking about engaging people's hearts so they come to love, and thus value, the ocean and its wonders for its own sake. People protect what they love.

Let me explain where we are and where I think we should be going.

Most environmental education programs consist of activities, which test, measure and impart isolated facts about particular aspects of the ocean environment. It is apparently assumed that if one knows how to measure a parameter (temperature, incident radiation, salinity, water pH, etc.) or name an organism then one understands ecology. I disagree. "Science is built of facts the way a house is built of bricks; but an accumulation of facts is no more science than a pile of bricks is a house." I think we do an acceptable job of giving students the bricks but construction of those bricks, or facts, into an integrated whole is missing in most educational programs. And issues relating to our moral and ethical obligations to nature, to other people and to the future are even less often considered in our educational systems.

My belief is that we should, of course, teach the basics but also make absolutely sure that the connectivity of one region of the sea or one ecosystem or a suite of species is related to the others. Such conceptual models should include the element of time and an appreciation for how dynamic are ocean systems, with the message that to manage them we had better take into consideration such variability. Fisheries are a good example where we presume to know what a sustainable catch is and exploit up or beyond that limit. Then, when a natural catastrophe arises, we see our whole sustainable edifice fall apart. Ignorance, along with a healthy dose of greed, results in the loss of resources, loss of economic benefits and a lot of human suffering.

Likewise, the eutrophication of coastal waters and harmful algal blooms, is more dependent on what we do on land than what we do in the sea. Our educational programs must look at how land, and what we do on land, is connected to the sea. We need to take a watershed perspective and emphasize that the ocean is ultimately the recipient of all we dump, waste, or mess up on land. We need to focus on the value of coastal regions, as the most productive regions of the sea, as nurseries, and as critical habitats for a lot of non-human species, which also deserve to live and thrive.

Most importantly we need to focus on the fundamental principles of natural science and ecology that apply to all systems. With such understanding students will be more likely to understand how our ocean ecosystem functions and how it is connected to the rest of the biosphere. I would like to call attention to a new report from the National Academies' National Research Council published in February of this year which pointed out that academic preparation for advanced study actually begins in middle school and emphasized the importance of the integration of important ideas with a focus on key concepts. I believe that with encouragement from this Commission, a more integrated educational approach could take place.

I believe we need to show that everything is connected. All components of the biosphere, land to the sea, the ocean to people, people to the ocean, people to people and the present to the future. This connection should be both intellectual and emotional – the head and the heart. I mention the latter because, ultimately, it is our emotions that usually drive our decisions.

On the other hand, issues of morality, ethics, the heart and emotions are generally considered outside the domain of our governing and educational institutions even though we probably all believe such subjects do have value. I have struggled with this and offer some thoughts.

I am involved in the development of educational programs for young people that does connect them with the sea. The approach my team and I take is to put young people into the natural environment, we use the ocean and coastlines as living laboratories and outdoor classrooms. We strive to do everything that cannot be done in a normal school setting. We show kids the wonder of nature, how marine species earn a living and how they collectively create sustainable communities. We focus on the interconnections of land and sea and the sea and people. And we make sure to create opportunities for them to connect to nature, personally, through activities such as snorkeling at night surrounded by bioluminescent plankton, swimming thorough a kelp canopy and exploring tidepools. We endeavor to connect young people to nature at a level far deeper than the intellect in these outdoor adventures.

I mention our Ambassadors of the Environment program because, having just visited a number of our National Marine Sanctuaries, I see a fantastic opportunity for those Sanctuaries to engage students in these kinds of educational, life changing activities. To my utter astonishment most Americans don't have the faintest idea of what our sanctuaries are or what they are about. I believe there are untapped opportunities for these Sanctuaries to be centers of learning and connection. There are some very good programs in place in a few of our Sanctuaries but even the best ones could be much better if we were to give them more support. And the more developed programs could serve as models for like programs elsewhere. I urge the commission to state their strong support, not only for the ecosystem management aspects of marine sanctuaries, but also for their educational value and potential.

There are many other avenues for promoting ocean awareness and connection, but I think the National Marine Sanctuary System should be our number one priority. Why? Because the nation's network of Marine Sanctuaries connect our most treasured marine resources, they are national in scope, and they are struggling to reach more Americans. The sanctuary program is one of the most important elements in the equation for success in our quest to create a more ocean literate society.

The oceans need help. We need an educated constituency who will demand that the health and vitality of oceans are protected for present and future generations. Action is needed now!

JEAN-MICHEL COUSTEAU

V6—4-16-02

COMMISSION ON OCEAN POLICY

EDUCATION

Jean-Michel Cousteau

Good afternoon. Thank you for the opportunity to testify before you today on what I consider one of the most important topics facing us today—creating an ocean ‘literate’ society. My experiences as President of Ocean Futures Society, and as a member of the Board of Trustees for the National Marine Sanctuary Foundation, lead me to believe that children are the hope for our future. And this is exactly where I believe a major investment must be made.

The sea and its mysteries fascinate most people and this interest can be used to engage students to think about how they are connected to the sea and how the ocean plays a role in our collective future. I believe that young people can be given the inspiration and tools to understand the value of the ocean and become stewards of its resources and in the process build sustainable human communities.

First, we need people with a solid understanding of how the ocean works and how the ocean is connected to their lives. In order to sustainably manage our ocean resources, we must first create an informed public who understands the value of the sea and who is willing to support responsible governance. Over-exploitation of fish and shellfish, pollution, the loss of species and habitats, and mismanagement of on-land resources, resulting in such things as nutrient enrichment of coastal waters with associated harmful algal blooms, are undermining the ability of the sea to provide goods and services for humans. I believe having people, particularly young people, who feel connected to the ocean is essential to protecting and managing ocean resources wisely. I emphasize connections because ultimately the cause of ocean problems is us - our state of mind, world view, beliefs and behavior.

Ocean awareness and education are necessary, but in themselves, they are insufficient to change behavior. In my opinion the solution is not to engage in an eternal mode of crisis management, searching for quick fixes to each problem as it arises, but to avoid the problems in the first place. This requires our embracing a completely different perspective of man's relationship to his surroundings and a different approach to education. This is far larger than teaching people about the parts of the system or a scientific search for new technology. I'm talking about an integrated approach where the parts are integrated into a holistic understanding of how ocean ecosystems work. This is a functional approach where the value of species and communities are shown according to the work they perform in keeping ecosystems functioning and where the benefits to humans are made clear. This brings me back to our worldview, beliefs, and behavior. I'm talking about engaging people's hearts so they come to love, and thus value, the ocean and its wonders for its own sake. People protect what they love.

Let me explain where we are and where I think we should be going.

Most environmental education programs consist of activities, which test, measure and impart isolated facts about particular aspects of the ocean environment. It is apparently assumed that if one knows how to measure a parameter (temperature, incident radiation, salinity, water pH, etc.) or name an organism then one understands ecology. I disagree. "Science is built of facts the way a house is built of bricks; but an accumulation of facts is no more science than a pile of bricks is a house." I think we do an acceptable job of giving students the bricks but construction of those bricks, or facts, into an integrated whole is missing in most educational programs. And issues relating to our moral and ethical obligations to nature, to other people and to the future are even less often considered in our educational systems.

5

My belief is that we should, of course, teach the basics but also make absolutely sure that the connectivity of one region of the sea or one ecosystem or a suite of species is related to the others. Such conceptual models should include the element of time and an appreciation for how dynamic are ocean systems, with the message that to manage them we had better take into consideration such

variability. Fisheries are a good example where we presume to know what a sustainable catch is and exploit up or beyond that limit. Then, when a natural catastrophe arises, we see our whole sustainable edifice fall apart. Ignorance, along with a healthy dose of greed, results in the loss of resources, loss of economic benefits and a lot of human suffering.

Likewise, the eutrophication of coastal waters and harmful algal blooms, is more dependent on what we do on land than what we do in the sea. Our educational programs must look at how land, and what we do on land, is connected to the sea. We need to take a watershed perspective and emphasize that the ocean is ultimately the recipient of all we dump, waste, or mess up on land. We need to focus on the value of coastal regions, as the most productive regions of the sea, as nurseries, and as critical habitats for a lot of non-human species, which also deserve to live and thrive.

6

Most importantly we need to focus on the fundamental principles of natural science and ecology that apply to all systems. With such understanding students will be more likely to understand how our ocean ecosystem functions and how it is connected to the rest of the biosphere. I would like to call attention to a new report from the National Academies' National Research Council

published in February of this year which pointed out that academic preparation for advanced study actually begins in middle school and emphasized the importance of the integration of important ideas with a focus on key concepts. I believe that with encouragement from this Commission, a more integrated educational approach could take place.

I believe we need to show that everything is connected. All components of the biosphere, land to the sea, the ocean to people, people to the ocean, people to people and the present to the future. This connection should be both intellectual and emotional – the head and the heart. I mention the latter because, ultimately, it is our emotions that usually drive our decisions.

7

On the other hand, issues of morality, ethics, the heart and emotions are generally considered outside the domain of our governing and educational institutions even though we probably all believe such subjects do have value. I have struggled with this and offer some thoughts.

I am involved in the development of educational programs for young people that does connect them with the sea. The approach my team and I take is to put young people into the natural environment, we use the ocean and coastlines as living laboratories and outdoor

classrooms. We strive to do everything that cannot be done in a normal school setting. We show kids the wonder of nature, how marine species earn a living and how they collectively create sustainable communities. We focus on the interconnections of land and sea and the sea and people. And we make sure to create opportunities for them to connect to nature, personally, through activities such as snorkeling at night surrounded by bioluminescent plankton, swimming thorough a kelp canopy and exploring tidepools. We endeavor to connect young people to nature at a level far deeper than the intellect in these outdoor adventures.

8

I mention our Ambassadors of the Environment program because, having just visited a number of our National Marine Sanctuaries, I see a fantastic opportunity for those Sanctuaries to engage students in these kinds of educational, life changing activities. To my utter astonishment most Americans don't have the faintest idea of what our sanctuaries are or what they are about. I believe there are untapped opportunities for these Sanctuaries to be centers of learning and connection. There are some very good programs in place in a few of our Sanctuaries but even the best ones could be much

better if we were to give them more support. And the more developed programs could serve as models for like programs elsewhere. I urge the commission to state their strong support, not only for the ecosystem management aspects of marine sanctuaries, but also for their educational value and potential.

9

There are many other avenues for promoting ocean awareness and connection, but I think the National Marine Sanctuary System should be our number one priority. Why? Because the nation's network of Marine Sanctuaries connect our most treasured marine resources, they are national in scope, and they are struggling to reach more Americans. The sanctuary program is one of the most important elements in the equation for success in our quest to create a more ocean literate society.

The oceans need help. We need an educated constituency who will demand that the health and vitality of oceans are protected for present and future generations. Action is needed now!

JEAN-MICHEL COUSTEAU

