Class 10.2: Playing with the Matrix for Ecosystems and Services - Practical Activity
by Milton L. Asmus

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SPSAS Ocean class 10.2 which was held on Saturday, August 18 was a practical class presented under the major topic of 'Blue Economy, the sustainable use of ocean resources for economic growth, improved livelihoods and jobs'. The class was delivered by Professor Milton L. Asmus of Federal University of Rio Grande - Brazil, with the assistance of Vitor Alberto de Souza, one of the participants of the course.

The class was initiated with an outdoor practical activity with the participation of all the students of the course. Students were divided into three groups with two sub groups in each. The two sub groups of each major group were asked to form two lines where students would stand parallelly by facing each other. One line could move while the other line remained in the same position. Upon a signal made my Professor Asmus, the two students who were facing one another in the two lines were given 20 seconds to answer and ask 2 questions: "Why SPSAS Ocean is important to you?" and "How are you gonna apply the knowledge you gained through this course?". Within 20 seconds, both the students should give answers to each other and after 20 seconds, the student in the moving line would shift a one position forward while the other student remained in the same position facing a new student from the moving line. At the end of the activity, all of the students of the two lines in each group have talked to and listened to everyone of their group and lot of information was shared in a short time period.

This outdoor activity was the first practical we engaged in during the course. Therefore it was very entertaining and interesting to be a part of it. Nevertheless, the objective of this activity was served very well at the end of the activity. Among all the answers given for the above mentioned questions, the majority was finding SPSAS Ocean relevant, due to the vast knowledge and the experiences it provided through international level policy makers, scientists, economists and students all over the world. Equally, the majority of the students were planning to apply this knowledge in their respective countries in order to raise the awareness on ocean conservation and governance as well as to improve the scientific literacy of their public communities and administrative bodies.

During the second half of the class, the students were asked to pair up for a group activity to understand and discuss the ecosystem services of different coastal and marine ecosystems. Before the activity, Professor Asmus and Vitor did a brief presentation on selected ecosystems of Baixada Santista region. Baixada Santista is a metropolitan area, composed of 9 municipalities. Santos is the most populated city in the region, with many different types of coastal and marine ecosystems (e.g. sand beaches, vegetated sand bars (restinga), mangroves, shoreline marine environment, rocky bottom seabed, Atlantic Rainforest, rocky shores, rivers, estuaries, estuarine channels and an urban system).

The main economic activities related to this region are based on industry, tourism and fisheries. Port of Santos is the largest port in Latin America which export around 28% of National GDP of Brazil. It is estimated in 2017 that around 130 million tons circulate in and out of the port where the main products are corn, soybean and sugar. Most of the industries in Baixada Santista region are concentrated in Cubatão, which was once the most polluted city in Brazil in 1980s. Many chemical

industries, fertilizer manufacturing farms and the oil refinery are the main industries found in this area. Apart from that, in 2005, major oil deposits were discovered in the offshore area with a depth up to 8000 m. Currently, around 3.5 million barrels of oil is extracted every day. The region is considered to be a local and foreign tourist hotspot with around 1.9 million tourists visiting the beaches during every summer. This earns around 12 billion Brazilian reais per year. Both commercial and artisanal fisheries are common in the region where artisanal fisheries is mainly done by gill netting and trawling, whereas longlines and trawling are used for industrial fisheries.

With all these information presented, the groups of two students were asked to pick two of any ecosystem described above, being from the Baixada region or any region all over the world. The students should complete a matrix of ecosystem services (provision, support, regulatory and cultural services) and the related challenges of managing the selected ecosystems. At the end of the activity, groups were allowed to present their work to the class.

This activity helped the students to understand the complexity of ecosystems with respect to their ecosystem services. During the activity the students understood that every ecosystem is interconnected with one another and it is impossible to separate one from the other with a boundary line. This complexity of the ecosystems and services make it even more complex to manage and govern them on an interdisciplinary basis due to the existence of a widespread network of stakeholders benefiting from these ecosystems. Thus, this activity was very important for the students to understand the challenges to be faced in the concept of blue economy and ocean governance and the importance of overcoming these difficulties though an interdisciplinary and multitasking approach.

Hence, the practical class on ‘Blue Economy, the sustainable use of ocean resources for economic growth, improved livelihoods and jobs’ summarized the importance of understanding the complex matrix of various ecosystem services of coastal and marine ecosystems as well as the possible challenges related to their management in order to utilize them for sustainable economy and development.