GLOBALIZED FISHERIES

Endangers species Vaquita Marina and Totoaba in the Upper Gulf of California

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The Upper Gulf of California and Colorado River delta is the shallow region located in the northern Gulf of California, where one of the most important sources of nutrients was the freshwater input from the Colorado River. The dams constructed in the United States have limited fresh surface water input to the estuary. This is the reason why this region lost estuarine conditions. It is widely recognized in the International Committee for the Recovery of the Vaquita, as the main risk factor for decreasing the size population as the incidental mortality by gill nets and they argue that environmental changes due the interrupted flow of the Colorado River are not a serious problem for survival, because still high concentration of nutrients, high primary productivity rates and high zooplankton biomass. In this work, we made an analysis of all these articles and we found that they were not properly interpreted, because the studies highlight the importance of the Colorado River in the environmental health of the Upper Gulf. The historical data of dependent estuarine species such as shrimp and totoaba, show how the Colorado River damming has affected drastically the population size, but in the other hand the fisheries pressure increase the problem.

Framework for a bioeconomic analysis based on ecosystem approach: the case of fisheries in Sinaloa, Mexico

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Ecosystem approach for fisheries management has been promoted in recent time before the challenge of collapsing fisheries worldwide. The aim of this study is to accomplish a bioeconomic analysis of fisheries maximizing net income and conserving ecosystem stability, in order to explore if there is a relationship between the ecosystem and bioeconomic indicators. We use as case study the fisheries of the continental shelf of southern Sinaloa. Simulations of the different scenarios are proposed to evaluate these indicators. Ecopath models with a dynamic Ecosim interface will be the base to explore and identify ecosystem indicators focused on their capacity for self-organization. Economic variables are considered for a holistic analysis. Optimization processes of multiple objectives in the scenarios can is used having state variables such as net income, ecological stability and employment to find temporal patterns of fishing effort that would be necessary for optimum exploitation with minimal cost of ecosystem conservation.

Strengthening capacity and compliance of small-scale fishermen for reducing impacts in the Upper Gulf of California Biosphere Reserve through an education program

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As part of a 2012 Environmental Impact Study (EIS) small scale fishermen of the Upper Gulf of California and Colorado River Delta Biosphere Reserve, are required to implement an education and training program to give them the tools and enabling conditions for active and willing engagement in the Study. The education program includes a communication strategy, production of educational materials, and implementation of over 70 workshops per year to raise fishermen’s awareness about marine resources and to train them in use of fishing logbooks and other procedures required in the EIS. We established baseline measures to evaluate the impact of the program in the future. Participation indicators show an increase in attendance levels at workshops and an increase in the use of fishing logbooks. We have also documented changes in fishermen’s perceptions and knowledge and have observed that fishermen are more confident in the EIS process. All measures are showing signs of success in engaging fishermen. Never before has such a comprehensive education program been conducted with fishermen in the region. The program encourages fishers to participate actively in management of their resources and empowers them as leaders to work towards sustainable fisheries in the Reserve.

Characterization of the Fisheries Catch from the Puerto Peñasco, Sonora Marine Corridor in the Northern Gulf of California

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In the northern region of the Gulf of California, a marine corridor has been characterized along the coast of Puerto Peñasco, Sonora, which includes six fishing communities, and approximately 1400 small-scale fishermen. The Corridor contains a diversity of habitats, including two large wetland complexes, estuaries, sandy and muddy bottom habitats, shallow and deep water patch reefs and an offshore island archipelago, San Jorge Island. Social, biological and holds the highest diversity and abundance of larvae of any other upper Gulf region. Connectivity between species, habitats, trophic interactions and socio-economic components support this concept of a biological corridor. From September 2010 to September 2012 voluntary community catch monitoring program was implemented in five communities of the Corridor, south of Peñasco. A total of 20,645 georeferenced catch records were obtained representing 772 tons, representing the first data of this kind for this region. A total of 75 species were captured, either as target species or secondary catch Geographic distribution of this catch is available by species, community and season. Jaccard and Sorensen indices were calculated to compare overlap of catch species and presence or absence between communities. This program shows the important role fishers can play in generating data about their fisheries.

Socioeconomic Diagnosis and Evaluation of a conservation strategy in the Gulf of Santa Clara, Sonora

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NO ABSTRACT SUBMITTED

Production chain of the giant squid (Dosidicus gigas) in the Gulf of California

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The value chain is understood as a linking process of different factors and actors that lead to the creation and capitalization of the added value of the product. Methodological approaches as Prospective Strategy are necessary to feedback the social sectors, prior to the creation of development and integration projects. The objective of the study is to define the variables that influence the Giant Squid’s value chain (GSVC) in the Gulf of California using Prospective Strategy. Literature classification and reviewing of various studies with emphasis in value chain of agribusiness and aquaculture resources was part of the characterized process, which defined the four GSVC links: catching, processing, marketing and consumption. From which were agreed 78 variables grouped into four subcategories: biological-fishing, socio-economic, governance and environmental aspects. The degree of influence of the variables on each other is defined as motricity and the relationship of the variables is understood as dependency. Those variables were rated by a panel of experts, who feed a structural and a motricity – dependency analysis. After these analyzes, the variables were ordered into four types: power, autonomous, conflict and output. Preliminary results indicate that marketing and consumption links contain the variables of power that marks a significant influence on the rest of the chain.

Analysis of the fishery situation in the Upper Gulf of California

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We analyzed the artisanal fishery of three communities in the Upper Gulf of California: San Felipe in Baja California, El Golfo de Santa Clara and Puerto Peñasco in Sonora. Volume captures of the main fisheries from 1995 to 2007 are shown with a description of their capture in the Biosphere Reserve of the Upper Gulf of California and Vaquita Refuge. It was analyzed the environmental benefits of the Biosphere Reserve, the fishing alternatives described by the fishermen and the management of the protected areas in the Upper Gulf of California. From a social point of view, management alternatives considerations are proposed for the conservation of the ecosystem and their species.

Small pelagic fishery from the south of the Gulf of California

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The small pelagic are the one important resource from the south of the Gulf of California due to the great catch. We show an analysis to know the status of fishery; this one comprised of three species of thread herring *Opisthonema libertate*, *O. bulleri* and *O. medirastre*, moreover an anchovy *Cetengraulis mysticetus*. We taken catch data from January to December 2012 in the small pelagic industry; it was analyzed change of captures and species, nominal effort (f), catch-per-unit- effort (CPUE) and mean efficiency of fishing fleet. Likewise were records sizes frequency and gonad mature of different species of fishery; the total value of capture was 133,302 t, the thread herring captures was less than anchovy with 58,729 t and 74,573 t respectively. The small pelagic fishing fleet was 10 vessels in this year with a total nominal effort of 918 trips. The thread herring mean sizes was 167 standard sizes. Whereas anchovy was 140 standard sizes. Meanwhile the activity reproductive behavior showed that the most thread herring specimens reach gonad mature (III and IV). The analysis SST suggests related inversely proportional between SST with total capture and negative thermal anomaly regarding anchovy.

On board observation program of small pelagic fishery from the south of the Gulf of California

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The small pelagic are the one important resource from the south of the Gulf of California due to the great catch, employment and income. We were implementing an Onboard Observation Program to know the effect of small pelagic fishing fleet on ecosystem of this region. The small pelagic fishing fleet comprising 10 vessels in 2012, a technical person made records onboard in the same ship solely, he collected data since April 2012 to April 2013. It was record the fishing activity and environmental conditions every day. The trips small pelagic fishing fleet was 918 trips; however 83 trips (6%) with observance, 290 fishing haul with total record 17,827 t, 37 fishing haul 13%, with discards 1.43% (255 t) and with slipped catch 3.27% (582 t). Overall the result does not show damage that it could be to cause changes on the ecosystem structure and diversity. However this kind of investigation is the first in the region to know fortitude and weakness about activity fishing of small pelagic and it will allow us to establish strategy, if it necessary improved the fishing activity to minimize adverse effect that it could be causing on the ecosystem.

Species composition of the shrimp fishery bycatch in a coastal lagoon in the Gulf of California during the season 2001-2002

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The effect of the artisanal shrimp fishery on the fish fauna in the coastal lagoon of Santa María la Reforma, Mexico, was analyzed. Twenty-nine stations were sampled monthly for shrimp and fin fish during six months, from December 2001 to May 2002, using small boats, the three fishing gears employed by shrimp fishermen in the area: small shrimp trawl net, gillnet, and suripera net. Each sampling period lasted five days. Relative importance shrimp bycatch composition was obtained. In total, 11,408 individuals were caught, comprising 172 species of genera100 and 50 families. Differences of relative importance between capture and net weren’t found. The fishing gear that had a greater impact on the fish fauna was the shrimp trawl net, because it caught the greatest number of fish and a large quantity of small individuals.

Provisioning ecosystemic services and multidimensional poverty reduction of coastal fishermen at La Paz Bay- La Ventana corridor, Baja California Sur Mexico

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FAO recognizes a greater dependence on natural resources in marginalized communities. To promote actions to reduce poverty demand of correct diagnoses that include new approaches, including consideration of the services provided by the ecosystem, laying the foundations for a development that promotes the efficient use of natural capital and equity in the social field. Due the need to improve the indicators, a multidimensional measuring approach, which uses income and other variables that directly influence the welfare of the population, is proposed. The aim of this study was to identify the levels of multidimensional poverty among people engaged in fishing and determine the impact of the Ecosystemic Services (ES) of provision type and recreation in reducing poverty and improving their quality of life. INEGI indicators are used and a survey was applied in 2012 to assess the monetary declared value of major ES. Multidimensional Poverty Index was calculated. The welfare improvement of fishermen by the ES was determined with the DAD 4.6 software. Localities were classified as poor on a multidimensional approach, some variables that most affected are linked to use of ecosystems.

Vulnerability analysis of fishing cooperative societies: The case of "Bahía Magdalena"

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Bahía Magdalena S.C.L. (SCBM) is an organization whose 60 years of existence has been exposed to different socio-economic, natural and governance issues that determine their social vulnerability. This is defined as exposure to such situations of internal or external threats that may influence their existence. The aim of this study is to analyze historical changes in SCBM’s vulnerability to help meet the social problems of the state of fishing cooperatives. Partners Surveys indicated that household income has remained low but stable. Rotating exploited species allows fishermen to practice fishing as a main subsistence activity. SCBM internal governance has shown a stable but high vulnerability due to factors such as coercion or clientilism. Their fishing areas have been reduced due to the emergence of other cooperatives and became more unstable due to the presence of illegal fishing. It has quantified the frequency of hurricanes as an environmental factor, finding that a higher frequency of impacts, plus the lack of economic resources, has reduced fishermen resistance in the last 10 years. It’s been found a reduction in vulnerability as access to basic services in home from 1990 to 2010 thanks to government policies.