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# "NATURE" STUMBLES

"Nature" is a highly respected scientific journal. Articles published in "Nature" are assumed to be scrupulously peer-reviewed, and represent high-level scientific information. Last May, however, "Nature" made a "fishy" slip.

It is hardly disputable that many of the world's fish resources are in a bad shape. We're frequently reminded of this condition by articles in the press, scientific papers, media features, NGOs, new fishery management steps, and fishermen as well.

In a widely-publicized article in the May issue of "Nature" entitled "Rapid worldwide depletion of predatory fish communities", R.A. Myers and B. Worm, of the Dalhousie University in Nova Scotia, say in a nutshell that "Industrialized fisheries typically reduced community biomass by 80% within 15 years of exploitation" and that "large predatory fish biomass is today only about 10% of pre-industrial levels".

The authors say that industrialized fishing has devastated marine ecosystems, and try to prove it by comparing the biomass of tuna and billfishes populations of the mid 20th century with contemporary ones, using Japanese longlining global data from 1952 to 1999. In their opinion, the true magnitude of the change is not appreciated, because the majority of declines of the populations of those species occurred during the first years of exploitation, and before surveys were undertaken. They try to make their readers believe that the Japanese catch rates data represent the state of the biomass of those species during the above period.

However, the Myers and Worm study is seriously misleading for quite a few reasons. But, as the story goes about Napoleon asking a town mayor why the bells didn't ring upon the emperor's entrance in the gates: "Majesty, there're 10 serious reasons why we couldn't ring the bells"- said the mayor. "The first is that we've got no bells". "Enough" – said Napoleon - "don't tell me the others".

The Myers and Worm study has no leg to stand on because the authors ignore the fact that for the various tuna species, an estimate based on longline catches couldn't bear witness on those species' biomass. All that such an analysis could have said would be that the share of the big, old tunas in the total tuna population has decreased.

The authors' and their peer reviewers must've been (or have chosen to be) ignorant of the fact that Japanese longlines catch only the larger and older fish living in the deeper and cooler water layers. Any student of tuna populations knows that the present purse seine fisheries operate in the upper water layer and take most of the large pelagics, though younger and smaller than longlining. Hence, without purse-seine catch data, hardly a valid thing can be said about most tunas' biomass. If the authors wished to show total biomass decrease, they hit far off their target.

Myers' and Worm's article provoked severe criticism among tuna experts. Dr. Gary Sharp, a distinguished researcher in tuna physiological ecology and oceanography, who already in the 1970s mapped the monthly global distribution of Pacific tunas. Later, his maps annotated with explanations of the distribution of tuna species and age groups by their temperature and depth preferences were published by the FAO's Indian Ocean Fisheries Development Program. In his chapter 'Tuna Oceanography, an Applied Science' in the Block and Stevens edited "Tuna - Physiology, Ecology, and Evolution". Sharp describes the evolution of longlining, and market changes that affected tuna fisheries. The early longline fisheries were near surface, targeting abundant juvenile tunas, but later went farther offshore, after larger and fatter individuals in deeper waters. All this is well documented, but apparently unread by the "Nature" article writers and their reviewers. Sharp posted his reaction on the Internet FISHFOLK List: - "The absolute non-overlap of the surface fisheries, and the longline fisheries is what fisheries oceanography is all about. Myers and Worm have demonstrated little understanding of any of these distinctive fisheries".

Another nail drove into the study's coffin another tuna specialist, Norm Bartoo of the US NMFS Southwest Fisheries Science Center in La Jolla, by saying that "The paper may be criticized vigorously because of some serious errors in the analysis".

Those, who unlike Napoleon, want to see all the reasons why that study shouldn't have been published in "Nature", are referred to a detailed paper "*Comments on Myers & Worm",* by John Hampton of the Oceanic Fisheries Programme at the Secretariat of the Pacific Community, John R. Sibert of the Pelagic Fisheries Research Program, University of Hawaii, and Pierre Kleiber, of the US National Marine Fisheries Service, Pacific Islands Fisheries Science Center. These scientists who do specialize in tuna fisheries leave the Myers' and Worm' study with no leg to stand on. They take apart almost every methodological and factual aspect of the Myers and Worm article. "Fundamentally flawed", "incorrect", "too

restrictive” are some of the epithets they use, concluding that “Myers and Worm do the fisheries community a disservice by applying a simplistic analysis to the available data, which exaggerates declines in abundance and implies unrealistic rebuilding benchmarks”.

But, let’s face it: commercial fisheries do modify age-and-size composition of fish populations. No stock can be both, commercially fished and maintain its “virgin” composition and biomass. The normal assumption is that a stock is most productive and can be sustainably exploited at about half of its pre-exploitation size. During decades of fishing, the composition of tuna biomass has changed in favour of younger year-classes not represented in longline catch data. Myers and Worm ignore the workings of the world's tuna fisheries, and their conclusions (biomass decrease by 90%, etc.), as based on the "analysis" of tuna longlining data are all but fallacious, to say the least.

Until it has come to a subject in which I’ve been involved for years, and wrote books and articles about, never a doubt of “Nature’s” wisdom had crossed my mind. But this time, I’m afraid, an article that, owing to its prestigious host, received undeserved publicity was not peer reviewed by appropriate specialists. Anybody blushing?