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Letters

Illegal fishing and the organized crime analogy

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Sustainable use of ecosystems represents a significant challenge [1]. In the case of fisheries, illegal, unregulated and unreported (IUU) fishing is a globally crucial barrier to sustainability [2]. Illegal fishing for some species in the Southern Ocean has been described as a form of well-organized, transnational crime [3,4]. Conceptualizing illegal fishing as a form of organized crime has made it easier to identify the political priorities and the resources and actions required to address the problem effectively. Countries responsible for managing this resource (http://www.ccamlr.org) have achieved a substantial reduction in illegal fishing, showing potential for sustainable resource use [5]. Here, we evaluate whether common definitions of organized crime correspond with characteristics of illegal fishing and argue that such systematic, well-organized natural resource exploitation should be included in the definition of organized crime.

Organized crime is a non-traditional security (non-military) threat. It does not threaten the physical survival of the state, but will impact on its quality and identity [6]. The temporal persistence and financial success of criminal organizations is related to their organizational structure (resilience owing to network redundancy), their modus operandi (e.g. division of labor, internal control mechanisms, use of intimidation, money laundering using legitimate front companies, etc.) and ability to adapt to government policies [6,7]. Illegal fishing in the Southern Ocean also qualifies as a non-traditional security threat. The vessels involved are usually part of complex, dynamic networks [3,8], capable of adapting to management measures [5], with layers of corporations to hide beneficiary owners [9] and the use of bribery as a means of intimidation (http://www.nmfs.noaa.gov/ole/news/news_NED_052804.htm).

Political and social conditions are important for the emergence and persistence of organized crime. Governments can create market vacuums that are filled by entrepreneurial criminals in black markets, often with the support of corrupt government officials [6,7]. Organized crime can be a solution for those with few alternative livelihoods and can be stimulated in areas where a state is not perceived as legitimate [7]. The emergence of illegal fishing in the Southern Ocean has also been described as a consequence of a 'market vacuum' resulting from depleted fish stocks in the Northern Hemisphere [8]. A lack of legitimacy perceived by some operators of the exclusive economic zones around the Sub-Antarctic probably contributed to IUU fishing.

Organized crime is commonly identified as a foreign threat with ethnic connotations [7]. Fighting such crime has focused on major bosses and a perception that criminal organizations should be challenged through criminal law and possibly military means. However, what are perceived as ethnically homogonous, hierarchical, well-organized operations are instead often dynamic, multinational networks of interlinked (and often replaceable) groups and individuals with common interests or bonds of friendships, operating different functions without central leadership [6,7].

The perception of organized crime as a security threat can lead to securitization, described as the process of contextualizing an issue as urgent and requiring extreme measures [6]. Latin American cocaine trafficking has been securitized in both Europe and the USA, both of which have allocated substantial resources aimed at reducing the problem. However, the means and methods to address it differ substantially between the two regions, with the EU focusing on reducing demand and stimulating alternative economic and social development, whereas the USA, in its war on drugs, focuses on law enforcement to reduce supply [6].

Analogous to organized crime, illegal fishing in the Southern Ocean has been described as a foreign threat with ethnic connotations, focusing on some 'major bosses' [3,4]. Illegal fishing has been substantial around Australian Sub-Antarctic Islands, and Australia considered this breach of sovereignty to be a sensitive issue [10]. Illegal fishing can be described as having been securitized, judging from the commitment both in rhetoric and resources allocated [4,11].

Fish is not an illegal substance or detrimental to human health. Illegal fishing does not obviously contribute to the deterioration of society or state functions [6]. Given this difference to what is usually considered organized crime*, how relevant is the analogy? Clearly, illegal fishing influences state credibility and has substantial social and economic consequences [2,3,10].

The greatest differences between organized IUU fishing and other illegal activities regarded as organized crime are the immediacy of the impact on society and the degree of separation of the latter crimes from the legal economic activities of other industries. IUU fishing directly influences other interest groups, such as legitimate fisheries, relying on the same resource. This is in contrast to trade in illicit drugs,

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* A key criterion in many definitions of organized crime is that a crime must be considered serious; http://www.organized-crime.de/index.html.

which does not jeopardize such groups [6]. The overlap between licit and illicit markets means that unmasking illegitimacy is substantially more difficult than for drug smuggling, where, for example, all cocaine is illegal.

Many points of difference are weak in separating IUU fishing from organized crime. Importantly, many natural resources are either fully or overexploited [1,2] and well-organized, illegal fishing is prevalent elsewhere (e.g. for abalone, *Haliotis* spp. [4,12]). Systematic, well-organized and illegal activities designed to avoid regulation while exploiting ecosystems directly undermine legitimate activities, degrade resources in the long term, and have social consequences. This is serious, and should be regarded as organized crime.

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Letters

Gender differences in science: no support for the 'Homer Simpson Effect' among tropical researchers

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'D'oh!'

Homer Simpson, ca 1989

Many readers of *TREE* are interested in the factors that determine scientific success, some of which could be influenced by the gender of scientists (e.g. [1–3]). Given general tendencies for men to have a more-positive attitude toward science [4], to publish more frequently in scientific journals [5] and to engage more forcefully in self-promotion [6,7], we hypothesized that men would also rate their personal scientific expertise more highly than would women, given comparable levels of individual experience. We term our hypothesis the 'Homer Simpson Effect' in honor of a well-known male cartoon character who thinks very highly of his own intellectual prowess (http://www.angelfire.com/home/pearly/homer/homer-quotes1.html).

We had a good opportunity to test our hypothesis as part of a global survey of recognized scientific experts engaged in long-term environmental or ecological research at 60 protected areas stratified across forests of the Asia-Pacific, African and American tropics, conducted from 2008 to 2010. We identified our experts mostly via scientific publications and recommendations from other scientists. No effort was made to include gender as a consideration in the study. In addition to a battery of questions about the study area in which they had long-term expertise, we recorded three general attributes for each scientist: (i) their gender; (ii) the number of years they had worked at the site; and (iii) their perceived level of knowledge about their study area (1, excellent; 2, good; 3, fair; scored at increments of 0.5). We recorded variable (ii) in two ways: as the number of years since the scientist first visited their study site and, whenever possible, as the total number of years that she or he had actually spent at the site. These two metrics were strongly and linearly related ($R^2 = 84.1\%$, $F_{1,167} = 883$, $P < 0.0001$; linear regression) and yielded almost identical results in our analyses, so we used the former as it was available for all participants in our study.

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