

# Communications...

From: *Frédéric Ducarme*<sup>1,\*</sup>

## Participative sciences and naturalist biology

New technologies allow new data and new opportunities for science. On his Echinoblog website (<http://echinoblog.blogspot.fr/>), Dr C. Mah (Mah 2008) has proved how useful some public websites, such as *Flickr* (<https://www.flickr.com/>), could be, providing thousands of underwater pictures from all around the world, allowing scientists to discover unknown behaviours, strange physical patterns and unsuspected geographical ranges of echinoderms, but also potential new species.

Another website is becoming increasingly important as a link between research and popularisation of knowledge: the free open-source, web-based, encyclopaedia *Wikipedia* ([www.wikipedia.org](http://www.wikipedia.org)). The scientific accuracy of its content is still heterogeneous, but improving at a fast rate. *Wikipedia* content is more and more often used as a basis in more professional websites and databases, such as *Encyclopaedia of Life* (<http://eol.org/>) or *iNaturalist* (<http://www.inaturalist.org/>). *Wikipedia* is also a promising platform for popularising some lesser known groups of animals, especially invertebrates. Hence, some professional scientists have already started writing scientific articles about echinoderms on *Wikipedia*, including labelled articles (see *Acanthaster planci* for example, see reference). A few taxonomists and divers generously uploaded hundreds of copyright-free professional pictures to illustrate them, or helped to identify pictures uploaded by others. But there is still a lot of work to be done, and most species lack a proper picture or article.

Knowledge about sea cucumbers is still heterogeneous, and not always of easy access for scientists on fieldwork or non-professionals. Hence, making *Wikipedia* a reliable source of knowledge could be useful, providing a lot of accessible pictures, descriptions and information. As *Wikipedia* exists in many languages and articles are translated from most complete versions to others, this could also be a powerful tool for popularisation, along with awareness rising about protected species and ecological issues. Articles about sea cucumbers are available from the following address: [https://en.wikipedia.org/wiki/Sea\\_cucumber](https://en.wikipedia.org/wiki/Sea_cucumber).

Many scientists possess pictures, data and knowledge that could be shared. Creating an account, uploading files (especially research-grade pictures of rare animals) is easy, and other *Wikipedia* contributors are ready to explain the rules, help in identification, review, or correct mistakes. We strongly believe that giving a little of one's time to a project such as *Wikipedia* is part of a scientist's work.

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<sup>1</sup> Centre d'Ecologie et des Sciences de la Conservation, UMR 7204, Muséum National d'Histoire Naturelle (Paris)

\* Corresponding author: [frederic.ducarme@ens-lyon.fr](mailto:frederic.ducarme@ens-lyon.fr)

From: *Choo Poh Sze*<sup>1,\*</sup>

**China Central Television (CCTV) exposed the overuse of drugs in farmed sea cucumber in Northeast China's coastal Liaoning province, which has tainted the nearby seawater and killed many sea creatures, the Beijing Morning Post reported**

Sea cucumber farms abound in Dalian city's Pikou town, located on the coast of the Bohai Sea. It is no secret that drugs are used to keep farmed sea cucumbers healthy, the investigative report said. Small bottles labelled ceftriaxone sodium, a type of antibiotic, are frequently dumped outside a farm in the town. Reporters learned that mariculture famers use several types of antibiotics and Chinese herbal concoctions to protect sea cucumbers from illness. One farmer told reporters that they also spike the water with pesticide to kill organisms that might otherwise steal nutrients from sea cucumbers. And sodium hypochlorite and clinical dextrane, all disinfectants, are used to clean up excrement from the sea creatures, he added. Farmers dump this contaminated water into the sea every three or four days, undermining water quality near the fishing farms. In general, the farmland is cleaned up every four years. After removing all sea cucumbers and draining the water, local farmers cover the land with lime, 150 to 160 kg per mu (666 m<sup>2</sup>), and then wait for waves to take the lime and waste into the sea. Dozens of dead fish have been seen floating on the sea when these large-scale clean-ups are carried out.

In nearby areas, other sea creatures like squid and shrimp have been wiped out, a farmer said.

See more at <http://www.thefishsite.com/fishnews/24073/antibiotic-overuse-causing-species-extinction-in-china#sthash.R5dkFPU6.yIfzXVgk.dpuf>

<sup>1</sup> Asian Fisheries Society, c/o Laboratory of Marine Biotechnology, Institute of Bioscience, University Putra Malaysia, 43400 UPM, Serdang, Selangor, Malaysia

\* Corresponding authors: pohsze@gmail.com