

Editorial

Protection of marine species diversity in China

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China has approximately 14 500 km long coastline that not only offers to dwell for human being but also exists diverse marine organisms. Nowadays, Chinese marine economy development is rapid and marvelous, while we have met very serious problem on losing marine biodiversity.

Marine biodiversity can be addressed at the level of diversity within species, between the species and of ecosystems. Each level of biodiversity have been at different extents of threatening. Among this species-level diversity may be the most essential and important for these protecting actions. Species is the basic unit of classification and a taxonomic rank, as well as a unit of biodiversity. Removing species from marine ecosystems removes those important functions. We have an ethical responsibility to protect marine biodiversity, but the first step is to understand how many marine species exist, and it is important because it provides a measure of how well we know about marine life and their potential ecosystem functions.

To date, about 1.5 million species, mostly insects, have been formally described in the scientific literature. Proportionately, bacteria make up less than 1% of all described species. It is estimated that the total number of species on earth today is about 10 million, but it could be as low as 2, possibly as high as 100 million or even 2 billion (Larsen et al., 2017), and the number of species on earth is more than 1 000 times the number currently described. Based on Census of Marine Life (CoML) report, that is the new estimate of the total number of species on earth, the most accurate calculation to date, with 6.5 million species found on land and 2.2 million living on the ocean floor (marine species richness take about 25 percent of the total) (Mora et al., 2011). There are ~226 000 eukaryotic marine species described, 70 000 species may already be in specimen collections, waiting to be described (Appeltans et al., 2012), the National and Regional Implementation Committees of CoML regions with most recorded species were Australia and Japan, each reporting over 32 000 species, and China, which had over 22 000 species (Costello et al., 2010). Chinese scientists have conducted intensive multidisciplinary studies of marine biodiversity in China seas, which have recorded 22 629 species belonging to 46 families. The marine fauna and flora of China seas are highly biodiverse, including tropical and subtropical elements of the warm water fauna of the Indo-western Pacific in the South China Sea and East China Sea, and temperate elements of the North Pacific temperate fauna dominated by the Yellow Sea. The South China Sea fauna is characterized by typical tropical elements parallel to the Philippines-New Guinea-Indonesia coral triangle and is a typical tropical fauna center (Liu, 2013).

The richest sources of biodiversity on the earth are found in the ocean (Sun, 2011). New marine species are discovered often, and many have been discovered but have not yet been classified. So the marine taxonomists, who are responsible for the discovery of new species, are highly required. Describing marine remaining unknown species may take as long as 1 200 years and would require 76 621 marine taxonomists at an approximated cost of US \$92 billion (Mora et al., 2011). Take a Chinese marine diversity accounts for one-tenth that of the world ocean, the Chinese government should incubate ~ 6.4 marine taxonomist per year and invest 54 million RMB per year for marine taxonomic research.

Base on CoML report, there were on average 9.4 ± 1.7 marine taxonomists per taxonomic group in each region and China is in a lower number of six marine taxonomists per taxonomic group (Costello et al., 2010). The taxonomic research requires valuable identification skills, the ability to categorize and recognize species relationships, an understanding of ecosystems and ecology, knowledge of species distribution, and the ability to determine keystone species. Therefore, only very few scientists are working in taxonomy. Like marine species, marine taxonomists also need to be protected. Compared with European and the United States, the Chinese specimen library system is far from enough.

Actions we should all take right now against the loss of marine biodiversity in China. For this reason, *Acta Oceanologica Sinica* (AOS) organize this special issue of the marine taxonomy and new records, to help on covering as many marine new species and records done by Chinese taxonomists as possible. We report a series of new species and records from Chinese coastlines, offshores, high seas and the adjacent West Pacific and eastern Indian Ocean, including marine cyanobacteria (Zhang et al., 2018c), dinoflagellates (Hu et al., 2018; Xiao et al., 2018), Haptophyta (Zhang et al., 2018d), diatoms (Li et al., 2018a), green alga (Ding et al., 2018), foraminifera (Lei and Li, 2018; Munir and Sun, 2018a), ostracods (Du et al., 2018b), ciliates (Chen and Xu, 2018; Munir and Sun, 2018b), trichodinids (Zhan et al., 2018), jellyfish (Aungtonya et al., 2018; Du et al., 2018a; Guo et al., 2018b; Wang et al., 2018b), polychaeta (Lin et al., 2018; Sui and Li, 2018; Sun et al., 2018b; Wang and Li, 2018; Wu and Xu, 2018), nematodes (Fu et al., 2018; Guo et al., 2018a; Huang et al., 2018; Shi et al., 2018; Sun et al., 2018a), sponges (Gong and Li, 2018), ophiuroid (Zhang et al., 2018a), starfish (Zhang et

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al., 2018b), isopoda (Belattmania et al., 2018), copepods (Liu et al., 2018; Ma and Li, 2018), chiton (Wang et al., 2018c), shrimps (Gan and Li, 2018), Gastropoda (Chen and Zhang, 2018), microzooplankton (Li et al., 2018b), and mesozooplankton (Wang et al., 2018a). This is the first special issue on marine taxonomy in AOS, we hope it can receive more public attention and encouragement on marine taxonomic studies in China.

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