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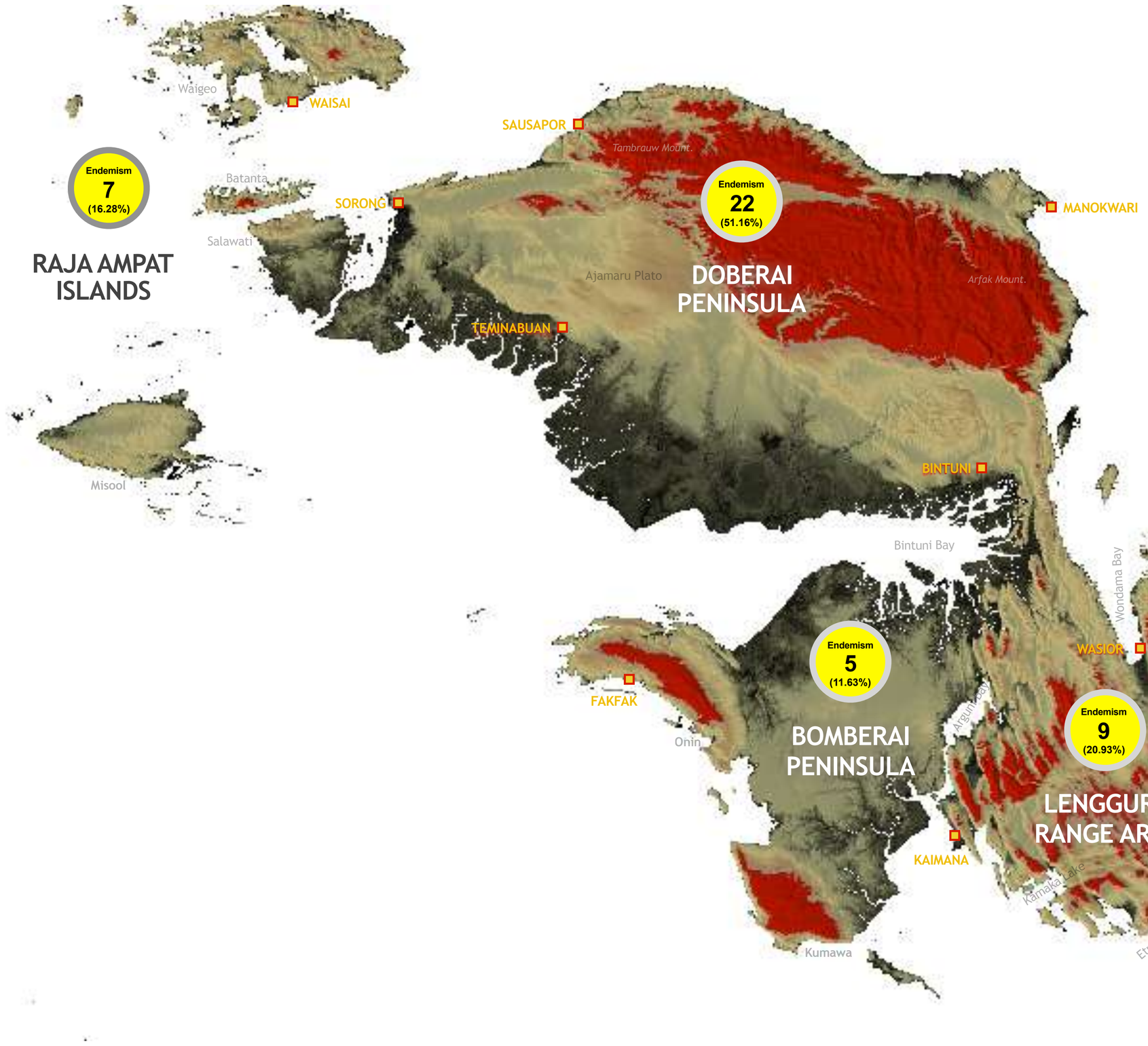

CHECKLIST OF THE FRESHWATER FISHES OF BIRD'S HEAD PAPUA, INDONESIA

ABSTRACT. Freshwaterfishes of the Bird's Head of Papua (BHP) comprise 98 species representing 8 Orders, 22 families and 38 genera (43 species are endemic species). The Doberai Peninsula is home of 51.16% of the total endemic species richness in the region following Lengguru Range Area (20.93%), surprisingly Raja Ampat Islands and the Bomberai Peninsula are only harbouring 16.28% and 11.63% respectively. Atheriniformes (35 species) and Perciformes (51 species) are most diverse Order. Similarly, Melanotaeniidae (33 species) and Gobiidae (23 species) are most superlative diversified families. Despite this work contributes significantly our knowledge on the diversity of Bird'Head Papua's freshwaterfishes, it is likely that many obligate ichthyodiversity remain undocumented.

INTRODUCTION

The Bird's Head of Papua (BHP region) is located at the most western part of New Guinea Island. This terrane was exhumed to surface in recent time, < 10 mya (Bailly *et al.*, 2009). Radiation of the freshwaterfishes correspond to the geo-fragmentation habitat and marine transgression in the region (Kadarusman *et al.* 2012). Earlier ichthyological work on the region was investigated by several French vessels including L'Uranie (1818-1819), La Coquille and L'Astrolabe (1823-1826). The first checklist of the freshwaterfishes New Guinea was made by Allen (1991; 2007) counting <50 species occurred in the region and highlighted that region has significant endemic forms. Recently, intensive Ichthyological research have been permitted to discover more than 20 new taxon (mostly rainbowfishes) found in the mainland and adjacent islands (Nugraha *et al.*, 2015; Allen *et al.*, 2016). To understand the current status of the species diversity in the region, here we present an updated checklist for the region. This is an important report for researchers, government and NGOs having interest in documenting, domesticating and conserving ichthyodiversity.

METHODS

This work is based on extensive literature review, species reference collection and a decade field investigation 2006-2016. Species status and distribution are generated from electronic reference including Fishbase, Archive of Californian Academy and the Encyclopedia of Life. Sub-regionalisation boundaries were delineated following the recent biogeographic studies proposed by Kadarusman 2012 and Unmack *et al.*, 2013. These sub-regions are, Raja Ampat Island (RAI), Doberai Peninsula (DP), Bomber Peninsula (BP) and the Lengguru Range Area (LRA). The eastern border of the sub-region lined at western side of Kamaka Lake to Wondama Bay.

DIVERSITY

The Birds Head of Papua (BHP) is home of 98 species of freshwaterfishes, representing 8 Orders, 22 families and 38 genera. Among others, Atheriniformes and Perciformes are eventually recognised as the most diverse Order inhabiting the region containing 35 and 51 species respectively.

The region BHP harbours 22 families characterised by the obligate freshwater and diadromous forms. Surprisingly, Melanotaeniidae and Gobiidae are most specious family consisting 33 and 23 species respectively, other families have less then 10 species.

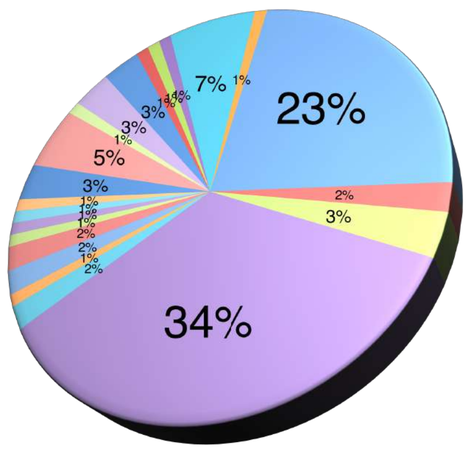

Figure 1. Percentage of the species richness (inter-families) in the region of Bird's Head of Papua. Melanotaeniidae (34%) and Gobiidae (23%) represent the most amazing specious family, following Eleotridae (7%) and Terapontidae (5%).

There are 38 genera inhabiting the region where genus *Melanotaenia* is the most specious (33 species). All species of *Melanotaenia* are obligate freshwater origin colonising nearly all spectrum of the freshwater ecosystems in the region: lake, river and swamp.

According to Kadarusman *et al.*, (2012), historical tectonic event and the marine transgression during ice age, are two factors responsible for the recent radiation and diversification of freshwaterfishes in the region.

ENDEMISM

In the present checklist, we reported 43 species to be endemic to the region representing 7 families (Melanotaeniidae (33 species)), Pseudomugilidae (1 sp.), Zenarchopteridae (1 sp.), Apogoniidae (1 sp.), Eleotridae (1 sp.), Gobiidae (5 spp.) and Soleidae (1 sp.). Among seven families, Melanotaeniidae is recognised as superlative specious and all its members are endemic.

Raja Ampat Islands (RA) is currently harbouring 7 endemic species representing 16.28% of the total endemism in the region BHP and 14.89% of the total species sub-region RA.

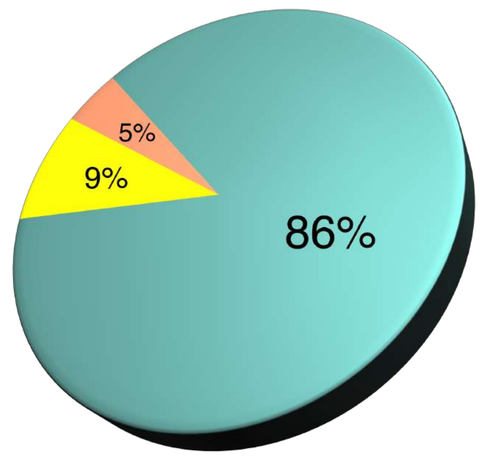

Figure 2. The large Doberai Peninsula is actually harbouring 22 endemic species, make up 51.16% (BHP Region) and 81.48% (sub-region DP). Melanotaeniidae is the most specious family (86%) following Gobiidae (9%) and Zenarchopteridae (5%).

Sub-region Bomberai Peninsula (BP) is home of 5 endemic species constitute 11.63% of level endemism (BHP region) and possessed 100% endemism (sub-region BP).

Lengguru Range Area (LRA) was the result of the multiple tectonic subduction Plates. Its landscapes are characterised by the most rugged karst in New Guinea. We recorded 9 species, all species are confined in the area. Its endemic species represents 20.93% (region BHP) and 100% (sub-region LRA).

CONSERVATION

West Papua (Papua Barat Province) is covered by 9.4 millions ha of rainforest. About 10.31% of its wealth forest belongs to peatland areas. Due to rapid increase of economic and agricultural development plus the growth population in recent decade, its native fishes are now facing various threats including deforestation, new settlements, mining and agriculture.

There are 30 private companies operating the extensive palm plantation in West Papua with a total occupation areas is now reaching 693.047 ha, representing 7.37% of the total of western Papuan forest (CI & Suryadiputra, 2016).

In the most western part of West Papua, in particular in Sorong Regencies, we have documented, since 2006, unsustainable catch of freshwater biotas, villagers are using agri-chemical product (e.g Thiodan, Decis) to catch of fishes and giant prawn.

Others threats are from introduced species include tilapias, cyprinids form, snakehead, climbing perch, Asian swamp eel, guppies and the African Cichlids.

Regarding the complexity and degree of threats, native forms are highly threatened and need an urgent political action to ensure its conservation. Currently, 44 species (24 genera) are considered to be threatened species by IUCN Redlist.

Since the initial rainbowfish program in 2006, some of the BHPs freshwaterfishes being domesticated, now available in aquaria. To address its protection, sustainable uses and the continuos of the program, there are more 30 populations of rainbowfishes (17 species) are in domestication program maintained at the Politeknik Kelautan dan Perikanan Sorong.

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NEW GUINEAN FRESHWATERFISHES PROGRAM
Evolution, systematic and conservation
Visiting professor Program, period 2017
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