Insects abundance at Putrajaya Lake and Wetland

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1 Insects are by far the largest group of animals, constituting about 70% of the total animals, and can be found in nearly all environments. Wetlands are considered as the 'natural kidney' of the earth with the diversity of flora and fauna. Wetlands are important to the environment, as they play a role in protecting the coastline from hurricanes and tsunamis, mitigate flooding of stream and rivers, wastewater treatment, and immense carbon storage. According to Mitsch et al. (2009), wetlands support the food chain for both terrestrial and aquatic ecosystem, and attract hundred of birds species as location for food, breeding and protection. Putrajaya wetlands has become a wildlife sanctuary and a birds paradise including the migratory birds. Many of the birds species are herbivorous or omnivorous. Some of them feed on insects. According to Batzer & Wissinger (1996), insects make up much of the invertebrata taxonomy in freshwater marshes and their composition is depending on wetland hydrology and vegetation.

2 This study embark to determined the abundance of insects at Putrajaya Lake and Wetland.

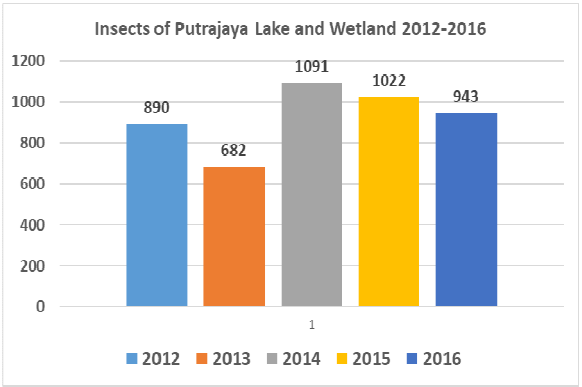
3 This study was carried out at five Wetland Arms and Lake areas of Putrajaya. The five Wetland Arms are Upper West (UW), Upper North (UN), Upper East (UE), Lower East (LE) and Upper Bisa (UB). The sampling was conducted during the year 2012-2016 using four collection methods namely sweep net, malaise trap, pitfall trap and light trap.

4 A total 1600 morphospecies of 15 order of insects has been successfully collected from Putrajaya Lake and Wetland. The most abundant insects order are Hymenoptera, followed by Diptera, Coleoptera, Lepidoptera, Hemiptera and Orthoptera (Table 1). According to the year, 2014 recorded the highest sample collected of 1091 morphospecies collected, followed by 2015 (1022), 2016 (943), 2012 (890) and the least are from 2013 with only 682 species collected (Figure 1).

Table 1 Morphospecies collected from Putrajaya Lake and Wetland

Order/Year	2012	2013	2014	2015	2016	TOTAL
Hymenoptera	212	167	256	241	204	1080
Diptera	210	133	203	192	166	904
Coleoptera	149	142	196	193	206	886
Lepidoptera	145	98	166	171	163	743
Hemiptera	119	70	149	122	106	566
Orthoptera	29	41	61	42	39	212
Blattodea	7	7	22	21	19	76
Odonata	12	10	15	11	12	60
Mantodea	2	1	10	4	10	27
Trichoptera	2	2	5	6	4	19
Neuroptera	0	6	3	8	4	21
Ephemeroptera	1	2	3	3	3	12
Dermaptera	1	3	1	5	5	15
Thysanoptera	1	0	1	1	1	4
Psocoptera	0	0	0	2	1	3
TOTAL	890	682	1091	1022	943	4628

Figure 1 The number of insects collected from 2012-2016



5 Insects are a primary prey source for many birds species such as waterfowl and shore birds. Thus, insects population are important in the food web and ecological function of the wetland. Putrajaya Lake and Wetland presented high abundance of insects species from 15 order of insects. Putrajaya Lake and Wetland are rich in many species of plants, thus support the abundance of insects species in this area.