

**Advisory Council on the Environment
Nature Conservation Subcommittee**

Dragonflies of Hong Kong

Purpose

This paper presents the findings of the dragonfly baseline survey and monitoring programme conducted by the Agriculture, Fisheries and Conservation Department (AFCD) and the results of an analysis of dragonflies of Hong Kong for members' information.

Background

2. Records of dragonflies in Hong Kong were made as early in the 1850s, but more extensive studies started only in the 1960s. Studies in the past 40 years enhance our understanding of the dragonfly diversity in Hong Kong. However, significant knowledge gaps still exist. In 1997, Wilson provided an annotated checklist of 107 dragonfly species of Hong Kong wherein he pointed out as an example that many dragonfly species in Hong Kong have precise habitat requirements and are non-dispersive – with the majority of mature adults returning faithfully to their sites of emergence to breed. This implies that the species have very restricted distribution. Precise location of their breeding habitats and representative sites of such habitats are therefore important to safeguard their population in Hong Kong. Nevertheless, geographical information about the distribution of dragonflies in Hong Kong was rather limited, outdated or not comprehensive enough for precise site location.

3. In view of the above, AFCD initiated a three-year (2002-2004) territory-wide baseline survey of Hong Kong's dragonflies and followed it up with continuous monitoring of the representative sites (starting in 2005) to obtain a comprehensive and updated geographical information about this insect group.

Baseline Survey and Monitoring

4. The baseline survey was carried out from April 2002 to October 2004, covering all wetland habitats, including lowland natural or partly modified stream courses, upland streams, marshes, open water areas (pools / ponds / reservoirs) and abandoned / active wet agricultural fields, throughout the

territory. 177 sites were covered in the survey. Subsequent monitoring of the representative sites identified in the survey and other selected sites was commenced in 2005.

5. Both baseline survey and subsequent monitoring of dragonfly representative sites focused on adults. They were carried out by two surveyors on sunny / fine and windless days from April to October of each survey year. Transect count method was adopted in stream courses, around open water areas and along the trail crossing stream courses. For the surveys in marshes, the surveyors walked across the marshes following a systematic routing. All the dragonflies observed were identified visually, with the aid of a pair of close-focus binoculars or caught with a sweep net when necessary, to species level according to Wilson *et al.* (2004).

Data Analysis

6. In addition to the data collected by AFCD's surveys, AFCD also made use of the existing records of 86 dragonfly sites in their study. The local status of each dragonfly species recorded in the survey and the monitoring programme was classified following Wilson *et al.* (2004), i.e.:

- Rare (1 or 2 localities)
- Uncommon (3 – 10 localities)
- Common (11 – 100 localities)
- Abundant (>100 localities)

7. Representation of each dragonfly species in the protected areas system (i.e. Country Parks, Special Areas, Restricted Areas and Sites of Special Scientific Interest) of Hong Kong was also analysed. Any species that has its entire locality records or have any site with a breeding population within the protected areas system is considered well protected in Hong Kong.

Findings

8. Five new species (*Anax nigrofasciatus nigrofasciatus* (Blue-spotted Emperor 黑紋偉蜓), *Cephalaeschna klotsi* (Yellow-spotted Dusk-hawker 克氏頭蜓), *Fukienogomphus choifongae* (Hong Kong Tusk-tail 賽芳閩春蜓), *Pseudagrion pruinosum frasei* (Ferruginous-faced Sprite 赤斑蟴) and *Trithemis pallidinervis* (Dancing Dropwing 灰脈褐蜻)) were recorded in AFCD's survey, increasing the total number of dragonfly species recorded in Hong Kong from 107 in 1997 to 112 in 2004. Among them, *Fukienogomphus choifongae* is a species new to science (Wilson and Tam 2006) and is endemic

to Hong Kong.

9. The local status of each dragonfly species was updated by analysing the records pooled from previous studies, AFCD's baseline survey and subsequent monitoring programme. The results revealed that there were 15 rare, 35 uncommon, 39 common and 23 abundant dragonfly species in Hong Kong.

10. The analysis of the representation of dragonfly species in the protected areas system showed that 12 out of the 15 rare species were well protected in Hong Kong. For the remaining three (i.e. *Ischnura asiatica* (東亞異痣蟴), *Ischnura* sp. (*rufostigma* group) (赤異痣蟴組別) and *Paracercion hieroglyphicum* (隼尾蟴)), their records were made over 40 years ago and each had only one locality. They are treated as historical records.

11. The top five sites with the largest number of dragonfly species recorded are the Hong Kong Wetland Park, Luk Keng, Sha Lo Tung, Tai Po Kau and Wu Kau Tang. Double Island, Ng Tung Chai, Pat Sin Leng marsh, Tai Shing Stream and Tai Tong Stream were identified as the typical localities of the rare / endangered species listed by IUCN. The above ten sites were recognized as representative sites of Hong Kong's dragonflies. All these sites are within the protected areas system or under appropriate conservation measures in Hong Kong.

12. The above findings reveal that rare dragonfly species and representative dragonfly sites are well protected in Hong Kong. We will continue monitoring the representative sites and the sites where rare dragonfly species are found to keep track of the site conditions. AFCD's law enforcement and management work in country parks, special areas and Sites of Special Scientific Interest would help safeguarding dragonflies and their habitats in Hong Kong. Opportunities would also be taken to provide suitable habitats for dragonflies in wetlands managed by AFCD in particular those in country parks and special areas such as the Hong Kong Wetland Park.

Advice sought

13. Members are invited to note the findings on the dragonflies in Hong Kong and to comment on work done by AFCD.

Agriculture, Fisheries and Conservation Department
November 2007

References

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