

Dragonfly groups of conservation interest confined to the Oriental Region

Dragonflies are classified into three main suborders, the Zygoptera (damselflies), the Anisozygoptera and the Anisoptera (dragonflies). The Anisozygoptera contains just two species and the remaining two groups contain some 6000 described species. The Zygoptera is comprised of 21 families and the Anisoptera contains seven families. Representatives of three dragonfly families are found only in the Oriental Region. These include the Pseudolestidae (Zygoptera) containing just one species, Epiophlebiidae (Anisozygoptera) with two species and the Chlorogomphidae (Anisoptera) with nearly 50 species.

Pseudolestidae (Zygoptera)

The single species contained in the Pseudolestidae is *Pseudolestes mirabilis*, which is endemic to the island of Hainan, China. It is a most unusual damselfly. Its hind wings are much shorter than the forewings and are highly coloured. Above, the hind wings are coloured with patches of orange and black but below the wings are coloured with areas of white and black. Closer inspection reveals the white colour to be formed by numerous tiny scales. Males use their hind wings for display purposes. They will face off against rival males at stream breeding sites both males holding their hindwings in a stationary, downward pointing position, while rising up through the forest canopy (see photo). They can also give the appearance of a bee when threatened and will scull their hindwings to reveal flashes of colour.

Epiophlebiidae (Anisozygoptera)

The Epiophlebiidae is a difficult family to classify. The two extant species contain several features of the Zygoptera damselflies with wings closed together, held over the back of the body and an ovipositor, but also possess many features of the Anisoptera. The family is best considered as a sister group of the Anisoptera. The Japanese species, *Epiophlebia superstes* is relatively common in Japan but *Epiophlebia laidlawi*, from India and Nepal is considered rare and is listed as a 'threatened' species in the Red Data List of the IUCN.

Chlorogomphidae (Anisoptera)

Although many Chlorogomphids dragonflies have clear wings there are several with spectacular, highly coloured wings. They prefer mountainous regions and breed in fast flowing montane streams and rivers. Adults can be seen soaring high above ravines and around mountain tops. They are found all across the oriental region with highest number of species concentrated in north Vietnam and southern China including Guangxi, Hainan, Guangdong and Taiwan. Perhaps the most spectacular of all is *Chlorogomphus papilio* from southern China. This is a very large and bulky dragonfly with wings coloured extensively with dark brown and cream patches of colour. In flight it resembles a very large birdwing butterfly hence the name '*papilio*' meaning butterfly. The females possess extremely broad wings with a depth measuring 31-33 mm. Males have an abdomen length of about 67.0 – 68.0 mm and their hindwings measure between 60.0 – 64 mm. Females' abdomens measure 59.0 - 61.0 mm and hindwings 67.0 – 72.0 mm.

Oriental Biodiversity and Conservation – IUCN/SSC Dragonfly Action Plan

The IUCN/SSC, Odonata Specialist Group (Moore. 1997) has prepared a Dragonfly Action Plan to address the problems, which threaten dragonflies and make recommendations to conserve them. The plan focuses on the importance of creating protected areas such as nature reserves and conserving important habitats. The Action Plan also contained lists of dragonflies considered to be priority species for further study and conservation action. The priority species from the Oriental region are listed below.

Priority Species [based on recommendations of the IUCN/SSC, Odonata Specialist Group (Moore. 1997)]

1. Taxonomically isolated Species from the Oriental Region (groups of species found nowhere else outside the Oriental Region)

Suborder	Family	Species	Distribution
Anisozygoptera	Epiophlebiidae	<i>Epiophlebia superstes</i> (Selys, 1889)	Japan
		<i>Epiophlebia laidlawi</i> Tillyard, 1921	India, Nepal
Zygoptera	Calopterygidae	<i>Noguchiphaea yoshikoe</i> Asahina,	Thailand

		1976	
		<i>Caliphaea confusa</i> Hagen in Selys, 1859	Bhutan, China, India, Laos, Myanmar, Nepal
		<i>Caliphaea consimilis</i> McLachlan, 1894	China (Guangxi, Sichuan, Yunnan and Zhejiang).
		<i>Caliphaea thailandica</i> Asahina, 1976	Thailand
	Diphlebiidae	<i>Philoganga loringae</i> Fraser, 1927	Myanmar, Thailand
		<i>Philoganga montana</i> (Hagen in Selys, 1859)	Bangladesh, India, Malaysia, Nepal
		<i>Philoganga robusta</i> Navás, 1936	China
		<i>Philoganga vetusta</i> Ris, 1912	China, Hong Kong
	Megapodagrionidae	<i>Lestomima flavostigma</i> May, 1933	China
		<i>Rhipidolestes aculeatus</i> Ris, 1912	China (Taiwan), Japan
		<i>Rhipidolestes alleni</i> Wilson, 2000	China (Guangxi)
		<i>Rhipidolestes apicatus</i> Navás, 1934	China (Zhejiang)
		<i>Rhipidolestes asatoi</i> Asahina, 1994	Japan (Kyushu)
		<i>Rhipidolestes bastiaani</i> Zhu & Yang, 1998	China (Shaanxi)
		<i>Rhipidolestes cyanoflavus</i> Wilson, 2000	China (Guangdong)
		<i>Rhipidolestes hiraoi</i> Yamamoto, 1955	Japan (Shikoku)
		<i>Rhipidolestes janetae</i> Wilson, 1997	China (Hong Kong)
		<i>Rhipidolestes jucundus</i> Lieftinck, 1948	China (Fujian)
		<i>Rhipidolestes malaisei</i> Lieftinck, 1948	Myanmar
		<i>Rhipidolestes nectans</i> (Needham, 1929)	China (Zhejiang)
		<i>Rhipidolestes okinawanus</i> Asahina, 1951	Japan (Okinawa)
		<i>Rhipidolestes owadai</i> Asahina, 1997	Vietnam
		<i>Rhipidolestes rubripes</i> (Navás, 1936)	China (Jiangxi)
		<i>Rhipidolestes truncatidens</i> Schmidt, 1931	China (Fujian, Guangdong)
		<i>Rhipidolestes yangbingi</i> Davies, 1998	China (Sichuan)
		<i>Devadatta argyoides</i> (Selys, 1859)	Indonesia, Myanmar, Singapore, Thailand
		<i>Devadatta ducatrix</i> Lieftinck, 1969	China (Guangxi), Vietnam
		<i>Devadatta multinervosa</i> Fraser, 1933	Laos
		<i>Devadatta podolestoides</i> Laidlaw, 1934	Indonesia, and Malaysia (Borneo)
		<i>Philosina buchi</i> Ris, 1917	China (Fujian, Guangdong, Guangxi)
		<i>Philosina alba</i> Wilson, 1999	China (Guangdong,

			Hainan)
	Pseudolestidae	<i>Pseudolestes mirabilis</i> Kirby, 1900	China (Hainan)
Anisoptera	Onychothemistinae	<i>Onychothemis abnormis</i> Brauer, 1868	Indonesia, Philippines
		<i>Onychothemis celebensis</i> Ris, 1912	Indonesia (Celebes)
		<i>Onychothemis coccinea</i> Lieftinck, 1953	Indonesia, Malaysia
		<i>Onychothemis culminicola</i> Förster, 1904	Indonesia, Malaysia, Myanmar, Thailand
		<i>Onychothemis testacea</i> Laidlaw, 1902	China (Guangdong, Guangxi, Hainan, Hong Kong, Taiwan), Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam

2. Monotypic Genera from the Oriental Region (genera containing only one species)

Zygoptera	Megapodagrionidae	<i>Agriomorpha fusca</i> May, 1933	China (Guangdong, Guangxi, Hainan, Hong Kong)
	Synlestidae	<i>Sinolestes editus</i> Needham, 1930	China (Fujian, Guangdong, Guangxi and Zhejiang)
Anisoptera	Gomphidae	<i>Gastrogomphus abdominalis</i> (McLachlan, 1884)	China
		<i>Labrogomphus torvus</i> Needham, 1931	China (Guangdong, Guangxi, Hainan, Hong Kong)

3. Dragonflies with unusual biology from the Oriental Region

Zygoptera	Coeagrionidae	<i>Mortonagrion Hirosei</i> Asahina, 1972	China (Hong Kong), Japan (salt tolerant species found to associate with <i>Phragmites</i> sp. reed)
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Reference

MOORE, N.W., 1997. *Dragonflies: Status Survey and Conservation Action Plan*. IUCN/SSC Odonata Specialist Group. 27 pp.