Acta Veterinaria Hungarica 40 (1—2), pp. 55—61 (1992)

FURTHER MONOGENEANS FROM IRANIAN FRESHWATER FISHES

K. MOLNÁR[1] and B. JALALI[2]

[1]Veterinary Medical Research Institute, Hungarian Academy of Sciences, H-1581 Budapest, P. O. Box 18, Hungary; [2]Fisheries Co. of Iran, Inland Water and Aquaculture Department, Fish Disease Control Service Tehran, Iran

(Received August 1, 1991)

Thirteen *Dactylogyrus*, 1 *Dogelius* and 1 *Tetraonchus* species are first recorded on Iranian fishes. Of them, twelve *Dactylogyrus* species and *Tetraonchus monenteron* are identified with known species. *Dogelius persicus* sp. n. from *Barbus sharpeyi*, *Barbus grypus* and *Carassobarbus luteus*, as well as *Dactylogyrus holciki* from *Chalcalburnus mossulensis* and *C. chalcoides* are described as new species. Besides the first record of the above monogeneans, new host records are given to some known species.

Key words: Monogenea, freshwater fishes, *Dactylogyrus*, *Dogelius*, *Tetraonchus*, host, Iran

Monogeneans from Iranian fishes were first described by Bychowsky (1949) who reported on the occurrence of three *Dactylogyrus* and an *Ancyrocephalus* species on the gills of fishes in River Karkheh. Further monogeneans were recorded by Jalali and Molnár (1990*a*, *b*) who found 24 species on fishes from natural waters and 14 species on fishes cultured in pond farms. Among the species found they identified 22 known *Dactylogyrus* spp. and described a new *Dogelius* sp.

The detection of further *Dactylogyrus* spp. new for Iran is reported and a new *Dactylogyrus* sp. and *Dogelius* sp. are described in this paper.

Materials and methods

Fishes were collected in three different geographical regions of Iran, namely from the rivers Sefid, Tonekabon and Tajan running to the Caspian Sea, the rivers Dez, Karun and Beshar belonging to the Persian Gulf system, and from the rivers Zayandeh, Kor and Jaj flowing into sodium lakes in Central Iran. In addition, some fish were collected from Lake Sama in the Elburz Mountain (Table 1).

More than 600 fish specimens were examined. However, only those fish were recorded which on their gills and fins harboured monogeneans which were identified to species (Tables 1 and 2).

Table 1

First record of known monogenean parasites on Iranian fishes

No.	Name of parasite	Name of host	Locality		
			Ponto-Caspian region	Persian Gulf region	Inland watersheds
1.	*Dactylogyrus affinis* Bychowsky, 1933	*Barbus brachycephalus*	River Sefid		
2.	*D. chramulii* Kojava, 1966	*Capoeta capoeta*	River Sefid	River Beshar	
3.	*D. carpathicus* Zachvatkin, 1951	*Barbus plebeius*	River Sefid		
4.	*D. gracilis* Mikailov, 1974	*Capoeta capoeta*	River Sefid		River Zayandeh
5.	*D. intermedius* Wegener, 1910	*Carassius auratus*			Petfish farm close to Tehran
6.	*D. lenkorani* Mikailov, 1967	*Capoeta capoeta*	River Sefid Tajan Tonekabon	River Beshar	River Zayandeh, Kor
7.	*D. linstowi* Bychowsky, 1936	*Barbus plebeius* *Barbus capito*	River Sefid River Sefid		
8.	*D. minor* Wagener, 1857	*Chalcalburnus chalcoides*			River Ghasemlu
9.	*D. parvus* Wegener, 1910	*Alburnus charusini*	River Sefid		
10.	*D. suecicus* Nybelin, 1937	*Rutilus frisii kutum*	River Sefid		
11.	*D. tuba* Linstow, 1878	*Aspius aspius*	River Sefid		
12.	*D. vistulae* Prost, 1957	*Ch. chalcoides*	River Sefid		River Ghasemlu
13.	*Tetraonchus monenteron* Wagener, 1857	*Esox lucius*			Lake Sama

Results

The majority of fish examined in this study had monogenean infestation of the gills. Of the monogeneans, twelve *Dactylogyrus* spp. and a *Tetraonchus* sp. proved to be known species and were identified with monogeneans of the Ponto-Caspian fauna region (Table 1). These parasites had been collected from 19 host species. Besides monogeneans detected for the first time during this survey, *Dactylogyrus* spp. recorded earlier (Bychowsky, 1949; Jalali and Molnár, 1990*a*) were frequently encountered. Of them, those which were found in new hosts are presented in Table 2.

Table 2

Monogenean species known from Iran but found in hosts other than previously recorded

No.	Name of parasite	New hosts	Locality	Hosts by Jalali and Molnár (1990*a*)
1.	*Dactylogyrus alatus* Linstow, 1878	*Chalcalburnus chalcoides*	River Ghasemlu	*Alburnoides bipunctatus*
		Alburnus charusini	River Sefid	
2.	*D. chalcalburni* Dogiel and Bychowsky, 1934	*Chalcalburnus chalcoides*	River Sefid River Zayandeh	*Alburnoides bipunctatus* *Alburnus alburnus*
		Alburnus charusini	River Sefid	
3.	*D. haplogonus* Bychowsky, 1933	*Rutilus frisii kutum*	River Sefid	*Vimba vimba persa*
4.	*D. pulcher* Bychowsky, 1957	*Capoeta capoeta*	River Ghasemlu River Jaj Tonekabon Sefid Tajan	*Aspius vorax*
		Capoeta trutta	River Dez	
5.	*D. turaliensis* Aligadzhiev, Gussev, Kazieva, 1984	*Rutilus frisii kutum*	River Sefid	*Rutilus rutilus caspicus*

In addition to the known species, several undescribed new monogeneans were found on fishes of the Persian Gulf basin and of rivers running into the sodium lakes of Central Iran. Most of the latter species require further studies for a detailed description. Therefore, only a *Dactylogyrus* sp. and a *Dogelius* sp. is described here. Both parasites occurred exclusively on the gills. All measurements are given in μm.

Dactylogyrus holciki n. sp. (Fig. 1)
Hosts: *Chalcalburnus mossulensis* (Heckel) and *C. chalcoides* Güldenstadt
Locality: River Beshar

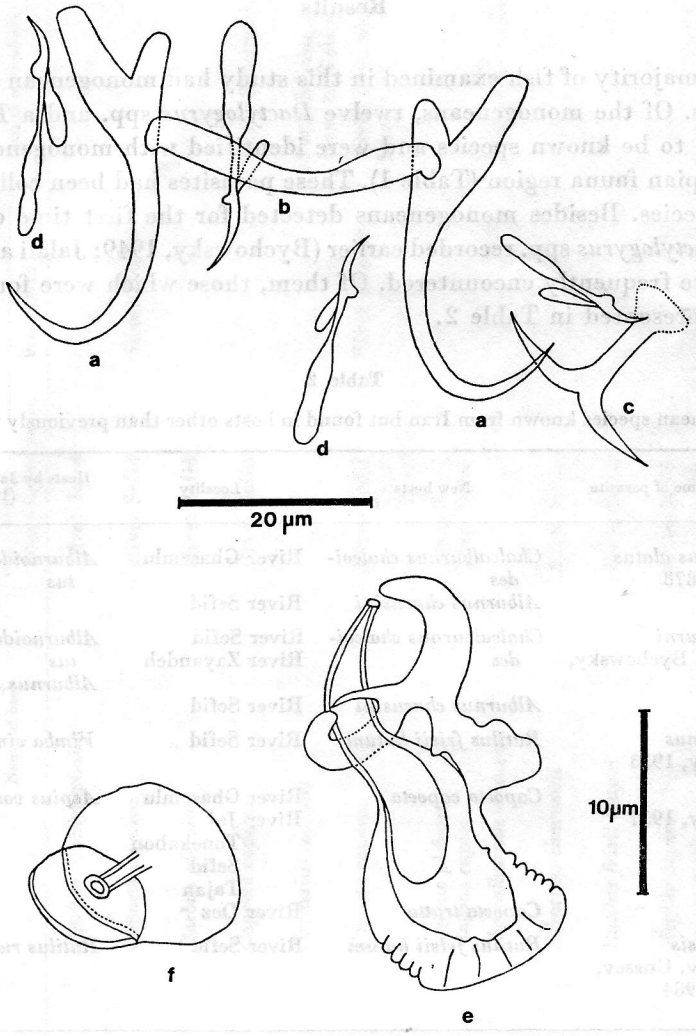

Fig. 1. Sclerotized organs of *Dactylogyrus holciki*. a) anchors; b) dorsal bar; c) ventral bar; d) hooks; e) copulatory organ; f) vagina

Specimens studied: 9. Type specimen from *C. mossulensis* has been deposited in the collection of the Zoological Department, Hungarian Natural History Museum, Budapest.

Medium-sized *Dactylogyrus*. Body 850 (720–950) long and 110 (90–126) wide. Hooks of different size with massive handle and with well-projected heel of blades. Their length 16.5–21.5 (the smallest), 23–28 (the biggest). Anchors slender. Ventroapical length of anchors 34 (28–36.5), dorsoapical length 35

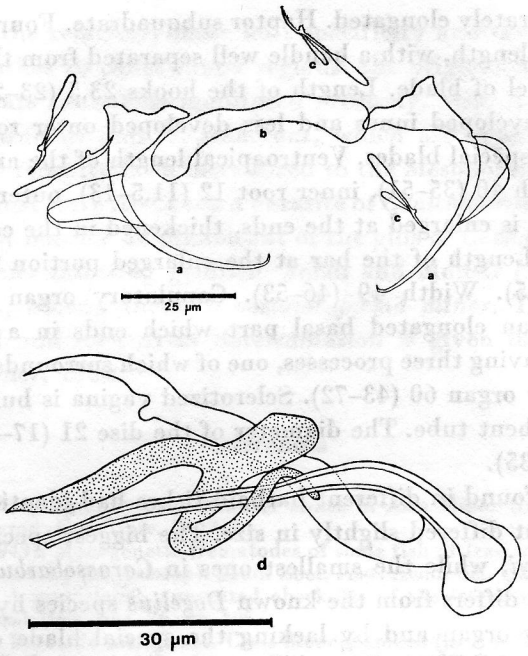

Fig. 2. Sclerotized organs of *Dogelius persicus.* a) anchors; b) bar; c)hooks; d) copulatory organ

(30–36.5), main part 29 (26.5–31.5), tip 9 (8.3–11). Inner root 10 (8.3–12), outer root 5.3 (4.4–5.8). Dorsal bar thin, elongated and slightly bent backwards, 3.4 (2.5–4.2) long and 26.5 (20–31.5) wide. Ventral bar triangular, with an anteriorly and two laterally directed processes. The latter enlarged at the end. Length 11.3 (10–13), width 21.5 (16.5–26.5). Copulatory organ composed of a short thick tube, a strong initial part and a triangular accessory piece. One of the processes of the accessory piece surrounds the tube as a pincers. Length 37.5 (33–40). Sclerotized vagina composed of two round discs with a short tube between them. It measures 19.5 (15–25).

This species differs from all known *Dactylogyrus* species by the shape of its copulatory organ. The species is named in the honour of Dr. Juraj Holcik, a well-known Slovak ichthyologist and ecozoologist.

Dogelius persicus n. sp. (Fig. 2)

Hosts: *Barbus grypus* Heckel, *B. sharpeyi* Günter and *Carassobarbus luteus* (Heckel)

Locality: Rivers Dez and Karun

Specimens studied: 6. Type specimen from *Barbus grypus* has been deposited in the collection of the Zoological Department, Hungarian Natural History Museum, Budapest.

Body moderately elongated. Haptor subquadrate. Four eyespots present. Hooks similar in length, with a handle well separated from the pivot and with well-projected heel of blade. Length of the hooks 23.5 (23–25). Anchors with relatively well-developed inner and less developed outer roots. Point of the anchors without special blades. Ventroapical length of the anchors 52 (50–60), dorsoapical length 40 (35–51), inner root 12 (11.5–13), outer root 5. Only one bar is present. It is enlarged at the ends, thickened in the centre and slightly bent anteriorly. Length of the bar at the enlarged portion 9.5 (8–11), at the middle 5.5 (5–6.5). Width 49 (46–53). Copulatory organ composed of an elongated tube, an elongated basal part which ends in a blade and of an accessory piece having three processes, one of which surrounds the tube. Length of the copulatory organ 60 (43–72). Sclerotized vagina is built of a sphaerical disc and a short bent tube. The diameter of the disc 21 (17–26), the length of the tube 23 (17–35).

Specimens found in different barboid fishes had identical morphological characteristics but differed slightly in size. The biggest specimens were found in *Barbus sharpeyi*, while the smallest ones in *Carassobarbus luteus*.

This species differs from the known *Dogelius* species by the construction of the copulatory organ and by lacking the special blade on the tip of the anchors.

Discussion

Data obtained in this survey and those obtained in earlier studies (Bychowsky, 1949; Jalali and Molnár, 1990*a*, *b*) indicate that, similarly to the composition of fish species (Berg, 1940; Coad, 1979), the monogenean fauna of Iranian fishes varies by habitat. *Dactylogyrus* spp. infecting fishes of the Ponto-Caspian region correspond to species known from the Palaearctics; however, those infecting fishes endemic in the Mesopotamian region represent mostly unknown species. In the latter habitat known *Dactylogyrus* spp. were found only on introduced fishes and on some very common fishes like *Capoeta capoeta*, which are widespread in this region but cannot be regarded as original inhabitants of these waters.

The species composition of both fishes and monogeneans suggests that the fauna of rivers running into sodium lakes in Central Iran belongs to, or is very close to, the Ponto-Caspian region.

Dactylogyrus spp. of European and East-African fishes show very strict host specificity and mostly infect only one fish species (Gussev, 1985; Molnár et al., 1984). *Dactylogyrus* species found on Iranian cyprinids exhibit less pronounced host specificity and infect some closely related fish species. In this way, *D. alatus* was detected on *Chalcalburnus*, *Alburnus* and *Alburnoides* spp., and *D. haplogonus* on *Vimba* and *Rutilus* spp.

Because of the relatively loose host specificity and the active or passive introduction of fishes to other fauna regions, the original monogenean fauna of different habitats cannot be monitored precisely. Still, it is suggested that *D. pulcher*, *D. chramuli* and *D. lenkorani*, which are typical Ponto-Caspian species, have only recently been introduced to the Mesopotamian region, while *D. holciki* n. sp. must have first been a parasite of *Chalcalburnus mossulensis* and only later on did it become an inhabitant of the gills of *C. chalcoides*.

Among species infecting goldfish, Jalali and Molnár (1990*b*) recorded 4 *Dactylogyrus* spp., among them *D. vastator forma minor*. This latter species was misidentified and its correct determination is given in this work as *D. intermedius* Wegener, 1910.

References

Berg, L. S. (1940): Zoogeography of freshwater fishes in Asia Minor (in Russian). Utsonnie Zapiski Leningrad. Gos. Univ. **50,** 3–31.

Bychowsky, B. E. (1949): Monogenetic trematodes of some fish of Iran, collected by academician E. N. Pavlovsky (in Russian). Trudi Zool. Inst. Acad. Sci. USSR **8,** 870–878.

Coad, B. W. (1979): A provisional, annotated check-list of the freshwater fishes of Iran. J. Bombay Natural Hist. Soc. **76,** 86–105.

Gussev, A. V. (1985): Parasitic metazoans. Class Monogenoidea (in Russian). In: Bauer, O. N. (ed.) Key to the Parasites of Freshwater Fishes of the USSR Vol. **2,** pp. 10–353.

Jalali, B. and Molnár, K. (1990*a*): Occurrence of monogeneans on freshwater fishes of Iran: Dactylogyridae from fish of natural waters and description of *Dogelius mokhayeri* sp. n. Parasit. Hung. **23,** 27–32.

Jalali, B. and Molnár, K. (1990*b*): Occurrence of monogeneans on freshwater fishes in Iran. *Dactylogyrus* spp. on cultured Iranian fishes. Acta Vet. Hung. **38,** 239–242.

Molnár, K., Bakos, J. and Krasznai, Z. (1984): Parasites of hybrid fishes. Parasit. Hung. **17,** 29–34.