

THE GYRODACTYLID FAUNA OF THREE SPECIES OF GOBY CAUGHT ON THE DORSET COAST

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Introduction

Gobies are a widely distributed family of teleost fishes typically of small size (Miller, 1986) and to date, only four named species of *Gyrodactylus* have been described parasitising gobies. In addition, *Gyrodactylus arcuatus* has been shown to use the two-spot goby, *Gobiusculus flavescens* (Fabricius, 1779) as a temporary host, and two further undescribed species have been recorded on *Pomatoschistus* spp. (see Table 1 for details). This poster reports five previously undescribed *Gyrodactylus* species collected during a survey of parasites of gobies in Dorset.

Table 1: Host-parasite list of previously described and new species of *Gyrodactylus* spp. from gobies.

	<i>Gobiusculus flavescens</i>	<i>Pomatoschistus lozanoi</i>	<i>Pomatoschistus microps</i>	<i>Pomatoschistus minutus</i>	<i>Pomatoschistus norvegicus</i>	<i>Proterorhinus marmoratus</i>	<i>Thorogobius ephippiatus</i>	<i>Zosterisessor ophiocephalus</i>
<i>G. arcuatus</i> Bychowsky sensu Bychowsky & Poljansky, 1953	X							
<i>G. longidactylus</i> Geets, Malmberg & Ollevier, 1998		X						
<i>G. microps</i> Gläser, 1974			X	X				
<i>G. proterorhini</i> Ergens, 1967						X		X
<i>G. rugiensis</i> Gläser, 1974			X	X				
<i>Gyrodactylus</i> sp. Llewellyn, Green & Kearns, 1984				X	X			
<i>Gyrodactylus</i> sp. Appleby, 1996				X				
<i>Gyrodactylus</i> sp. type I - this study	X							
<i>Gyrodactylus</i> sp. type II - this study	X							
<i>Gyrodactylus</i> sp. type III - this study				X			X	
<i>Gyrodactylus</i> sp. type IV - this study				X				
<i>Gyrodactylus</i> sp. type V - this study							X	

Materials and methods

Specimens of gobies were caught in Portland Harbour using a hand net and transported back to CEFAS Weymouth laboratory in water from the locality. Fish were sacrificed either by pithing or by over-anaesthetising in MS-222 and immediately screened for the presence of gyrodactylid infections. *Gyrodactylus* specimens were removed by means of mounted needles, air dried onto glass slides and mounted permanently using DPX synthetic resin. In addition, the opisthaptoral hard parts of ten live *Gyrodactylus* sp.V were prepared for Scanning Electron Microscopy (SEM) studies by protease digestion of the soft tissues. A multi-comparison table of marginal hook outlines was constructed to demonstrate the differences between *Gyrodactylus* species (see Table 2).

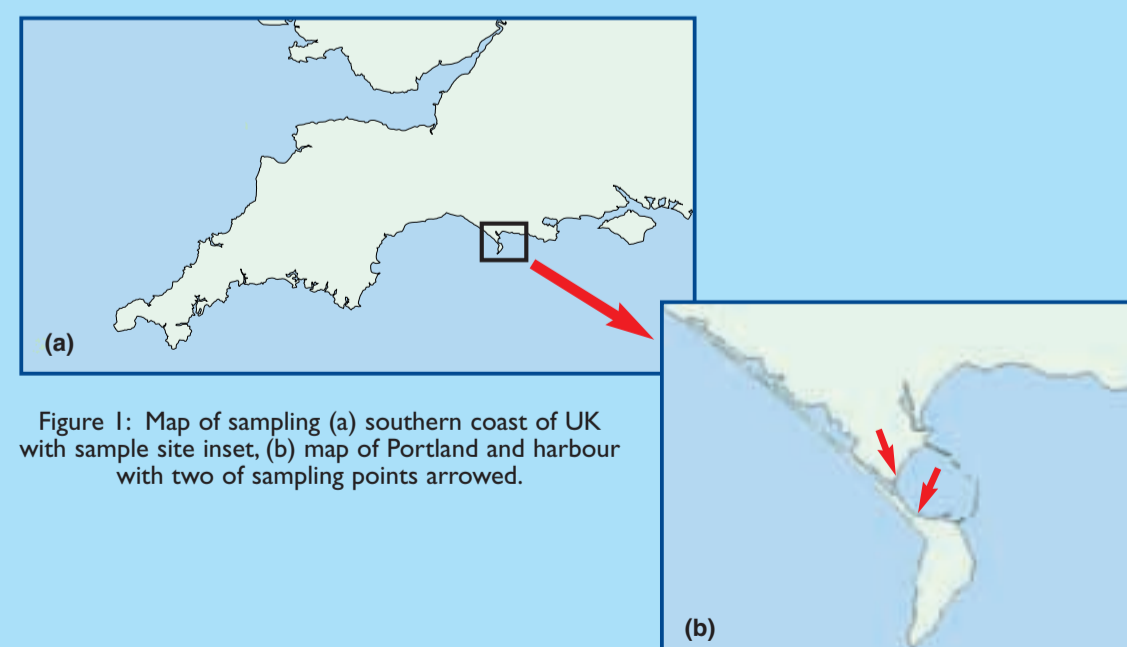


Figure 1: Map of sampling (a) southern coast of UK with sample site inset, (b) map of Portland and harbour with two of sampling points arrowed.



Figure 2: View of Portland Harbour and Chesil Beach from the Isle of Portland. Two of the sampling sites within the harbour are arrowed.



Figure 3: The three species of goby examined during this study (a) sand goby (*Pomatoschistus minutus*), (b) leopard-spotted goby (*Thorogobius ephippiatus*) and (c) two-spotted goby (*Gobiusculus flavescens*). Images from Hayward et al., (1996)

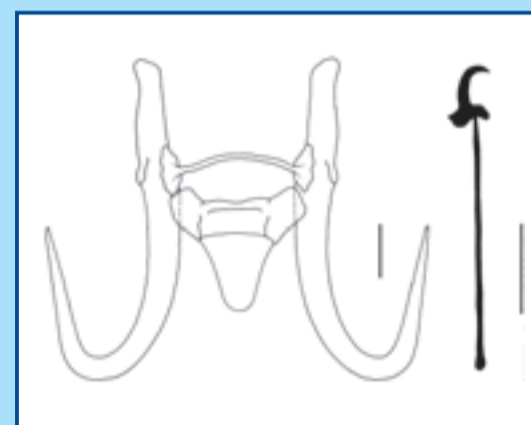


Figure 4: The opisthaptoral hard parts of *Gyrodactylus* sp. I from *Gobiusculus flavescens*. Scale bar: 10µm



Figure 5: The opisthaptoral hard parts of *Gyrodactylus* sp. II from *Gobiusculus flavescens*. Scale bar: 10µm



Figure 6: The opisthaptoral hard parts of *Gyrodactylus* sp. III from *Pomatoschistus minutus*. Scale bar: 10µm



Figure 7: The opisthaptoral hard parts of *Gyrodactylus* sp. IV from *Pomatoschistus minutus*. Scale bar: 10µm



Figure 8: The opisthaptoral hard parts of *Gyrodactylus* sp. V from *Thorogobius ephippiatus*. Scale bar: 10µm

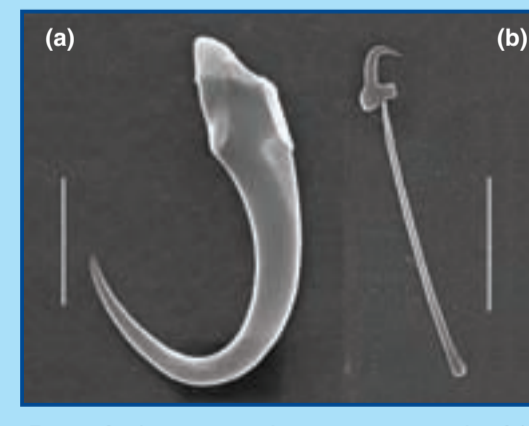


Figure 9: A scanning electron micrograph of (a) a hamulus from *Gyrodactylus* sp. V released by protein digest method and (b) a marginal hook from *Gyrodactylus* sp. V released by protein digest method. Scale bar: 10µm.

Table 2: A multi-comparison table of outline drawings of marginal hooks of *Gyrodactylus* spp. isolated from gobies. Scale bar: 5µm.

	<i>G. longidactylus</i>	<i>G. proterorhini</i>	Gyro sp. I	Gyro sp. III	Gyro sp. V
	<i>G. arcuatus</i>	<i>G. microps</i>	<i>G. rugiensis</i>	Gyro sp. II	Gyro sp. IV
<i>G. arcuatus</i>					
<i>G. longidactylus</i>					
<i>G. microps</i>					
<i>G. proterorhini</i>					
<i>G. rugiensis</i>					
Gyro sp. I					
Gyro sp. II					
Gyro sp. III					
Gyro sp. IV					
Gyro sp. V					



Gyrodactylus sp. attached to the skin of its host

Discussion

Despite the numerous species of gobies world-wide, there is a paucity of data on the gyrodactylid parasites, and indeed of all parasite groups of these ecologically important fish. The role of these hosts in transmitting parasites through the food chain to fish species of commercial importance has been the subject of limited studies (Groenewold et al., 1996). Whilst there is no evidence from the current study to suggest that any of the *Gyrodactylus* sp. described are detrimental to their respective hosts, the inshore habit of goby species would mean that they are naturally exposed to high summer temperatures. The ability of the parasite to multiply rapidly under these conditions may prove detrimental to its host. There is thus a need to better understand the host-parasite interactions and indeed to gain a greater knowledge of the parasite fauna of these fish hosts.

Acknowledgements

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References

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