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ON THE OCCURRENCE OF THE PELAGIC STINGRAY, *DASYATIS VIOLACEA* (BONAPARTE, 1832), IN THE GULF OF TRIESTE (NORTHERN ADRIATIC)

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ABSTRACT

The pelagic stingray Dasyatis violacea (Bonaparte, 1832) has been recorded for the very first time off the Slovenian coast in the Gulf of Trieste (Northern Adriatic). Data on morphometrics and feeding habits of nine specimens collected are presented in the article. The main fish preyed were anchovies (Engraulis encrasicolus) and red bandfish (Cepola rubescens).

Key words: *Dasyatis violacea*, Dasyatidae, first record, Gulf of Trieste, Adriatic Sea

IL TRIGONE VIOLA *DASYATIS VIOLACEA* (BONAPARTE, 1832) NEL GOLFO DI TRIESTE (ADRIATICO SETTENTRIONALE)

SINTESI

Gli autori fanno un resoconto su nove esemplari di Trigone viola, Dasyatis violacea (Bonaparte, 1832) catturati dalle reti nel Golfo di Trieste nel corso del 2004. È la prima segnalazione della presenza di questa specie nelle acque slovene e in genere nel Golfo di Trieste. Sono indicati pure i loro dati morfometrici e alcuni particolari relativi alle loro abitudini alimentari. La maggior parte delle prede era costituita da pesci, in particolare alici (Engraulis encrasicolus) e cepole (Cepola rubescens). Gli autori ritengono che il Trigone viola fosse presente nel golfo già da prima, ma i pescatori ributtavano in mare gli esemplari catturati.

Parole chiave: *Dasyatis violacea*, Dasyatidae, prima segnalazione, Golfo di Trieste, Mare Adriatico

INTRODUCTION

For the Adriatic Sea, Jardas (1996) listed only *Dasyatis pastinaca* as a common species, *D. centroura* as a rare species (see also Dulčić *et al.*, 2003) and *D. violacea* as a very rare species. According to McEachran & Capapé (1984), one more *Dasyatis* species occurs in the Adriatic, e.g. *Dasyatis tortonesei* (Capapé, 1977), a species close to *D. pastinaca*.

Pelagic stingray is a relatively small ray with a maximum disk width of 80 cm (Mollet, 2002). It is dark with a typically broadly rounded snout and an angular pectoral disc without thorns (Compagno *et al.*, 1989). The colour of both sides is usually uniformly violet, purple, or dark blue-green dorsally and ventrally, without any prominent markings. It is found in tropical to warm temperate waters usually in the first 100 m (McEachran & Capapé, 1984). In the Mediterranean, it occurs mainly in waters off the African coasts (Hemida *et al.*, 2003), in the Ligurian Sea (Orsi Relini *et al.*, 2000), in waters off Sicily (McEachran & Capapé, 1984), and in waters off Greece and Israel (Hemida *et al.*, 2003).

As already pointed above, Jardas (1996) stated that the pelagic stingray was very rare in the Adriatic Sea. Bello (1999), on the other hand, wrote that this species was being captured by drifting longline in the Southern Adriatic and in the Gulf of Taranto. The same author also mentioned catches of this species in the Northern Adriatic on the basis of personal communication by I. Bianchi.

Since there has been a lack of records, this species has not been included in the key for the identification of cartilaginous fish of Slovenia (Lipej, 1999). The aim of this report is to hereby present the first data on the occurrence of pelagic stingrays in Slovenian coastal waters. Data on morphometrics and feeding habits of nine specimens collected are presented in this article.

MATERIAL AND METHODS

Between May and September 2004, nine pelagic stingray specimens were caught by fishermen with pelagic trawl on muddy substrate in the Gulf of Trieste (Fig. 1). Soon after their capture, the specimens were frozen and stored in deep freeze chambers of the fishing enterprise Delamaris d.d. in Izola. Specimens were identified according to keys of McEachran & Capapé (1984) and Jardas (1996). The stingrays were measured according to the recommendations by Jardas (1996) to the nearest millimetre (Fig. 2). Sex was determined according to the presence of pterygoids. Specimens were photographed and subsequently dissected for the assessment of their

food habits. Stomachs were accurately checked for food items and washed with seawater. The entire material was stored in 5% formaline. Fish remains were identified using the determination keys, such as Whitehead *et al.* (1984) and Marčeta (1999). Afterwards, the specimens were discarded.

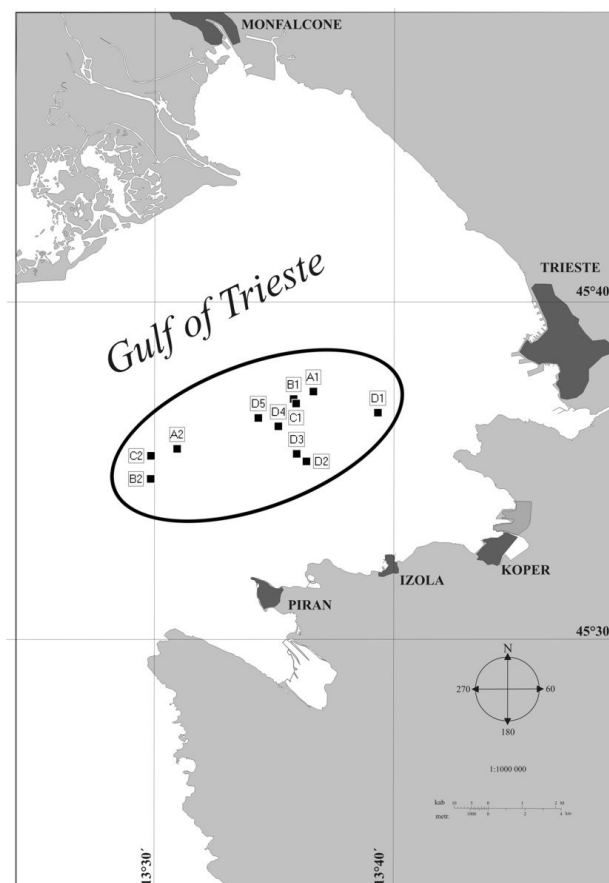


Fig. 1: Study area with sampling sites, where pelagic stingrays were caught.

Sl. 1: Raziskovano območje z vzorčišči, na katerih so bili ujeti vijoličasti morski biči.

RESULTS AND DISCUSSION

The main morphometric data of the nine pelagic stingray specimens are presented in Table 1. Among the nine specimens (Fig. 3), 8 were females. The size varied from the smallest specimen, measuring 410 mm (disk width), to the largest measuring 650 mm (disk width – DW).

Tab. 1: Measurements (in mm) for the nine specimens of *Dasyatis violacea*.
Tab. 1: Mere (v mm) za devet primerkov vrste *Dasyatis violacea*.

Specimens	1	2	3	4	5	6	7	8	9	Average (\pm SD)
Internasal length (IN)	57	51	43	55	45	58	40	50	40	48.8 (7.1)
Mouth width (LO)	65	62	49	65	54	60	45	58	46	56.0 (7.8)
Eyeball length (O)	17	19	15	19	15	16	14	16	16	16.3 (1.7)
Snout tip to eye (POC)	65	58	52	64	52	72	54	62	50	58.8 (7.5)
Disk width (LAD)	615	500	440	580	480	650	450	566	410	521.2 (84.4)
Trunk length (LTR)	255	238	171	278	190	290	200	246	170	226.4 (45.2)
Head length (LC)	193	180	169	186	180	230	160	190	150	182.0 (22.9)
Snout tip to mouth (PO)	80	70	66	93	69	84	65	68	60	72.8 (10.6)
Disk length (LOD)	500	460	380	482	386	530	370	432	330	430.0 (67.6)
Tail length (LCA)	875	595	756	831	649	840	420	900	810	741.8 (157.7)
Sex	f	f	m	f	f	f	f	f	f	
Date	Aug	Aug	Aug	Aug	Aug	Sep	Sep	Sep	Sep	

Tab. 2: Prey items found in stomachs of nine specimens of pelagic stingray (*Dasyatis violacea*).
Tab. 2: Ostanki plena iz želodcev devetih primerkov vijoličastega morskega biča (*Dasyatis violacea*).

Specimens	1	2	3	4	5	6	7	8	9	Σ	%
<i>Engraulis encrasicolus</i>		10		12	3	5		11	4	45	54.88
<i>Sardina pilchardus</i>		1			3			1		5	6.10
Clupeidae		2			1	2			1	6	7.32
<i>Trachurus trachurus</i>						1				1	1.22
<i>Trachurus</i> sp.						3				3	3.66
<i>Merluccius merluccius</i>						3				3	3.66
<i>Hippocampus hippocampus</i>								1		1	1.22
<i>Cepola rubescens</i>	3	1					4	1		9	10.98
<i>Serranellus hepatus</i>	1									1	1.22
<i>Trisopterus minutus capellanus</i>	2									2	2.44
<i>Gobius</i> sp.	1									1	1.22
Teleostei indet.	2		1	1						4	4.88
Teleosts total	9	14	1	13	7	14	4	14	5	81	98.78
<i>Sepia</i> sp.						1				1	1.22
Cephalopoda total						1				1	1.22
Prey items	9	14	1	13	7	15	4	14	5	82	100

These data are in agreement with the size range of adult specimens recorded by Hemida *et al.* (2003), who reported on adult males from different Mediterranean areas, ranging from 420 to 580 mm, and adult females ranging from 450 to 610 mm DW. Only the 410 mm long female could be considered a subadult specimen.

Eighty-two prey items of 10 different species were removed from the stomachs (Tab. 2). All stomachs contained some food, ranging from 1 to 15 food items (mean 9.11). Food items of the nine specimens showed that in the Gulf of Trieste the pelagic stingray fed on

teleosts, which constituted more than 98% of all prey items; cephalopods were occasionally ingested. The main teleosts preyed were anchovies *Engraulis encrasicolus* (54.9%), *Sardina pilchardus* (6.1.0%) and other clupeids (more than 66% of all prey items), moreover, the red bandfish *Cepola rubescens* (11.0%) was also frequently ingested (11.0%). The majority of the teleost species found in stomach contents were pelagic (Fig. 4), and these findings confirm the pelagic diet of *D. violacea*.

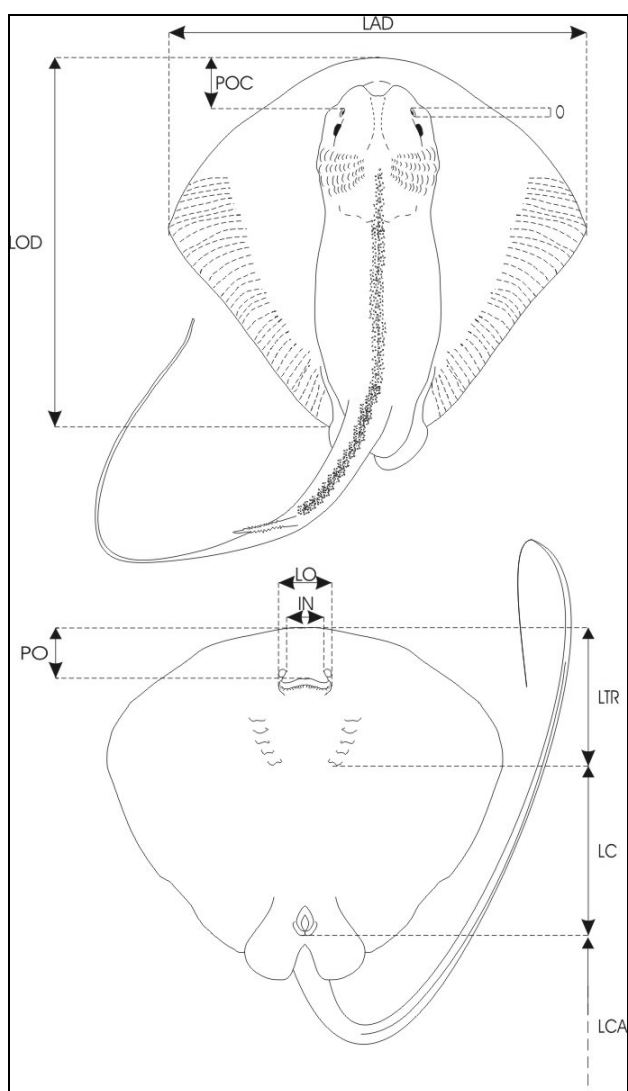


Fig. 2: Morphometric measurements, according to Jardas (1996). Legend: LAD – disk width, LOD – disk length, O – eyeball length, POC – snout tip to eye distance, LC – head length, PO – snout tip to mouth distance, IN – internasal length, LO – mouth width, LCA – tail length, LTR – trunk length.

Sl. 2: Morfometrične dimenzije po Jardasu (1996). Legenda: LAD – širina diska, LOD – dolžina diska, O – dolžina zrkla, POC – razdalja med očmi in konico gobca, LC – dolžina glave, PO – razdalja med usti in konico gobca, IN – mednosnična dolžina, LO – širina ust, LCA – dolžina repa, LTR – dolžina trupa.

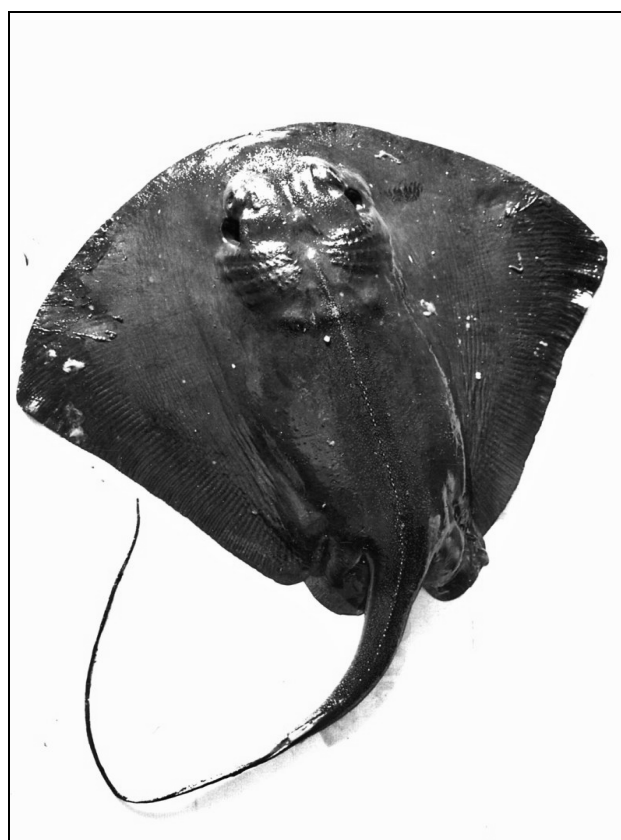


Fig. 3: Pelagic stingray, *Dasyatis violacea*, caught in August 2004 in waters off Piran. (Photo: L. Lipej)

Sl. 3: Vijoličasti morski bič, *Dasyatis violacea*, ujet avgusta 2004 v vodah nedaleč od Pirana. (Foto: L. Lipej)

According to the information obtained from fishermen, few pelagic stingray specimens have already been caught in the last ten years. One was even housed for some weeks in the Piran Aquarium (V. Žiža, *pers. comm.*). The lack of data on the occurrence of pelagic stingray in the Adriatic could probably be due to the fact that the specimens are regularly discarded at sea by fisherman. A closer and improved cooperation between fishermen and scientists should therefore be established for a better surveillance of the Northern Adriatic and its biodiversity.

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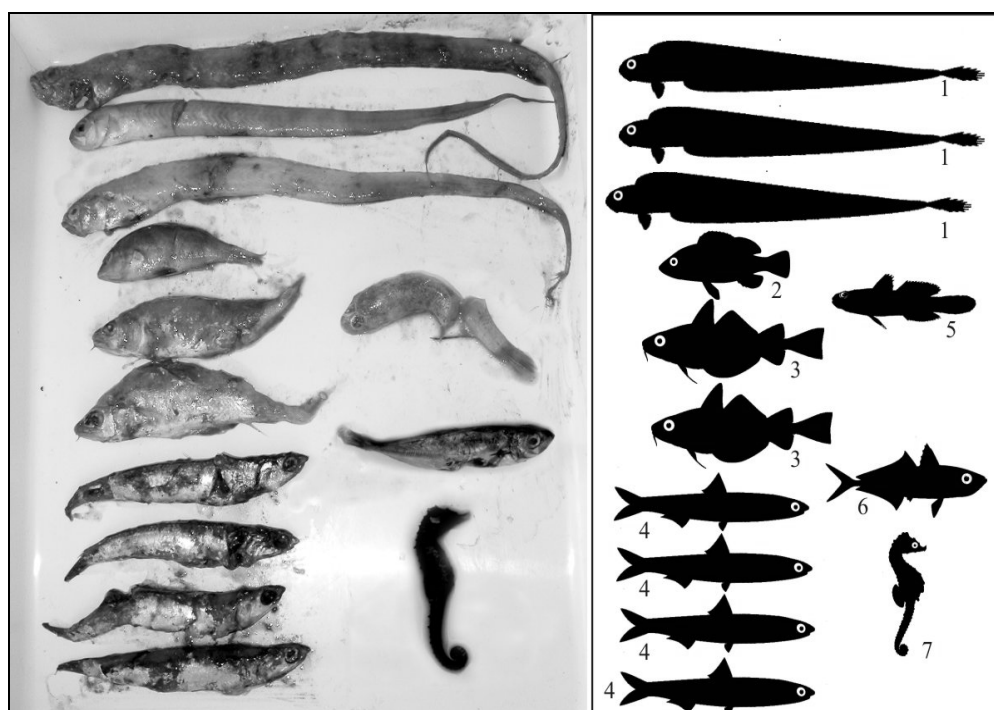


Fig. 4: Some fish preyed by pelagic stingrays (specimens 1, 6 and 8) caught in waters off Piran in 2004. Legend: 1 – *Cepola rubescens*, 2 – *Serranus hepatus*, 3 – *Trisopterus minutus capelanus*, 4 – *Engraulis encrasicolus*, 5 – *Gobius sp.*, 6 – *Trachurus trachurus* and 7 – *Hippocampus hippocampus*.

Sl. 4: Nekatere izmed ribjih vrst, s katerimi so se hranili vijoličasti morski biči (primerki 1, 6 in 8), ujeti leta 2004 v vodah nedaleč od Pirana. Legenda: 1 – *Cepola rubescens*, 2 – *Serranus hepatus*, 3 – *Trisopterus minutus capelanus*, 4 – *Engraulis encrasicolus*, 5 – *Gobius sp.*, 6 – *Trachurus trachurus* in 7 – *Hippocampus hippocampus*.

O POJAVLJANJU VIJOLIČASTEGA MORSKEGA BIČA *DASYATIS VIOLACEA* (BONAPARTE, 1832) V TRŽAŠKEM ZALIVU (SEVERNI JADRAN)

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POVZETEK

Avtorji poročajo o devetih primerkih vijoličastega morskega biča, *Dasyatis violacea* (Bonaparte, 1832), ki so se poleti leta 2004 ujeli v ribiške mreže v Tržaškem zalivu. Gre za prvi zapis o pojavljanju te vrste v slovenskem morju in Tržaškem zalivu sploh. Avtorji med drugim navajajo morfometrične podatke ujetih primerkov in nekaj podatkov o njihovih prehranjevalnih navadah. Veliko večino plena so sestavljale ribe, med njimi pa pretežno inčuni (*Engraulis encrasicolus*) in rdeči mečaki (*Cepola rubescens*). Avtorji domnevajo, da so se vijoličasti morski biči na obravnavanem območju verjetno pojavljali tudi prej, vendar so jih ribiči takoj po ulovu običajno zavrgli.

Ključne besede: *Dasyatis violacea*, Dasyatidae, prvi zapis, Tržaški zaliv, Jadransko morje

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