Gobies (Gobioidei) of Soft Bottoms from Nha Trang and Van Phong Bays (South China Sea, Vietnam)

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Received March 23, 2016

Abstract—Gobioid fishes collected in Nha Trang and Van Phong bays (Vietnam) represented by 44 species, including 30 species continuously associated with soft bottoms in the open parts of the bays with normal marine conditions are reviewed. A new species, *Navigobius khanhoa* sp. n., is described. This species differs from other species of the genus in much higher number of rays in the second dorsal fin (26), smaller size of the mouth, teeth on the jaws arranged in a single row, and other characters. Four species from the genera *Acentrogobius*, *Eviota*, *Favonigobius*, and *Gnatholepis* have not been identified to the species, and, most likely, some of them are new for science. Nine species are recorded in the fauna of Vietnam for the first time: *Aulopareia unicolor*, *Bathygobius hongkongensis*, *Egglestonichthys bombylios*, *Glossogobius circumspectus*, *Oplopomops diacanthus*, *Oxyurichthys auchenolepis*, *Tomiyamichthys* ex gr. *russus*, *Tryssogobius porosus*, and *Valenciennea immaculata*. An occurrence of *Glossogobius olivaceus* in the fauna of Vietnam is confirmed. Three species, *G. olivaceus*, *Oligolepis acutipennis*, and *Periophthalmus kalolo*, are recorded in the Cai River delta for the first time. A new synonymy is established: *Eviota gurjanovae* (Prokofiev, 2007) = *E. prasina* (Klunzinger, 1871). The current state of knowledge of Gobiidae fauna of Vietnam is discussed, and the updating of the species composition of Gobiodontini of Nha Trang Bay is presented in addition to the species list published earlier (Prokofiev, 2007).

Keywords: Gobioidei, Vietnam, South China Sea, faunistics, systematics, new species

DOI: 10.1134/S0032945216060096

INTRODUCTION

Gobioid fishes (suborder Gobioidei) are characterized by the maximum species diversity among all recent Teleostei, and they are represented in the world fauna by approximately 300 genera and 2000 species; the species number is increased with each year (Eschmeyer, 2016). The fauna of gobioid fishes of Vietnam is studied very incompletely. In the entire water area of the South China Sea, 358 species are indicated (Randall and Lim, 2000), but, until present, the species number has increased up to several dozen because of the description of new species and new records. Approximately 600 species are indicated for the entire tropical Western Pacific (Larson and Murdy, 2001). However, only 92– 97 species are reported for the coastal zone and fresh waters of Vietnam (Nguyen et al., 1997; Nguyen, 2000). Obviously, this reported number of species is greatly underestimated.

The fauna of gobies inhabiting different biotopes has been studied to a different extent. Nowadays, the most representative collections are obtained from the coral reefs and the adjacent sandy stations and in the freshwaters and brackish waters. However, the data on the communities of soft bottoms, especially at the depths more than 30–40 m are very incomplete even in such well-studied regions as Japan and Australia. Therefore, a

review of the materials presented in this study and focused on this group collected during trawl surveys in Nha Trang and Van Phong bays (coastal zone of southernmost Central Vietnam) at the depth range of 8—120 m in 2005—2012 is very important. It should be noted that this study does not pretend to a comprehensive review of the fauna, because a collection of the representatives of the group is not a special purpose of the surveys. In addition, during prolonged trawling, the material can be partly lost due to small sizes and weak constitution of fishes, which can be destroyed or washed away from trawls. The new species that were partly described earlier have been found when processing this material (Prokofiev, 2007, 2008, 2009, 2015, 2016a, 2016b); these samples are also the source of the new faunistic records. The present communication sums up the results of the processing of this collection.

MATERIALS AND METHODS

The sampling has been performed by the author on board the local wooden trawler-like vessel. The samples have been taken by means of the handicraft shrimp trawl with 6-m opening at the average trawling speed of 2.2 knots. The list of the stations is given in the table.

Trawling stations conducted by the author in the coastal zone of Vietnam

Date, trawl, or polygon	Coordinates		_	
	N	Е	Trawling time	Depth, m
May 28, 2005, polygon 1	12°10′579—12°10′764	109°13′251–109°13′698	14:30-15:15	8.0-11.0
May 28, 2005, polygon 3	12°14′732—12°15′261	109°12′962–109°13′788	11:45-13:15	15.0-19.0
May 28, 2005, polygon 4	12°14′673−12°15′274	109°17′428–109°18′908	8:15-10:15	22.0-24.0
May 30, 2005, polygon 1	12°10′486—12°10′780	109°13′287–109°13′715	23:53-24:23	8.0-11.0
May 30, 2005, polygon 3	12°14′530—12°15′180	109°13′030–109°13′782	21:50-22:50	15.0-19.0
May 30, 2005, polygon 4	12°14′621−12°15′402	109°17′428–109°18′892	19:20-20:20	22.0-24.0
June 21, 2005, Hon Dun	12°13′200–12°11′329	109°24′161–109°23′944	20:45-21:45	~70.0
June 21, 2005, polygon 1	12°10′579—12°10′764	109°13′251−109°13′698	daytime trawling*	8.0-11.0
June 21, 2005, polygon 3	12°14′732—12°15′261	109°12′962–109°13′788	Ibid.	15.0-19.0
June 21, 2005, polygon 4	12°14′673–12°15′274	109°17′428–109°18′908	"	22.0-24.0
June 23, 2005, polygon 1	12°10′579—12°10′764	109°13′251−109°13′698	nocturnal	8.0-11.0
			trawling*	
June 23, 2005, polygon 3	12°14′732–12°15′261	109°12′962–109°13′788	Ibid.	15.0-19.0
June 23, 2005, polygon 4	12°14′673–12°15′274	109°17′428–109°18′908	"	22.0-24.0
Nov. 24, 2005, trawl no. 1	12°15′182—12°15′076	109°18′494—109°19′222	8:05-9:05	22.0-24.0
(polygon 4)				
Nov. 24, 2005, trawl no. 2	12°15′126–12°14′515	109°13′770—109°13′500	10:35-11:40	15.0-20.0
(polygon 3)				
Nov. 24, 2005, station 2	12°09′793—12°09′737	109°15′967–109°16′378	12:45-13:50	~10–15 (not regis-
(strait between Hon Tam and Hon Mieu)				tered precisely)
· · · · · · · · · · · · · · · · · · ·	12°10′113—12°09′956	109°14′192—109°14′325	14:35—15:35	8.0-11.0
Nov. 24, 2005, trawl no. 3 (polygon 1)	12 10 113-12 09 930	109 14 192-109 14 323	14.55-15.55	8.0-11.0
Nov. 26, 2005, trawl no. 1	12°14′639—12°11′255	109°24′347–109°23′193	8:35-10:30	59.0-80.0
Nov. 26, 2005, trawl no. 2	12°11′385–12°09′000	109°23′690–109°22′888	11:15–12:35	68.0-80.0
Nov. 26, 2005, trawl no. 3	12°08′830–12°06′321	109°23′960–109°23′411	13:30–14:45	77.0-80.0
Nov. 29, 2005, trawl no. 1	12°12′010−12°14′333	109°20′908–109°20′826	7:30	22.0-34.5
Nov. 29, 2005, trawl no. 2	12°15′867—12°14′002	109°17′893–109°18′066	10:05-11:07	22.0-25.5
Nov. 29, 2005, trawl no. 3	12°10′418−12°06′807	109°20′992–109°19′788	12:25—14:25	42.0–47.5
Nov. 29, 2005, trawl no. 4	12°09′856–12°08′290	109°16′619–109°16′654	15:46–16:46	30.0–45.0
Dec. 4, 2005, trawl no. 1	12°12′012–12°08′820	109°25′805–109°24′501	9:03-10:33	90.0–95.0
Dec. 4, 2005, trawl no. 2	12°15′702−12°15′104	109°18′077−109°16′783	13:40-14:55	17.0-27.0
Dec. 4, 2005, trawl no. 3	12°15′160−12°14′400	109°15′365–109°13′366	15:25–16:30	14.0–15.0
Dec. 10, 2005, trawl no. 1	12°08′000—12°05′988	109°13′513−109°12′839	6:35-7:38	8.0–19.0
Dec. 10, 2005, trawl no. 2	12°04′870−12°02′809	109°12′969–109°13′443	8:20-9:35	not registered
Dec. 10, 2003, trawr no. 2	12 04 670—12 02 00)	107 12 707—107 13 443	6.20-7.55	precisely, but < 20
Dec. 10, 2005, trawl no. 4	12°09′810—12°10′082	109°16′458–109°14′424	13:35-15:30	18.0-20.0
Dec. 13, 2005, trawl no. 1	12°10363–12°10′127	109°16′028–109°16′667	6:50-8:15	19.0-22.0
Dec. 13, 2005, trawl no. 2	12°09′577—12°07′824	109°14′759—109°13′804	9:00-10:05	11.0-22.0
Dec. 13, 2005, trawl no. 3	12°07′800—12°05′585	109°13′600–109°12′735	10:30-11:55	7.0-15.0
Dec. 17, 2005, trawl no. 1	12°20′167–12°20′255	109°18′082—109°18′302	8:40-10:25	15.8-19.8
Dec. 17, 2005, trawl no. 2	12°20′210–12°18′046	109°16′770–109°15′727	10:50-12:22	10.0-14.0
Dec. 17, 2005, trawl no. 3	12°17′890—12°15′538	109°15′800—109°14′515	12:40-14:00	10.0-15.0
May 26, 2006, trawl no. 1	12°13′360—12°10′210	109°21′120—109°21′000	19:50-21:19	45.0-60.0
May 26, 2006, trawl no. 2	12°09′090—12°08′480	109°19′470—109°17′080	22:02-23:19	25.5–36.5
111ay 20, 2000, trawi iio. 2	12 07 070-12 00 400	107 17 7/0-107 1/ 000	22.02-23.17	

Table. (Contd.)

Date, trawl, or polygon	Coordinates			1
	N	E	Trawling time	Depth, m
May 26, 2006, trawl no. 3	12°09′410−12°09′310	109°17′390—109°15′560	23:48-00:36	14.6-23.5
May 26, 2006, trawl no. 4	12°11′040—12°10′270	109°15′210−109°15′410	01:06-01:28	10.0-20.0
May 26, 2006, trawl no. 5	12°10′540—12°11′940	109°15′010-109°14′060	01:52-02:35	10.0-20.0
May 29, 2006, trawl no. 1	12°21′990–12°20′917	109°21′271−109°20′917	09:00-09:50	30.0-40.0
May 29, 2006, trawl no. 2	12°19′994—12°19′911	109°21′019–109°19′911	10:20-11:14	33.0-36.5
May 29, 2006, trawl no. 3	12°20′006–12°21′441	109°17′906–109°19′170	11:54-12:43	18.8-27.5
May 29, 2006, trawl no. 4	12°20′201—12°18′685	109°17′756—109°16′038	13:20-14:30	14.0-18.8
May 31, 2006, trawl no. 1	12°10′000—12°06′985	109°26′535—109°25′992	09:25-10:45	91.0-95.0
May 31, 2006, trawl no. 2	12°06′006–12°10′025	109°22′013–109°23′940	11:26-13:29	55.0-79.0
May 31, 2006, trawl no. 3	12°10′013–12°07′396	109°22′998-109°23′002	14:06-15:30	55.0-73.0
June 2, 2006, trawl no. 1	12°08′017−12°04′948	109°20′024—109°20′005	19:10-20:32	47.0-55.0
June 2, 2006, trawl no. 2	12°08′045–12°06′420	109°15′036–109°13′943	21:41-22:37	11.0-18.0
June 2, 2006, trawl no. 3	12°05′024—12°07′047	109°12′974—109°13′047	23:06-00:16	18.0-22.0
June 2, 2006, trawl no. 4	12°09′993—12°12′575	109°15′927–109°14′149	01:10-02:39	10.0-20.0
June 6, 2006, trawl no. 1	12°18′000–12°16′736	109°25′497—109°25′485	20:51-21:38	55.0-68.0
June 6, 2006, trawl no. 2	12°16′491–12°16′376	109°19′488–109°17′574	22:05-23:04	20.0-33.0
June 6, 2006, trawl no. 3	12°12′489—12°11′201	109°14′084—109°15′137	01:36-02:24	10.0-20.0
June 8, 2006, trawl no. 1	12°05′000–12°07′000	109°13′000–109°14′000	11:30-12:50	11.0-19.8
June 8, 2006, trawl no. 2	12°12′800—12°10′000	109°14′000–109°16′000	not registered	10.0-20.0
June 10, 2006, trawl no. 1	12°03′982—12°06′067	109°13′032–109°12′708	19:37-20:38	11.0-18.0
June 10, 2006, trawl no. 2	12°06′558—12°08′069	109°13′644—109°14′988	21:05-22:08	11.8-19.8
June 10, 2006, trawl no. 3	12°07′994—12°10′004	109°16′024–109°14′162	22:35-23:50	12.8-22.0
June 10, 2006, trawl no. 4	12°10′081−12°12′011	109°15′928–109°14′661	00:20-01:26	10.0-20.0
June 12, 2006, trawl no. 1	12°21′736—12°19′980	109°21′988–109°19′987	20:02-21:15	27.5-33.0
June 12, 2006, trawl no. 2	12°19′080—12°18′922	109°18′008–109°16′598	21:54-22:35	11.0-27.5
June 12, 2006, trawl no. 3	12°15′000—12°16′010	109°16′021-109°20′025	23:23-01:14	18.8-23.5
June 12, 2006, trawl no. 4	12°17′990–12°14′656	109°20′000-109°17′818	01:40-02:46	20.0-36.5
June 13, 2006, trawl no. 1	12°14′740—12°14′463	109°18′082-109°21′038	18:46-20:09	23.5-45.5
June 13, 2006, trawl no. 2	12°14′501—12°16′214	109°25′010–109°25′697	21:05-21:55	71.0-82.0
June 13, 2006, trawl no. 3	12°13′618−12°11′230	109°20′986-109°21′111	23:12-00:18	22.0-45.5
June 13, 2006, trawl no. 4	12°10′010—12°11′658	109°15′956–109°15′509	01:29-02:20	14.4-16.4
June 14, 2006, trawl no. 1	12°22′668—12°19′112	109°24′097—109°21′162	21:17-23:35	31.0-45.5
June 14, 2006, trawl no. 2	12°13′993—12°14′440	109°19′985–109°17′371	00:43-02:28	20.0-23.5
June 16, 2006, trawl no. 1	12°10′014—12°12′035	109°21′191–109°21′074	19:13-20:11	27.5-47.5
June 16, 2006, trawl no. 2	12°10′992—12°13′172	109°24′712-109°24′539	21:04-22:15	68.0-80.0
June 16, 2006, trawl no. 3	12°11′557—12°11′956	109°16′072–109°14′330	00:21-01:25	13.4-19.2
June 17, 2006, trawl no. 1	12°20′555–12°19′039	109°18′848—109°17′523	19:27-20:25	18.8-22.0
June 17, 2006, trawl no. 2	12°14′723—12°14′962	109°19′095—109°16′939	21:22-22:28	7.0-10.0
June 17, 2006, trawl no. 3	12°10′539—12°07′979	109°15′076—109°14′496	23:45-01:07	11.2-18.8
June 19, 2006, trawl no. 1	12°02′959–12°05′056	109°13′183–109°13′095	19:22-20:22	10.0-18.0
June 19, 2006, trawl no. 2	12°05′060–12°08′014	109°13′017—109°15′017	20:40-22:41	11.0-18.0
June 19, 2006, trawl no. 3	12°14′524—12°14′502	109°14′981–109°17′016	00:05-01:08	14.0-20.0
June 21, 2006, trawl no. 1	12°19′015—12°19′007	109°19′086–109°16′986	08:03-09:02	18.8-23.5
June 21, 2006, trawl no. 2	12°14′980—12°15′001	109°19′116–109°16′914	09:56-10:59	16.2–22.0

Table. (Contd.)

	Coordinates			
Date, trawl, or polygon			Trawling time	Depth, m
	N	E	C	11.
June 21, 2006, trawl no. 3	12°12′692—12°08′816	109°14′144—109°15′582	11:53-13:55	10.0-20.0
June 23, 2006, trawl no. 1	12°02′480—12°05′091	109°12′996—109°13′067	07:47-09:04	10.0-18.0
June 23, 2006, trawl no. 2	12°05′700-12°06′253	109°12′736—109°12′583	09:39-10:00	11.0-18.0
June 23, 2006, trawl no. 3	12°13′065–12°13′541	109°20′002-109°19′687	11:43-12:10	10.0-33.0
June 26, 2006, trawl no. 1	12°05′262—12°07′794	109°23′119–109°23′916	19:47-20:49	11.0-19.0
June 26, 2006, trawl no. 2	12°13019-12°14′709	109°20′974—109°18′471	22:13-23:50	23.0-33.0
June 26, 2006, trawl no. 3	12°15′025−12°15′002	109°19′051−109°16′415	00:20-01:40	18.0-29.0
June 30, 2006, trawl no. 1	12°37′526—12°34′780	109°28′736–109°27′283	18:53-20:19	29.0-44.0
June 30, 2006, trawl no. 2	12°31′995–12°32′002	109°25′081-109°23′456	21:15-22:07	31.0-42.0
June 30, 2006, trawl no. 3	12°32′023–12°34′118	109°25′990–109°24′971	22:56-00:13	20.0-29.0
June 30, 2006, trawl no. 4	12°35′520—12°33′497	109°24′110—109°25′539	01:25-02:26	19.0-33.0
June 30, 2006, trawl no. 5	12°28′838—12°26′718	109°23′475–109°23′037	03:50-04:49	17.0-40.0
Jan. 5, 2007, trawl no. 1	12°02′407—12°04′697	109°13′126–109°12′368	08:00-09:19	<20.0
Jan. 5, 2007, trawl no. 2	12°05′073–12°07′466	109°12′090–109°13′252	09:39-11:26	12.8-23.5
Jan. 5, 2007, trawl no. 3	12°09′997—12°12′235	109°15′987–109°14′514	12:24-13:53	13.4-23.5
Jan. 9, 2007, trawl no. 1	12°14711–12°14′714	109°16′040–109°19015	07:26-09:04	16.2-29.0
Jan. 9, 2007, trawl no. 2	12°18′026—12°15′496	109°16′471–109°16′507	10:10-11:10	15.8-18.8
Jan. 9, 2007, trawl no. 3	12°18′174—12°15′952	109°15′995—109°14′999	12:00-13:04	15.0—18.0
Jan. 11, 2007, trawl no. 1	12°21′059—12°19′012	109°20′021–109°18′525	08:33-09:49	22.0-29.0
Jan. 11, 2007, trawl no. 2	12°18′068—12°14′957	109°16′491–109°16′503	10:29-12:08	15.0-19.0
Jan. 11, 2007, trawl no. 3	12°15′525—12°18′065	109°15′025–109°15′509	12:44-13:58	15.0-18.0
Jan. 14, 2007, twin trawl no. 1	12°24′532—12°19′068	109°26′223–109°24′237	09:20-11:22	80.0-104.0
Jan. 14, 2007, twin trawl no. 2	12°18′300—12°12′984	109°25′432—109°25′712	12:15-14:02	45.0-93.0
Apr. 21, 2007, trawl no. 1	12°13′244—12°14′691	109°20′273–109°18′459	07:57-09:14	23.5-45.5
Apr. 21, 2007, trawl no. 2	12°15′888—12°18′045	109°16′522–109°16′502	09:58-11:00	16.2-18.8
Apr. 21, 2007, trawl no. 3	12°18′572—12°15′937	109°15′511−109°15′438	11:25-12:42	11.0-15.8
Apr. 21, 2007, trawl no. 4	12°17′038–12°16′848	109°15′232–109°13′505	13:10-14:00	8.0-11.0
Apr. 23, 2007, trawl no. 1	12°17′213—12°15′382	109°22′554—109°22′499	20:14-21:05	49.5-55.0
Apr. 23, 2007, trawl no. 2	12°12′975–12°14′692	109°20′293–109°18′406	22:00-23:19	23.5-34.5
Apr. 23, 2007, trawl no. 3	12°16′007—12°18′544	109°16′485–109°16′509	00:01-01:12	11.0-18.8
Apr. 23, 2007, trawl no. 4	12°18′014—12°14′977	109°15′797—109°15′805	01:47-03:21	14.0-15.2
Apr. 25, 2007, trawl no. 1	12°07′500—12°04′840	109°24′048–109°24′036	08:12-09:18	88.0-95.0
Apr. 25, 2007, trawl no. 2	12°09′002–12°06′997	109°15′960–109°14′724	04:07-05:21	18.0-22.0
Apr. 25, 2007, trawl no. 3	12°06′951—12°04′980	109°13′098—109°13′108	06:23-07:34	15.0-18.0
Apr. 27, 2007, trawl no. 1	12°17′210—12°14′979	109°22′536—109°22′500	08:14-09:18	55.0
Apr. 27, 2007, trawl no. 2	12°12′920—12°14′696	109°20′310—109°18′478	10:06-11:51	22.0-40.0
Apr. 27, 2007, trawl no. 3	12°15′960—12°18518	109°16501–109°16′503	12:31—13:55	15.0-18.6
Apr. 27, 2007, trawl no. 4	12°18′057—12°14′982	109°15′839—109°15′804	14:19—15:51	15.0—18.0
May 2, 2007, trawl no. 1	12°16′562–12°13′511	109°21′041–109°21′054	07:55-09:16	27.5–45.5
May 2, 2007, trawl no. 2	12°16′576—12°15′485	109°18′303–109°16′884	10:11-11:30	17.0-27.5
May 2, 2007, trawl no. 3	12°18′036—12°15′196	109°16′498–109°16′487	12:10-13:32	15.0-18.8
May 4, 2007, trawl no. 1	12°07′780–12°04′464	109°21′894—109°20′820	20:00-21:53	53.0-75.0
May 4, 2007, trawl no. 2	12°09′102 (12°08′532—	109°16′049 (109°15′833–	23:12(23:33-	22.0–27.5
	12°08′699)—12°06′981	109°16′046)—109°14′658	23:58)—01:13	

Table. (Contd.)

Date, trawl, or polygon	Date, trawl, or polygon	Coordinates			
May 8, 2007, trawl no. 1		N	Е	Trawling time	Depth, m
May 8, 2007, trawl no. 2 12°16′613—12°13′442 109°21′002—109°20′995 09·41—11:01 44.0—49.5 May 8, 2007, trawl no. 3 12°16′610—12°15′483 109°18′160—10°16′160 12:02—13:02 16.8—27.5 May 8, 2007, trawl no. 1 12°10′650—12°14′480 109°16′160—10°16′160 13:50—15:06 May 10, 2007, trawl no. 2 12°10′600—12°12′480 109°12′812—109°13′756 07:30—08:47 15.0—18.0 May 10, 2007, trawl no. 3 12°15′994—12°16′273 109°16′494 109°16′494 12:22—12:35 16.2—18.8 May 10, 2007, trawl no. 1 12°16′405—12°19′220 109°15′010—109°15′090 12:58—14:26 11.8—15.2 May 12, 2007, trawl no. 2 12°38′080—12°23′340 109°28′092—109°27′798 09·43—11:22 51.0—86.0 May 17, 2007, trawl no. 3 12°26′941—12°22′336′7 109°23′374—109°25′058 11:0—12:55 20.0—38.0 May 17, 2007, trawl no. 2 12°37′069—12°33′677 109°22′2572—109°22′525 1420—15:25 20.0—38.0 May 17, 2007, trawl no. 3 12°2700—12°16′218 109°210′61—109°18′533 16:28—18:04 18.0—36.0 May 21, 2007, trawl no. 3 12°15′48—12°18′125 May 21, 2007, trawl no. 4 12°10′10–12°34′970 109°21′061—109°30′013 07:45—10:05 96.0—119.0 11.00°18′030 109°18′05—109°30′013 07:45—10:05 96.0—119.0 11.00°18′030 11.00°18′	May 4, 2007, trawl no. 3	12°06′983—12°04′753	109°13′027–109°13′104	01:42-02:57	18.0-18.8
May 8, 2007, trawl no. 3	May 8, 2007, trawl no. 1	12°11′333–12°12′690	109°20′953–109°20′166	07:44-08:41	23.5-45.5
May 8, 2007, trawl no. 1	May 8, 2007, trawl no. 2	12°16′613–12°13′442	109°21′002-109°20′995	09:41-11:01	44.0-49.5
May 10, 2007, trawl no. 1 12°05′532−12°07′564 109°12′812−109°13′756 07:30−08:47 15.0−18.0 May 10, 2007, trawl no. 3 12°15′994−12°16′273 109°16′126−109°13′7879 09:42−11:22 15.8−19.2 15.8−19.2 May 10, 2007, trawl no. 4 12°16′405−12°19′220 109°15′010−109°15′009 12:38−14:26 11.8−15.2 108°13′041−109°30′0402 07:43−08:47 97.0−119.0 109°18′0207, trawl no. 1 12°40′019−12°37′463 109°30′414−109°30′0402 07:43−08:47 97.0−119.0 109°18′0207, trawl no. 1 12°40′036−12°37′466 109°30′414−109°30′0402 07:43−08:47 97.0−119.0 109°28′092−109°27′798 09:43−10:44 29.0−44.0 109°30′256−109°30′307 07:37−08:55 128.0−150.0 109°30′256−109°30′307 07:37−08:55 128.0−150.0 109°30′256−109°30′307 07:37−08:55 128.0−150.0 109°23′374−109°25′058 11:10−12:55 20.0−38.0 109°21′051−109°18′353 16:28−18:04 18.0−36.0 109°21′051−109°18′353 16:28−18:04 18.0−36.0 109°21′051−109°18′353 16:28−18:04 18.0−36.0 109°21′051−109°18′353 16:28−18:04 18.0−36.0 109°12′051−109°18′353 16:28−18:04 18.0−36.0 109°12′007, trawl no. 1 12°12′920−12°16′218 109°16′360 109°16′360 100·1−11:57 15.0−23.5 15.0−23.5 109°13′126 109°13′126 109°13′126 109°13′126 14:51−16:18 11.0−18.0 109°15′304−109°13′126 14:51−16:18 11.0−18.0 109°15′304−109°13′126 14:51−16:18 11.0−18.0 109°15′304−109°13′126 14:51−16:18 11.0−18.0 109°15′304−109°30′013 07:45−10:05 96.0−119.0 12°35′144−12°37′63 109°27′068−109°23′194 14:07−16:08 22.0−27.0 12°35′044−12°29′972 109°23′019−109°23′194 14:07−16:08 22.0−27.0 109°30′004−109°30′018 01:44−04:02 97.0−119.0 12°35′044−12°29′972 109°23′019−109°24′315 06:17−07:51 22.0−33.0 109°23′091−109°24′315 06:17−07:51 22.0−33.0 109°23′091−109°24′315 06:17−07:51 22.0−33.0 109°21′325−109°21′107 11:50−12:47 27.5−44.0 109°21′352−109°21′107 11:50−12:47 27.5−44.0 109°21′352−109°16′503 13:15−14:32 8.0−11.0 109°15′508−109°16′503 13:15−14:32 8.0−11.0 109°15′508−109°1	May 8, 2007, trawl no. 3	12°16′610−12°15′483	109°18′444—109°16′160	12:02-13:02	16.8-27.5
May 10, 2007, trawl no. 2 12°10′060–12°12′480 109°16′126–109°13′879 09:42–11:22 15.8–19.2 May 10, 2007, trawl no. 4 12°16′406–12°19′220 109°15′009 12:58–1342.5 11.8 = 15.2 109°16′494–109°16′443 12:22–12:35 16.2–18.8 May 12, 2007, trawl no. 1 12°40′019–12°37′463 109°28′010–109°15′009 07:43–08:47 97.0–119.0 May 12, 2007, trawl no. 2 12°38′008–12°35′934 109°28′092–109°27′798 09:43–10:44 29.0–44.0 109°28′092–109°27′798 09:43–10:44 29.0–44.0 109°28′092–109°28′669 1223–1422 51.0–86.0 May 17, 2007, trawl no. 1 12°40′036–12°37′467 109°28′056–109°28′669 1223–1422 51.0–86.0 May 17, 2007, trawl no. 3 12°27′037–12°24′373 109°22′505–109°23′374–109°25′058 11:10–12:55 20.0–38.0 109°23′374–109°25′058 11:10–12:55 20.0–38.0 109°23′374–109°25′058 11:10–12:55 20.0–38.0 109°21′2527–109°22′525 14:20–15:27 38.0–45.0 109°21′061–109°18′353 16:28–18:04 18.0–36.0 109°21′061–109°18′353 14:20–15:27 38.0–45.0 109°21′061–109°18′353 14:20–15:27 38.0–45.0 109°21′061–109°18′353 109°21′061–109°18′353 109°21′061–109°18′342 109°21′061–109°18′342 109°18′4960 10:01–11:57 15.0–23.5 109°16′481–109°18′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′126 109°198′1	May 8, 2007, trawl no. 4	12°18′020-12°14′950	109°16′516–109°16′495	13:50-15:20	15.0-17.6
May 10, 2007, trawl no. 3 12°15′994—12°16′273 109°16′494—109°16′443 12:22—12:35 16.2—18.8 May 10, 2007, trawl no. 1 12°16′405—12°19′220 109°15′010—109°15′009 12:58—14:26 11.8—15.2 10.9°16′140, 109°30′400 10.9°30′400	May 10, 2007, trawl no. 1	12°05′532−12°07′564	109°12′812−109°13′756	07:30-08:47	15.0-18.0
May ID, 2007, trawl no. 4 12°16′405−12°19′220 109°15′010−109°15′009 12:58−14:26 11.8−15.2 May I2, 2007, trawl no. 1 12°40′019−12°37′463 109°30′414−109°30′402 07:43−08:47 97.0−119.0 May I2, 2007, trawl no. 2 12°38′086−12°35′934 109°28′950−109°28′669 1223−1422 51.0−86.0 May I7, 2007, trawl no. 1 12°40′036−12°37′466 109°30′256−109°30′307 07:37−08:55 128.0−150.0 May I7, 2007, trawl no. 2 12°37′069−12°33′677 109°22′3374−109°22′508 11:10−12:55 20.0−38.0 May 17, 2007, trawl no. 3 12°27′037−12°24′737 109°22′527−109°22′525 14:20−15:27 38.0−45.0 May 17, 2007, trawl no. 3 12°21′014−12°19′261 109°21′061−109°18′333 16:28−18:04 18.0−36.0 May 21, 2007, trawl no. 1 12°16′089−12°15′423 109°21′061−109°18′33 16:28−18:04 18.0−36.0 May 21, 2007, trawl no. 2 12°16′089−12°16′218 109°20′041−109°20′014 07:44−09:19 29.0−44.0 May 31, 2007, trawl no. 4 12°16′049−12°15′11 109°16′481−00°13′165 12°34−10°16′500 12°34−10°16′500 12°34′80−10°12°16′30 12°34′140−12°15′11 109°16′481−00°13′16	May 10, 2007, trawl no. 2	12°10′060-12°12′480	109°16′126–109°13′879	09:42-11:22	15.8-19.2
May 12, 2007, trawl no. 1 12°40′019−12°37′463 109°30′414−109°30′402 07:43−08:47 97.0−119.0 May 12, 2007, trawl no. 3 12°26′941−12°22′836 109°28′092−109°27′798 1223−1422 51.0−86.0 May 17, 2007, trawl no. 1 12°40′036−12°37′466 109°30′307 07:37−08:55 128.0−150.0 May 17, 2007, trawl no. 2 12°37′069−12°33′677 109°22′3374−109°22′508 11:10−12:55 20.0−38.0 May 17, 2007, trawl no. 3 12°27′037−12°24′737 109°22′3374−109°22′505 11:10−12:57 38.0−45.0 May 17, 2007, trawl no. 1 12°12′920−12°16′218 109°21′061−109°18′353 16:28−18:04 18.0−36.0 May 21, 2007, trawl no. 1 12°12′920−12°16′218 109°21′061−109°21′353 16:28−18:04 18.0−36.0 May 21, 2007, trawl no. 3 12°15148−12°18′125 109°16′481−109°21′014 109°20′014 109°20′014 109°20′014 109°20′014 109°20′014 109°20′014 109°20′014 100°11:57 15.0−23.5 13.0−44.0 12°17′04−12°15′117 109°15′034−109°30′013 14:51−16:18 11.0−18.0 14.00 14.00 12°34′4970 109°30′050−109°30′013 07:45−10:05 96.0−119.0 11.00 12°34′360 109°20′457−109°22′563 17:14−18:16 20.0−22.0 12°38′285−12°37′904 109°20′457−109°22′563 17:14−18:16 20.0−22.0 12°35′044−12°29′972 109°30′004−109°30′018 01:44−04:02 97.0−119.0 12°35′044−12°29′972 109°30′004−109°30′018 01:44−04:02 97.0−119.0 12°35′044−12°29′972 109°20′457−109°22′563 17:14−18:16 20.0−22.0 12°35′044−12°29′972 109°30′004−109°30′018 01:44−04:02 97.0−119.0 12°35′044−12°29′972 109°30′004−109°30′018 01:44−04:02 97.0−119.0 12°35′044−12°21′457 109°21′3525−109°21′107 11:50−12:47 27.5−44.0 109°21′3525−109°21′107 11:50−12:47 27.5−44.0 109°22′588−12°109′109′109′109′109′109′109′109′109′109′	May 10, 2007, trawl no. 3	12°15′994—12°16′273	109°16′494–109°16′443	12:22-12:35	16.2-18.8
May 12, 2007, trawl no. 2 12°38′008–12°35′934 109°28′092–109°27′798 1223–1422 51.0–86.0 May 17, 2007, trawl no. 3 12°40′036–12°37′466 109°28′956–109°28′669 1223–1422 51.0–86.0 May 17, 2007, trawl no. 2 12°37′069–12°33′677 109°23′374–109°22′058 11:10–12:55 20.0–38.0 May 17, 2007, trawl no. 3 12°27′037–12°24′737 109°23′374–109°22′525 14:20–15:27 38.0–45.0 May 17, 2007, trawl no. 4 12°21′014–12°19′261 109°21′061–109°18′353 16:28–18:04 18.0–36.0 May 21, 2007, trawl no. 1 12°12′920–12°6′218 109°21′061–109°20′014 07:44–09:19 29.0–44.0 May 21, 2007, trawl no. 3 12°16′089–12°15′423 109°18′105–109°14′960 10:01–11:57 15.0–23.5 May 21, 2007, trawl no. 4 12°11′2104–12°15′117 109°15′034–109°13′126 14:51–16:18 11.0–18.0 May 30–June 1, 2007, trawl no. 1 12°35′144–12°37′763 109°27′068–109°27′099 11:06–12:24 29.0–44.0 May 30–June 1, 2007, trawl no. 3 12°35′044–12°38′538 109°24′650–109°23′194 14:07–16:08 22.0–27.0 May 30–June 1, 2007, trawl no. 6 12°35′044–12°29′972 109°30′004–109°30′018 07:44–04:02 97.0–119.0 May 30–June 1, 2007, trawl no. 6 12°35′044–12°29′972 109°30′004–109°30′018 07:44–04:02 97.0–119.0 May 30–June 1, 2007, trawl no. 6 12°35′044–12°29′972 109°20′457–109°22′563 17:14–18:16 20.0–22.0 May 30–June 1, 2007, trawl no. 1 12°37′630–12°34′760 109°29′035–109°26′283 09:29–10:54 38.0–51.0 May 30–June 1, 2007, trawl no. 1 12°10′049–12°12′457 109°16′583–109°16′503 07:45–10:05 38.0–51.0 May 30–June 1, 2007, trawl no. 1 12°10′049–12°12′457 109°20′35–109°20′253 09:29–10:54 38.0–51.0 May 30–June 1, 2007, trawl no. 1 12°10′049–12°12′457 109°20′35–109°20′33 09:29–10:54 38.0–51.0 May 30–June 1, 2007, trawl no. 1 12°10′049–12°13′457 109°20′35–109°20′33 09:29–10:54 38.0–51.0 May 30–30-30-30-30-30-30-30-30-30-30-30-30-30-3	May 10, 2007, trawl no. 4	12°16′405—12°19′220	109°15′010—109°15′009	12:58-14:26	11.8-15.2
May 12, 2007, trawl no. 3 12°26′941–12°22′836 109°28′956–109°28′669 1223–1422 51.0–86.0 May 17, 2007, trawl no. 1 12°40′036–12°37′466 109°30′256–109°28′669 1223–1422 51.0–86.0 May 17, 2007, trawl no. 2 12°37′069–12°33′677 109°23′374–109°25′058 11:10–12:55 20.0–38.0 May 17, 2007, trawl no. 3 12°27′037–12°24′737 109°22′527–109°22′525 14:20–15:27 38.0–45.0 May 17, 2007, trawl no. 4 12°21′014–12°19′261 109°21′061–109°18′353 16:28–18:04 18.0–36.0 May 21, 2007, trawl no. 2 12°16′089–12°16′218 109°20′041–109°20′014 07:44–09:19 29.0–44.0 May 21, 2007, trawl no. 3 12°15′48–12°18′125 109°18′105–109°14′960 10:01–11:57 15.0–23.5 May 21, 2007, trawl no. 4 12°11′04–12°18′125 109°18′4105–109°13′126 14:51–16:18 11.0–18.0 May 30–June 1, 2007, trawl no. 1 12°40′000–12°34′970 109°30′050–109°30′013 07:45–10:05 96.0–119.0 11:06–12:24 29.0–44.0 14:07–16:08 22.0–27.0 12°34′880–12°38′538 109°24′650–109°23′194 14:07–16:08 22.0–27.0 12°34′880–12°38′538 109°24′650–109°23′194 14:07–16:08 22.0–27.0 12°35′044–12°29′972 109°30′004–109°30′018 01:44–04:02 97.0–119.0 12°37′630–12°34′760 109°23′019–109°24′315 06:17–07:51 22.0–33.0 12°37′630–12°34′760 109°23′019–109°24′315 07:33–09:10 15.0–20.0 11:06–24, 2007, trawl no. 8 12°16′049–12°12′457 109°16′583–109°14′761 07:33–09:10 15.0–20.0 11:06–24, 2007, trawl no. 2 12°16′282–12°15′687 109°20′37–109°16′503 15:55–17:26 16.0–19.6 14.20, 20.00, trawl no. 4 12°16′022–12°18′086 109°16′533 109°21′057 11:50–12:47 27.5–44.0 11:06–24, 2007, trawl no. 4 12°16′022–12°18′086 109°16′533 109°16′975 13:22–15:00 19.6–36.5 10.0–19.6 13:15–14:32 8.0–11.0 14.20, 2007, trawl no. 1 12°10′042–12°18′585 109°21′037–109°16′503 15:55–17:26 16.0–19.6 16.8–19.0 16.20, 2007, trawl no. 1 12°10′022–12°13′544 109°21′354 109°21′355 15:20–16:25 16.8–19.0 16.8–19.0 16.60.0 16.60.0 16.60.0 16.60.0 16.60.0 16.60.0	May 12, 2007, trawl no. 1	12°40′019-12°37′463	109°30′414—109°30′402	07:43-08:47	97.0-119.0
May 17, 2007, trawl no. 1 12°40′036–12°37′466 109°30′256–109°30′307 07:37–08:55 128.0–150.0 May 17, 2007, trawl no. 2 12°37′069–12°33′677 109°23′374–109°25′058 11:10–12:55 20.0–38.0 May 17, 2007, trawl no. 3 12°27′037–12°24′737 109°22′3′374–109°22′052 14:20–15:27 38.0–45.0 May 17, 2007, trawl no. 4 12°21′014–12°19′261 109°21′061–109°18′353 16:28–18:04 18.0–36.0 May 21, 2007, trawl no. 1 12°12′920–12°16′218 109°20′041–109°20′014 07:44–09:19 29.0–44.0 May 21, 2007, trawl no. 3 12°16′089–12°15′423 109°18′105–109°14′960 10:01–11:57 15.0–23.5 May 21, 2007, trawl no. 3 12°16′108–12°15′112 109°16′481–109°16′300 12:34–14:05 17.0–19.6 May 30, June 1, 2007, trawl no. 4 12°17′104–12°15′117 109°15′034–109°31′26 14:51–16:18 11.0–18.0 May 30–June 1, 2007, trawl no. 2 12°35′144–12°37′763 109°27′068–109°27′009 11:06–12:24 29.0–44.0 Trawl no. 3 12°35′044–12°37′763 109°27′068–109°23′194 14:07–16:08 22.0–27.0 Trawl no. 6 12°35′044–12°29′972 109°20′35–109	May 12, 2007, trawl no. 2	12°38′008-12°35′934	109°28′092–109°27′798	09:43-10:44	29.0-44.0
May 17, 2007, trawl no. 2 12°37′069–12°33′677 109°23′374–109°25′058 11:10–12:55 20.0–38.0 May 17, 2007, trawl no. 3 12°27′037–12°24′737 109°22′527–109°22′525 14:20–15:27 38.0–45.0 May 17, 2007, trawl no. 4 12°21′014–12°19′261 109°21′061–109°18′353 16:28–18:04 18.0–36.0 May 21, 2007, trawl no. 2 12°12′920–12°16′218 109°20′041–109°20′014 07:44–09:19 29.0–44.0 May 21, 2007, trawl no. 2 12°15′188–12°18′125 109°16′481–109°16′500 12:34–14:05 17.0–19.6 May 21, 2007, trawl no. 3 12°15148–12°18′125 109°16′481–109°16′500 12:34–14:05 17.0–19.6 May 30–June 1, 2007, trawl no. 1 12°17′104–12°15′117 109°15′034–109°13′126 14:51–16:18 11.0–18.0 May 30–June 1, 2007, trawl no. 1 12°35′144–12°37′763 109°27′068–109°27′009 11:06–12:24 29.0–44.0 May 30–June 1, 2007, trawl no. 3 12°38′285–12°37′904 109°20′457–109°22′563 17:14–18:16 20.0–22.0 May 30–June 1, 2007, trawl no. 6 12°37′630–12°34′760 109°23′019–109°22′563 17:14–18:16 20.0–22.0 May 30–June 1, 2007, trawl no. 7 12°27′	May 12, 2007, trawl no. 3	12°26′941–12°22′836	109°28′956–109°28′669	1223-1422	51.0-86.0
May 17, 2007, trawl no. 3 12°27'037–12°24'737 109°22'527–109°22'525 14:20–15:27 38.0–45.0 May 17, 2007, trawl no. 4 12°21'014–12°19'261 109°21'061–109°18'353 16:28–18:04 18.0–36.0 May 21, 2007, trawl no. 1 12°12'920–12°16'218 109°20'041–109°20'014 07:44–09:19 29.0–44.0 May 21, 2007, trawl no. 3 12°15'182–12°15'423 109°16'190-109°16'500 10:01–11:57 15.0–23.5 May 21, 2007, trawl no. 3 12°15'148–12°18'125 109°16'3481–109°16'500 12:34–14:05 17.0–19.6 May 30 – June 1, 2007, trawl no. 1 12°40'000–12°34'970 109°30'050–109°30'013 07:45–10:05 96.0–119.0 May 30 – June 1, 2007, trawl no. 2 12°35'144–12°37'763 109°27'068–109°27'009 11:06–12:24 29.0–44.0 May 30 – June 1, 2007, trawl no. 3 12°38'285–12°37'904 109°20'457–109°22'563 17:14–18:16 20.0–22.0 May 30 – June 1, 2007, trawl no. 6 12°35'044–12°29'972 109°30'004–109°30'018 01:44–04:02 97.0–119.0 May 30 – June 1, 2007, trawl no. 7 12°27'987–12°28'000 109°23'019–109°24'315 06:17–07:51 22.0–33.0 May 30 – June 1, 2007, trawl no. 1<	May 17, 2007, trawl no. 1	12°40′036—12°37′466	109°30′256-109°30′307	07:37-08:55	128.0-150.0
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Mar. 26, 2009, trawl no. 1					
Mar. 26, 2009, trawl no. 2 12°15′542–12°16′000 109°22′005–109°18′950 11:01–12:35 23.5–51.0					
10.0-20.0					
Mar. 27, 2009, trawl no. 1 12°19′042–12°19′858 109°16′012–109°16′860 08:38–09:16 15.0–25.5					

Table. (Contd.)

Date trawl or nalygon	Coordinates		Teomilie - time	D
Date, trawl, or polygon	N	Е	Trawling time	Depth, m
Mar. 27, 2009, trawl no. 2	12°18′437—12°15′314	109°16′498–109°16′705	10:20-11:51	10.0-20.0
Mar. 27, 2009, trawl no. 3	12°14′047—12°14′042	109°17′393–109°16′962	12:21-12:35	18.0-20.0
Mar. 27, 2009, trawl no. 4	12°14′711−12°15′111	109°18′671–109°16′036	13:10-14:31	16.0-22.0
Mar. 30–31, 2009, trawl no. 1	12°15′949—12°18′507	109°16′525–109°16′494	20:44-22:03	11.8-18.8
Mar. 30–31, 2009, trawl no. 2	12°18′069–12°14′976	109°15′493—109°14′494	22:28-00:04	12.0-20.0
Mar. 30–31, 2009, trawl no. 3	12°15′516−12°16′020	109°22′048–109°18′905	02:00-03:38	38.5-51.0
Mar. 21–22, 2010, Phu Quy	10°38′498—10°48′145	108°58′897—108°00′923	09:35-13:20	100.0-130.0
Island, twin trawl no. 1				
Mar. 21–22, 2010 Phu Quy	10°47′633—10°38′765	108°00′980–108°58′654	13:40-18:00	100.0-130.0
Island, twin trawl no. 2				
Mar. 21–22, 2010 Phu Quy	10°38′951−10°49′362	108°59′119—108°58′033	18:20-00:33	100.0-130.0
Island, twin trawl no. 3				
Mar. 21–22, 2010 Phu Quy	10°49′362–10°38′990	108°58′033–108°59′401	00:33-06:12	100.0-130.0
Island, twin trawl no. 4	10012/700 1001 //071	102056/125 102055/040	00.45.00.50	40.044
Nov. 18, 2010, Phu Quoc	10°13′708−10°14′051	103°56′125–103°55′948	08:45-09:59	<40.0**
Island, trawl no. 1 Nov. 18, 2010, Phu Quoc	10014/220 10015/027	102055/425 102054/710	10.10 11.27	< 40.0
Island, trawl no. 2	10°14′320—10°15′637	103°55′425—103°54′710	10:18-11:37	<40.0
Nov. 18, 2010, Phu Quoc	10°15′486—10°13′846	103°54′668–103°56′596	11:48—14:48	Ibid.
Island, trawl no. 3	10 13 480-10 13 840	103 34 006-103 30 390	11.40-14.40	ioia.
Nov. 18, 2010, Phu Quoc	10°13′730–10°13′773	103°56′545—103°56′575	14:33-15:56	"
Island, trawl no. 4	10 15 750 10 15 775	100 00 0 10 100 00 070	11.33 13.30	
Nov. 18, 2010, Phu Quoc	10°12′478—10°11′796	103°57′325—103°57′637	16:25-17:23	"
Island, trawl no. 5				
Nov. 20-21, 2010, Phu Quoc	10°12′878—10°15′051	103°55′803–103°53′188	18:27-20:30	"
Island, trawl no. 1				
Nov. 20-21, 2010, Phu Quoc	10°15′006—10°14′056	103°52′914—103°53′884	21:10-22:10	"
Island, trawl no. 2				
Nov. 20-21, 2010, Phu Quoc	10°14138—10°16′308	103°53′749—103°54′660	22:29-00:03	"
Island, trawl no. 3				
Nov. 20–21, 2010, Phu Quoc	10°16′262−10°13′788	103°54′619−103°55′538	00:30-02:39	"
Island, trawl no. 4				
Nov. 20–21, 2010, Phu Quoc	10°13′870—10°12′970	103°55′454–103°55′856	03:07-04:24	"
Island, trawl no. 5				
Nov. 22–23, 2010, Phu Quoc	10°12′135–10°14′375	103°52′450—103°52′190	17:50—19:32	"
Island, trawl no. 1	10014/200 1001///20	102052/240 102050/152	10.50 21.54	"
Nov. 22–23, 2010, Phu Quoc	10°14′399–10°16′630	103°52′248—103°50′152	19:58-21:54	,,
Island, trawl no. 2	10016/755 10015/677	102940/747 102951/002	22.20 00.11	"
Nov. 22–23, 2010, Phu Quoc Island, trawl no. 3	10°16′755–10°15′677	103°49′747—103°51′903	22:29-00:11	
Nov. 22–23, 2010, Phu Quoc	10°15′801−10°14′523	103°51′737—103°53′322	00:39-02:37	,,
Island, trawl no. 4	10 13 001-10 14 323	103 31 131-103 33 322	00.37-02.37	
Nov. 22–23, 2010, Phu Quoc	10°14′571−10°14′029	103°53′163–103°54′310	03:02-04:15	"
Island, trawl no. 5	10 11 3/1 10 17 02)	100 00 100 100 04 010	03.02 07.13	
	21 1 22 2005 -41-			<u> </u>

^{*} Data on exact trawling time on June 21 and 23, 2005, at polygons 1, 3, and 4 were lost; at each polygon, the trawling surveys were conducted for 45 min during the light (8–14 UT) and dark (19–24 UT) time of the day; ** during the trawling off Phu Quoc Island, exact measurement of the depth was impossible, but it did not reach 40 m.

Although the gobies have not been found at all the stations, the full station list is presented here, because the deposited material was labeled by the number of the trawl and the sampling date only, and the trawl cards are not in the open access. In addition, the catches from local fisheries sampled with similar trawls at the landing sites of the estuaries of the Be River (Cho Cua Be) and Nha Phu Bay (Cang Ca Vinh Luong), as well as the catches of local fishermen (line fishing and lifting nets) in the estuary of the Cai River (within Nha Trang City), were inspected. In addition to the species associated with soft bottoms (i.e., sandy or silty) of the open sea, the species distributed in estuaries or associated with coral reefs but living at the sites adjacent to the reefs and available for trawling were also included in this review. Apparently, such species may be caught by the trawls only from time to time; however, to my opinion, the review will be incomplete without mentioning of them. Such species is marked in the list by (+) sign. The representatives of the subfamily Ambyopinae (Gobiidae) and of the genus Oxymetopon Bleeker, 1861 from the subfamily Ptereleotrinae (Microdesmidae) were not included in this study, because the targeted studies on these groups have been published earlier (Prokofiev, 2015, 2016a).

The material was fixed in 6–10% formaldehyde solution and then transferred to 70–80% ethanol for continuous storage. The material is deposited in the Shirshov Institute of Oceanology, Russian Academy of Sciences (IO RAS), and the exceptions are indicated in the descriptions of the species. Several species were identified with the help of Dr. H. Larson (Museum and Art Gallery Northern Territory, Darwin, Australia). These species are indicated by asterisks.

The following abbreviations are used in the text: *SL*, standard length; *ID*, *IID*, *A*, *P*, *V*, *C*, the first and second dorsal fins, anal, pectoral, pelvic, and caudal fins, respectively; ZIN, Zoological Institute, Russian Academy of Sciences, St. Petersburg; ZMMU, Zoological Museum, Moscow State University.

FAMILY ELEOTRIDAE

In my samples, all species of the family from Nha Trang Bay are represented by the specimens from the catches of local fishermen from the estuary of the Cai River. However, these fishes can migrate to the seawaters characterized by the normal marine salinity and can be fished with trawls. Therefore, these specimens are mentioned in this description.

+Butis butis Hamilton, 1822 (Figs. 1a and 1b)

Material. In total, four specimens 65–94 mm *SL*, Nha Trang, Cho Xon Moi, from December 2006 to January 2007.

Comments. In the studied material, the specimens with a black spot in *P* base (Fig. 1a) and without this

spot (Fig. 1b) are observed. However, other differences between them are not registered.

*Eleotris melanosoma Bleeker, 1852 (Fig. 1c)

Material. In total, nine specimens 72–180 mm *SL*, estuary of the Cai River, collected from 2006 to 2009.

Comments. One of the caught specimens (82 mm SL, sampled during spring-summer 2006) differs in the following features: widely separated upper and lower rows of genipores on the gill cover and only the fourth transversal row of genipores under the eye crosses the upper longitudinal row of genipores that is usual for the characters of *E. acanthopoma* (Bleeker, 1853) (Akihito et al., 2002). However, this specimen is collected together with the specimens of the same size characterized by the typical features of *E. melanosoma*: point-like gap between the upper and lower opercular rows and the third and fourth transversal rows crossing the upper longitudinal row on the cheek. According to Koumans (1953), these species are conspecific. The relationships between these nominal species, most likely, should be specified.

+Oxyeleotris marmorata (Bleeker, 1852)

Material. In total, five specimens 107-140 mm SL, estuary of the Cai River, collected from 2006 to 2009.

FAMILY GOBIIDAE

*Acentrogobius caninus (Valenciennes, 1837) (Fig. 1d)

Material. In total, two specimens 102 and 103 mm *SL*, Nha Trang, Cho Xon Moi, catches of local fishermen, spring and summer 2009.

+Acentrogobius janthinopterus (Bleeker, 1852) (Figs. 1e and 1f)

Material. In total, ten specimens 45–65 mm *SL*, Nha Trang, Cho Xon Moi, from December 2006 to January 2007.

Acentrogobius sp. 1 (Fig. 1g)

Material. One specimen 26 mm SL, trawl no. 3, January 9, 2007.

Comments. A single juvenile has a specific pigmentation: five rounded and distinct spots along the lateral line and the last spot on *C* base is behind of the bases of its rays. The species is most similar to *A. suluensis* (Herre, 1927). However, the latter species differs in the following characters: the last posterior spot of the lateral row before *C* base and two dark longitudinal bands under the eye are present (they absent in the studied

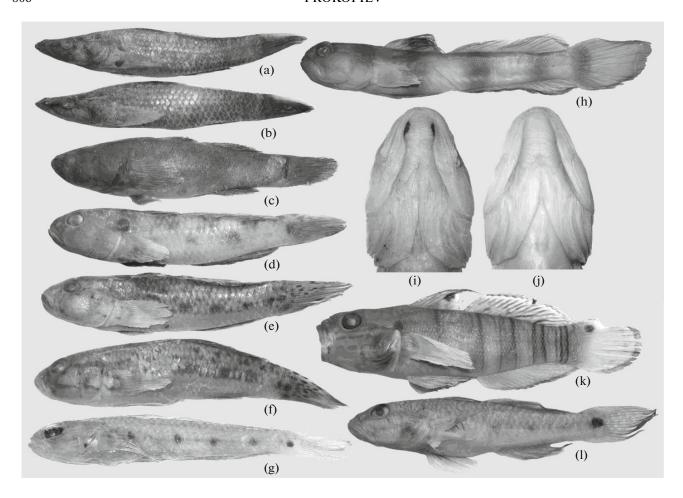


Fig. 1. Gobioid fishes of soft bottoms from southern Central Vietnam: (a) Butis butis 94 mm SL; (b) B. butis 65 mm SL; (c) Eleotris melanosoma 90 mm SL; (d) Acentrogobius caninus 103 mm SL; (e, f) Acentrogobius janthinopterus (e, male 65 mm SL; f, female 56 mm SL); (g) Acentrogobius sp. 1 26 mm SL; (h–j) Amblyeleotris fontanesii (h, general view of a female 130 mm SL; i, j, head from below in a male and female); (k) Amblygobius phalaena 85 mm SL; (l) Arcygobius baliurus 77 mm SL.

specimen). Another very similar species is *A. violarisi* Allen, 2015. It differs from the studied species in the following characters: the first four lateral spots substantially elongated transversally into the dashes, and the last spot rounded and located directly on the bases of rays of *C*. The studied species, most likely, belongs to an undescribed species.

Amblyeleotris fontanesii (Bleeker, 1852) (Figs. 1h-1j)

Material. In total, three specimens: one specimen 56.5 mm SL, trawl. no. 3, December 17, 2005; one specimen 130 mm SL, Hon Tre, cape Mui Nam, line fishing, June 2, 2006; one specimen 142 mm SL, trawl. no. 3, January 9, 2007.

Comments. This species is usual on soft bottoms along the entire coastal zone of South Vietnam (the most southern record is off Phu Quoc Island, three specimens 73-97 mm SL, October 2010). In Nha Trang Bay, this is a usual species inhabiting silty or

sandy grounds, including sea grass beds. In trawl catches, the species is often found together with *M. crocata* characterized by a similar biology. The representatives of the species possess sexual dimorphism in coloration: the males differ from females in the presence of two black oval spots on the lower surface of the head (Figs. 1i and 1j) and absence of the black spot on ID; only the distal part of the spot is black.

*Amblygobius phalaena (Valenciennes, 1837) (Fig. 1k)

Material. In total, two specimens 70 and 85 mm *SL*, Nha Trang, catches of local fishermen, spring—summer 2009.

Comments. This species is distributed on coral reefs, and it is not observed on soft bottoms. However, sometimes, the fishes can be caught with trawls near coral reefs.

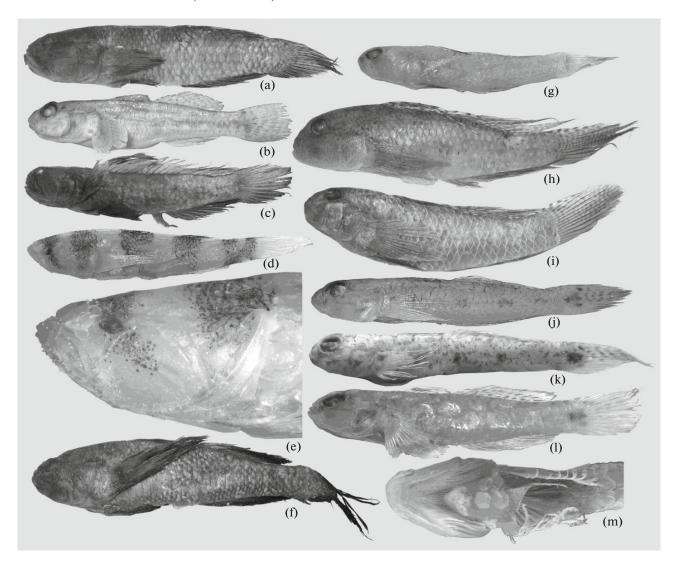


Fig. 2. Gobioid fishes of soft bottoms from southern Central Vietnam: (a) *Aulopareia unicolor* 95 mm SL; (b) *Bathygobius hong-kongensis* 36.5 mm SL; (c) *Cryptocentrus pavoninoides* 82 mm SL; (d, e) *Egglestonichthys bombylios* (general view and head of a specimen 30 mm SL); (f) *E. melanoptera* 103 mm SL; (g) *Eviota* sp. indet. 27.5 mm SL; (h, i) *Exyrias puntang* (male 100 mm SL and female 95 mm SL); (j) *Favonigobius opalescens* 44 mm SL; (k) F. cf. *opalescens* 52 mm SL; (l, m) *Favonigobius* sp. 1 36 mm SL (a view from a side and from below).

Arcygobius baliurus (Valenciennes, 1837) (Fig. 11)

Material. In total, seven specimens: one specimen 57 mm SL, polygon 1, May 28, 2005; four specimens 65–71 mm SL, trawl no. 3, from June 30 to July 1, 2006; one specimen 77 mm SL, trawl no. 7, from June 30 to July 1, 2006; one specimen, 71 mm SL, trawl no. 4, from May 30 to June 1, 2007.

***Aulopareia unicolor (Valenciennes, 1837) (Fig. 2a)

Material. In total, one specimen 95 mm *SL*, mouth of the Cai River, spring—summer 2007.

Comments. This is a rare species, which has not been recorded before in the Cai River basin, as well as in Central Vietnam (Serov et al., 2003, 2006). A similar species, *A. janetae* Smith, 1945, is indicated for the Mekong River basin including its Vietnamese part (Rainboth, 1996).

*Bathygobius hongkongensis Chiu, 1986 (Fig. 2b)

Material. In total, five specimens 28-36.5 mm SL, Cana Bay, coastal zone opposite of Cu Lao Cau Island, $11^{\circ}19'55''$ N, $108^{\circ}52'04''$ E, in the tidal zone inside of the crevices of large boulders.

Comments. This species distributed in the upper littoral, most likely, cannot be found in trawl catches.

However, I mention this species because it has not been recorded before in the fauna of Vietnam and (in general) in the tropical Western Pacific (Nguyen, 2000; Larson and Murdy, 2001).

Cryptocentrus pavoninoides (Bleeker, 1854) (Fig. 2c)

Material. In total, one specimen 82 mm *SL*, Nha Trang, market, from December 2006 to January 2007.

Comments. In this specimen, scales on the dorsal surface of the head are absent (but present in the predorsal area), and only three transversally elongated black spots on the first to third interradial membranes *ID* are present. These characters differ from the description of Koumans (1953): head covered by scales from the eyes and a spot between each ray of *ID* are present. However, a "complex variability" is usual for the species complex "pavoninoides" (Hoese and Larson, 2004. P. 168), and the other characters of the specimen are in accordance with the species description.

Egglestonichthys bombylios Larson et Hoese, 1996 (Figs. 2d and 2e)

Material. In total, one specimen 30 mm *SL*, trawl no. 3, January 9, 2007.

Comments. The species is indicated in the fauna of Vietnam for the first time. It was known before only based on the first description (Larson and Hoese, 1996): three specimens off Northern Australia and India (off Bombay). In the first description, the raised rows of genipores especially "in the interorbital area, on the jaws and snout" present (Larson and Hoese, 1996, p. 47). In my specimen (Fig. 2e), papillae on the lower jaw are elongated into short barbel-shaped protrusions similar to those in Feia Smith, 1959 (Lachner and McKinney, 1979), V-shaped row of genipores on the chin (not indicated in the first description) are present, and nasal capsule is substantially protruded (not indicated in the first description and not seen on the figure (Larson and Hoese, 1996; Fig. 2)). The latter character cannot be assessed because of a poor quality of the photograph of the holotype. In addition, the following characters are given in the first description: a narrow frenum of the ventral sucking disc and pelvic fins "oval, disc-shaped" (Larson and Hoese, 1996, p. 48). In my specimen, the frenum is absent (it is possible that it is an artifact, and this structure has been lost in the trawl) and the pelvic fins are pointed. The top of the fin is formed by the third and fourth branched rays, and the fins are connected by a membrane only in their bases (this part fully remains). Based on other characters, the specimen is in accordance with the first description.

E. bombylios differs substantially from other representatives of the genus, but it is similar to the species of the genus *Feia* in some external features (small size,

teeth distribution, absence of sensory pores in the canals, and position of genipores). Genipores are raised and (on the lower jaw) elongated (barbelshaped), and a V-shaped genipore row is present on the chin. Based on the latter character, the genus *Feia* differs from the similar genera (Winterbottom, 2003, 2005). However, I observed a V-shaped genipore row also in *E. melanoptera*. Therefore, a monophyly of *E. bombylios* and *Feia* spp. cannot be supported by any of the characters: these characters can be found in other genera or they are subjected to interspecific variation in other genera of gobioid fishes.

Egglestonichthys melanoptera (Rao, 1971) (Fig. 2f)

Material. In total, five specimens: one specimen 103 mm SL, trawl no. 1, May 26, 2006; one specimen 77 mm SL, trawl no. 4, May 29, 2006; one specimen 68 mm SL, trawl no. 2, June 26, 2006; two specimens 46 and 54 mm SL, trawl no. 3, March 31, 2009.

Comments. Larson and Hoese (1996, p. 48) indicate a specimen with a label "Vietnam, coll. P. Fourmanoir, January 20, 1964." Based on the date and name of the collector, this specimen is collected in Nha Trang Bay, and this is the first record of this species in Vietnam (not mentioned by the Vietnamese author (Nguyen, 2000)). Based on my observations, *E. melanoptera* is a comparatively usual species in Nha Trang Bay, but it is sparsely distributed and represented by single individuals.

Eviota sp. indet. (Fig. 2g)

Material. In total, four specimens 25.5–27.5 mm *SL*, Hon Dun, June 20, 2005, at night.

Comments. This is a deepwater species, most likely, not described. However, all specimens are damaged, and their confidential identification is not possible. Based on the results of underwater observations, the gobies from the genera *Eviota* Jenkins, 1903, and *Trimma* Jordan et Seale, 1906, are usual at small depths on coral reefs of Nha Trang and Van Phong bays. They, most likely, are represented by a large number of species, but the attempts for the investigation of this fauna have not been conducted.

The results of the study of a small collection of *Eviota* spp. from the samples of the Research Vessel *Vityaz* conducted on reefs of the Indo-Vest-Pacific show that a species *Eviota gurjanovae* (Prokofiev, 2007) described previously from the littoral zone of Hainan Island (Prokofiev, 2007, 2012) is conspecific with *E. prasina* (Klunzinger, 1871), a species widely distributed in the Indo-Vest-Pacific; and the former species should be regarded as a younger synonym (syn. nov.).

Exyrias puntang (Bleeker, 1851) (Figs. 2h and 2i)

Material. In total, four specimens: one specimen 65 mm *SL*, polygon 1, May 28, 2005; one specimen 100 mm *SL*, trawl no. 3, December 17, 2005; two specimens 80 and 95 mm *SL*, Nha Trang, market, from December 2006 to January 2007.

Comments. According to Allen and Randall (2005), the majority of species of the genus (with the exception of *E. akihito* described by these authors) are associated with soft bottoms. However, in my samples, the second species known for the bay (*E. bellissimus* (Smith, 1959)) was registered only on coral reefs.

Favonigobius opalescens (Herre, 1936) (Fig. 2j)

Material. In total, 18 specimen: two specimens 22 and 26 mm *SL*, polygon 4, June 21, 2005, trawling during day; one specimen 35 mm *SL*, trawl no. 1, December 17, 2005; three specimens 41.5–46.5 mm *SL*, trawl no. 2, December 17, 2005; five specimens 32.5–42.0 mm *SL*, trawl no. 3, December 17, 2005; one specimen 39.5 mm *SL*, trawl no. 2, May 29, 2006; one specimen 44 mm *SL*, trawl no. 4, June 2, 2006; one specimen 43 mm *SL*, Nha Trang, ChoXonMoi, from December 2006 to January 2007; one specimen 21 mm *SL*, trawl no. 2, April 25, 2007; two specimens 25 and 27 mm *SL*, trawl no. 1, May 8, 2007; one specimen 22 mm *SL*, trawl no. 4, May 17, 2007. *Favonigobius* cf. *opalescens* (Fig. 2k), one specimen, 52 mm *SL*, trawl no. 5, from June 30 to July 1, 2006.

Comments. This is a usual species of the bay; most likely, the most abundant goby of soft bottoms. However, its registration in trawl catches is difficult because of small body size of the fish. During the trawling conducted at polygon 1 during the daytime and at night in May 2005 (table), the biomass of the representatives of this species was 1.90×10^{-3} and 2.045×10^{-3} at the extent of the trawling area of 1.65 nautical miles and total biomass of the fishes 1.66×10^{-1} and 1.64×10^{-1} , respectively.

In the studied material, a specimen from Van Phong Bay (trawl no. 5, from June 30 to July 1, 2006) differs from other specimens in a weak development of milk-white coloration on the lower side of the head, substantially more expressed pigmentation of scale pockets, and spotted fins (Fig. 2k). It is possible that this specimen is not conspecific with the others.

Favonigobius sp. 1 (Figs. 2l and 2m)

Material. In total, two specimens 35.5 and 36.0 mm *SL*, trawl no. 3, January 9, 2007.

Comments. The representatives of the species differ from *F. opalescens* in a dark pigmented medial part of the branchial membrane (Fig. 2m). Other features of

coloration are as follows: on C base, two sequentially located medial spots; above and below of the posterior spot, a spot of a smaller size. The specimens of the species differ from $Papillogobius\ melanobranchus$ (Fowler, 1934) in the absence of the line (usual for the genus) of densely located papillae (zone c) on the cheeks between the longitudinal rows of b and d.

Glossogobius circumspectus (Macleay, 1883) (Fig. 3a)

Material. In total, one specimen 62 mm *SL*, Nha Trang, market of the Be River (Cho Cua Be), from December 2006 to January 2007.

Comments. This species is recorded in the fauna of Vietnam for the first time. The single specimen is sampled from the trawl catches of local fishermen in the open part of the bay.

Glossogobius giuris (Hamilton, 1822) (Fig. 3b)

Material. In total, one specimen 78 mm *SL*, trawl no. 3, December 17, 2005.

+Glossogobius olivaceus (Temminck et Schlegel, 1845) (Fig. 3c)

Material. In total, three specimens 83–102 mm *SL*, Nha Trang, catches of local fishermen, 2007.

Comments. This species was not described before for the Cai River basin, but *G. aureus* Akihito et Meguro, 1975, and *G. giuris* (Hamilton, 1822) (Serov et al., 2003) were indicated. These species were found in the catches of local fishermen in the estuary. Nevertheless, the representatives of *G. giuris* were caught in the area of the Grand Bank (Ran qiao). The species *G. olivaceus* was indicated before only to the south of Taiwan Island (Akihitoetal, 2002). However, Vietnamese authors (Nguyen et al., 1997; Nguyen, 2000) mention *G. fasciatopunctatus* (Richardson, 1845) for the fauna of the country, and this species is conspecific with *G. olivaceus* (Akihito Prince and Meguro, 1975).

Gnatholepis sp. (aff. G. cauerensis (Bleeker, 1853)) (Fig. 3d)

Material. In total, nine specimens: one specimen 25 mm SL, polygon 4, June 21, 2005, daytime; one specimen 36 mm SL, polygon 3, June 23, 2005; one specimen 26 mm SL, trawl no. 1, May 8, 2007; two specimens 27 and 29 mm SL, trawl no. 3, May 21, 2007; four specimens 32–36 mm SL, trawl no. 4, June 24, 2007.

Comments. Despite a recent revision of the genus (Larson and Buckle, 2012), I was unable to identify this species confidently. Its characters mainly are in accordance with those in *G. cauerensis*. However, the

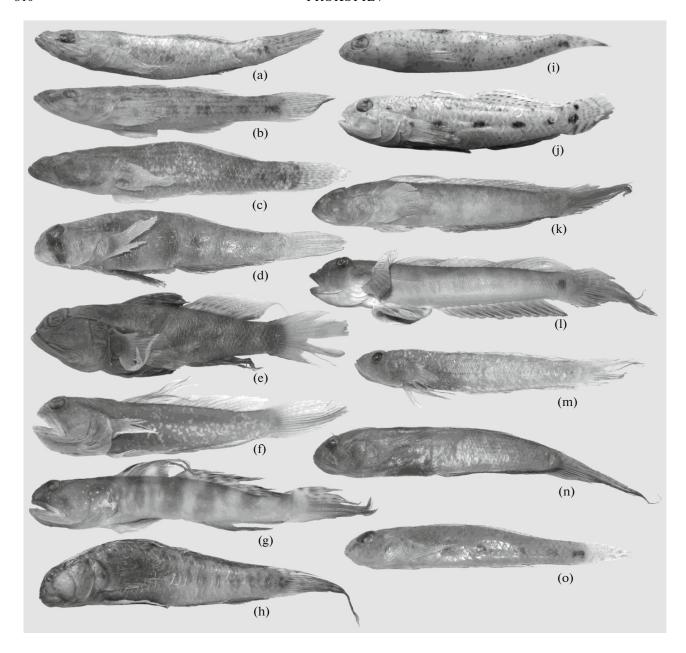


Fig. 3. Gobioid fishes of soft bottoms from southern Central Vietnam: (a) Glossogobius circumspectus 62 mm SL; (b) G. giuris 78 mm SL; (c) G. olivaceus 92 mm SL; (d) Gnatholepis sp. 36 mm SL; (e) Mahidolia mystacina 60 mm SL (C damaged); (f) Myersina crocata 90 mm SL; (g) M. filifer 120 mm SL (C damaged); (h) Oligolepis acutipennis 68 mm C, (i) Oplopomops diacanthus 39 mm C, (j) Oplopomus caninoides 60 mm C, (k) Oxyurichthys auchenolepis 130 mm C, (l) C0. papuensis 110 mm C1, (m, n) C0. tentacularis (specimen 60 mm C1 and specimen 110 mm C2.

studied specimens differ from the typical representatives of the species in the presence of a very wide suborbital band, absence of humeral spot, and dark coloration of V. Dermal protrusion in the angle of the mouth is almost not expressed.

Lubricogobius tre Prokofiev, 2009

Material. In total, one specimen, holotype, ZIN no. 54130, 25 mm *SL*, trawl no. 1, June 24, 2007.

Mahidolia mystacina (Valenciennes, 1837) (Fig. 3e)

Material. In total, nine specimens: one specimen 85 mm SL, trawl no. 1, December 10, 2005; two specimens 57 and 62 mm SL, trawl no. 1, December 17, 2005; one specimen 48 mm SL, trawl no. 2, December 17, 2005; three specimens 38–54 mm SL, trawl no. 3, December 17, 2005; one specimen 60 mm SL, Nha Trang, market, from December 2006 to January 2007; one specimen 62 mm SL, trawl no. 3, April 21, 2007.

Comments. In the studied specimens, ID is black but not monotonous; black color is formed by melanophores, which are slightly less dense in the areas represented by indistinct bands (more distinct in the females). In the males, indistinct conglomerations, including several small rounded sparse spots can be seen, but distinct black spots are absent. Thus, based on the coloration of ID, the studied specimens are intermediate between two species of the genus Mahidolia (one of them has not been described) indicated for the waters off Japan (Akihitoetal, 2002). However, a substantial variability in the coloration of ID has been mentioned before (Allen and Erdmann, 2012).

Myersina crocata (Wongratana, 1975) (Fig. 3f)

Material. In total, five specimens: two specimens 58 and 76 mm SL, trawl no. 2, December 17, 2005; one specimen 77 mm SL, trawl no. 3, December 17, 2005; two specimens 50 and 90 mm SL, trawl no. 3, January 9, 2007.

Myersina filifer (Valenciennes, 1837) (Fig. 3g)

Material. In total, five specimens: one specimen 111 mm SL, trawl no. 2, December 17, 2005; two specimens 96–120 mm SL, trawl no. 3, December 17, 2005; one specimen 46 mm SL, trawl no. 1, June 17, 2006; one specimen 77 mm SL, trawl no. 2, March 23, 2009.

**Oligolepis acutipennis (Valenciennes, 1837) (Fig. 3h)

Material. In total, three specimens 64–68 mm *SL*, Nha Trang, Cho Xon Moi, from December 2006 to January 2007.

Comments. This species is usual in the Mekong River basin (Rainboth, 1996), but it has not been recorded in the Cai River basin and (in general) Central Vietnam (Serov et al., 2003, 2006). The studied specimens are caught in the estuary of the Cai River.

Oplopomops diacanthus (Schultz, 1943) (Fig. 3i)

Material. In total, four specimens 36-39 mm SL, trawl no. 3, June 24, 2007.

Comments. The species is recorded in the fauna of Vietnam for the first time.

Oplopomus caninoides (Bleeker, 1852) (Fig. 3j)

Material. In total, 12 specimens: one specimen 60 mm *SL*, polygon 4, trawl no. 1, Nov. 24, 2005; one specimen 43 mm *SL*, trawl no. 1, December 10, 2005;

four specimens 42-54 mm SL, trawl no. 2, December 17, 2005; four specimens 42-53 mm SL, trawl no. 3, December 17, 2005; one specimen 41 mm SL, trawl no. 5, May 29, 2006; one specimen 59 mm SL, trawl no. 4, June 24, 2007.

Comments. Vietnamese authors (Nguyenetal, 1997; Nguyen, 2000) do not indicate this species for the fauna of the country, most likely, confusing it with *Oplopomus oplopomus* (Valenciennes, 1837).

Oxyurichthys auchenolepis Bleeker, 1867 (Fig. 3k)

Material. In total, seven specimens: one specimen 54 mm SL, Nha Trang, market of the Be River (Cho Cua Be), from May 24 to June 19, 2005; one specimen, 137 mm SL, trawl no. 3, May 17, 2007; three specimens 97–130 mm SL, trawl no. 4, May 17, 2007; one specimen 40 mm SL, trawl no. 2, from May 30 to June 1, 2007; one specimen 148 mm SL, trawl no. 8, from May 30 to June 1, 2007.

Comments. The species is recorded in the fauna of Vietnam for the first time. It reliably differs from a very similar species O. papuensis in the predorsal area totally covered by scales on the sides from the medial dermal keel. In addition, O. auchenolepis differs from O. papuensis in the presence of light (but not silvery) interradial membranes V covered by dark melanophores (vs. bright silvery with specks from dense merged black melanophores in O. papuensis), very short bristle-shaped dermal protrusions of the edge of the frenum in large specimens (sometimes, entirely absent even at 137 mm SL), absence of a dark spot in C base, absence of the longitudinal medial row of vertical silvery dashes on interradial membranes A, and absence of bright white small spots along the rays of P and C in fixed specimens. It should be noted that the coloration of the fins cannot be expressed in O. papuensis juveniles (it appears initially on V), and the spot in C base also can be absent. However, both species differ significantly at any age by the presence of scales in the predorsal area and degree of development of bristle-shaped dermal protrusions of the frenum. In the smallest studied specimens of O. auchenolepis, the edge of the frenum is smooth, and the protrusions are developed only in adult specimens. In O. papuensis, these protrusions are well developed even in juveniles. The deviations by this character are observed in only two studied specimens of *O. papuensis*. In particular, in the specimen 85 mm SL (trawl no. 5, May 29, 2006), the medial third of the edge of the frenum is smooth, but the protrusions are well developed in the lateral thirds of the frenum edge. In the specimen 81 mm SL (trawl no. 2, May 21, 2007), these protrusions are substantially shorter than those in other investigated specimens of similar size (however, they are always absent in the specimens of O. auchenolepis of such size).

Oxyurichthys papuensis (Valenciennes, 1837) (Fig. 31)

Material. In total, 18 specimens: two specimens 45 and 52 mm SL, Hon Dun, June 20, 2005, at night; one specimen 110 mm SL, trawl no. 1, December 17, 2005; two specimens 27 and 135 mm SL, trawl no. 3, December 17, 2005; five specimens 74–85 mm SL, trawl. no. 5, May 29, 2006; two specimens 43 and 65 mm SL, trawl no. 3, January 9, 2007; one specimen 44 mm SL, trawl no. 1, May 21, 2007; two specimens 81 and 85 mm SL, trawl no. 2, May 21, 2007; two specimens 55 and 65 mm SL, trawl no. 4, May 21, 2007; one specimen 55 mm SL, trawl no. 2, from May 30 to June 1, 2007.

Oxyurichthys tentacularis (Valenciennes, 1837) (Figs. 3m and 3n)

Material. In total, five specimens: one specimen, 51 mm SL, trawl no. 2, December 17, 2005; one specimen, 87 mm SL, trawl no. 3, December 17, 2005; two specimens, 85 and 95 mm SL, Nha Trang, catches of local fishermen, from December 2006 to January 2007; one specimen, 60 mm SL, trawl no. 3, January 9, 2007.

⁺*Papillogobius reichei* (Bleeker, 1853) (Fig. 30)

Material. In total, three specimens 24-35 mm SL, Kobe River delta, May 11, 1985, in the morning (8:00-9:00 a.m.).

Comments. In the studied specimens, the predorsal area with two or three scale rows before ID along the medial line and with two scale rows on the flanks up to the middle of the length of the gill cover; preventral area entirely covered by scales, branchial membrane light. The specimens are studied from the old collection of the Institute of the Evolutionary Morphology and Ecology of Animals, Academy of Sciences of the former Soviet Union. In my samples, the species is not registered. The species is associated with sandy sites close to mangroves and coral reefs (Hoese, 1986).

Parachaeturichthys polynema (Bleeker, 1853) (Fig. 4a)

Material. In total, 29 specimens: one specimen 67 mm SL, polygon 1, May 28, 2005; one specimen 85 mm SL, trawl no. 1, December 10, 2005; one specimen 91 mm SL, trawl no. 4, December 10, 2005; one specimen 77 mm SL, trawl no. 1, December 17, 2005; four specimens 34–105 mm SL, trawl no. 2, December 17, 2005; four specimens 26–48 mm SL, trawl no. 3, December 17, 2005; one specimen 54 mm SL, trawl no. 2, May 26, 2006; three specimens 39–53 mm SL, trawl no. 3, May 26, 2006; one specimen 67 mm SL, trawl no. 1, May 29, 2006; two specimens 90 and 95 mm SL, trawl no. 4, June 2, 2006; one specimen

95 mm SL, trawl no. 3, June 6, 2006; one specimen 50 mm SL, trawl no. 3, June 10, 2006; two specimens 70 and 98 mm SL, trawl no. 2, June 12, 2006; one specimen 92 mm SL, trawl no. 1, June 14, 2006; three specimens 50–105 mm SL, trawl no. 1, June 17, 2006; one specimen 32 mm SL, trawl no. 3, June 21, 2006; one specimen 110 mm SL, trawl no. 2, June 26, 2006.

Comments. Together with *O. papuensis*, this is the most frequently occurring goby in the trawl catches within Nha Trang Bay, but the fishes are never observed in large amounts. The species is usual at the depths between 10 and 40 m.

+Periophthalmus kalolo Lesson, 1831

Material. In total, two specimens 36 and 54 mm *SL*, Kobe River delta, May 11, 1983, in the morning (8:00–9:00 a.m.).

Comments. Mudskippers inhabit the supralittoral zone and are characterized by amphybiotic mode of life. Therefore, they cannot be found in trawl catches. I mention this species because of the error found in a review of ichthyofauna of the Cai River (Serov et al., 2003). The authors describe a single mudskipper species, *Periophthalmodon schlosseri* (Pallas, 1770) including its diagnostic characters. However, the related photographs apparently show *P. kalolo*. This is supported by the identification of the material, which is mentioned above. The species *P. kalolo* is widely known in the literature under the name *Periophthalmus argentilineatus* Valenciennes, 1837 (Murdy, 1989). Nevertheless, according to Kottelat (2013), these names are objective synonyms, and *P. kalolo* has a priority.

Up to the early 2000s, the mangroves near Nha Trang and around the islands of the bay were almost destroyed. I did not observed mudskippers during the entire period of studies in the region. I also did not find them during a special observation of artificial mangrove plantations in the Dam Bay (Hon Tre) in summer 2007. Mudskippers were also absent at the markets of Nha Trang despite their delicacy for local people.

Platygobiopsis dispar Prokofiev, 2008

Material. In total, four specimens: holotype, 65 mm *SL*, ZMMU no. 21658, trawl no. 6, from May 30 to June 1, 2007; paratypes, two specimens, ZMMU no. 21659, trawl no. 6, from May 30 to June 2007; paratype, one specimen, ZMMU no. 21660, trawl no. 3, January 9, 2007.

Psammogobius viet Prokofiev, 2016

Material. In total, two specimens (holotype, 66.5 mm *SL*, ZMMU no. 23154 and paratype, 74 mm *SL*, ZMMU no. 23154-a), Nha Trang Bay, landing site in Nha Phu Bay (Cang Ca Vinh Luong), from March to May 2009.

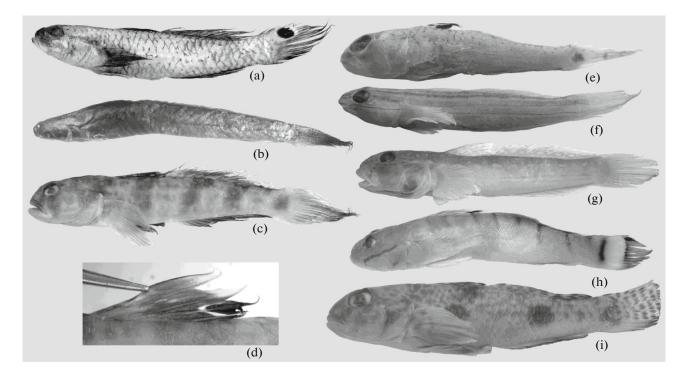


Fig. 4. Gobioid fishes of soft bottoms from southern Central Vietnam: (a) *Parachaeturichthys polynema* 65 mm *SL*; (b) *Pseudapocryptes lanceolatus* 148 mm *SL*; (c, d) *Tomiyamichthys* ex gr. *russus* (general view of a specimen 90 mm *SL* and its ID); (e) *Tryssogobius porosus* 30 mm *SL*; (f) *Valenciennea immaculate* 41 mm *SL*; (g) *V. puellaris*, 100 mm *SL*; (h) *V. wardii* 67 mm *SL*; (i) *Yongeichthys nebulosus* 90 mm *SL*.

Comments. This species is very similar to *P. biocellatus* (Valenciennes, 1837) widely distributed in the Indo-Vest-Pacific and indicated for the waters off Vietnam (Nguyen, 2000). However, the studied species differs in the coloration and structure of the seismosensory system (in particular, pore *E* absent and genipores present only in the initial parts of the sensory lines on the cheeks (Prokofiev, 2016b)).

*Pseudapocryptes lanceolatus (Bloch et Schneider, 1801) (Fig. 4b)

Material. In total, four specimens 125–150 mm *SL*, Nha Trang, market, from December 2006 to January 2007.

*Tomiyamichthys ex gr. russus (Cantor, 1850) (Fig. 4c and 4d)

Material. In total, four specimens: one specimen 43 mm *SL*, trawl no. 1, December 17, 2005; three specimens 58.5–90.0 mm *SL*, trawl no. 3, December 17, 2005.

Comments. *T. russus* is represented by a species complex, and at least a part of the nominal species combined into synonymy by Koumans (1953) should be separated. This species has not been registered in the fauna of Vietnam before.

Tryssogobius porosus Larson et Chen, 2007 (Fig. 4e)

Material. In total, nine specimens: four specimens 29-36 mm SL, trawl no. 1, May 21, 2007; two specimens 26 and 27 mm SL, trawl no. 2, from May 30 to June 1, 2007; two specimens, 30 and 31 mm SL, trawl no. 5, from June 30 to July 1, 2006; one specimen 33.5 mm SL, trawl no. 6, from May 30 to June 1, 2007.

Additional material. In total, six specimens 12–26 mm *SL*, Research Vessel *Vityaz*, survey 54, station 6727, February 22, 1973, South China Sea to the south of the Anambas Islands (Indonesia), 02°03′0 N, 105°37′0 E, Sigsbee trawl, depth 73 m, catching time 10:11–11:40, collector Fisunov.

Comments. This species, most likely, can be referred to the genus *Obliquogobius* Koumans, 1941. The differences between the genera *Tryssogobius* and *Obliquogobius* are rather conditional, and they are based on the characters that are used in other genera for distinction of species. A more detailed morphological analysis of the representatives of these genera should be conducted.

The species *T. porosus* was known before only based on the type series collected off southern Taiwan and Hainan (Larson and Chen, 2007). The new records show that the species is widely distributed along the western border of the shelf of the South China Sea up to extreme south of the shelf.

⁺Valenciennea immaculata (Ni, 1981) (Fig. 4f)

Material. In total, one specimen 41 mm *SL*, trawl no. 2, January 11, 2007.

Comments. A representative of this species, most likely, was occasionally collected with the trawl from an adjacent coral reef. The species is reliably recorded in the fauna of Vietnam for the first time.

The species of the genus *Valenciennea* Bleeker, 1856, (synonym *Eleotriodes* Bleeker, 1857) (Figs. 4f—4h) are the most notable gobies on reefs of Nha Trang Bay.

Valenciennea wardii (Playfair, 1866) (Fig. 4h)

Material. In total, six specimens: one specimen 38 mm SL, polygon 4, June 21, 2005 (daytime trawling); three specimens 66–70 mm SL, polygon 4, trawl no. 1, Nov. 24, 2005; one specimen 60 mm SL, trawl no. 3, December 4, 2005; one specimen 65 mm SL, trawl no. 2, December 17, 2005.

Comments. In contrast to the previous species, the representatives of *V. wardii* are continuously distributed on soft bottoms.

In addition to the species of the genus mentioned above, the following species are known from Nha Trang Bay: *Valenciennea puellaris* (Tomiyama, 1955) (associated strictly with coral reefs; two specimens 98 and 100 mm *SL*, samples of 2009; Fig. 4g) and *V. strigata* (Broussonet, 1782) (only underwater observations, fixed specimens absent).

Yongeichthys nebulosus (Forsskål, 1775) (Fig. 4i)

Material. In total, ten specimens: two specimens 63 and 80 mm SL, trawl no. 1, polygon 4, Nov. 24, 2005; four specimens 58–94 mm SL, trawl no. 1, December 17, 2005; three specimens 86–100 mm SL, trawl no. 3, December 17, 2005; one specimen 105 mm SL, trawl no. 2, May 21, 2007.

FAMILY MICRODESMIDAE

At soft bottoms of Nha Trang Bay, three species of the genus *Oxymetopon* Bleeker, 1861, revised previously (Prokofiev, 2016a) and a new species (described below) from a recently described genus *Navigobius* Hoese et Motomura, 2009, are recorded. In addition, the following species are found on coral reefs: *Nemateleotris magnifica* Fowler, 1938, *Ptereleotris evides* (Jordan et Hubbs, 1925), and *P. monoptera* Randall et Hoese, 1985. All these species belong to the subfamily Ptereleotrinae.

Navigobius khanhoa Prokofiev, sp. nova (Fig. 5)

Material. Holotype (Fig. 5a), ZMMU no. 23819, 18.5 mm *SL*, Vietnam, Nha Trang Bay, to the north and west of the Grand Bank (Ran qiao), trawl no. 1, May 21, 2007 (table), collector A.M. Prokofiev.

Diagnosis. Species of genus *Navigobius* with 26 rays IID and A, ~75 scales in lateral row, 17 gill rakers, short upper jaw, single-row teeth on jaws weakly different in size, and without pigmented picture in fixed specimens.

Description. I*D*6, II*D*26, *A*26, *P* 20, *V*i + 4, *C*xi + 7 + 6 + ix, branched 11.

Several measurements in % *SL*: head length 32.4; maximum and minimum body depth, 24.3 and 9.5, respectively; first and second predorsal, preventral, and preanal distances, 35.1, 54.1, 32.4, and 55.7, respectively; snout length, 8.1; horizontal eye diameter, 8.1; width of the interorbital space, 5.4; upper jaw length, 11.9.

Body not deep, slender, compressed from sides; caudal peduncle of equal length and depth. Oral fissure distinctly skewed, terminated at level of anterior margin of the eye; mouth half-superior. Width of interorbital space 1.3 times larger than pupil diameter. Premaxillas retractable. In jaws, small and sharp not numerous teeth in one row. Vomer and palatine bones without teeth. Tongue narrowed to its top, sharpened. Branchial openings large, terminated slightly before vertical through posterior margin of eye. Branchial membrane fused with isthmus at narrow site with folder across isthmus. Gill rakers on first branchial arch 17. Pseudobranch well developed, from six large components.

In seismosensory system of head (Fig. 5b), right and left orbito-scapular canals separated, including five pores in each (B', D, E, F, G'); posterior orbito-scapular canal absent. Preopercular pores absent, preopercular canal opened from above. Rows of genipores very short. Location of genipores differs on right and left sides, most likely, because of damage in trawl (combined pattern on both sides illustrated in Fig. 5b). In *C* base, longitudinal rows of genipores on membranes between fourth and fifth, fifth and sixth, seventh and eighth, and tenth and eleventh segmented rays; rows reach distal margin of fin.

ID originated slightly behind of a vertical through P base, its third ray largest. Filamentous rays in fins absent. P and V attached at same vertical, of equal length. P lanceolate, third segmented ray of V largest. C bifurcated, its lobes sharpened.

Scales in initial part of trunk cycloid; in posterior direction, cycloid scales along IID base reach almost end of this base; along A base, they reach middle of its length. In posterior two-thirds of the trunk, scales ctenoid; on flanks along medial line, ctenoid scales reach anteriorly middle of P length. Transversal scale

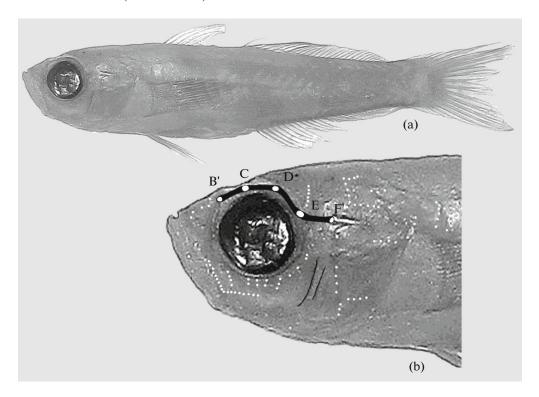


Fig. 5. *Navigobius khanhoa* sp. n., holotype 18.5 mm *SL*, ZMMU no. 23819: (a) a general view; (b) seismosensory system of the head. Designations of pores are standard (Akihito et al., 2002).

rows approximately 75. Scales reach *C* base. Sides of head without scales. Almost all ctenoid scales with single elongated ctenium in middle of posterior edge of scale, very rarely, with two or three ctenii.

Coloration of alive fish unknown. Fixed specimen absolutely without pigmentation.

Etymology. The species name is given from Khanh Hoa Province where the representatives of the species were collected in the coastal zone.

Comparison. The new species differs easily from other species of the genus in a larger number of rays in IID and A (26 vs. 20–21 in N. dewa Hoese et Motomura, 2009, and 11-14 in *N. vittatus* Allen, 2015). lower size of the mouth (upper jaw terminated at a vertical through the anterior margin of the eye vs. at a vertical through the middle or anterior third of the pupil). and teeth on the jaws located in a single row and weakly different in size (vs. double-row teeth enlarged in the external rows). In addition, the new species is characterized by a slightly larger number of gill rakers on the first branchial arch (17 vs. 15–16). Based on the number of transversal scale rows on the flanks, the new species has an intermediate position between two species described previously (~75 vs. 52-58 in N. vittatus and 92–97 in N. dewa). A distribution of genipores is specific for each species (Hoese and Motomura, 2009. Fig. 2; Allen, 2015. Fig. 4). The new species differs from N. vittatus in the absence of dark bands under the eye, behind the eye, and in the predorsal area (well preserved in fixed specimens) and in the structure of C lobes, which are not elongated into the braids.

CONCLUSIONS

In total, 44 gobioid fish species are identified in the studied collection, including 30 species continually associated with soft bottoms in the marine parts of Nha Trang and Van-Phong bays. Five other species of the subfamily Amblyopinae (Gobiidae) and three species of the genus *Oxymetopon* (Microdesmidae: Ptereleotrinae) described previously in two papers (Prokofiev, 2015, 2016a) and not included in this review should be added to the species continually associated with soft bottoms. A new genus (from Amblyopinae¹) and six new species were described based on these materials. Four other species from the genera *Acentrogobius*, *Eviota*, *Favonigobius*, and *Gnatholepis* are not

The English translation of the original Russian paper on the subfamily Amblyopinae (Prokofiev, 2015) is conducted with distortion of the text. In particular, it is indicated that the epural-2 absent in both new genera described in the paper. However, in the original version, "epurals two" is indicated (Prokofiev, 2015, Russian version, pp. 658 and 661). Other substantial errors, most likely, can be found in the descriptions of the species. Obviously, the English version of the paper (Prokofiev, 2015) can be regarded as only introductory materials, and it cannot be used in the practical work, because it is not in accordance with the original descriptions of the taxa represented in the original Russian version.

identified to the species, and, most likely, also represent the new species. Nine species (A. unicolor, B. hongkongensis, E. bombylios, G. circumspectus, O. diacanthus, O. auchenolepis, T. ex gr. russus, T. porosus, and V. immaculata) are recorded in the fauna of Vietnam for the first time. In addition, an occurrence of G. olivaceus in this fauna is supported. The species G. olivaceus, O. acutipennis, and P. kalolo are recorded in the Cai River delta for the first time. Thus, based on my rather restricted samples from a limited water area, the knowledge on the species richness of gobioid fishes in the coastal waters of Vietnam is substantially increased. The results of this study support an extremely poor investigation of this group in the region and the need for further studies.

The fauna of gobioid fishes on coral reefs of Nha Trang Bay has not been intensively studied before. I have only the material from occasional samples with the exclusion of the representatives of the group "Gobiodontini," which has been reviewed before (Prokofiev, 2007). In total, seven species were indicated for Nha Trang Bay: Gobiodon micropus Günther, 1861, G. okinawae Sawada and Arai et Abe, 1972, G. rivulatus (Rüppell, 1838), G. quinquestrigatus (Valenciennes, 1837), G. unicolor (Castelnau, 1873), Paragobiodon echinocephalus (Rüppel, 1830), and P. modestus (Regan, 1908). At present, to take into account the new data, this list can be corrected. In particular, G. micropus was erroneously identified as G. histrio (Valenciennes, 1837). According to Herler et al. (2013, p. 324), the holotype of G. unicolor is characterized by a dark spot near the upper edge of the branchial opening. Thus, this species name is erroneously applied to a species with a correct name G. ceramensis (Bleeker, 1853).

"Gobiodon guamensis" (Prokofiev, 2007) is a lapsus calami for *G. ceramensis*. In addition, the recent samples include *G. prolixus* Winterbottom et Harold, 2005 and *P. lacunicolus* (Kendall et Goldsborough, 1911). The type series of the former species also includes the specimens from Vietnam (Winterbottom and Harold, 2005). Therefore, at least nine species of Gobiodontini can be found in Nha Trang Bay. In addition, the investigation of the gobies from the genera *Eviota* and *Trimma* represented by a large number of species seems very important.

In the sampled collection, the gobioid fishes are represented mainly by species usual for the tropical Indo-Vest-Pacific. At present, it is difficult to assess if the described species are endemic for the South China Sea or they possess wider ranges. Based on the studied materials, the range of a newly described *T. porosus* has become substantially wider, but it remains within the water area of the South China Sea. In the studied collection, the subtropical species from the North and West Pacific, most likely, are represented by only *B. hongkongensis* and *G. olivaceus*. For these species,

the coastal zone of southern Central Vietnam is a southern border of their ranges.

ACKNOWLEDGMENTS

I thank D.A. Astakhov (IO RAS) for help in the collection of fishes in Vietnam, H. Larson (Museum and Art Gallery of the Northern Territory, Darwin, Australia), and R. Winterbottom (Royal Ontario Museum, Canada) for the valuable comments and sending of several papers. This study was supported in part by the Russian Foundation for Basic Research, project no. 16-04-00365.

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Translated by D.A. Pavlov