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ORIGINAL ARTICLE

Identification and checklist of the Persian Gulf fishes in the food basket of the people native to southern Fars, Iran

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Abstract

A large part of Mohr and Lamerd counties in the south of Fars Province, Iran is encompassed in the Mehran River basin of the greater Hormuz basin, which is closely connected to the Persian Gulf and the borders of Bushehr and Hormozgan provinces. The purpose of this research was to prepare a checklist of common edible fishes from the Persian Gulf that are present in the food baskets of the people of the south of Fars Province. Identification of these edible fish species was based on examinations of the cargoes of fishing docks, trade markets, field interviews with elder and modern fishermen and fish sellers of the Persian Gulf, as well as scientific and experimental knowledge of ichthyology. Based on the results of this research, 67 marine fish species belonging to 8 orders, 27 families, and 50 genera were identified and listed as contributing to the typical food basket of people in the southern regions of Fars Province, and more broadly, the Persian Gulf. Within Actinopterygii the highest species richness was found for the order Perciformes (38 species), followed by Carangiformes (19 species), Clupeiformes (4 species), Pleuronectiformes (2 species), and Beloniformes, Mugiliformes, Mulliformes, and Scorpaeniformes (each with 1 species). This is despite the fact that species of cartilaginous fish are not common in the food basket of the people of southern Fars Province. The results also showed that unusual species of bony and cartilaginous fish have more recently been incorporated into the local diet due to changing tastes, use in traditional medicine, and sport. Nevertheless, the traditional and historical food preferences of the local people have not changed greatly in terms of the choices of edible fish. The results of this research may be useful in understanding the dietary habitats of the people of the south of Fars Province and the Persian Gulf region, as well as for the management of the catch, sale, and stocks of fish in the Persian Gulf.

Keywords: Edible fish, Ichthyodiversity, Mohr and Lamerd counties, Persian Gulf, saltwater fish.

INTRODUCTION

The south of Iran abuts the Persian Gulf and the Oman Sea, which flow to the Indian Ocean. Thus far, 744 saltwater fish species belonging to 445 genera across 131 families and 27 orders have been reported from the Persian Gulf (Eagderi et al. 2019). The quantified species diversity has been established via the discovery of new fish species from the Persian Gulf and confirmed records of the occurrence of known species in its waters. In the Persian Gulf, the highest fish species richness is presented by the class Actinopterygii and family Gobiidae with 65 species (about 10.0%), followed by the family Carangidae with 45 species (about 6.5%). Meanwhile, within class Chondrichthyes, the highest species richness is in the families Carcharhinidae and Dasyatidae, with 23 and 15 species, respectively (Eagderi et al. 2019). The extensive province of Fars, with its 37 counties in political divisions and an area of 122,608 km^2, is located in the south of Iran between latitudes 27°–31° N and longitudes 50°–55° E and it constitutes about 8% of the total area of Iran. Fars Province is the fourth-largest province in Iran after Kerman, Sistan and Baluchestan, and South Khorasan. Fars Province is bordered by the provinces of Isfahan and Kohgiluyeh and Boyer-Ahmad in the north, the coastal provinces of Bushehr to the west and Hormozgan to the south, and Kerman and Yazd provinces to the east. Within Fars Province, the counties of Mohr and Lamerd are located in the

southwest where Mohr County is known as the 'Gateway to the Persian Gulf' due to its relatively short distance to the Persian Gulf coast. Mohr and Lamerd have border connections with the cities (ports) of Asaluyeh, Bushehr Province and Parsian (previously known as Gavbandy), Hormozgan Province, respectively.

In terms of Iranian aquatic basins, a large portion of the southern areas of Fars Province (Mohr and Lamerd counties) is part of the Mehran River basin (an area of about 8300 km^2) and of the greater Hormuz (Hormozgan) basin. The Mehran River basin includes both the Fars and Hormozgan provinces, and the area of this basin in Fars Province is nearly 3665 km^2 (Esmaeili & Teimori 2016; Gholamifard 2017). The highest point of the Mehran basin is the northern heights of Kal village, located in the Ashkanan District of Lamard County, which is 2165 meters above sea level, and its lowest point is on the shores of the Persian Gulf (Esmaeili & Teimori 2016).

Also, a part western Mohr County is encompassed in the Mond River subbasin, one of the largest sub-basins of the main Persis basin (Persian Gulf). A section of northern Lamerd County (some of Alamrvdasht District) is part of one of the sub-basins of the Mond basin, which is located in the southwestern slopes of the Zagros Mountains range. Rainfalls in this basin are mostly in the form of floods, which eventually fall into the Persian Gulf. Most of the rivers in the Mond basin are dry for half of the year (Jaafari 2005; Esmaeili & Teimori 2016). From the ancient periods of Iran (pre-Islam) to present times, the people of the southern lands of Fars Province (an area with the general and contemporary title of the Beikheh-Jat region, known in antiquity as Pars) were in social and commercial connection with the ports and various locations of the northern and southern rims of the Persian Gulf. The people of today's Mohr and Lamerd counties engage trade interactions with Persian Gulf ports such as Siraf (Taheri), Parak, Kangan, Asalouyeh, Nakhle-Taqhi, and Chah Mubarak in Bushehr Province, and Parsian, Lengeh, and Moqham in Hormozgan Province. Continuously, the importance of food trading, especially with regard to fishing, has catalyzed travel and movement of people in this region in such a way that even today, a significant population of people from the south of Fars Province has migrated to the cities of the Persian Gulf for various fishing-related jobs. Today, with the establishment of large gas, oil, and petrochemical industries along the coasts of the Persian Gulf, and especially the economic zone of Asaluyeh, Bushehr Province (the economic capital of Iran), numerous and vast land communication routes (also airports) have been built between Fars Province and the coastal areas of Bushehr and Hormozgan provinces. These routes have facilitated enhanced public communication for fishing trade between Fars Province and the country than other regions of the country, and this has led to the expansion of fishing and trade of marine aquatics in the region and country.

Considering the abovementioned expansion of trade and fishing economy of various species of Persian Gulf fish in the southern Fars region, the whole of Fars Province, as well as the country, and the addition of new (sometimes unusual) options of marine fish species to the local diet, an account of the species used as food is required from a taxonomic perspective. In this study, we attempt to introduce, for the first time, a scientific checklist of halal edible Persian Gulf fish species that are part of the traditional and current food basket of the people of southern Fars Province (Persian Gulf region), Iran. The list of the contents of the local food basket, which we consider to be the assemblage of a population's commonly consumed foodstuffs, is based on historical experiences and scientific and experimental ichthyological knowledge, and it aims to correctly account for the traditional and historical food tastes of the people of the coastal and neighboring areas of the Iranian Persian Gulf to other regions of the country and the broader international community.

MATERIAL AND METHODS

The preparation of this scientific checklist of the common edible and halal Persian Gulf fishes of the southern Fars Province food basket was based on the professional ichthyological taxonomic knowledge, as

well as the long-term experimental knowledge and personal observations of the authors of the commonly eaten fishes in the local area. Additionally, the second author (M. T.) has further firsthand knowledge of the topic due to a family background that includes the occupation of fishing and trade of sea fish. Several fishing piers in Bushehr and Hormozgan provinces were visited (between 2009 and 2023), and photographs were taken of various species of dietary marine fish. To further ensure that the Persian Gulf fish species in the local food basket were listed correctly and authentically for the local region (and to include traditional food choices), a few trusted traditional and elder fishmongers were consulted (especially in relation to the local names of the species) and the correctness of selecting similar species from the same genus for inclusion was discussed. Furthermore, fish purchase and sale invoices from the region and in the advertisements for fish sales in online groups based in the researched area, and the names of traded fish and their local and general names were crosschecked. Finally, the loads of refrigerated vehicles used for transporting and selling marine fish in the area were investigated for a more detailed understanding of the species diversity of edible fish. For the Persian common names and scientific names of the species listed in this research, various sources, such as Eagderi et al. (2019) and FishBase (2023), were consulted. Fieldwork research was conducted from February to April 2023.

RESULTS

Based on the collected field data, 67 marine fish species belonging to 8 orders, 27 families, and 50 genera were identified and listed as part of the typical food basket of the people of the southern regions of Fars Province (Mohr and Lamerd Counties) (Table 1; Appendix). In terms of representation in the local food basket, from the highest to the lowest species richness the orders were ranked as follows: Perciformes (38 species), Carangiformes (19 species), Clupeiformes (4 species), Pleuronectiformes (2 species), and Beloniformes, Mugiliformes, Mulliformes, and Scorpaeniformes (1 species each (Table 1; Figure 1). The families with the highest species richness were Carangidae (18 species belonging to 12 genera), Scombridae (6 species belonging to 5 genera), Haemulidae and Sparidae (each with 4 species belonging to 3 genera), and Serranidae (4 species belonging to 2 genera) (Table 1; Fig. 1). It is important to note that since ancient times and in recent years, because of the specialized food tastes of some people and/or for the consumption of traditional medicine, some unusual fish species such as sharks and rays that have been used as food, are not included in the current list. Unfortunately, in some cases, the bodies of sharks (despite their national and international conservation status) are dismembered at the head and tail regions, and regardless of the motivation of the illegal shark fin trade, their meat is sold and bought either illicitly or unwittingly when the meat is falsely represented as edible fish species (Fig. 2). Furthermore, sharks, rays, and other non-edible bony fish are sometimes part of the bycatch in fishing nets. Table 1 shows the checklist of Persian Gulf fish species identified in the food basket of people in the south of Fars Province, according to order and family, with scientific, common Persian, and local names. Regarding species that have more than one local name, it was found that all the used cases have relatively the same prevalence. Notably, the morphology/biological characteristics of fish species were recognized as the basis for the local names of Persian Gulf fish (similar to the common Persian names), as used by the communities to name and distinguish fish species. Among the checklist of fish presented in Table 1, two species of Clupeiformes *Dussumieria acuta* Valenciennes, 1847 (Dussumieriidae) with the local name of "Hashenah" (see Gholami et al. 2019) and the common name of Rainbow sardine (Fig. 3) and *Stolephorus indicus* (van Hasselt, 1823) (Engraulidae) with the local name of "Mitoo" and the common name of Indian anchovy form schools and are caught and sold in the southern regions of Iran in winter and are traditionally and historically preserved with large quantities of salt (locally called "Suru") in containers and in the sun (Fig. 4).

Table 1. Checklist of the Persian Gulf fish species identified in the typical food basket of people in the south of Fars Province, Iran.

Row	Scientific name	Family	Order	Local name	English name
1	*Tylosurus crocodilus* (Péron and Lesueur, 1821)	Belonidae	Beloniformes	Hagoul	Hound needlefish
2	*Alectis indica* (Rüppell, 1830)	Carangidae	Carangiformes	Jash-e Kaghazi	Indian threadfish
3	*Alepes melanoptera* (Swainson, 1839)	Carangidae	Carangiformes	Jasm	Blackfin scad
4	*Atropus atropos* (Bloch and Schneider, 1801)	Carangidae	Carangiformes	Jash-e Dandour	Cleftbelly trevally
5	*Atule mate* (Cuvier, 1833)	Carangidae	Carangiformes	Domzard	Yellowtail scad
6	*Carangoides armatus* (Rüppell, 1830)	Carangidae	Carangiformes	Jash, Jash-e Gargouri	Longfin trevally
7	*Carangoides bajad* (Fabricius [ex Forsskål] in Niebuhr, 1775)	Carangidae	Carangiformes	Jash, Jash-e Bakkoo	Orangespotted trevally
8	*Carangoides chrysophrys* (Cuvier, 1833)	Carangidae	Carangiformes	Jash, Jash-e Dandour, Jash-e Gargouri	Longnose trevally
9	*Carangoides coeruleopinnatus* (Rüppell, 1830)	Carangidae	Carangiformes	Jash, Jash-e Dandour, Jash-e Gargouri	Coastal trevally
10	*Carangoides malabaricus* (Bloch and Schneider, 1801)	Carangidae	Carangiformes	Jash	Malabar trevally
11	*Caranx heberi* (Bennett, 1830)	Carangidae	Carangiformes	Forou Domzard	Blacktip trevally
12	*Caranx sexfasciatus* Quoy and Gaimard, 1825	Carangidae	Carangiformes	Jash	Bigeye trevally
13	*Megalaspis cordyla* (Linnaeus, 1758)	Carangidae	Carangiformes	Dom Seio, Day Yahyoo, Titi, Dordaman, Balal	Torpedo scad
14	*Parastromateus niger* (Bloch, 1795)	Carangidae	Carangiformes	Halva Seiah	Black pomfret
15	*Scomberoides commersonnianus* Lacépède, 1801	Carangidae	Carangiformes	Sarm-e Zard, Shir-e Bandar	Talang queenfish
16	*Scomberoides tol* (Cuvier, 1832)	Carangidae	Carangiformes	Sarm-e Seio	Needlescaled queenfish
17	*Selar crumenophthalmus* (Bloch, 1793)	Carangidae	Carangiformes	Posht Sozou Cheshm Bozorg	Bigeye scad
18	*Seriolina nigrofasciata* (Rüppell, 1829)	Carangidae	Carangiformes	Hamam, Kaboutari	Blackbanded trevally
19	*Uraspis helvola* (Forster, 1801)	Carangidae	Carangiformes	Jash, Jash-e Gargouri	Whitetongue jack
20	*Rachycentron canadum* (Linnaeus, 1766)	Rachycentridae	Carangiformes	Seken	Cobia
21	*Chirocentrus nudus* Swainson, 1839	Chirocentridae	Clupeiformes	Kharou	Whitefin wolf-herring
22	*Dussumieria acuta* Valenciennes, 1847	Dussumieriidae	Clupeiformes	Hashenah	Rainbow sardine
23	*Stolephorus indicus* (van Hasselt, 1823)	Engraulidae	Clupeiformes	Mitoo	Indian anchovy
24	*Ilisha megaloptera* (Swainson, 1839)	Pristigasteridae	Clupeiformes	Shamsak	Bigeye ilisha
25	*Planiliza abu* (Heckel, 1843)	Muglildae	Mugiliformes	Beiah	Abu mullet

Table 1. Continued.

26	*Upeneus vittatus* (Forsskål in Niebuhr, 1775)	Mullidae	Mulliformes	Baci, Soltan Ebrahim	Yellowstriped goatfish
27	*Gerres infasciatus* Iwatsuki and Kimura, 1998	Gerreidae	Perciformes	Bat, Badh	Nonbanded whipfin mojarra
28	*Diagramma pictum* (Thunberg, 1792)	Haemulidae	Perciformes	Fersh-e Seiah	Painted sweetlips
29	*Plectorhinchus gaterinus* (Fabricius [ex Forsskål] in Niebuhr, 1775)	Haemulidae	Perciformes	Fersh-e Khal Zard	Blackspotted rubberlip
30	*Pomadasys kaakan* (Cuvier, 1830)	Haemulidae	Perciformes	Shanak	Javelin grunter
31	*Pomadasys stridens* (Forsskål in Niebuhr, 1775)	Haemulidae	Perciformes	Gangam	Striped piggy
32	*Photopectoralis bindus* (Valenciennes, 1835)	Leiognathidae	Perciformes	Jashe-e Kokhou	Onangefin ponyfish
33	*Lethrinus microdon* Valenciennes, 1830	Lethrinidae	Perciformes	Shehri Soulie	Smalltooth emperor
34	*Lethrinus nebulosus* (Forsskål in Niebuhr, 1775)	Lethrinidae	Perciformes	Shehri, Shehri-e Lab Sorkhou	Spangled emperor
35	*Lutjanus argentimaculatus* (Forsskål in Niebuhr, 1775)	Lutjanidae	Perciformes	Sorkhou	Mangrove red snapper
36	*Lutjanus ehrenbergii* (Peters, 1869)	Lutjanidae	Perciformes	Naisar, Tak Khal	Blackspot snapper
37	*Lutjanus lutjanus* Bloch, 1790	Lutjanidae	Perciformes	Naisar	Bigeye snapper
38	*Lutjanus quinquelineatus* (Bloch, 1790)	Lutjanidae	Perciformes	Naisar, Tak Khal	Five-lined snapper
39	*Nemipterus japonicus* (Bloch, 1791)	Nemipteridae	Perciformes	Baci, Soltan Ebrahim	Japanese threadfish bream
40	*Scarus ghobban* Fabricius [ex Forsskål] in Niebuhr, 1775	Scaridae	Perciformes	Touti	Blue-barred parrotfish
41	*Argyrosomus japonicas* (Temminck and Schlegel, 1843)	Sciaenidae	Perciformes	Shourideh	Japanese meagre
42	*Nibea maculata* (Bloch and Schneider, 1801)	Sciaenidae	Perciformes	Shourideh	Blotched croaker
43	*Otolithes ruber* (Bloch and Schneider, 1801)	Sciaenidae	Perciformes	Shourideh-e Sefied, Shourideh-e Kallah	Tigertooth croaker
44	*Auxis thazard* (Lacepède, 1800)	Scombridae	Perciformes	Bache Darou	Frigate tuna
45	*Euthynnus affinis* (Cantor, 1849)	Scombridae	Perciformes	Darou	Kawakawa
46	*Rastrelliger kanagurta* (Cuvier, 1816)	Scombridae	Perciformes	Posht Sozou	Indian mackerel
47	*Scomberomorus commerson* (Lacepède, 1800)	Scombridae	Perciformes	Shir	Narrow-barred Spanish mackerel
48	*Scomberomorus guttatus* (Bloch and Schneider, 1801)	Scombridae	Perciformes	Ghobad	Indo-pacific king mackerel

Table 1. Continued.

49	*Thunnus tonggol* (Bleeker, 1851)	Scombridae	Perciformes	Veir	Longtail tuna
50	*Cephalopholis hemistiktos* (Rüppell, 1830)	Serranidae	Perciformes	Hamour-e Sorkhou	Yellowfin hind
51	*Epinephelus chlorostigma* (Valenciennes, 1828)	Serranidae	Perciformes	Somman	Brown-spotted grouper
52	*Epinephelus coioides* (Hamilton, 1822)	Serranidae	Perciformes	Hamour	Orange-spotted grouper
53	*Epinephelus stoliczkae* (Day, 1875)	Serranidae	Perciformes	Hamour	Epaulet grouper
54	*Siganus javus* (Linnaeus, 1766)	Siganidae	Perciformes	Safie-e Asli	White-spotted spinefoot
55	*Acanthopagrus arabicus* Iwatsuki, 2013	Sparidae	Perciformes	Shanak	Arabian yellowfin seabream
56	*Acanthopagrus bifasciatus* (Forsskål in Niebuhr, 1775)	Sparidae	Perciformes	Dokhtar Nakhoda	Twobar seabream
57	*Argyrops spinifer* (Forsskål in Niebuhr, 1775)	Sparidae	Perciformes	Koufar, Koupar	Indian karanteen seabream
58	*Crenidens indicus* Day, 1873	Sparidae	Perciformes	Bat	Karanteen seabream
59	*Sphyraena jello* Cuvier, 1829	Sphyraenidae	Perciformes	Daval-e Dom Seiah, Chengou Dom Seiah, Ghalayeh Dom Seiah	Pickhandle barracuda
60	*Sphyraena obtusata* Cuvier, 1829	Sphyraenidae	Perciformes	Daval-e Dom Zard, Chengou Dom Zard, Ghalayeh Dom Zard	Obtuse barracuda
61	*Sphyraena putnamae* Jordan and Seale, 1905	Sphyraenidae	Perciformes	Daval-e Dom Seiah, Chengou Dom Seiah, Ghalayeh Dom Seiah	Silver pomfret
62	*Pampus argenteus* (Euphrasén, 1788)	Stromateidae	Perciformes	Halva Safid	Silver pomfret
63	*Pelates quadrilineatus* (Bloch, 1790)	Terapontidae	Perciformes	Gangam	Fourline tarapon
64	*Terapon jarbua* (Fabricius [ex Forsskål] in Niebuhr, 1775)	Terapontidae	Perciformes	Gangam	Jarbua terapon
65	*Pseudorhombus arsius* (Hamilton, 1822)	Paralichthyidae	Pleuronectiformes	Zaboun	Largetooth flounder
66	*Psettodes erumei* (Bloch and Schneider, 1801)	Psettodidae	Pleuronectiformes	Kafshak	Indian halibut
67	*Platycephalus indicus* (Linnaeus, 1758)	Platycephalidae	Scorpaeniformes	Zamin Kan	Bartail flathead

"Mitoo" are dried and stored with salt in the sun. Both species are then used as a popular food seasoning and dessert, especially in the summer. Selling Persian Gulf fish via various traditional traveling (mobile) vehicles and even on foot has been common in the southern regions of Fars Province throughout history (Fig. 5). Various species of Scombridae with the local names of "Shir" (*Scomberomorus commerson* (Lacepède,

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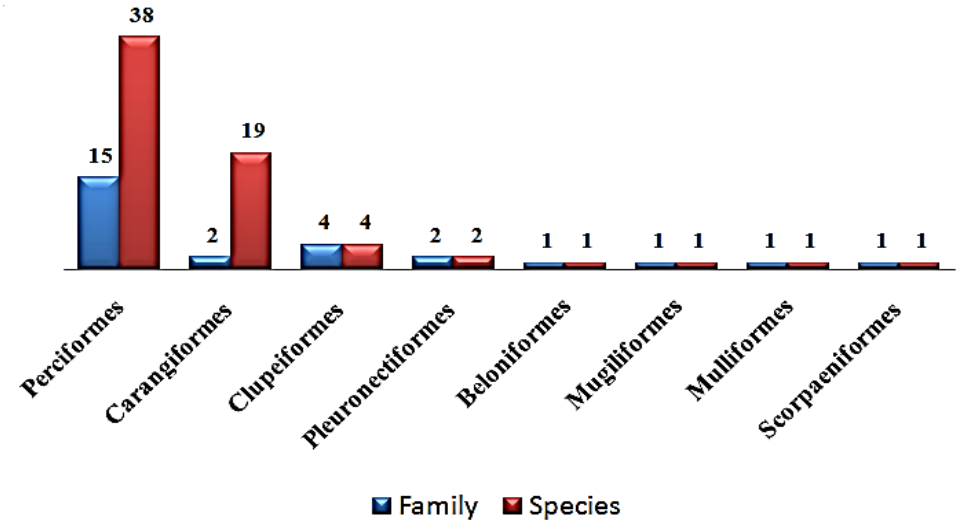

Fig.1. Richness of fish orders of the Persian Gulf in the typical food basket of people in the south of Fars Province by family (blue) and species (red).

Fig.2. Typical examples of the use of shark meats (A, *Sphyrna* sp.; B, *Carcharhinus dussumieri*) and non-target fish *Arothron stellatus* (D) in the local food basket, which is becoming more popular and has implications for the conservation threats to sharks.

1800)), "Vir" (*Thunnus tonggol* (Bleeker, 1851)), and "Qobad" (*Scomberomorus guttatus* (Bloch and Schneider, 1801)) were observed as being among the more expensive species compared to other species. Also, in recent years, the methods of consumption of various fish species have diversified, and for grilling, stewing, boiling, charcoal, etc., certain groups of fish are more frequently used and favored; therefore, the

Fig.3. The locally important food fish *Dussumieria acuta* ("Hashenah") is abundant in winter and sold in at markets in large quantities. (A) Kangan Port, Bushehr Province. (B) Varavi District, Fars Province.

Fig.4. Three forms of *Dussumieria acuta* ("Hashineh") consumption in the Persian Gulf Region. (A) Bread dipped in salty Hashineh extract. (B) Filtered Hashenahextract. (C) Hashenah fried in oil.

fish consumption market is also influenced by cultural and social tastes as well as advertisements.

DISCUSSION

Compared to freshwater fish, marine species are an important component to of the southern Fars Province

Fig.5. Traditional mobile sales of Persian Gulf fish species in the southern regions of (A) Fars and (B) Bushehr provinces.

food basket. The Mehran subbasin of the Hormuz basin, which includes a large part of Mohr and Lamerd counties, does not sustain a permanent river; all the rivers flowing in this basin are seasonal. The main branch of the Mehran River, which is located in Fars Province, flows as a large channel in the middle of the Galehdar and Varavi Plains (Galehdar and Varavi Districts of Mohr County), Lamard (Fars Province), and Jenah (Hormozgan Province) in the northwest to southeast direction. This basin has a main branch called the Mehran River, which flows in the middle of the basin (Esmaeili & Teimori 2016).

In Mohr County, at Varavi there is a seasonal freshwater wetland without fish. There is also an artificial lake behind the small dam of the Mohr Valley and streams and freshwater ponds of this valley contain several species of native cyprinids (Gholamifard 2016; 2017); however, these fish are not accepted as food. The main reason is the easy access to the shores of the Persian Gulf and the saltwater fish market. In other words, the traditional and historical

food preferences of the people of southern Iran (familiar with the taste of saltwater fish) are not yet familiar and ready for freshwater fish from rivers and farms. Moreover, exotic warm-water fish such as Chinese carps (even native freshwater fish) have no place for reproduction, breeding, or consumption in the south of Fars Province (Gholamifard 2016).

The results of this research found that 67 species of marine fishes from 27 families can be considered as present in the food basket of the people of southern Fars Province, Iran. In the juridical atlas of fishes of Iran (www.mozooshenasi.ir, 2023), 286 marine fish species from the Persian Gulf and Oman Sea are listed. According to a direct quote from this virtual thematic database, "Making a Shariah ruling that a bird or a fish is halal is not a reason for permission to hunt them; rather, this issue is determined by the current laws of the country, which are undoubtedly necessary to preserve the generations of some species. Of birds, fish, or other materials, their hunting is prohibited according to the law, and sometimes there are penalties and fines that must be followed". In this jurisprudential list (www.mozooshenasi.ir, 2023), 24 species of sharks and rays and various species of puffer fish and other fish families are mentioned in the halal food list; therefore, the list should be revised to take into account conservation measures of the threatened species and religious factors. This is particularly important as Iran is ranked among the top twenty-five marine capture producing countries in the world (FAO 2022).

Based on the present checklist of marine fish, in the southern Fars Province food basket there is a wide variety of seafood options based on fish protein mass, season of abundance, price, desirable appearance of fish, size and weight of the fish related to purchasing power, the suitability of the fish for the type of cooking and the type of consumption table (e.g. family dining table vs. parties and large gatherings), as the contribution of the order Perciformes is high (also considering its status as the most species richness group of vertebrates). As marine fish can serve as an affordable and accessible source of protein, calcium, zinc, and other vitamins and nutrients (Byrd et al. 2021; Rifat et al. 2023) the checklist of species contributing to the local diet should be continually monitored.

Today, with the expansion of communication routes from the southern Fars Province to other regions of the country, as well as increased online advertising, the Persian Gulf fish trading market has also expanded. The establishment of fixed and mobile fish markets and the establishment of large cold storage of fish in the region are proof of this. However, traditional methods for preserving fish, for example the fermentation of "Hashenah" (Gholami et al. 2019), remain important.

The recreational value of fishing, as well as the benefit to the family economy, have caused a new group of people to turn to fishing as a secondary source of income and they may be equipped with modern tools such as inflatable boats and dive hunting rifles, while conventional fishing commonly uses unmotorized boats and motorized boats with fixed and mobile nets. The methods of storing, cooking, and consuming marine fish should be scientifically evaluated and revised in order to maximize the nutritional and economic benefits of marine fish species. For example, the new generation of recreational fishermen (with less economic motivation) do not typically recommend the method of cleaning and cutting the fish into pieces and then storing it in frozen form, but instead suggest that, in order to maintain the quality of the fish, the whole fish should be kept in a temperature controlled and freezing environment from the time of catch until consumption and without first emptying the stomach contents and washing the fish.

Considering the expansion of fish consumption and the fish market and the reduction of fish stocks and populations in the Persian Gulf in recent years, careful monitoring of the fishing season, especially in the spawning seasons of fish, is necessary to prevent the fishing of non-target and endangered species and to manage the fish processing and productivity chain through the creation of side industries. Due to the social, agricultural and climatic characteristics of Iran, fish and other aquatic organisms have not been a

common part of the traditional diet of the people, except in coastal areas (Regunathan & Kitto 2005). Therefore, it is necessary to develop the infrastructure and technologies for reproduction and breeding of marine fish (especially with cages). Also, comprehensive studies are desirable to identify the exact ichthyodiversity in the Persian Gulf and the Sea of Oman.

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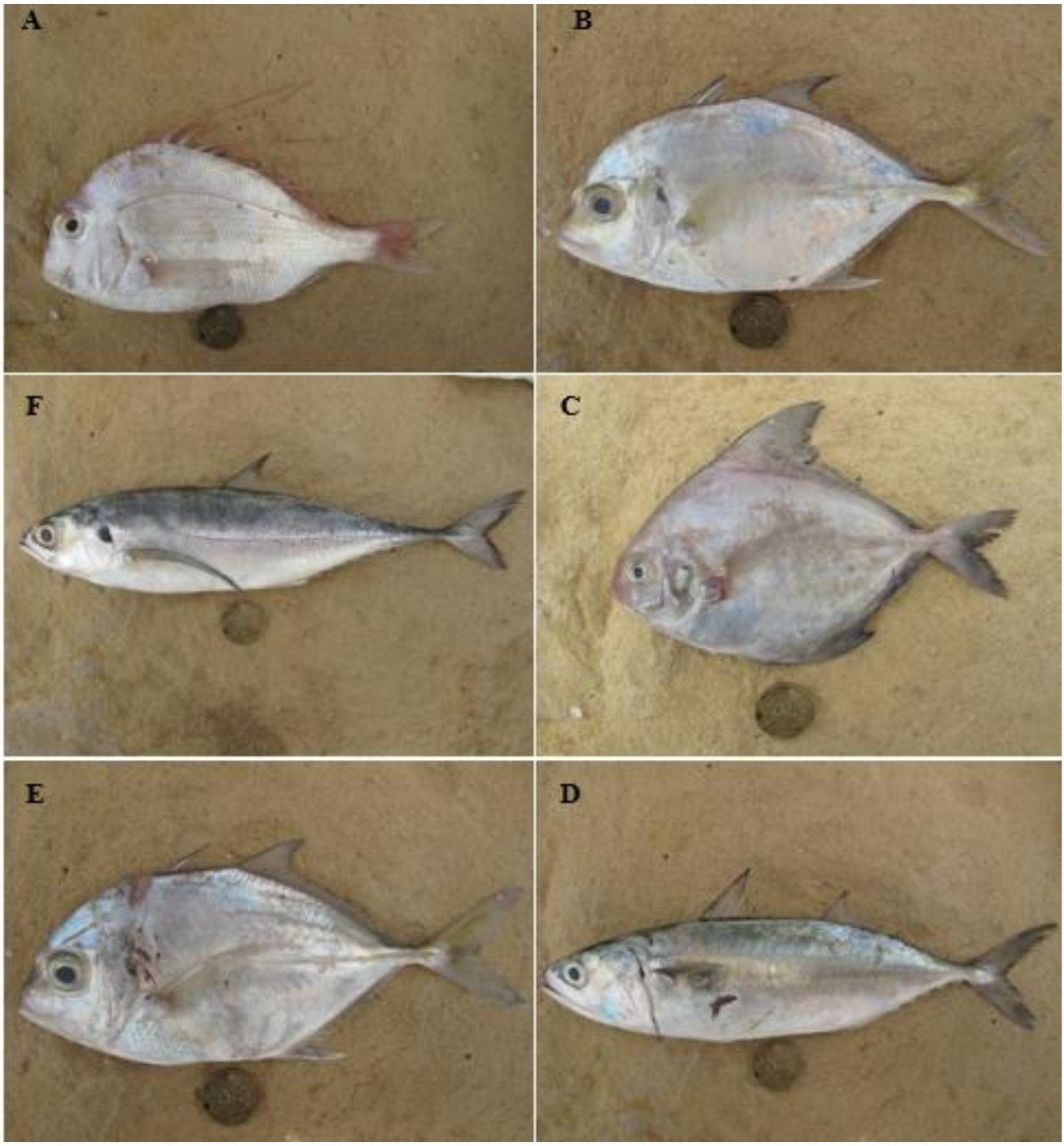
APPENDIX.

Some common species of Persian Gulf fish in the food basket of the people of the southern Fars region of Iran. (A) *Argyrops spinifer*, (B) *Carangoides malabaricus*, (C) *Parastromateus niger*, (D) *Rastrelliger kanagurta*, (E) *Atropus atropos*, (F) *Megalaspis cordyla*.



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مقاله کامل

شناسایی و فهرست ماهیان خلیج فارس در سبد غذایی مردم بومی جنوب استان فارس

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چکیده: بخش گسترده‌ای از شهرستان‌های مُهر و لامِرد در جنوب استان فارس جزو حوضه آبریز رودخانه مِهران از حوضه آبریز هُرمز هستند که ارتباط نزدیکی با خلیج فارس و مرزهای استان‌های بوشهر و هرمزگان دارند. هدف از این پژوهش، تهیه فهرست ماهیان رایج خوراکی از خلیج فارس در سبد غذایی مردم جنوب استان فارس است. شناسایی تنوع گونه‌ای از این ماهیان خوراکی بر پایه بررسی محموله‌های اسکله‌های صید ماهیان، بازارهای خرید و فروش، مصاحبه‌های میدانی با صیادها و ماهی‌فروشان قدیمی و امروزی خلیج فارس و نیز دانش علمی و تجربی ماهی‌شناسی بوده است. برپایه نتایج این پژوهش، ۶۷ گونه ماهی دریایی متعلق به ۸ راسته، ۲۷ خانواده، و ۵۰ جنس برای سبد غذایی معمول مردم مناطق جنوبی استان فارس شناسایی و فهرست شده است. از رده ماهیان پرتوباله، راسته سوف‌ماهی‌سانان (۳۸ گونه)، گیش‌ماهی‌سانان (۱۹ گونه)، شگ‌ماهی‌سانان (۴ گونه)، کفشک ماهی‌سانان (۲ گونه)، و منقارماهی‌سانان، کفال‌ماهی‌سانان، بزماهی‌سانان و عقرب‌ماهی‌سانان (هر یک با ۱ گونه)، به‌ترتیب بیشترین غنای گونه‌ای را در این فهرست دارند. این در حالی است که گونه‌های مختلف از رده ماهیان غضروفی به‌عنوان گزینه‌های غذایی رایج در سبد غذایی مردم جنوب استان فارس نیستند. هم‌چنین، نتایج نشان می‌دهد که گونه‌های غیرمعمول جدیدی از ماهیان استخوانی و غضروفی با دلایل تغییر ذائقه، استفاده در طب سنتی و صید ورزشی وارد سبدغذایی مردم شده‌اند؛ با این وجود، ذائقه غذایی سنتی و تاریخی مردم محلی از نظر انتخاب ماهی‌های خوراکی تغییر چندانی نکرده است. نتایج این پژوهش می‌تواند در شناخت عادت‌های غذایی مردم جنوب استان فارس و حاشیه خلیج فارس و مدیریت صید، فروش و ذخایر ماهیان خلیج فارس مفید باشد.

کلمات‌کلیدی: ماهیان خوراکی، تنوع ماهیان، شهرستان های مهر و لامرد، خلیج فارس، ماهیان آب شور.