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SHORT COMMUNICATION

First substantiated record of the twobar seabream *Acanthopagrus bifasciatus* (Forsskål, 1775) from Greek waters, with a critical update of Mediterranean occurrences

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Abstract: The twobar seabream, *Acanthopagrus bifasciatus*, is native to the western Indian Ocean and Red Sea and is regarded as a rare non-indigenous fish in the Mediterranean Sea. Here, we document a single individual photographed after being speared off Trypiti Beach, Gavdos Island, southern Greece, on 28 August 2026. The fish was reportedly captured at approximately 10 m depth and was photographed only after scaling and evisceration. Identification was based on the characteristic pair of broad dark bars on the head, including a bar crossing the eye and a second bar extending from the nape towards the opercular region, together with conspicuously yellow visible fins. A critical audit of published records and occurrence data from the Global Biodiversity Information Facility (GBIF) and iNaturalist recovered eight Mediterranean occurrences reported in the scientific literature before the Gavdos observation, plus one independently traceable photographic observation from Israel. A purported 2018 Greek occurrence in GBIF could not be reconciled with its cited primary source, whose supplementary dataset instead locates the record in Tunisia. The Gavdos specimen therefore represents the first substantiated record of *A. bifasciatus* from Greek waters. This isolated finding expands the documented Mediterranean distribution of the species. Targeted monitoring and retention of voucher specimens when possible are recommended.
***Keywords*:** alien fish; biological invasions; citizen science; Greece; Lessepsian migration; Sparidae; Suez Canal

Sažetak: PRVI POTVRĐENI NALAZ VRSTE *ACANTHOPAGRUS BIFASCIATUS* (FORSSKÅL, 1775) U GRČKIM VODAMA, UZ ZNAČAJNO AŽURIRANJE NALAZA U SREDOZEMNOM MORU. Vrsta *Acanthopagrus bifasciatus* prirodno je rasprostranjena u zapadnom Indijskom oceanu i Crvenom moru, a u Sredozemnom moru se smatra rijetkom stranom vrstom ribe. U ovom radu dokumentiramo nalaz jedne jedinke ulovljene podvodnom puškom uz plažu Trypiti na otoku Gavdosu u južnoj Grčkoj 28. kolovoza 2026. Prema dostupnim informacijama, riba je ulovljena na dubini od približno 10 m, a fotografirana je tek nakon uklanjanja ljusaka i utrobe. Identifikacija se temeljila na dvjema karakterističnim širokim tamnim prugama na glavi, od kojih jedna prelazi preko oka, a druga se pruža od zatiljka prema području škržnog poklopca te na izrazito žutoj boji vidljivih peraja. Kritičkom provjerom objavljenih nalaza i podataka o pojavljivanju vrste dostupnih putem platformi Global Biodiversity Information Facility (GBIF) i iNaturalist utvrđeno je osam sredozemnih nalaza zabilježenih u znanstvenoj literaturi prije nalaza s Gavdosa te jedno dodatno, neovisno, provjerljivo i fotografski dokumentirano opažanje iz Izraela. Navodni nalaz iz Grčke iz 2018., dostupan u bazi GBIF, nije bilo moguće uskladiti s navedenim izvornim radom, u čijem je dopunskom skupu podataka taj nalaz smješten u Tunis. Stoga jedinka s Gavdosa predstavlja prvi potkrijepljeni nalaz vrste *A. bifasciatus* u grčkim vodama. Ovaj pojedinačni nalaz proširuje poznatu dokumentiranu rasprostranjenost vrste u Sredozemnom moru. Preporučuje se ciljano praćenje vrste te, kada je to moguće, pohrana ulovljenih jedinki kao dokaznih primjeraka.
Ključne riječi: strane vrste riba; biološke invazije; građanska znanost; Grčka; lesepsijska migracija; Sparidae; Sueski kanal

INTRODUCTION

Biological invasions are a major and rapidly changing component of Mediterranean marine biodiversity. The opening and successive enlargement of the Suez Canal have facilitated the entry of numerous Red Sea taxa, while maritime transport, aquarium releases and other human-mediated pathways may also contribute to introductions (Galil *et al*., 2017; Zenetos and Galanidi, 2020; Zenetos *et al*., 2022). Reliable distributional assessments depend not only on discovering new occurrences, but also on distinguishing independent, verifiable occurrences from duplicated, spatially miscoded, or weakly documented database records.

Acanthopagrus bifasciatus (Forsskål, 1775) is a member of the family Sparidae native to the Red Sea and western Indian Ocean. It is readily recognised in fresh specimens by two prominent dark bars on the

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head and yellow fins, although its identity has historically been confused with *Acanthopagrus catenula*, a western Indian Ocean congener that differs in colour pattern and selected meristic characters (Iwatsuki and Heemstra, 2011). The first documented Mediterranean specimen was collected in Tunisia in 2010 (Ben-Souissi *et al*., 2014). Subsequent records have remained scattered and infrequent, spanning Türkiye, Spain, Egypt, Syria, Lebanon and additional Tunisian observations (Katsanevakis *et al*., 2020; Şensurat-Genç *et al*., 2020; García-de-Vinuesa *et al*., 2020; Al Mabruk *et al*., 2021; Saad *et al*., 2022; Ragkousis *et al*., 2023; Bariche *et al*., 2025). The species is therefore best treated as casual in the Mediterranean rather than established.

We report a newly documented individual from Gavdos Island, south of Crete. Because an aggregated occurrence dataset currently contains an earlier Greek georeference that conflicts with the cited source, we couple the new record with an occurrence-based reassessment of available Mediterranean occurrences. Our aims were to (1) substantiate the first record from Greek waters, (2) summarise independently traceable Mediterranean occurrences, and (3) assess how duplicate records, inconsistent georeferencing and unverifiable portal entries may affect future distributional assessments.

MATERIAL AND METHODS

On 28 August 2026, a recreational spearfisher captured one seabream off Trypiti Beach, Gavdos Island, Greece (34°48′04″ N, 24°07′19″ E). The reported capture depth was approximately 10 m, on a mixed bottom with sand, rocks and patches of *Posidonia oceanica*. The fish was photographed on shore after it had already been scaled and eviscerated. No morphometric measurements were taken at the time, and the total length was estimated to be approximately 25 cm.

The record is consequently supported by a high-resolution colour photograph and associated capture testimony rather than a deposited voucher specimen. No specimen or tissue sample was retained. Identification followed the diagnostic account and taxonomic revision of Iwatsuki and Heemstra (2011), supplemented by comparisons with Mediterranean records containing voucher specimens or detailed imagery.

We searched the scientific literature and the openly accessible biodiversity platforms Global Biodiversity Information Facility (GBIF) and iNaturalist for Mediterranean occurrences of *Acanthopagrus bifasciatus* up to 12 September 2026. Records were compared as candidate occurrences using date, coordinates or locality, and cited source. Multiple database entries representing the same specimen, tissue sample or publication were consolidated into one occurrence. Records lacking a traceable image, voucher specimen or internally consistent primary source were retained only as queried or excluded records and were not used to establish national first occurrences.

RESULTS AND DISCUSSION

The photographed fish had the deep, laterally compressed body and robust head typical of *Acanthopagrus*. Two broad dark vertical bands were visible on the head: the anterior band originated dorsally near the occipital region and crossed the eye and cheek, whereas the posterior band extended from the nape towards the opercular region. The caudal fin and the visible dorsal-fin portions were conspicuously yellow, whereas the anal fin showed dark pigmentation (Fig. 1). This combination is diagnostic of *Acanthopagrus bifasciatus* and clearly separates it from native Mediterranean seabreams (Sparidae). The similar *A. catenula* generally bears a conspicuous broad black posterior margin on the caudal fin and another one on the dorsal fin (Iwatsuki and Heemstra, 2011).

Before the Gavdos observation, we recovered eight occurrences reported in the scientific literature and one additional independently traceable photographic record available through iNaturalist and aggregated by GBIF (Fig. 2, Table 1). The online photographic observation was made on the Israeli Mediterranean coast in 2025. The observer was not contacted, and no supplementary information beyond the public photograph, species identification, date and locality was available. Depending on whether literature-only or all traceable occurrence evidence is counted, the Gavdos observation is thus the ninth literature-documented or the tenth independently traceable Mediterranean occurrence.

A Global Biodiversity Information Facility (GBIF) occurrence currently assigns *A. bifasciatus* to Greece on 12 February 2018 at 37°19′08″ N, 26°34′01.6″ E (GBIF, 2026, occurrence 6249845519) and links the record to Katsanevakis *et al*. (2020). However, the original supplementary table associated with that paper reports the species from Tunisia in 2018 at 37°07′17.1″ N, 10°47′09.2″ E. We found no Greek locality, photograph, voucher specimen or observer-level documentation for this taxon in the cited source. The Greek database record was therefore not considered. A comparable country/coordinate mismatch affects a second aggregated entry attributed to Israel in 2020, while its cited source reports a Tunisian observation (Ragkousis *et al*., 2023; GBIF, 2026, occurrence 6249849790). These inconsistencies indicate probable field-mapping errors.

We also excluded three additional Mediterranean records reported in GBIF and considered to require further evaluation by García-de-Vinuesa *et al*. (2020): one record attributed to Egypt and two observations made by divers near Barcelona in 2013 and 2017. Because these records could not be independently validated from the available supporting evidence, they were not treated as substantiated occurrence records. Consistently, Evangelopoulos *et al*. (2024) reported only one literature-based occurrence of *A. bifasciatus* in the North Aegean Sea, restricted to the Turkish coast of Asia Minor, and provided no field or literature records from Greek waters.



Fig. 1. *Acanthopagrus bifasciatus* photographed after capture off Trypiti Beach, Gavdos Island, Greece, on 28 August 2026. The two dark cephalic bars and yellow fins are visible. The individual had already been scaled and eviscerated when photographed; no scale is available. Photograph by Sara Tortora.

The photograph from Gavdos provides diagnostic visual evidence of *A. bifasciatus* and represents the first substantiated record from Greek waters. Gavdos lies at the southern margin of the Aegean region and occupies a biogeographically informative position between the Levantine Basin, the waters south of Crete and the central Mediterranean. The record fills a conspicuous national gap between previously documented occurrences in the eastern Mediterranean and more distant observations to the west.

The pathway by which this individual reached Gavdos cannot be inferred from one observation. At an estimated total length of approximately 25 cm, the fish was small relative to the reported maximum of 70 cm and below the mean female maturity length of 26.4 cm fork length in the southern Arabian Gulf (Grandcourt *et al*., 2004). It may therefore have been immature or subadult, although the approximate length, lack of a scale and absence of gonads prevent a firm determination. Its size alone does not distinguish natural secondary dispersal from human-assisted transport earlier in life. Natural secondary dispersal after entry through the Suez Canal is plausible given the species' Red Sea distribution and occurrences along the Levant and in Türkiye. Transport associated with shipping also cannot be excluded, particularly because verified records include major harbour areas such as Barcelona and because Mediterranean occurrences are widely separated.

Despite the increasing geographic span of reports, available evidence does not demonstrate a self-sustaining Mediterranean population. Occurrences remain single and temporally discontinuous; no evidence of reproduction, spawning aggregations or repeated local captures has been documented in Greek waters. The appropriate present status is therefore non-indigenous and casual. Repeated observations around Gavdos or southern Crete, especially of different size classes, would materially change this assessment.

This record also illustrates both the value and the limitations of opportunistic documentation and citizen science (Azzurro and Tiralongo, 2020; Tiralongo *et al*., 2020). A clear photograph allowed a rare taxon to be recognised even though the fish had been processed for consumption. Conversely, the absence of photographs of the intact specimen before processing, a measurement scale, meristic counts, a voucher specimen and a tissue sample limits taxonomic and biological inference. Outreach to recreational fishers, spearfishers and fish markets should therefore encourage a simple protocol: photograph the entire fresh specimen from lateral view

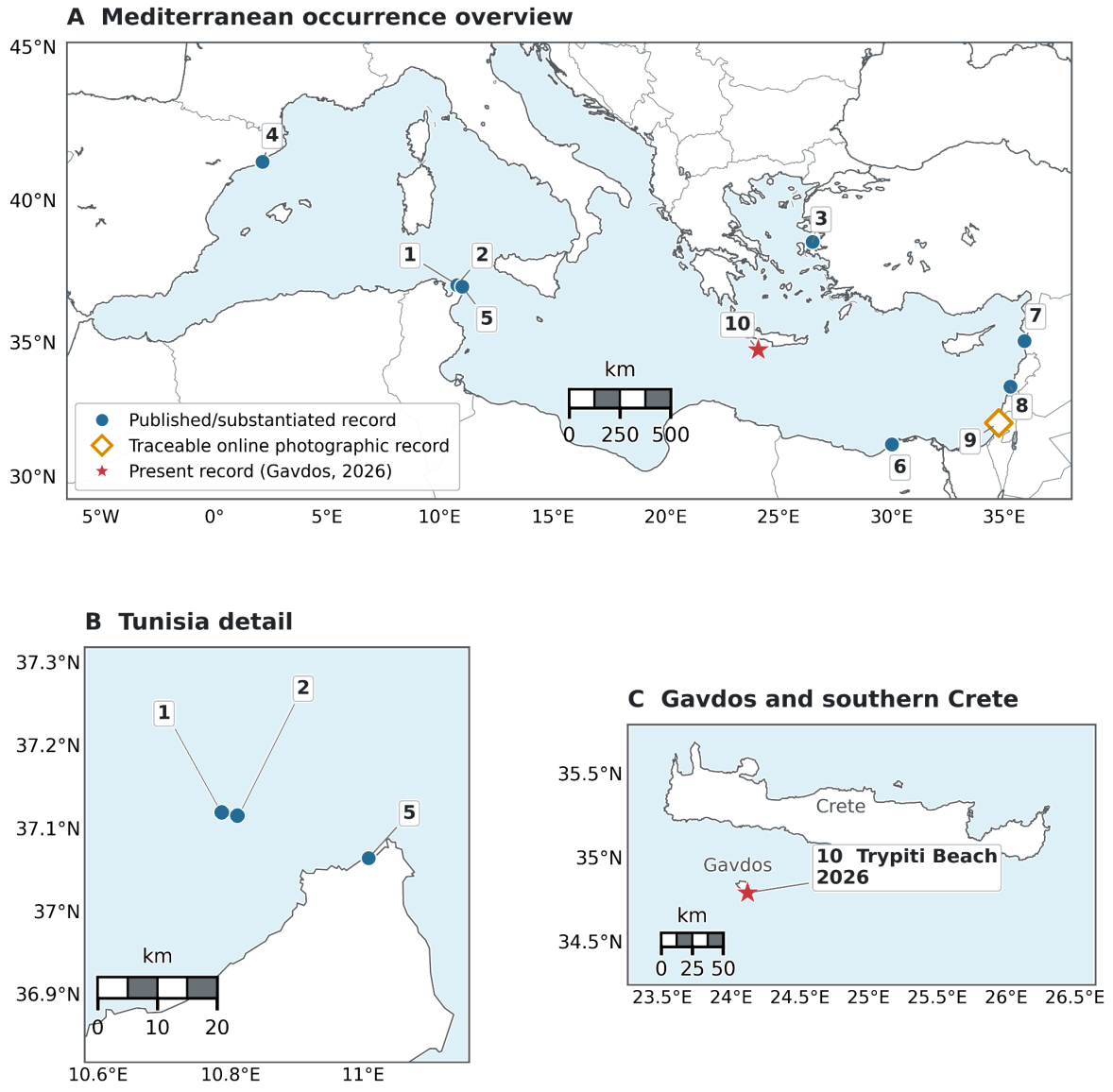


Fig. 2. Mediterranean records of *A. bifasciatus*. Overview of substantiated or independently traceable records **(A)**; detail of the Tunisian records **(B)**; location of the present record at Trypiti Beach, Gavdos Island, Greece **(C)**. Blue circles indicate published or substantiated occurrences, the orange diamond indicates the traceable photographic record from Israel, and the red star indicates the present record. Numbers correspond to: 1, Tunisia (2010); 2, Tunisia (2018); 3, Türkiye (2018); 4, Spain (2019); 5, Tunisia (2020); 6, Egypt (2020); 7, Syria (2022); 8, Lebanon (2024); 9, Israel (2025); and 10, Greece (2026).

with a scale; record date, coordinates, depth, gear and habitat; retain the specimen frozen when practically possible; and preserve a small tissue sample in high-grade ethanol for genetic analysis.

Finally, the conflict between aggregated georeferences and the supplementary data cited as their source shows why national first records should not be inferred from portal coordinates alone. Occurrence-level deduplication and inspection of primary evidence are essential because duplicate entries can inflate occurrence counts, country–coordinate mismatches can create false national records and distort range maps, and image-only records without metadata limit biological and pathway inference. These limitations should be addressed before occurrence data are used in future range or dispersal models. Curatorial correction of the queried GBIF entries would improve future Mediterranean syntheses.

CONCLUSIONS

A single, photographically documented *Acanthopagrus bifasciatus* from Gavdos constitutes the first substantiated occurrence in Greek waters. The finding extends the known Mediterranean distribution but does not demonstrate establishment. Its publication is justified primarily as a new national record supported by di-

Table 1. Chronology of substantiated or independently traceable Mediterranean occurrences of *Acanthopagrus bifasciatus* before and including the present record.

No.	Year	Country	Latitude; longitude	Source
1	2010	Tunisia	37°07′03.0″ N; 10°48′34.9″ E	Ben-Souissi *et al.,* 2014
2	2018	Tunisia	37°07′17.1″ N; 10°47′09.2″ E	Katsanevakis *et al.,* 2020
3	2018	Türkiye	38°37′47.9″ N; 26°31′27.2″ E	Şensurat-Genç *et al.,* 2020
4	2019	Spain	41°20′51.0″ N; 2°10′13.8″ E	García-de-Vinuesa *et al.,* 2020
5	2020	Tunisia	37°03′58.4″ N; 11°00′31.0″ E	Ragkousis *et al.,* 2023
6	2020	Egypt	31°17′16.6″ N; 30°01′57.0″ E	Al Mabruk *et al.,* 2021
7	2022	Syria	35°07′17.0″ N; 35°54′14.8″ E	Saad *et al.*, 2022
8	2024	Lebanon	33°27′00.0″ N; 35°16′48.0″ E	Bariche *et al.,* 2025
9	2025	Israel	32°05′42.3″ N; 34°46′18.8″ E	iNaturalist, 2025; GBIF, 2026, occurrence 5230694437
10	2026	Greece	34°48′04.0″ N; 24°07′19.0″ E	Tiralongo and Tortora, present study

agnostic imagery and strengthened by a transparent audit of previously reported occurrences. No specimen or tissue sample was retained; future records should therefore prioritise voucher preservation and genetic sampling.

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