

ANNALES

Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterranee
Annals for Istrian and Mediterranean Studies
Series Historia Naturalis, 36, 2026, 1





ANNALES

**Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterraneei
Annals for Istrian and Mediterranean Studies**

Series Historia Naturalis, 36, 2026, 1

ISSN 1408-533X
e-ISSN 2591-1783

UDK 5

Letnik 36, leto 2026 številka 1

**UREDNIŠKI ODBOR/
COMITATO DI REDAZIONE/
BOARD OF EDITORS:**

Alessandro Acquavita (IT), Nicola Bettoso (IT), Christian Capape (FR), Darko Darovec, Dušan Devetak, Jakov Dulčić (HR), Edy Fantinato (IT), Ana Fortič, Andrej Gogala, Daniel Golani (IL), Danijel Ivajnsič, Hakan Kabasakal (TR), Mitja Kaligarič, Marcelo Kovačić (HR), Petar Kružić (HR), Lovrenc Lipej, Vesna Mačić (ME), Alenka Malej, Borut Mavrič, Patricija Mozetič, Martina Orlando-Bonaca, James Pierson (USA), Michael Stachowitsch (AT), Francesco Tiralongo (IT), Tom Turk, Al Vrezec

**Glavni urednik/Redattore capo/
Editor in chief:**

Darko Darovec

**Odgovorni urednik naravoslovja/
Redattore responsabile per le scienze
naturali/Natural Science Editor:**

Lovrenc Lipej

Urednici/Redattrici/Editors:

Martina Orlando-Bonaca, Ana Fortič

Prevajalci/Traduttori/Translators:

Martina Orlando-Bonaca (sl./it.)

**Oblikovalec/Progetto grafico/
Graphic design:**

Dušan Podgornik, Lovrenc Lipej

Tisk/Stampa/Print:

Založništvo PADRE d.o.o.

Izdajatelj/Editori/Published by:Zgodovinsko društvo za južno Primorsko - Koper / Società storica del Litorale - Capodistria®
Inštitut IRRIS za raziskave, razvoj in strategije družbe, kulture in okolja / Institute IRRIS for Research, Development and Strategies of Society, Culture and Environment / Istituto IRRIS di ricerca, sviluppo e strategie della società, cultura e ambiente®**Sedež uredništva/Sede della redazione/
Address of Editorial Board:**Nacionalni inštitut za biologijo, Morska biološka postaja Piran / Istituto nazionale di biologia, Stazione di biologia marina di Pirano / National Institute of Biology, Marine Biology Station Piran
SI-6330 Piran / Pirano, Fornače/Fornace 41, tel.: +386 5 671 2900, fax +386 5 671 2901;
e-mail: annalesSHN@nib.si, internet: www.zdjp.si

Redakcija te številke je bila zaključena 20. 06. 2026.

**Sofinancirajo/Supporto finanziario/
Financially supported by:**

Javna agencija za znanstveno-raziskovalno in inovacijsko dejavnost Republike Slovenije (ARIS)

Annales - Series Historia Naturalis izhaja dvakrat letno.**Naklada/Tiratura/Circulation:** 300 izvodov/copie/copies

Revija Annales, Series Historia Naturalis je vključena v naslednje podatkovne baze / La rivista Annales, series Historia Naturalis è inserita nei seguenti data base / Articles appearing in this journal are abstracted and indexed in: BIOSIS-Zoological Record (UK); Aquatic Sciences and Fisheries Abstracts (ASFA); Elsevier B.V.: SCOPUS (NL); Directory of Open Access Journals (DOAJ).

To delo je objavljeno pod licenco / Quest'opera è distribuita con Licenza / This work is licensed under a Creative Commons BY 4.0.

Navodila avtorjem in vse znanstvene revije in članki so brezplačno dostopni na spletni strani <https://zdjp.si/en/p/annalesshn/>
The submission guidelines and all scientific journals and articles are available free of charge on the website <https://zdjp.si/en/p/annalesshn/>
Le norme redazionali e tutti le riviste scientifiche e gli articoli sono disponibili gratuitamente sul sito <https://zdjp.si/en/p/annalesshn/>

VSEBINA / *INDICE GENERALE* / *CONTENTS*

BIOTSKA GLOBALIZACIJA
GLOBALIZZAZIONE BIOTICA
BIOTIC GLOBALIZATION

Alen SOLDO, Rigers BAKIU & Sherif DURMISHAJ

The First Record of Bastard Grunt *Pomadasys incisus* (Bowdich, 1825) in Albanian Waters (Adriatic Sea) 1
Prvi zapis o pojavljanju neprave prašičevke Pomadasys incisus (Bowdich, 1825) v albanskih vodah (Jadransko morje)

Pero UGARKOVIĆ, Ilija ČETKOVIĆ, Olivera MARKOVIĆ, Aleksandar JOKSIMOVIĆ, Nikola ĐORĐEVIĆ & Jakov DULČIĆ

Additional Records of the Bastard Grunt, *Pomadasys incisus* (Bowdich, 1825), from the Eastern Adriatic Sea 7
Dodatne najdbe neprave prašičevke, Pomadasys incisus (Bowdich, 1825), iz vzhodnega Jadranskega morja

Rüştü KIRMAN & Murat BİLECENOĞLU

Significant Range Expansion of *Sepioteuthis lessoniana* (Cephalopoda: Loliginidae) in the Aegean Sea Based on Scuba and Photographic Observations 15
Znatno razširjanje areala vrste Sepioteuthis lessoniana (Cephalopoda: Loliginidae), v Egejskem morju na podlagi podvodnih opazovanj in fotografiranja

Adrian BRAJKOVIĆ, Iris MATULJA & Neven IVEŠA

Conquering the North: New Occurrence of the Common Lionfish, *Pterois miles* (Bennett, 1828), in the Adriatic Sea 21
Osvajanje severa: novi zapis o pojavljanju navadne plamenke, Pterois miles (Bennett, 1828), v Jadranskem morju

Alan DEIDUN, Bruno ZAVA, Maria CORSINI-FOKA, Arnold SCIBERRAS & Alessio MARRONE

First Record of the Devil Firefish *Pterois miles* (Bennett, 1828) (Actinopterygii: Scorpaenidae) from Maltese Coastal Waters 29
Prvi zapis o pojavljanju plamenke Pterois miles (Bennett, 1828) (Actinopterygii: Scorpaenidae) v malteških obalnih vodah

Chirine HUSSEIN, Amir IBRAHIM, Firas ALSHAWY, Mouina BADRAN & Rahaf ABO ASA

First Mediterranean Record of the Diagonal Butterflyfish, *Chaetodon fasciatus* Forsskål, 1775, Reported from Syrian Waters 35
Prvi sredozemski zapis o pojavljanju poševnoprogame ščetinozobke, Chaetodon fasciatus Forsskål, 1775, iz sirske vode

Houssein ELBARAASI, Tarek SHOEIB, Mona SAID & Laith A. JAWAD

A Further Record of the Barred Knifejaw, *Oplegnathus fasciatus* (Temminck & Schlegel, 1844), a Pacific Species, from the Mediterranean: A New Record from Benghazi, Libya 41
Novi zapis o vrsti Oplegnathus fasciatus (Temminck & Schlegel, 1844), pacifiški vrsti, v Sredozemlju: nova najdba iz Bengazija v Libiji

Alen SOLDO & Rigers BAKIU

Rapid Increase in Records of the Invasive Silver-cheeked Toadfish *Lagocephalus sceleratus* (Gmelin, 1789) in the Adriatic Sea 49
Hitro naraščanje pojavov invazivne srebrnoproge napihvalke Lagocephalus sceleratus (Gmelin, 1789) v Jadranskem morju

Gerasimos KONDYLATOS, Konstantinos KALAENTZIS, Styliani MINOUDI & Maria CORSINI-FOKA

Further Molecular Identification Confirms the Occurrence of *Lagocephalus guentheri* Miranda Ribeiro, 1915 in the Aegean Coastal Waters of Greece 55
Nadaljnja molekularna identifikacija potrjuje prisotnost vrste Lagocephalus guentheri Miranda Ribeiro, 1915 v egejskih obalnih vodah Grčije

Deniz ERGÜDEN & Cem ÇEVİK

Length–Weight and Length–Length Relationships, and Condition Factor of *Ambassis dussumieri* Cuvier, 1828, in the Northeastern Mediterranean, Türkiye 65
Dolžinsko-masni odnos med dolžino in kondicijskim faktorjem pri vrsti Ambassis dussumieri Cuvier, 1828, v severovzhodnem Sredozemskem morju, Turčija

Okun AKYOL & HALİL ŞEN

Unexpected Occurrence of Prussian Carp *Carassius gibelio* (Cyprinidae) in Homa Lagoon (Izmir Bay, Aegean Sea) 73
Nepričakovani pojav srebrnega koreslja Carassius gibelio (Cyprinidae) v laguni Homa (Izmirski zaliv, Egejsko morje)

SREDOZEMSKA HRUSTANČNICE
 SQUALI E RAZZE MEDITERRANEE
 MEDITERRANEAN SHARKS AND RAYS

Terry CARBON, Emily GIGNON, Justine LALLAU-VAZZOLER, Hugo MENARD, Claudio BARRIA, Ana I. COLMENERO & Nicolas ZIANI

Precopulatory Behaviour of *Pteroplatytrygon violacea* (Myliobatiformes: Dasyatidae) in the Northwestern Mediterranean 81
Predkopulacijsko vedenje vijoličnega morskega biča (Pteroplatytrygon violacea) (Myliobatiformes: Dasyatidae) v severozahodnem Sredozemlju

Hakan KABASAKAL Distribution of <i>Odontaspis ferox</i> in the Mediterranean Sea: Insights from Spatial and Temporal Analyses 87 <i>Razširjenost vrste Odontaspis ferox v Sredozemskem morju: Spoznanja na podlagi prostorskih in časovnih analiz</i>	MORSKA FAVNA FAUNA MARINA MARINE FAUNA
Hristina GELEVSKA, Borut MAVRIČ, Lovrenc LIPEJ & Christian CAPAPÉ Is the Gulf of Trieste a potential nursery area for some elasmobranch species? 99 <i>Ali je Tržaški zaliv potencialno območje odraščanja (jaslice) za določene vrste hrustančnic?</i>	Francesco TIRALONGO, Paola LEOTTA & Riccardo MARTELLUCCI <i>Physalia physalis</i> in the central Mediterranean Sea: Recent observations associated with mass strandings of <i>Velella velella</i> and surface circulation dynamics 165 <i>Portugalska ladjica (Physalia physalis) v osrednjem Sredozemskem morju: nedavna opažanja v povezavi z masovnimi nasedanji morskega jadrčka (Velella velella) in dinamiko površinskega kroženja vode</i>
IHTIOFAVNA ITTIOFAUNA ICHTHYOFAUNA	
Cem DALYAN, Yunus GÖNÜL, Mahmud Samed ŞAHİNOĞULLARI & Hakan KABASAKAL New data on the Occurrence and Morphology of the Armless Snake Eel, <i>Dalophis imberbis</i> (Ophichthidae), from the Northeastern Mediterranean Sea 119 <i>Novi podatki o pojavljanju in morfologiji kačaste jegulje, Dalophis imberbis (Ophichthidae), iz severovzhodnega Sredozemskega morja</i>	Andrea LOMBARDO, Juba CHABANE & Rachida GHALMI First Contribution to the Study of the "Sea Slug" Fauna (Gastropoda, Heterobranchia) of the Algerian coast 177 <i>Prvi prispevek k proučevanju favne „goliš morskih polžev“ (Gastropoda, Heterobranchia) alžirske obale</i>
Chirine HUSSEIN, Firas ALSHAWY & Amir IBRAHIM First Record of the Mediterranean Dealfish, <i>Trachipterus trachipterus</i> (Gmelin, 1789) (Trachipteridae), in Syrian Marine Waters 127 <i>Prvi zapis o pojavljanju kosice, Trachipterus trachipterus (Gmelin, 1789) (Trachipteridae), v sirskih morskih vodah</i>	Borut MAVRIČ, Tjaša PREMRL, Martin MAVRIČ, Tina MIRT, Neža LEBAN, Tihomir MAKOVEC & Lovrenc LIPEJ Assessing Soft-Bottom Epibenthic Communities: Methodological Insights into Dredging and Video Surveys 203 <i>Ocenjevanje epibentoških združb mehkega dna: metodološki vpogledi v dredžanje in video pregleda</i>
Igor AGOSTINI & Okan AKYOL On the Occurrence of the Currently Largest Recorded <i>Pagellus erythrinus</i> (Sparidae) in the Tyrrhenian Sea (Italy) 133 <i>O pojavljanju trenutno največjega evidentiranega primerka vrste Pagellus erythrinus (Sparidae) v Tirenskem morju (Italija)</i>	FAVNA FAUNA FAUNA
Ismail Burak DABAN & Yusuf ŞEN Substantiated Record and Preliminary Biological Insights of <i>Microlipophrys dalmatinus</i> (Steindachner & Kolombatović, 1883) from the Sea of Marmara, Türkiye 141 <i>Potrjen zapis o pojavljanju in predhodna biološka spoznanja o vrsti Microlipophrys dalmatinus (Steindachner & Kolombatović, 1883) iz Marmarskega morja, Turčija</i>	Kim LEBAN, Iztok ŠKORNIK, Špela ČONČ, Mateja BREG VALJAVEC, Žan KURALT, Lenart ŠTAUT, Jure TIČAR, Katarina POLAJNAR HORVAT, Primož GAŠPERIČ, Aleš SMREKAR & Melita VAMBERGER Habitat Insights for the European Pond Turtle (<i>Emys orbicularis</i>) in the Coastal Wetland Area Sečovlje Salina Nature Park, Slovenia 221 <i>Habitatne značilnosti močvirske sklednice (Emys orbicularis) v krajinskem parku Sečoveljske soline, Slovenija</i>
Zeliha ERDOĞAN, Gülçin ULUNEHİR AYDIN, Hatice TORCU-KOÇ & Tuğba ANBAROĞLU Population Study of <i>Trachurus mediterraneus</i> Focused on Reproductive Biology in Edremit Bay, Northern Aegean Sea 151 <i>Razmnoževalna biologija sredozemskega šura (Trachurus mediterraneus) v sklopu populacijske raziskave v Edremitnem zalivu (severno Egejsko morje)</i>	Leon CIMERMAN & Matija KRIŽNAR Najdbe pleistocenske avifavne v kamnolomu Črni Kal (Primorska, Slovenija) 243 <i>Pleistocene Avifauna Finds in the Črni Kal Quarry (Primorska Region, Slovenia)</i>
	Kazalo k slikam na ovitku 255 Index to images on the cover 255

FIRST CONTRIBUTION TO THE STUDY OF THE “SEA SLUG” FAUNA (GASTROPODA, HETEROBRANCHIA) OF THE ALGERIAN COAST

Andrea LOMBARDO

Independent researcher; Via Dante 21, Valverde (CT) 95028, Italy.

Juba CHABANE

University of Tipaza - Morsli Abdellah, Oued Merzoug 42200, Tipaza, Algeria.
e-mail: chabane.juba@univ-tipaza.dz

Rachida GHALMI

National High school for marine science and coastal management, Algiers, Algeria

ABSTRACT

In Algeria, studies concerning the informally defined group of “sea slugs” have so far focused exclusively on sporadic records of species from various areas of the local coast. Consequently, the sea slug fauna of the Algerian coast remains largely unknown. This study aimed to compile the first list of sea slugs in the Algerian coast by examining new photographic and field data collected between 2010 and 2025. Based on these new data and published literature, it has been possible to confirm that 71 species belonging to 35 families of sea slugs have been recorded in the region to date. Given the historical lack of experts on this faunal group in Algeria and the high marine environmental diversity of its coast, this number is likely a great underestimation.

Key words: Algeria, inventory, citizen science, heterobranch sea slugs, marine heterobranchs, opisthobranchs

PRIMO CONTRIBUTO ALLO STUDIO DELLA FAUNA A “LUMACHE DI MARE” (GASTROPODA, HETEROBRANCHIA) DELLA COSTA ALGERINA

SINTESI

In Algeria, gli studi riguardanti il gruppo definito in modo informale “lumache di mare” si sono finora concentrati esclusivamente su segnalazioni sporadiche di specie provenienti da diverse aree della costa locale. Di conseguenza, la fauna a lumache di mare della costa algerina rimane in gran parte sconosciuta. Questo studio ha l’obiettivo di compilare la prima lista delle lumache di mare presenti lungo la costa algerina, esaminando nuovi dati fotografici e osservazioni sul campo raccolti tra il 2010 e il 2025. Sulla base di questi nuovi dati e della letteratura scientifica pubblicata, è stato possibile confermare che nella regione sono state finora segnalate 71 specie appartenenti a 35 famiglie. Considerata la storica mancanza di esperti di questo gruppo faunistico in Algeria e l’elevata diversità ambientale degli ecosistemi marini della sua costa, questo numero è probabilmente fortemente sottostimato.

Parole chiave: Algeria, inventario, scienza partecipativa, lumache di mare eterobranchie, eterobranchi marini, opistobranchi

INTRODUCTION

The Algerian coastline, extending over 2148 km along the southwestern Mediterranean basin (El Watan, 2023), is characterised by marked geomorphological heterogeneity that results in a wide variety of coastal marine environments (Millot, 1999). Specifically, rocky shores dominate large portions of the coast, while sandy beaches and dune systems are mainly developed within broad embayments (Grimes et al., 2010). This structural heterogeneity, combined with strong longitudinal gradients in hydrodynamics, productivity, and substrate composition, creates the conditions suitable for a wide range of marine habitats (e.g., soft-bottom assemblages, seagrass meadows of *Posidonia oceanica* (Linnaeus) Delile, and coralligenous

formations), which collectively contribute to the high environmental diversity of the Algerian coastal area within the southwestern Mediterranean context (Grimes et al., 2016).

Despite the remarkable richness of the Algerian marine environment, faunal research remains limited and has been predominantly focused on general surveys of the main groups of marine animals, such as fish, crustaceans, polychaetes, and molluscs. This situation is linked to numerous factors, including limited interest in purely faunistic studies, limited resources for studying marine faunas, and a shortage of taxonomists (Grimes et al., 2004).

Historically, one of the groups of marine molluscs less frequently considered in Algerian studies is that of sea slugs. Comprising 13 higher-level taxa

Tab. 1: Algerian sea slug reports in the literature to date. For each species, locality(ies), reference(s) and chorotype are indicated. Chorotype abbreviations are as follows: ME = Mediterranean endemic; AM = Atlantic–Mediterranean; BA = Boreo-Atlantic; SA = subtropical Atlantic; IP = Indo-Pacific; PO = pan-oceanic; UD = Unknown distribution. The abbreviation NS stands for "Not specified".

Tab. 1: Poročila o alžirskih golih morskih polžih v razpoložljivi literaturi. Za vsako vrsto so navedeni lokaliteta(-e), vir(-i) in horotip. Kratice horotipov so naslednje: ME = sredozemski endemit; AM = atlantsko-sredozemski; BA = boreo-atlantski; SA = subtropski atlantski; IP = indo-pacifiški; PO = pan-oceanski; UD = neznana razširjenost. Kratica NS pomeni „ni določeno“.

Taxon	Locality	Reference	Chorotype
Acteonoidea			
Family Acteonidae d’Orbigny, 1842			
<i>Acteon tornatilis</i> (Linnaeus, 1758)	Bay of Algiers; Bay of Fetzara	Bakalem, 2008	BA
Ringiculimorpha			
Family Ringiculidae Philippi, 1853			
<i>Ringicula buccinea</i> (Brocchi, 1814)	Bay of Fetzara	Bakalem, 2008	BA
<i>Ringicula</i> sp.	Bay of Fetzara	Bakalem, 2008	UD
Nudibranchia			
Family Facelinidae Bergh, 1889			
<i>Cratena peregrina</i> (Gmelin, 1791)	Annaba	Derbal & Kara, 2005	AM
<i>Facelina auriculata</i> (Müller, 1776)	Bay of Algiers	Bakalem, 2008	BA
Family Flabellinidae Bergh, 1889			
<i>Flabellina affinis</i> (Gmelin, 1791)	Annaba	Derbal & Kara, 2005	AM
	Réghaïa	CAR/ASP-PLUE/PAM, 2015	
Family Myrrhinidae Bergh, 1905			
<i>Godiva quadricolor</i> (Barnard, 1927)	Port of Arzew	Bensari et al., 2020	PO
<i>Nemesignis banyulensis</i> (Portmann & Sandmeier, 1960)	Artificial reef of Oran	Tamsouri et al., 2018	AM
Family Fionidae Gray, 1857			
<i>Fiona pinnata</i> (Eschscholtz, 1831)	Bay of Algiers	Bakalem, 2008	PO
Family Samlidae Korshunova, Martynov, Bakken et al., 2017			
<i>Luisella babai</i> (Schmekel, 1972)	Réghaïa	CAR/ASP-PLUE/PAM, 2015	AM

Family Tethydidae Rafinesque, 1815			
<i>Tethys fimbria</i> Linnaeus, 1767	NS	Pruvot-Fol, 1954	AM
Doridida			
Family Chromodorididae Bergh, 1891			
<i>Felimare tricolor</i> (Cantraine, 1835)	Annaba	Derbal & Kara, 2005	AM
	Réghaïa	CAR/ASP-PLUE/PAM, 2015	
<i>Rudmania purpurea</i> (Risso, 1831)	Artificial reef of Oran	Tamsouri <i>et al.</i> , 2018	AM
Family Discodorididae Bergh, 1891			
<i>Jorunna tomentosa</i> (Cuvier, 1804)	Annaba	Camacho-García & Gosliner, 2008	BA
<i>Peltodoris atromaculata</i> Bergh, 1880	Annaba	Derbal & Kara, 2005	AM
	Réghaïa	CAR/ASP-PLUE/PAM, 2015	
<i>Platydoris argo</i> (Linnaeus, 1767)	NS	Pruvot-Fol, 1954	AM
Family Dorididae Rafinesque, 1815			
<i>Doris verrucosa</i> Linnaeus, 1758	Bay of Algiers	Bakalem, 2008	SA
Cephalaspidea			
Family Bullidae J. E. Gray, 1827			
<i>Bulla striata</i> Bruguière, 1792	NS	Pruvot-Fol, 1954	SA
Family Retusidae Thiele, 1925			
<i>Retusa variabilis</i> (Milaschewitsch, 1912)	Bay of Algiers	Bakalem, 2008	ME
Family Cylichnidae H. Adams & A. Adams, 1854			
<i>Cylichna cylindracea</i> (Pennant, 1777)	Gulf of Béjaïa	Bakalem, 2008	PO
Family Haminoeidae Pilsbry, 1895			
<i>Roxaniella jeffreysi</i> (Weinkauff, 1866)	NS	Pruvot-Fol, 1954	AM
Family Aglajidae Pilsbry, 1895 (1847)			
<i>Philinopsis depicta</i> (Renier, 1807)	Bay of Fetzara	Bakalem, 2008	AM
Family Alacuppidae Oskars, Bouchet & Malaquias, 2015			
<i>Roxania semilaevis</i> (G. Seguenza, 1880)	NS	Pruvot-Fol, 1954	AM
Family Laonidae Pruvot-Fol, 1954			
<i>Laona pruinosa</i> (W. Clark, 1827)	NS	Pruvot-Fol, 1954	BA
Family Philinidae J. E. Gray, 1850 (1815)			
<i>Philine quadripartita</i> Ascanius, 1772	Bay of Algiers; Gulf of Jijel; Bay of Fetzara	Bakalem, 2008	BA
Aplysiida			
Family Aplysiidae Lamarck, 1809			
<i>Aplysia fasciata</i> Poiret, 1789	NS	Pruvot-Fol, 1954	SA
	West coast of Algeria	Meziane <i>et al.</i> , 2020	
<i>Aplysia punctata</i> (Cuvier, 1803)	Annaba	Derbal & Kara, 2005	BA
	West coast of Algeria	Meziane <i>et al.</i> , 2020	
<i>Bursatella leachii</i> Blainville, 1817	El Kala	Refes <i>et al.</i> , 2010	PO
	Sidi Fredj	Eleftheriou <i>et al.</i> , 2011	
<i>Dolabella auricularia</i> ([Lightfoot], 1786)	l'île Plane	Brahimi & Bensaou, 2018	IP
<i>Petalifera petalifera</i> (Rang, 1828)	Castiglione	Dieuzeide, 1951	SA
Umbraculida			
Family Tylodinidae J. E. Gray, 1847			
<i>Tyrodina perversa</i> (Gmelin, 1791)	NS	Pruvot-Fol, 1954	AM

(i.e., Rhodopoidea, Acteonoidea, Ringiculimorpha, Pleurobranchida, Nudibranchia, Doridida, Cephalaspidea, Runcinida, Aplysiida, Pteropoda, Umbraculida, Sacoglossa, and Acochliidiomorpha) and considered informal (with the various constituent taxa currently placed within the subclass Heterobranchia), this group is still regarded as an unofficial whole by scholars and enthusiasts worldwide, who commonly refer to its members as "opisthobranchs", "marine heterobranchs", or "heterobranch sea slugs" (see Lombardo and Marletta, in press, for more details on the use of these informal terms). With their striking body shapes and unique adaptations, these marine creatures have garnered global attention and become particularly popular among underwater photography enthusiasts (Trainito & Doneddu, 2014; Lombardo & Marletta, in press).

With regard to the Algerian coast, the available data on these animals derive almost exclusively from reports included in general studies (Derbal & Kara, 2005; Bakalem, 2008; Refes *et al.*, 2010; CAR/ASP-

PLUE/PAM, 2015; Brahimi & Bensaou, 2018; Bensari *et al.*, 2020) and works dedicated to the malacofauna of specific areas (Meziane *et al.*, 2020). Historically, only five specialised studies have been dedicated to Algerian sea slugs (Dieuzeide, 1951; Pruvot-Fol, 1954; Camacho-García & Gosliner, 2008; Eleftheriou *et al.*, 2011; Tamsouri *et al.*, 2018). Moreover, these publications are almost entirely limited to records of individual species (Pruvot-Fol, 1954; Camacho-García & Gosliner, 2008; Eleftheriou *et al.*, 2011; Tamsouri *et al.*, 2018), and only one study (Dieuzeide, 1951) provides information extending beyond simple species reporting.

An examination of the records documented in the above-mentioned literature reveals that, prior to this study, 31 species of sea slugs were recorded in Algeria, belonging to seven higher-level taxa (one Acteonoidea, two Ringiculimorpha, eight Nudibranchia, six Doridida, eight Cephalaspidea, five Aplysiida, and one Umbraculida species) (Tab. 1). Given the limited and scattered information currently available on this group of molluscs in Algeria, our



Fig. 1: A: Position of the Mediterranean Sea on a global scale (white rectangle); B: location of the Algerian coastline within the Mediterranean Sea (white rectangle); C: location and coastal extent of the ten wilayas along the Algerian coast examined in this study.

Sl. 1: A: Položaj Sredozemskega morja v globalnem merilu (beli pravokotnik); B: lokacija alžirske obale znotraj Sredozemskega morja (beli pravokotnik); C: lokacija in obalni obseg desetih administrativnih predelov vzdolž alžirske obale, preučenih v tej študiji.

study aimed to compile the first checklist of Algerian sea slugs using new faunal data derived from both scientific research and contributions from Algerian enthusiasts. This list is intended to serve as a starting point and reference for future studies dedicated to sea slugs in Algeria.

MATERIAL AND METHODS

In compiling the faunal information presented in this study, a collection of photographic data obtained between 2010 to 2025 was used. These data were derived both from original field observations and from information provided by external contributors. In the former case, the data were collected

through accidental capture (bycatch) of sea slugs in local fisheries (trammel nets, at depths ranging from 30 to 70 m) and through the manual collection of specimens during snorkelling sessions. Data from external contributors consisted of photographic material obtained from online reports and personal communications from enthusiasts and underwater photographers (see Tab. 2 and References). Overall, the data reported here were collected in ten wilayas (i.e., provinces) along the Algerian coast, including Tlemcen, Aïn Témouchent, Oran, Mostaganem, Tipaza, Algiers, Boumerdès, Tizi Ouzou, Jijel, and Skikda (Fig 1).

Species identification was carried out by examining the photographic material available to

Tab. 2: Sea slug species documented from new data examined in this study. The symbol x indicates the presence of a given species in the corresponding wilaya. The symbols * and ‡ indicate the observation of egg mass(es) and mating activity, respectively. Sources of the records are provided in References. Chorotype abbreviations are as follows: ME = Mediterranean endemic; AM = Atlantic–Mediterranean; BA = Boreo-Atlantic; SA = subtropical Atlantic; IP = Indo-Pacific; PO = pan-oceanic; UD = Unknown distribution. Wilayas: 1 = Tlemcen; 2 = Aïn Témouchent; 3 = Oran; 4 = Mostaganem; 5 = Tipaza; 6 = Algiers; 7 = Boumerdès; 8 = Tizi Ouzou; 9 = Jijel; 10 = Skikda.

Tab. 2: Vrste golih morskih polžev, dokumentirane na podlagi novih podatkov, preučenih v tej študiji. Simbol x označuje prisotnost določene vrste v pripadajočem administrativnem predelu. Simbola * in ‡ označujeta opažanje mrestov oziroma parjenja. Viri najdb so navedeni v literaturi. Kratice horotipov so naslednje: ME = sredozemski endemit; AM = atlantsko-sredozemski; BA = boreo-atlantski; SA = subtropski atlantski; IP = indo-pacifiški; PO = pan-oceanski; UD = neznana razširjenost. Administrativni predeli: 1 = Tlemcen; 2 = Aïn Témouchent; 3 = Oran; 4 = Mostaganem; 5 = Tipaza; 6 = Alžir; 7 = Boumerdès; 8 = Tizi Ouzou; 9 = Jijel; 10 = Skikda.

Taxon/wilaya	1	2	3	4	5	6	7	8	9	10	Reference	Chorotype
Pleurobranchida												
Family Pleurobranchidae Gray, 1827												
<i>Pleurobranchus testudinarius</i> Cantraine, 1835						x					Instagram, 2025c; present study	AM
Nudibranchia												
Family Aeolidiidae J. E. Gray, 1827												
<i>Anteaeolidiella lurana</i> (Ev. Marcus & Er. Marcus, 1967)			x								iNaturalist, 2024q; 2025l	PO
<i>Spurilla neapolitana</i> (Delle Chiaje, 1841)			x*			x					iNaturalist, 2024m; 2024o; 2025k; 2025m; present study	AM
Family Facelinidae Bergh, 1889												
<i>Cratena peregrina</i> (Gmelin, 1791)									x		Fates, pers. comm.	AM
<i>Facelina rubrovittata</i> (A. Costa, 1866)			x								iNaturalist, 2023d	ME
Family Flabellinidae Bergh, 1889												
<i>Edmundsella pedata</i> (Montagu, 1816)									x		Fates, pers. comm.; Azzoune pers. comm.; Mechekkef pers. comm.	BA
<i>Flabellina affinis</i> (Gmelin, 1791)							x‡		x		Fates, pers. comm.; Chibani, pers. comm.; Koudri, pers. comm.	AM
<i>Paraflabellina ischitana</i> (Y. Hirano & T. E. Thompson, 1990)	x										Zaoui, pers. comm.	AM
Family Glaucidae J. E. Gray, 1827												
<i>Glaucus atlanticus</i> Forster, 1777				x		x					Instagram, 2025a; present study	PO
Family Myrrhinidae Bergh, 1905												

<i>Godiva quadricolor</i> (Barnard, 1927)			x							iNaturalist, 2024p	PO
Family Samliidae Korshunova, Martynov, Bakken et al., 2017											
<i>Luisella babai</i> (Schmekel, 1972)									x	Fates, pers. comm.	AM
Incertae sedis											
Eolid sp.			x							iNaturalist, 2025q	UD
Family Tethyidae Rafinesque, 1815											
<i>Tethys fimbria</i> Linnaeus, 1767							x			Instagram, 2024a; Present study	AM
Family Tritoniidae Lamarck, 1809											
<i>Marionia blainvillea</i> (Risso, 1818)							x			Present study	AM
<i>Marionia</i> cf. <i>gemmii</i> Almón, J. Pérez & Caballer, 2018							x			Instagram, 2025g	AM
Family Arminidae Iredale & O'Donoghue, 1923 (1841)											
<i>Armina maculata</i> Rafinesque, 1814							x			Instagram, 2023a; 2024c; 2025d; present study	AM
Family Janolidae Pruvot-Fol, 1933											
<i>Antiopella cristata</i> (Delle Chiaje, 1841)							x		x	Instagram, 2025f; Fates, pers. comm.	BA
Doridida											
Family Chromodorididae Bergh, 1891											
<i>Felimare bilineata</i> (Pruvot-Fol, 1953)									x	Fates, pers. comm.	AM
<i>Felimare fontandraui</i> (Pruvot-Fol, 1951)									x	Fates, pers. comm.	AM
<i>Felimare picta</i> (R. A. Philippi, 1836)	x‡					x	x		x	iNaturalist, 2022d; Instagram, 2025b; Fates, pers. comm.; Club ORCA, pers. comm.; Chibani, pers. comm.	SA
<i>Felimare tricolor</i> (Cantraine, 1835)						x			x	Instagram, 2024b; Fates, pers. comm.	AM
<i>Felimare villafranca</i> (Risso, 1818)									x	Fates, pers. comm.	AM
<i>Felimida binza</i> (Ev. Marcus & Er. Marcus, 1963)			x				x		x	iNaturalist, 2023c; Fates, pers. comm.; Chibani, pers. comm.	AM
<i>Felimida elegantula</i> (R. A. Philippi, 1844)									x	Koudri, pers. comm.	ME
<i>Felimida luteorosea</i> (Rapp, 1827)									x	Fates, pers. comm.	AM
<i>Rudmania krohni</i> (Verany, 1846)									x	Fates, pers. comm.	AM
<i>Rudmania purpurea</i> (Risso, 1831)			x						x‡	iNaturalist, 2022e; 2023b; Fates, pers. comm.	AM
Family Discodorididae Bergh, 1891											
<i>Jorunna tomentosa</i> (Cuvier, 1804)									x	Azzoune, pers. comm.	BA
<i>Peltodoris atromaculata</i> Bergh, 1880	x								x‡	Club ORCA, pers. comm.; Fates, pers. comm.	AM
<i>Platydoris argo</i> (Linnaeus, 1767)					x				x*	Fates, pers. comm.; present study	AM
<i>Tayuva maculosa</i> (Bergh, 1884)								x		Present study	ME
Family Calycidorididae Roginskaya, 1972											
<i>Diaphorodoris papillata</i> Portmann & Sandmeier, 1960									x	Azzoune, pers. comm.	AM
Family Dendrodorididae O'Donoghue, 1924 (1864)											
<i>Dendrodoris limbata</i> (Cuvier, 1804)									*	Fates, pers. comm.	AM
Family Polyceridae Alder & Hancock, 1845											
<i>Martadoris mediterranea</i> (M. Domínguez, Pola & Ramón, 2015)									x	Fates, pers. comm.	ME
Cephalaspidea											
Family Haminoecidae Pilsbry, 1895											

<i>Haminoea exigua</i> (Schaefer, 1992)			x										iNaturalist, 2024s	ME
<i>Lamprohaminoea ovalis</i> (Pease, 1868)									x				Fates, pers. comm.	IP
Aplysiida														
Family Aplysiidae Lamarck, 1809														
<i>Aplysia dactylomela</i> Rang, 1828					x				x‡				iNaturalist, 2022f; 2024u	SA
<i>Aplysia depilans</i> Gmelin, 1791			x		x‡				x				iNaturalist, 2020; 2025h; 2025g; 2025p; 2025r	AM
<i>Aplysia fasciata</i> Poiret, 1789			x		x				x	x			iNaturalist, 2020; 2025h; 2025j; Fates, pers. comm.	SA
<i>Aplysia punctata</i> (Cuvier, 1803)			x										iNaturalist, 2021; 2023a; 2024n; 2025i	BA
<i>Aplysia</i> sp.			*						x?				iNaturalist, 2024h; 2024v; 2025c; 2025s	UD
<i>Aplysia</i> sp. 2 (see Lombardo & Marletta, in press)			x*						x				iNaturalist, 2025a; 2025d; 2025e; 2025g; Fates, pers. comm.	UD
<i>Aplysia</i> sp. 3 (see Lombardo & Marletta, in press)			x										iNaturalist, 2024t	UD
<i>Petalifera petalifera</i> (Rang, 1828)			x										iNaturalist, 2024a	SA
Pteropoda														
Family Cymbuliidae J. E. Gray, 1840														
<i>Cymbulia peronii</i> Blainville, 1818			x		x								present study	SA
Umbraculida														
Family Tylodinidae J. E. Gray, 1847														
<i>Tyloдина perversa</i> (Gmelin, 1791)									x				Fates, pers. comm.	AM
Family Umbraculidae Dall, 1889 (1827)														
<i>Umbraculum umbraculum</i> ([Lightfoot], 1786)					x				x				Instagram, 2024d; 2025e; Fates, pers. comm.; present study	PO
Sacoglossa														
Family Oxynoidae Stoliczka, 1868 (1847)														
<i>Lobiger serradifalci</i> (Calcara, 1840)			x										iNaturalist, 2024e; 2024g	AM
<i>Oxynoe olivacea</i> Rafinesque, 1814			x										iNaturalist, 2023g; 2024b; 2024c; 2024d; 2024f	ME
Family Plakobranchidae J. E. Gray, 1840														
<i>Elysia</i> sp.									*				Fates, pers. comm.	UD
<i>Elysia timida</i> (Risso, 1818)			x						x				iNaturalist, 2024i; 2024j; 2024k; 2024l; 2024r; 2025n; 2025o; Fates, pers. comm.	SA
<i>Thuridilla hopei</i> (Vérany, 1853)			x		x				x				iNaturalist, 2022c; 2023e; 2023f; present study	AM
Family Limapontiidae J. E. Gray, 1847														
<i>Placida cremoniana</i> (Trinchese, 1892)									x				Present study	AM
<i>Placida dendritica</i> (Alder & Hancock, 1843)			x										iNaturalist, 2022a	PO
Species per wilaya	3	1	20	1	3	14	3	3	31	1				
Species total	54													
Families per wilaya	3	1	9	1	3	10	2	3	14	1				
Families total	24													

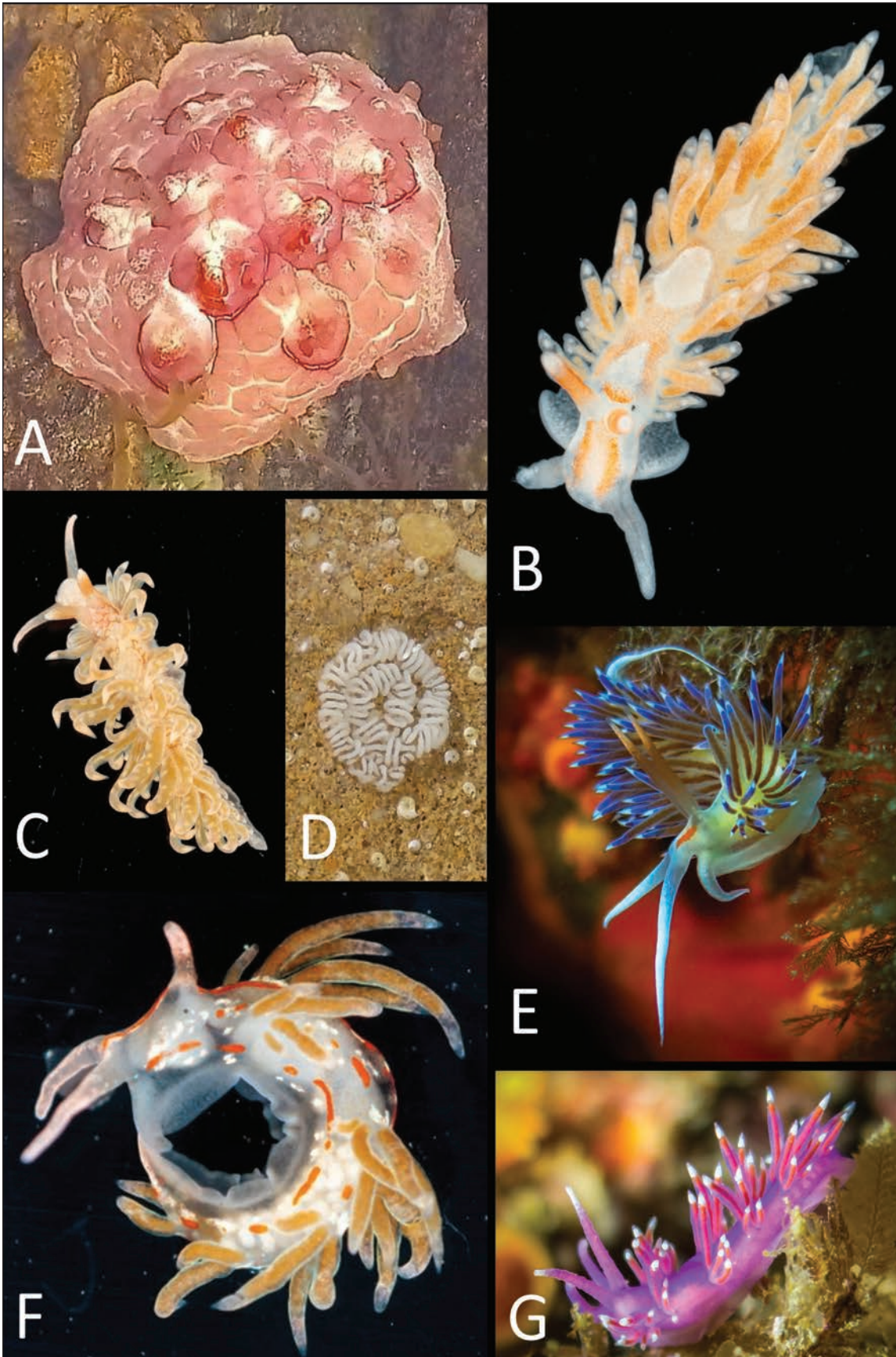


Fig. 2: A: *Pleurobranchus testudinarius*; B: *Antaeolidiella lurana*; C: *Spurilla neapolitana*; D: *S. neapolitana*, egg mass; E: *Cratena peregrina*; F: *Facelina rubrovittata*; G: *Edmundsella pedata*. **Photos by J. Chabane (A), H. S. Kernane (B–D, F), and Y. Fates (E, G).**
Sl. 2: A: *Pleurobranchus testudinarius*; B: *Antaeolidiella lurana*; C: *Spurilla neapolitana*; D: *S. neapolitana*, mrest; E: *Cratena peregrina*; F: *Facelina rubrovittata*; G: *Edmundsella pedata*. **Fotografije: J. Chabane (A), H. S. Kernane (B–D, F), in Y. Fates (E, G).**

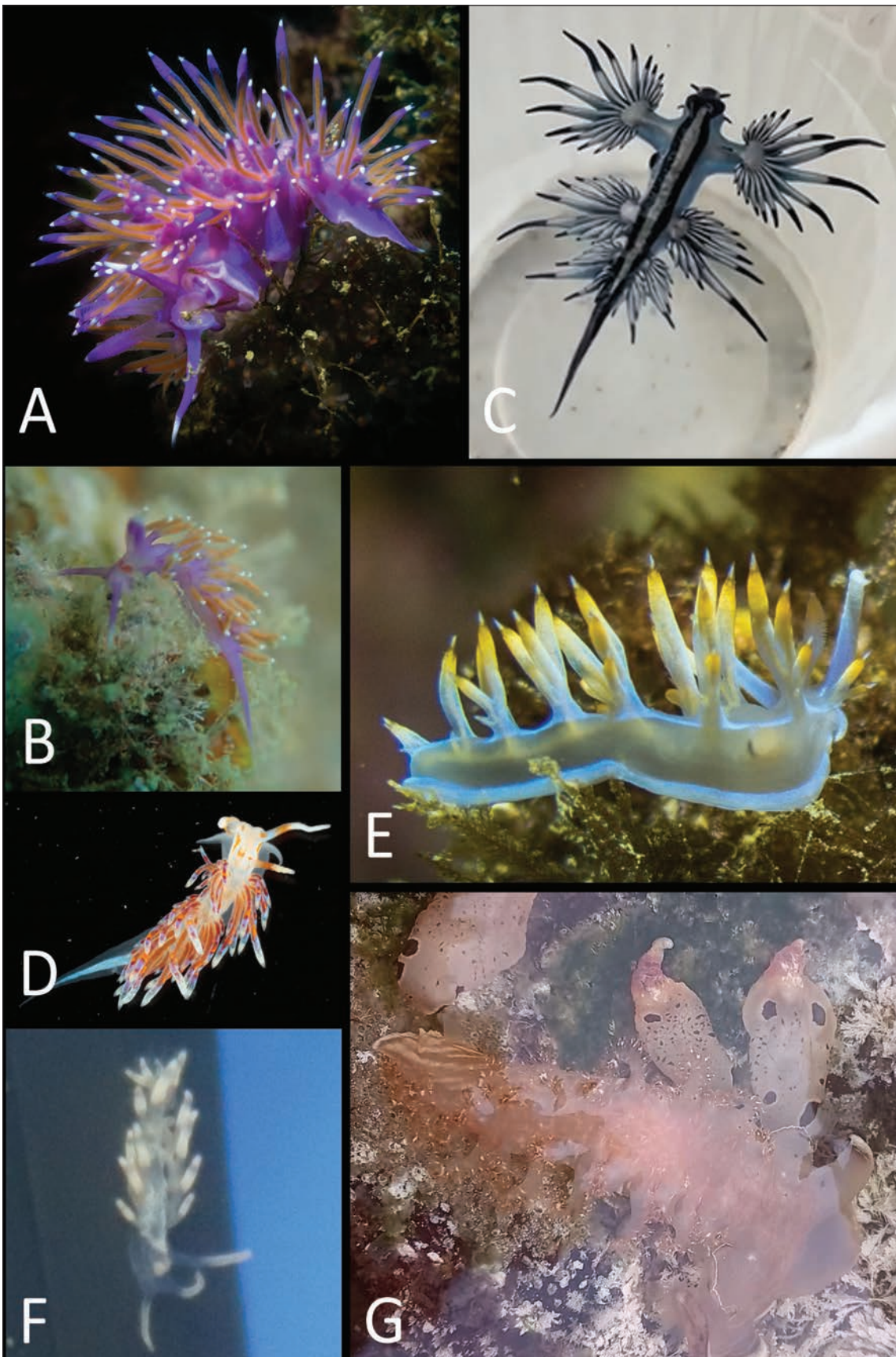


Fig. 3: A: *Flabellina affinis*; B: *Paraflabellina ischitana*; C: *Glaucus atlanticus*; D: *Godiva quadricolor*; E: *Luisella babai*; F: *Eolid* sp.; G: *Tethys fimbria*. **Photos** by Y. Fates (A, E), S. Zaoui (B), H. S. Kernane (C), H. S. Kernane (D, F), and M. Tacheboubet (G).
Sl. 3: A: *Flabellina affinis*; B: *Paraflabellina ischitana*; C: *Glaucus atlanticus*; D: *Godiva quadricolor*; E: *Luisella babai*; F: *Eolid* sp.; G: *Tethys fimbria*.
Fotografije: Y. Fates (A, E), S. Zaoui (B), H. S. Kernane (C), H. S. Kernane (D, F), in M. Tacheboubet (G).

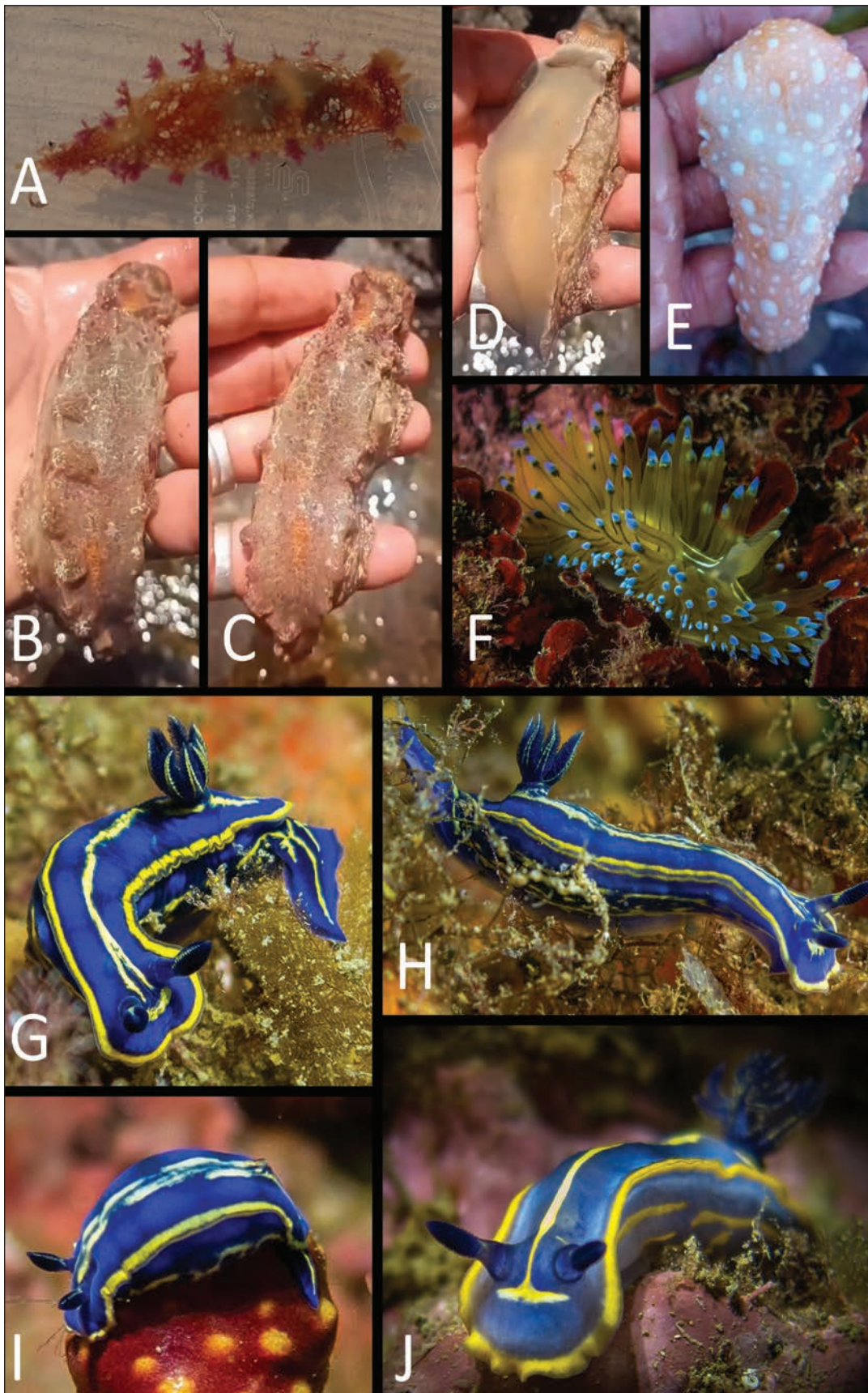


Fig. 4: A: *Marionia blainvillea*; B: *Marionia cf. gemmii*, dorsal view; C: *M. cf. gemmii*, additional dorsal view; D: *M. cf. gemmii*, left ventral-lateral view; E: *Armina maculata*; F: *Antipella cristata*; G: *Felimare bilineata*; H: *F. bilineata*, slightly different chromatic pattern; I: *F. bilineata*, additional specimen; J: *F. fontandraui*. **Photos by J. Chabane (A), M. Tacheboubet (B–E), and Y. Fates (F–I).**
Sl. 4: A: *Marionia blainvillea*; B: *Marionia cf. gemmii*, hrbtini pogled; C: *M. cf. gemmii*, dodatni hrbtini pogled; D: *M. cf. gemmii*, levi trebušno-bočni primerek; E: *Armina maculata*; F: *Antipella cristata*; G: *Felimare bilineata*; H: *F. bilineata*, nekoliko drugačen barvni vzorec; I: *F. bilineata*, dodaten primerek; J: *F. fontandraui*. **Fotografije: J. Chabane (A), M. Tacheboubet (B–E), in Y. Fates (F–I).**

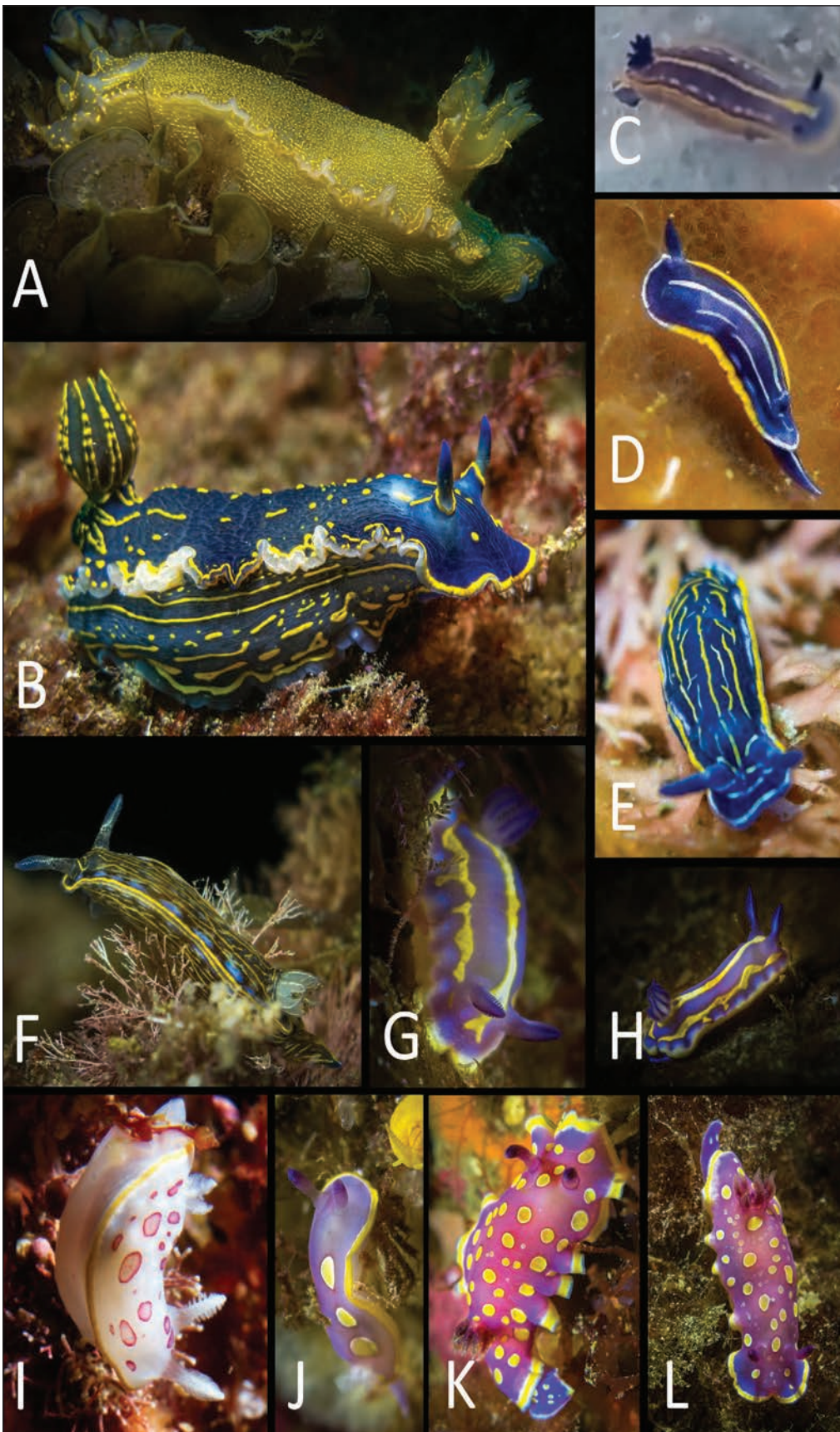


Fig. 5: A: *Felimare picta*, green-yellow coloration; B: *F. picta*, blue-yellow coloration; C: *F. tricolor*; D: *F. villafranca*, juvenile specimen; E: *F. villafranca*, less developed adult chromatic pattern; F: *F. villafranca*; G: *Felimida binza*, adult specimen; H: *F. binza*, slightly more developed adult chromatic pattern; I: *Felimida elegantula*; J: *F. luteorosea*, intermediate adult specimen; K: *F. luteorosea*, adult specimen; L: *F. luteorosea*, more developed adult chromatic pattern. Photos by Y. Fates (A–B, D–H, J–L), M. Tacheboubet (C), and H. Koudri (I).
Sl. 5: A: *Felimare picta*, zeleno-rumena obarvanost; B: *F. picta*, modro-rumena obarvanost; C: *F. tricolor*; D: *F. villafranca*, mladostni primerek; E: *F. villafranca*, slabše razvit barvni vzorec pri odraslih; F: *F. villafranca*; G: *Felimida binza*, odrasel primerek; H: *F. binza*, malo bolj razvit odrasli barvni vzorec; I: *Felimida elegantula*; J: *F. luteorosea*, vmesni odrasel primerek; K: *F. luteorosea*, odrasel primerek; L: *F. luteorosea*, bolj razvit odrasli barvni vzorec. Fotografije Y. Fates (A–B, D–H, J–L), M. Tacheboubet (C), in H. Koudri (I).

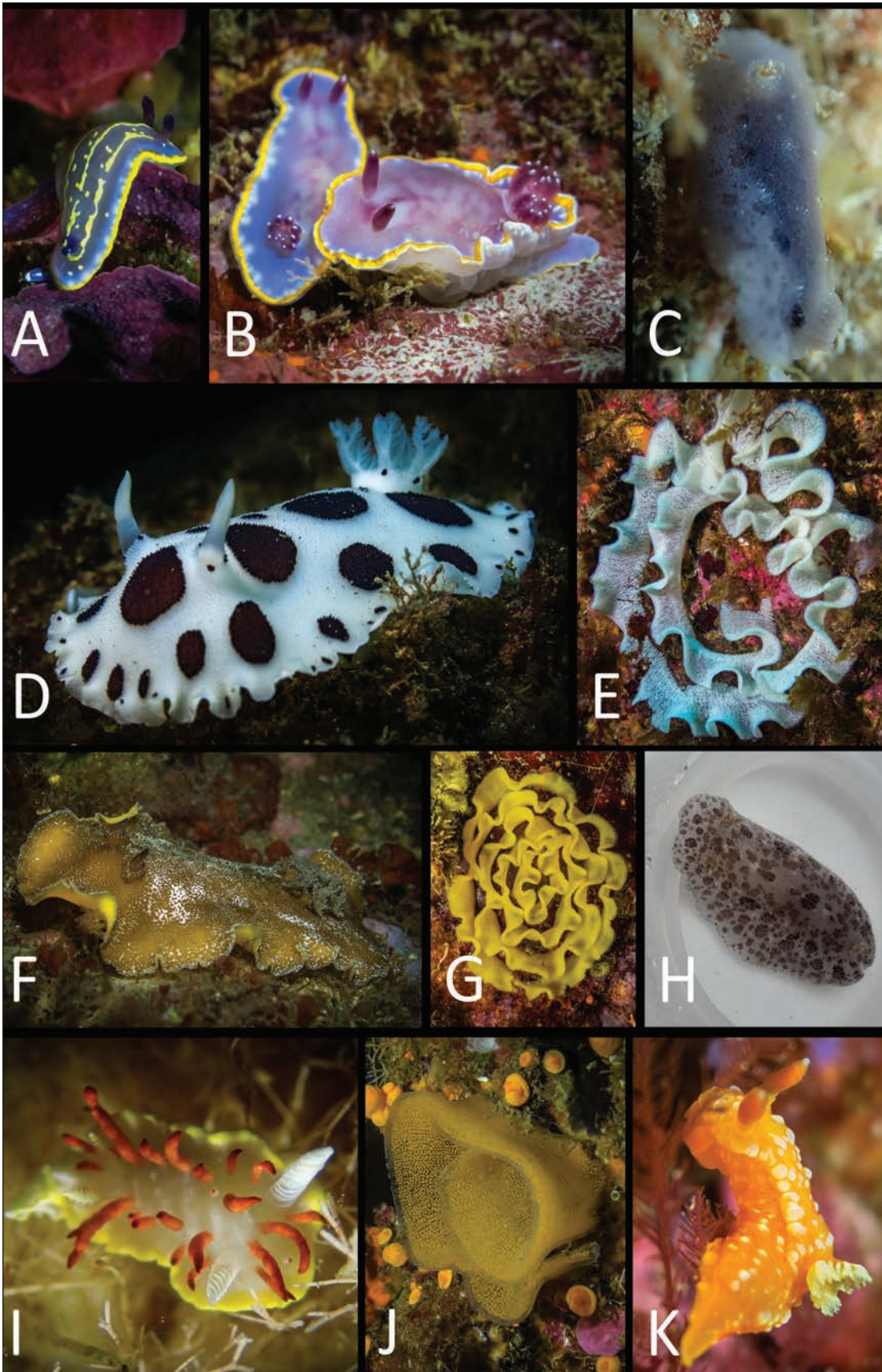


Fig. 6: A: *Rudmania krohni*; B: *R. purpurea*, two specimens; C: *Jorunna tomentosa*; D: *Peltodoris atromaculata*; E: *P. atromaculata*, egg mass; F: *Platydoris argo*; G: *P. argo*, egg mass; H: *Tayuva maculosa*; I: *Diaphorodoris papillata*; J: *Dendrodoris limbata*, egg mass; K: *Martadoris mediterranea*.
Photos by Y. Fates (A–B, D–H, J–K), and F. Azzoune (C, I).
Sl. 6: A: *Rudmania krohni*; B: *R. purpurea*, dva primerka; C: *Jorunna tomentosa*; D: *Peltodoris atromaculata*, mrest; E: *P. atromaculata*, mrest; F: *Platydoris argo*; G: *P. argo*, mrest; H: *Tayuva maculosa*; I: *Diaphorodoris papillata*; J: *D. limbata*, mrest; K: *Martadoris mediterranea*. **Fotografije: Y. Fates (A–B, D–H, J–K), in F. Azzoune (C, I).**

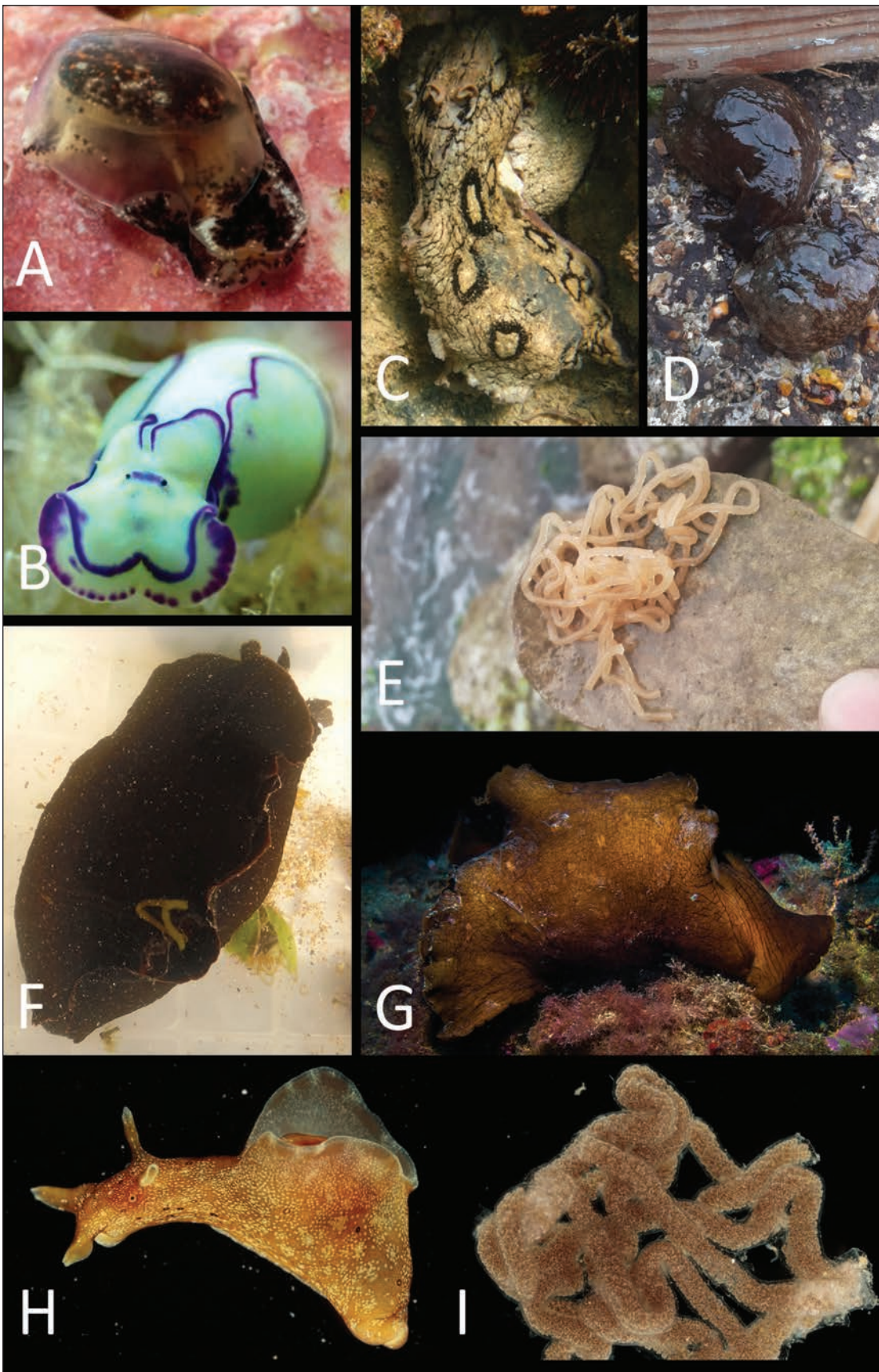


Fig. 7: A: *Haminoea exigua*; B: *Lamprohaminoea ovalis*; C: *Aplysia dactylomela*, two specimens matings; D: *A. depilans*; E: *A. depilans*, egg mass; F: *A. fasciata*, black morphotype; G: *A. fasciata*, brown/massive morphotype; H: *A. punctata*; I: *Aplysia* sp., egg mass. Photos by H. S. Kernane (A, F, H–I), Y. Fates (B, G), A. Dria (C), and J. Chabane (D–E).
Sl. 7: A: *Haminoea exigua*; B: *Lamprohaminoea ovalis*; C: *Aplysia dactylomela*, primerka na parjenju; D: *A. depilans*; E: *A. depilans*, mrest; F: *A. fasciata*, črni morfotip; G: *A. fasciata*, rjavi/čokati morfotip; H: *A. punctata*; I: *Aplysia* sp., mrest. Fotografije: H. S. Kernane (A, F, H–I), Y. Fates (B, G), A. Dria (C), in J. Chabane (D–E).

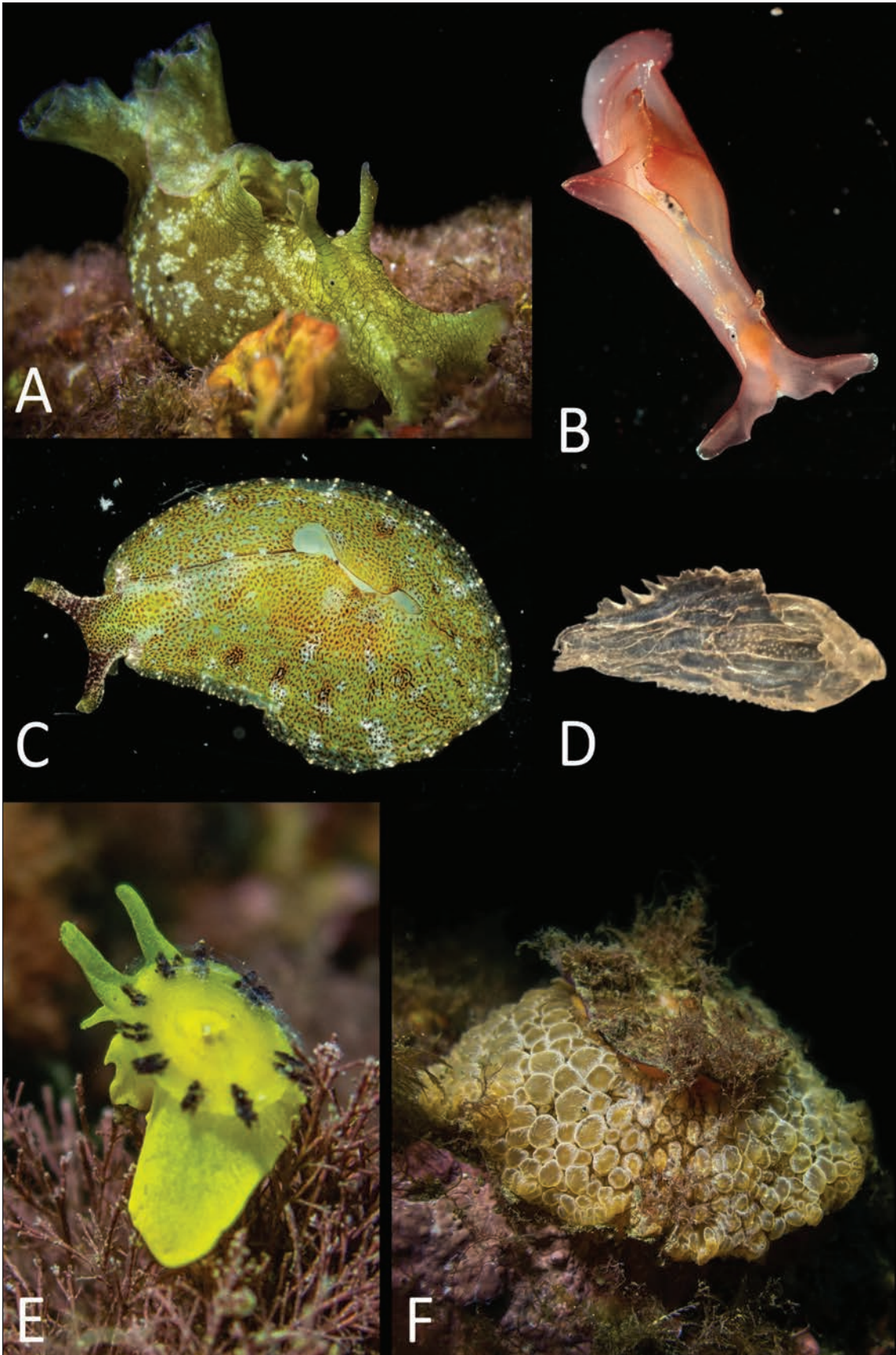


Fig. 8: A: *Aplysia* sp. 2; B: *Aplysia* sp. 3; C: *Petalifera petalifera*; D: *Cymbulia peronii pseudoconcha*; E: *Tylodina perversa*; F: *Umbraculum umbraculum*.
Photos by Y. Fates (A, E-F), H. S. Kernane (B-C), and J. Chabane (D).
Sl. 8: A: *Aplysia* sp. 2; B: *Aplysia* sp. 3; C: *Petalifera petalifera*; D: *Cymbulia peronii pseudoconcha*; E: *Tylodina perversa*; F: *Umbraculum umbraculum*.
Fotografije: Y. Fates (A, E-F), H. S. Kernane (B-C), in J. Chabane (D).

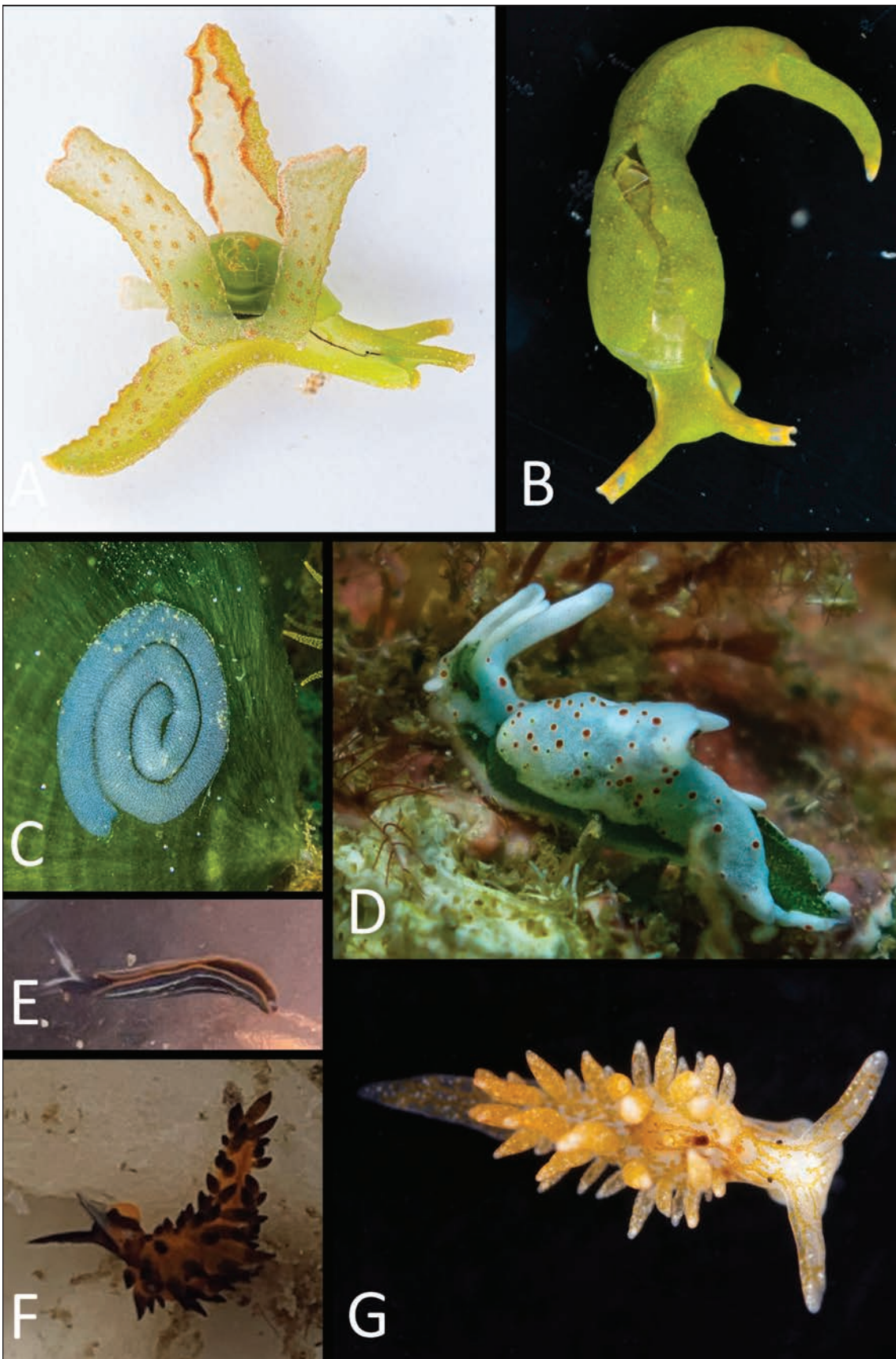


Fig. 9. A: *Lobiger serradifalci*; B: *Oxynoe olivacea*; C: *Elysia* sp., egg mass; D: *Elysia timida*; E: *Thuridilla hopei*; F: *Placida cremoniana*; G: *Placida dendritica*.
Photos by H. S. Kernane (A–B, G), Y. Fates (C–D), and J. Chabane (E–F).
Sl. 9: A: *Lobiger serradifalci*; B: *Oxynoe olivacea*; C: *Elysia* sp., jajčna masa; D: *Elysia timida*; E: *Thuridilla hopei*; F: *Placida cremoniana*; G: *Placida dendritica*.
Fotografije: H. S. Kernane (A–B, G), Y. Fates (C–D), in J. Chabane (E–F).

the authors, using relevant literature and online resources (Van Der Spoel, 1976; Cervera et al., 1986; 1998; Hirano & Thompson, 1990; Rudman 1998–2010; Ballesteros et al., 2012–2026; Calado & Silva, 2012; Trainito & Doneddu, 2014; Domínguez et al., 2015; Martínez Chacón, 2018; Pérez-Dieste et al., 2021; Rufay et al., 2021; Lombardo & Marletta, in press). In addition, the chorotype was provided for each species (Tab. 1–2). The chorotype of each species, based on the definitions provided in Bianchi et al. (2012) (with the additional category of “UD” for species whose distribution is unknown), was determined from pertinent literature and online resources (Van Der Spoel, 1976; Ballesteros et al., 2012–2026; Trainito & Doneddu, 2014; Kapeller, 2026; Lombardo & Marletta, in press).

RESULTS

The examination of photographic data analysed in the present study revealed the presence of 54 sea slug species along the Algerian coastline belonging to eight higher-level taxa (Tab. 2) (Figs. 2–9). The most diverse were the Doridida (17 species, 5 families) and Nudibranchia (16, 10), followed by Aplysiida (8, 1) and Sacoglossa (7, 3). The least diverse were the Umbraculida (2 species, 2 families), Cephalaspidea (2, 1), Pleurobranchida (1, 1), and Pteropoda (1, 1) (Fig. 10A). Of the 54 species documented in this study, 40 are newly recorded for the area of the Algerian coast, specifically: one Pleurobranchida (*Pleurobranchus testudinarius*), 11 Nudibranchia (*Anteaeolidiella lurana*, *Spurilla*

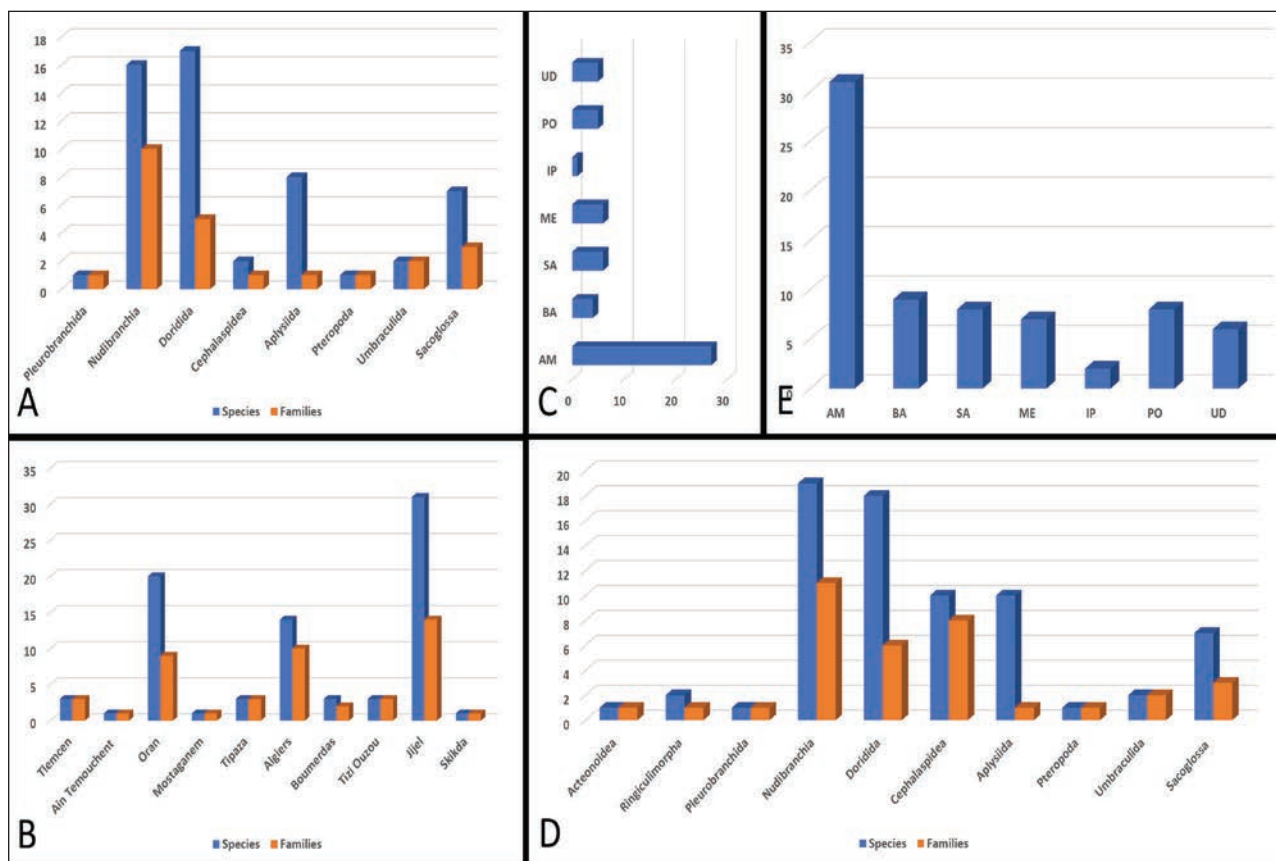


Fig. 10: A: Number of species and families per taxon documented in this study; B: number of species and families recorded in the ten wilayas examined; C: distribution of species chorotypes in the present study; D: number of species and families per taxon recorded along the Algerian coast (based on literature data and present study); E: distribution of species chorotypes along the Algerian coast (based on literature data and present study).

Sl. 10: A: Število vrst in število družin po taksonih ugotovljenih v tej raziskavi; B: število vrst in število družin v desetih administrativnih predelih, C: razširjenost horotipov v pričujoči študiji; D: število vrst in število družin po taksonih ugotovljenih vzdolž alžirske obale (na podlagi literarnih podatkov in pričujoče raziskave); E: Razširjenost horotipov vzdolž alžirske obale (na podlagi podatkov iz literature in pričujoče študije).

Tab. 3. Complete list (literature data plus present study) of sea slugs recorded along the Algerian coast to date.
Tab. 3. Celoten seznam (podatki iz literature in pričujoče študije) golih morskih polžev, zabeleženih vzdolž alžirske obale do danes.

Taxon	Species	Family
Acteonoidea	1	1
Family Acteonidae A. d'Orbigny, 1842		
<i>Acteon tornatilis</i> (Linnaeus, 1758)		
Ringiculimorpha	2	1
Family Ringiculidae R. A. Philippi, 1853		
<i>Ringicula buccinea</i> (Brocchi, 1814)		
<i>Ringicula</i> sp.		
Pleurobranchida	1	1
Family Pleurobranchidae Gray, 1827		
<i>Pleurobranchus testudinarius</i> Cantraine, 1835		
Nudibranchia	19	11
Family Aeolidiidae J. E. Gray, 1827		
<i>Anteaeolidiella lurana</i> (Ev. Marcus & Er. Marcus, 1967)		
<i>Spurilla neapolitana</i> (Delle Chiaje, 1841)		
Family Facelinidae Bergh, 1889		
<i>Cratena peregrina</i> (Gmelin, 1791)		
<i>Facelina auriculata</i> (O. F. Müller, 1776)		
<i>Facelina rubrovittata</i> (A. Costa, 1866)		
Family Flabellinidae Bergh, 1889		
<i>Edmundsella pedata</i> (Montagu, 1816)		
<i>Flabellina affinis</i> (Gmelin, 1791)		
<i>Paraflabellina ischitana</i> (Y. Hirano & T. E. Thompson, 1990)		
Family Glaucidae J. E. Gray, 1827		
<i>Glaucus atlanticus</i> Forster, 1777		
Family Myrrhinidae Bergh, 1905		
<i>Godiva quadricolor</i> (Barnard, 1927)		
<i>Nemesignis banyulensis</i> (Portmann & Sandmeier, 1960)		
Family Fionidae J. E. Gray, 1857		
<i>Fiona pinnata</i> (Eschscholtz, 1831)		
Family Samlidae Korshunova, Martynov, Bakken <i>et al.</i>, 2017		
<i>Luisella babai</i> (Schmekel, 1972)		

Incertae sedis		
Eolid sp.		
Family Tethydidae Rafinesque, 1815		
<i>Tethys fimbria</i> Linnaeus, 1767		
Family Tritoniidae Lamarck, 1809		
<i>Marionia blainvillea</i> (Risso, 1818)		
<i>Marionia</i> cf. <i>gemmii</i> Almón, J. Pérez & Caballer, 2018		
Family Arminidae Iredale & O'Donoghue, 1923 (1841)		
<i>Armina maculata</i> Rafinesque, 1814		
Family Janolidae Pruvot-Fol, 1933		
<i>Antiopella cristata</i> (Delle Chiaje, 1841)		
Doridida	18	6
Family Chromodorididae Bergh, 1891		
<i>Felimare bilineata</i> (Pruvot-Fol, 1953)		
<i>Felimare fontandraui</i> (Pruvot-Fol, 1951)		
<i>Felimare picta</i> (R. A. Philippi, 1836)		
<i>Felimare tricolor</i> (Cantraine, 1835)		
<i>Felimare villafranca</i> (Risso, 1818)		
<i>Felimida binza</i> (Ev. Marcus & Er. Marcus, 1963)		
<i>Felimida elegantula</i> (R. A. Philippi, 1844)		
<i>Felimida luteorosea</i> (Rapp, 1827)		
<i>Rudmania krohni</i> (Verany, 1846)		
<i>Rudmania purpurea</i> (Risso, 1831)		
Family Discodorididae Bergh, 1891		
<i>Jorunna tomentosa</i> (Cuvier, 1804)		
<i>Peltodoris atromaculata</i> Bergh, 1880		
<i>Platydoris argo</i> (Linnaeus, 1767)		
<i>Tayuva maculosa</i> (Bergh, 1884)		
Family Dorididae Rafinesque, 1815		
<i>Doris verrucosa</i> Linnaeus, 1758		
Family Calycidorididae Roginskaya, 1972		
<i>Diaphorodoris papillata</i> Portmann & Sandmeier, 1960		
Family Dendrodorididae O'Donoghue, 1924 (1864)		
<i>Dendrodoris limbata</i> (Cuvier, 1804)		

Family Polyceridae Alder & Hancock, 1845		
<i>Martadoris mediterranea</i> (M. Domínguez, Pola & Ramón, 2015)		
Cephalaspidea	10	8
Family Bullidae J. E. Gray, 1827		
<i>Bulla striata</i> Bruguière, 1792		
Family Retusidae Thiele, 1925		
<i>Retusa variabilis</i> (Milaschewitsch, 1912)		
Family Cylichnidae H. Adams & A. Adams, 1854		
<i>Cylichna cylindracea</i> (Pennant, 1777)		
Family Haminoeidae Pilsbry, 1895		
<i>Haminoea exigua</i> (Schaefer, 1992)		
<i>Lamprohaminoea ovalis</i> (Pease, 1868)		
<i>Roxaniella jeffreysi</i> (Weinkauff, 1866)		
Family Aglajidae Pilsbry, 1895 (1847)		
<i>Philinopsis depicta</i> (Renier, 1807)		
Family Alacuppidae Oskars, Bouchet & Malaquias, 2015		
<i>Roxania semilaevis</i> (G. Seguenza, 1880)		
Family Laonidae Pruvot-Fol, 1954		
<i>Laona pruinosa</i> (W. Clark, 1827)		
Family Philinidae J. E. Gray, 1850 (1815)		
<i>Philine quadripartita</i> Ascanius, 1772		
Aplysiida	10	1
Family Aplysiidae Lamarck, 1809		
<i>Aplysia dactylomela</i> Rang, 1828		
<i>Aplysia depilans</i> Gmelin, 1791		
<i>Aplysia fasciata</i> Poiret, 1789		
<i>Aplysia punctata</i> (Cuvier, 1803)		
<i>Aplysia</i> sp.		
<i>Aplysia</i> sp. 2 (see Lombardo & Marletta, in press)		
<i>Aplysia</i> sp. 3 (see Lombardo & Marletta, in press)		
<i>Bursatella leachii</i> Blainville, 1817		
<i>Dolabella auricularia</i> ([Lightfoot], 1786)		
<i>Petalifera petalifera</i> (Rang, 1828)		
Pteropoda	1	1

Family Cymbuliidae J. E. Gray, 1840		
<i>Cymbulia peronii</i> Blainville, 1818		
Umbraculida	2	2
Family Tylodinidae J. E. Gray, 1847		
<i>Tyrodina perversa</i> (Gmelin, 1791)		
Family Umbraculidae Dall, 1889 (1827)		
<i>Umbraculum umbraculum</i> ([Lightfoot], 1786)		
Sacoglossa	7	3
Family Oxynoidae Stoliczka, 1868 (1847)		
<i>Lobiger serradifalci</i> (Calcara, 1840)		
<i>Oxynoe olivacea</i> Rafinesque, 1814		
Family Plakobranchidae J. E. Gray, 1840		
<i>Elysia</i> sp.		
<i>Elysia timida</i> (Risso, 1818)		
<i>Thuridilla hopei</i> (Vérany, 1853)		
Family Limapontiidae J. E. Gray, 1847		
<i>Placida cremoniana</i> (Trinchese, 1892)		
<i>Placida dendritica</i> (Alder & Hancock, 1843)		
Total species and families	71	35

neapolitana, *Facelina rubrovittata*, *Edmundsella pedata*, *Paraflabellina ischitana*, *Glaucus atlanticus*, *Eolid* sp., *Marionia blainvillea*, *Marionia* cf. *gemmii*, *Armina maculata*, and *Antiopella cristata*), 12 Doridida (*Felimare bilineata*, *F. fontandraui*, *F. picta*, *F. villafranca*, *Felimida binza*, *F. elegantula*, *F. luteorosea*, *Rudmania krohni*, *Tayuva maculosa*, *Diaphorodoris papillata*, *Dendrodoris limbata*, and *Martadoris mediterranea*), two Cephalaspidea (*Haminoea exigua* and *Lamprohaminoea ovalis*), five Aplysiida (*Aplysia dactylomela*, *A. depilans*, *Aplysia* sp., *Aplysia* sp. 2, and *Aplysia* sp. 3), one Pteropoda (*Cymbulia peronii*), one Umbraculida (*Umbraculum umbraculum*), and seven Sacoglossa (*Lobiger serradifalci*, *Oxynoe olivacea*, *Elysia* sp., *E. timida*, *Thuridilla hopei*, *Placida cremoniana*, and *Placida dendritica*).

With regard to the wilayas covered by the data collection, Jijel (31 species, 14 families), Oran (20, 9), and Algiers (14, 10) showed the highest diversity. In contrast, the remaining wilayas exhibited generally low diversity: Tizi Ouzou (4 species, 3 families), Tlemcen (3, 3), Tipaza (3, 3), Boumerdès (3, 2), Aïn Témouchent (1, 1), Mostaganem (1, 1), and Skikda (1, 1) (Fig. 10B).

Examining the chorotypes of the documented species, a marked dominance of the species with Atlantic–Mediterranean distribution was observed (27 species), compared to those with other chorotypes, i.e., subtropical Atlantic (6), Mediterranean endemic (6), pan-oceanic (5), Boreo-Atlantic (4), and Indo-Pacific (1) (Fig. 10C).

The new data presented here (Tab. 2), together with those previously reported in the scientific literature (Tab. 1), have allowed, for the first time, the compilation of a checklist of sea slugs in the Algerian coast. Overall, the list comprises 71 species belonging to 35 families and nine higher taxa (Tab. 3).

DISCUSSION

The faunal data collected in this study and from the published literature show that, to date, 71 species and 35 families of sea slugs have been recorded along the Algerian coast. Of these, the most representative are Nudibranchia (19 species, 11 families), Doridida (18, 6), Cephalaspidea (10, 8), Aplysiida (10, 1), and Sacoglossa (7, 3). Conversely, the least represented are Umbraculida (2, 2), Ringiculimorpha

(2, 1), Acteonoidea (1, 1), Pleurobranchida (1, 1), and Pteropoda (1, 1) (Fig. 10D).

The combined dataset highlights the distinctly Atlantic–Mediterranean character of this fauna. In fact, the data collected and presented in this study (Fig. 10C), both when examined separately and in combination with data from the literature, indicate a dominance of species with an Atlantic–Mediterranean chorotype (31 species) over those with other geographical distributions – Boreo-Atlantic (9), pan-oceanic (8), subtropical Atlantic (8), Mediterranean endemic (7), and Indo-Pacific (2) – which are clearly in the minority (Fig. 10E). This Atlantic–Mediterranean character of the fauna reflects the hydrodynamic conditions affecting the entire Algerian coast, which is characterised by a current of Atlantic origin (Millot & Taupier-Letage, 2005).

Examining the sea slug fauna of the Algerian coast, we observed several notable species, including *Ringicula buccinea* (Bakalem, 2008), *Anteaeolidiella lurana* (iNaturalist, 2024q; 2025l), Eolid sp. (iNaturalist, 2025q), *Marionia* cf. *gemmii* (2025g), *Felimida elegantula* (Koudri, pers. comm.), *Tayuva maculosa* (present study), *Martadoris mediterranea* (Fates, pers. comm.), *Retusa variabilis* (Bakalem, 2008), *Haminoea exigua* (iNaturalist, 2024s), *Roxania semilaevis* (Pruvot-Fol, 1954), *Aplysia* sp. 2 (iNaturalist, 2025a; 2025d; 2025e; 2025g; Fates, pers. comm.), *Aplysia* sp. 3 (iNaturalist, 2024t), and *Dolabella auricularia* (Brahimi & Bensaou, 2018).

The Ringiculimorpha *R. buccinea* is considered a purely Atlantic species (Ciccione & Savona, 1982) and has been recorded only once in the Mediterranean Sea (Catalonia, Spain) (Cervera *et al.*, 2004). Of the three Nudibranchia species, one – the aeolidiid *A. lurana* – is a non-indigenous species in the Mediterranean Sea (Toso *et al.*, 2025) with an amphi-Atlantic distribution (Brazil, the Caribbean, Bermuda, the Canary Islands, Sardinia, Malta, Italy, Crete, and Australia) (Ballesteros *et al.*, 2025a); another – the Eolid sp. – is probably an undescribed species; and the third – *M. cf. gemmii* – is a Tritonina species recently described and currently known only from the Atlantic coasts of Galicia and Andalusia (Spain) and a few localities along the Mediterranean coasts of France and Italy (Almón *et al.*, 2018; Trainito *et al.*, 2021; Pontes *et al.*, 2025a). *Felimida elegantula*, *T. maculosa*, and *M. mediterranea* are all considered rare Mediterranean endemic species: *F. elegantula* has been recorded in multiple locations along the Italian and French Mediterranean coasts, the Balearic Islands, Türkiye, and Tunisia (Lombardo & Marletta, 2023a); *Tayuva maculosa*, once common but growing increasingly difficult to encounter, is now considered rare (Lombardo & Marletta, 2023b); and *M. mediterranea* has been reported only from a few

localities across the Mediterranean (Spain, Malta, Italy, and Greece) (Pontes *et al.*, 2025b). Also the three Cephalaspidea species reported here can be considered rare. For *H. exigua*, very few records of the living animal exist (Ballesteros *et al.*, 2025b), and *R. semilaevis* is also reported as rare (Arduino *et al.*, 2010), while the scant information on *R. variabilis* (Martynov & Korshunova, 2011; Kapeller, 2026) makes even the distribution of the species unclear (it may be endemic to the Black Sea) (Martynov & Korshunova, 2011). The two Aplysiida species here referred to as *Aplysia* sp. 2 and *Aplysia* sp. 3 are identical to the rare individuals reported by Lombardo and Marletta (in press) from the central-eastern coast of Sicily. Finally, the record of the Indo-Pacific and eastern Pacific aplysiid *D. auricularia* (Gosliner *et al.*, 2018) seems to be the first for Mediterranean waters.

Nevertheless, when considering Algerian records of species documented in the literature (Tab.1), it is essential to bear in mind that the vast majority derive from studies that either do not illustrate the identified specimen(s) (Derbal & Kara, 2005; Bakalem, 2008; CAR/ASP-PLUE/PAM, 2015; Meziane *et al.*, 2020) or, when they do, show specimens that are severely contracted and preserved (Brahimi & Bensaou, 2018), or photographed out of water (Bensari *et al.*, 2020) – both of which result in a considerable loss of external morphological characteristics. In essence, reports in Algerian literature that clearly depict sea slug species (Eleftheriou *et al.*, 2011; Tamsouri *et al.*, 2018) are the exception rather than the rule. This highlights the considerable importance of proper photography in documenting sea slug records along the Algerian coastline. Indeed, given the near absence of domestic specialists in this informal group of gastropod molluscs, the possibility of visually documenting the various specimens encountered would not only allow external experts to critically assess identifications, but also enable the photographic material to be re-examined at a later date. This would facilitate more accurate analyses and comparisons of the sea slug faunas across different areas of the Algerian coast.

Clearly, visual documentation of species cannot always be flawless, as some species are cryptic, and there is always the possibility of discovering taxa that are still unknown and therefore undescribed. In such cases, detailed morphological and genetic analyses are essential. Otherwise, the use of photography to document sea slug faunas remains best practice and an excellent starting point in a region lacking domestic specialists in the field.

Algerian enthusiasts of marine organisms have indeed shown remarkable foresight, photographing the various species of sea slugs along the coastal

areas considered herein (Tab. 2 and References). Nevertheless, their documentation effort has presented significant gaps, related mainly to the lack of systematic sampling of animals and the focus on only certain areas. The first gap is readily apparent in the complete absence of data beyond simple photographic documentation for the species and areas in question (e.g., information on seasonality, abundance, bathymetric and thermal ranges, reproductive periods, behavioural observations, etc.). The second gap is evident from the graph in Figure 10B, which shows that – at least as far as the new data presented in this study are concerned – the documentation of these animals has focused almost exclusively on three wilayas: Jijel (31 species, 14 families), Oran (20, 9), and Algiers (14, 10), while leaving others virtually unexplored, namely: Tlemcen (3, 3), Tipaza (3, 3), Tizi Ouzou (4, 3), Boumerdès (3, 2), Aïn Témouchent (1, 1), Mostaganem (1, 1), and Skikda (1, 1).

In light of the issues above, as well as the near-total lack of specialist studies on the sea slugs of the Algerian coast, and the richness of its marine environment, current data on this faunal group in the area are likely greatly underestimated.

CONCLUSIONS

In summary, the study of sea slugs in Algeria has never been particularly successful. This situation, mainly due to the lack of local experts on this faunal group, has led, on the one hand, to a considerable knowledge gap (pointed to by the present study) and,

on the other hand, to a fragmentation of the little information available (Dieuzeide, 1951; Pruvot-Fol, 1954; Derbal & Kara, 2005; Bakalem, 2008; Camacho-García & Gosliner, 2008; Refes *et al.*, 2010; Eleftheriou *et al.*, 2011; CAR/ASP-PLUE/PAM, 2015; Brahim & Bensaou, 2018; Tamsouri *et al.*, 2018; Bensari *et al.*, 2020; Meziane *et al.*, 2020).

In almost all cases, this information goes no further than simple records of single species. Consequently, qualitative data on Algerian sea slug faunas remain very scarce, while quantitative are practically non-existent. Given the considerable richness of the Algerian marine environment, its geographical position in the Mediterranean, and the ongoing loss of biodiversity (CAR/ASP-PLUE/PAM, 2015; MEER & SPA/RAC-ONU Environment/PAM, 2018), this situation should be addressed as soon as possible through the collection of new data on these animals. Over time, such studies will help fill the knowledge gap on this wonderful and mysterious group of molluscs.

ACKNOWLEDGEMENTS

This study was made possible exclusively through the generosity of several enthusiasts who provided numerous photographs. The authors would therefore like to express their sincere gratitude to the following persons and groups (in alphabetical order): Azzoune Farid, Chibani Chafia, Club ORCA, Dria Abdelwahid, Fates Yacine, Kernane Hamed Sami, Koudri Houcine, Mechekkef Youcef, Mensous Houssef Omar, Tacheboubet Mounir, and Zaoui Samir.

PRVI PRISPEVEK K PROUČEVANJU FAVNE „GOLIH MORSKIH POLŽEV“
(GASTROPODA, HETEROBRANCHIA) ALŽIRSKE OBALE

Andrea LOMBARDO

Independent researcher; Via Dante 21, Valverde (CT) 95028, Italy.

Juba CHABANE,

University of Tipaza - Morsli Abdellah, Oued Merzoug 42200, Tipaza, Algeria.

e-mail: chabane.juba@cu-tipaza.dz

Rachida GHALMI

National High school for marine science and coastal management, Algiers, Algeria

POVZETEK

V Alžiriji so se raziskave o neformalno definirani skupini „goli morski polžev“ doslej osredotočale izključno na sporadične najdbe vrst z različnih območij lokalne obale. Zaradi tega ostaja favna goli morski polžev alžirske obale v veliki meri nepoznana. Namen te raziskave je bil pripraviti prvi seznam goli morski polžev alžirske obale s pregledom novih fotografskih in terenskih podatkov, zbranih med letoma 2010 in 2025. Na podlagi teh novih podatkov in objavljene literature je bilo mogoče potrditi, da je bilo v regiji do danes zabeleženih 71 vrst goli morski polžev, ki pripadajo 35 družinam. Glede na zgodovinsko pomanjkanje strokovnjakov za to favnistično skupino v Alžiriji in visoko raznolikost morskega okolja njene obale, je to število verjetno precej podcenjeno.

Ključne besede: Alžirija, popis vrst, ljubiteljska znanost, goli morski polži, Heterobranchia, morski zaškrGARJI

REFERENCES

- Almón, B., J. Pérez & M. Caballer (2018):** Expect the unexpected: a new large species of *Marionia* (Heterobranchia: Nudibranchia: Tritoniidae) from western Europe. *Invertebr. Syst.*, 32, 892–908. <https://doi.org/10.1071/IS17073>.
- Arduino, G., M. Arduino, A. Nappo & S. Nappo (2010):** Conchiglie del Mediterraneo (<https://www.conchigliedelmediterraneo.it/index.php>).
- Bakalem, A. (2008):** Contribution a L'étude des peuplements benthiques du plateau continental Algérien. Université des sciences et de la technologie Houari Boumediene, 677 pp.
- Ballesteros, M., E. Madrenas & M. Pontes (2012-2026):** OPK Opisthobranchs (<https://opisthobranchis.info/en/>).
- Ballesteros, M., E. Madrenas & M. Pontes (2025a):** «*Anteaeolidiella lurana*» in OPK-Opisthobranchs (<https://opisthobranchis.info/en/?p=14164>).
- Ballesteros, M., E. Madrenas & M. Pontes (2025b):** «*Haminoea exigua*» in OPK-Opisthobranchs (<https://opisthobranchis.info/en/?p=14592>).
- Bensari, B., L. Bahbah, A. Lounaouci, S.E. Fahci, A. Bouda & N.E.I. Bachari (2020):** First records of non-indigenous species in port of Arzew (Algeria: southwestern Mediterranean). *Mediterr. Mar. Sci.*, 21(2), 393–399. <https://doi.org/10.12681/mms.21927>.
- Brahimi, R.N. & N. Bensaou (2018):** Inventaire et organisation des données et métadonnées de la diversité biologique faunistique marine en Algérie. Mémoire de fin d'études En vue de l'obtention du Diplôme d'Ingénieur d'état En Sciences de la Mer, 67 pp.
- Calado, G. & J.P. Silva (2012):** Sea Slugs of the Algarve – Opisthobranch Guide for the Southern Coast of Portugal. Edições SubNauta, Lisboa, 164 pp.
- CAR/ASP-PNUE/PAM (2015):** Caractérisation bioécologique de la zone marine de l'Est algérois (Algérie). Projet MedMPAnet, Tunis, 55 pp.
- Cervera, J.L., J.C. García & F.J. García (1986):** Il genere *Jorunna* Bergh, 1876 (Mollusca: Gastropoda: Nudibranchia) nel litorale iberico. *Lavori S.I.M.*, 22, 111–134.
- Cervera, J.L., P.J. López-González & J.C. García-Gomez (1998):** Redescription of the Aeolid Nudibranch *Flabellina ischitana* Hirano & Thompson, 1990 (Gastropoda: Opisthobranchia). *The Veliger*, 41(3), 289–293.
- Cervera, J.L., G. Calado, C. Gavaia, M.A.E. Malaquias, J. Templado, M. Ballesteros, J.C. García-Gómez & C. Megina (2004):** An annotated and updated checklist of the opisthobranchs (Mollusca: Gastropoda) from Spain and Portugal (including islands and archipelagos). *Bol. Inst. Esp. Oceanogr.*, 20(1-4), 5–111.
- Ciccione, G. & S. Savona (1982):** Il genere *Ringicula* Deshayes, 1838 nel Mediterraneo. *Boll. Malacol.*, 18(1-4), 17–34.
- Derbal, F. & M.H. Kara (2005):** Inventaire taxonomique de la faune côtière (poissons, crustacés, mollusques) du littoral d'Annaba. Deuxième Atelier International NAFRINET, 24 - 25 septembre 2005, Tébessa, Algérie, 1 p.
- Dieuzeide, R. (1951):** Sur un intéressant Opisthobranch Tectibranch *Aplysiella webbii* (Van Beneden et Robb). *Bull. Trav. Station Aquiculture et Pêche, Castiglione, N.S.*, 3, 55–67.
- Domínguez, M., M. Pola & M. Ramón (2015):** A new species of *Tambja* (Mollusca, Gastropoda, Nudibranchia) from the Mediterranean Sea: description of the first species of the genus from the Balearic Islands and Malta. *Helgol. Mar. Res.*, 69, 205–212. <https://doi.org/10.1007/s10152-015-0429-4>.
- Eleftheriou, A., E. Anagnostopoulou-Visilia, E. Anastasopoulou, S.A. Ateş, N.E.I. Bachari, L. Cavas, C. Cevik, M. Culha, F. Cevik, A.L. Delos, O.B. Derici, D. Erguden, N. Fragopoulou, A. Giangrande, T. Göksan, C. Gravili, M. Gurlek, A. Hattour, K. Kapiris, P. Kouraklis, S. Lamouti, E. Prato, L. Papa, G. Papantoniou, I. Parlapiano, D. Poursanidis, C. Turan & D. Yaglioglu (2011):** New Mediterranean Biodiversity Records (December 2011). *Mediterr. Mar. Sci.*, 12(2), 491–508. <https://doi.org/10.12681/mms.48>.
- El Watan (2023):** Littoral algérien: Une nouvelle étude porte la longueur à 2148 km (<https://elwatan.dz/littoral-algerien-une-nouvelle-etude-porte-la-longueur-a-2148-km/>).
- Gosliner, T.M., Á. Valdés & D.W. Behrens (2018):** Nudibranch & Sea Slug Identification – Indo-Pacific. New World Publications Inc., Jacksonville, 451 pp.
- Grimes, S., Z. Boutiba, A. Bakalem, M. Bouderbala, B. Boudjllal, S. Boumaza, M. Boutiba, A. Guedioura, A. Hafferssas, F. Hemida, N. Kaidi, H. Khelifi, F. Kerzabi, A. Merzoug, A. Nouara, B. Sellali, H. Sellali-Merabtine, R. Samroud, H. Seridi, M.Z. Taleb & T. Taouahria (2004):** Biodiversité Marine et littorale Algérienne. Ouvrage domicile au laboratoire "Réseau de surveillance environnementale". Université Es Sénia, Oran, 361 pp.
- Grimes, S., T. Ruellet, J.C. Dauvin & Z. Boutiba (2010):** Ecological Quality Status of the soft-bottom communities from the Algeria coast: General patterns and diagnostic. *Mar. Pollut. Bull.*, 60, 1969–1977. <https://doi.org/10.1016/j.marpolbul.2010.07.032>.
- Grimes, S., A. Bakalem & J.C. Dauvin (2016):** Annotated checklist of marine Algerian Crustacean Decapods. *Mediterr. Mar. Sci.*, 17, 384–395. <https://doi.org/10.12681/mms.1420>.

Hirano, Y.J. & T.E. Thompson (1990): Flabellinid nudibranchs from the Bay of Naples, with a description of a new species, *Flabellina ischitana*. J. Molluscan Stud., 56, 345–354. <https://doi.org/10.1093/mollus/56.3.345>.

iNaturalist (2020): 44963998 (<https://www.inaturalist.org/observations/44963998>).

iNaturalist (2021): 89204435 (<https://www.inaturalist.org/observations/89204435>).

iNaturalist (2022a): 115112924 (<https://www.inaturalist.org/observations/115112924>).

iNaturalist (2022b): 141634116 (<https://www.inaturalist.org/observations/141634116>).

iNaturalist (2022c): 141633933 (<https://www.inaturalist.org/observations/141633933>).

iNaturalist (2022d): 141633652 (<https://www.inaturalist.org/observations/141633652>).

iNaturalist (2022e): 141633084 (<https://www.inaturalist.org/observations/141633084>).

iNaturalist (2022f): 134199919 (<https://www.inaturalist.org/observations/134199919>).

iNaturalist (2023a): 177743600 (<https://www.inaturalist.org/observations/177743600>).

iNaturalist (2023b): 176459578 (<https://www.inaturalist.org/observations/176459578>).

iNaturalist (2023c): 170537574 (<https://www.inaturalist.org/observations/170537574>).

iNaturalist (2023d): 163692455 (<https://www.inaturalist.org/observations/163692455>).

iNaturalist (2023e): 193254635 (<https://www.inaturalist.org/observations/193254635>).

iNaturalist (2023f): 193254633 (<https://www.inaturalist.org/observations/193254633>).

iNaturalist (2023g): 190432517 (<https://www.inaturalist.org/observations/190432517>).

iNaturalist (2024a): 234354167 (<https://www.inaturalist.org/observations/234354167>).

iNaturalist (2024b): 232280408 (<https://www.inaturalist.org/observations/232280408>).

iNaturalist (2024c): 232280407 (<https://www.inaturalist.org/observations/232280407>).

iNaturalist (2024d): 232280404 (<https://www.inaturalist.org/observations/232280404>).

iNaturalist (2024e): 219537927 (<https://www.inaturalist.org/observations/219537927>).

iNaturalist (2024f): 219537921 (<https://www.inaturalist.org/observations/219537921>).

iNaturalist (2024g): 219537912 (<https://www.inaturalist.org/observations/219537912>).

iNaturalist (2024h): 217808453 (<https://www.inaturalist.org/observations/217808453>).

iNaturalist (2024i): 217351221 (<https://www.inaturalist.org/observations/217351221>).

iNaturalist (2024j): 217351219 (<https://www.inaturalist.org/observations/217351219>).

iNaturalist (2024k): 217351217 (<https://www.inaturalist.org/observations/217351217>).

iNaturalist (2024l): 217351215 (<https://www.inaturalist.org/observations/217351215>).

iNaturalist (2024m): 206325355 (<https://www.inaturalist.org/observations/206325355>).

iNaturalist (2024n): 206325353 (<https://www.inaturalist.org/observations/206325353>).

iNaturalist (2024o): 206325346 (<https://www.inaturalist.org/observations/206325346>).

iNaturalist (2024p): 206325345 (<https://www.inaturalist.org/observations/206325345>).

iNaturalist (2024q): 206325344 (<https://www.inaturalist.org/observations/206325344>).

iNaturalist (2024r): 204205835 (<https://www.inaturalist.org/observations/204205835>).

iNaturalist (2024s): 197261156 (<https://www.inaturalist.org/observations/197261156>).

iNaturalist (2024t): 197261152 (<https://www.inaturalist.org/observations/197261152>).

iNaturalist (2024u): 203788287 (<https://www.inaturalist.org/observations/203788287>).

iNaturalist (2024v): 233140447 (<https://www.inaturalist.org/observations/233140447>).

iNaturalist (2025a): 268141740 (<https://www.inaturalist.org/observations/268141740>).

iNaturalist (2025b): 268141739 (<https://www.inaturalist.org/observations/268141739>).

iNaturalist (2025c): 268141738 (<https://www.inaturalist.org/observations/268141738>).

iNaturalist (2025d): 268141733 (<https://www.inaturalist.org/observations/268141733>).

iNaturalist (2025e): 268141732 (<https://www.inaturalist.org/observations/268141732>).

iNaturalist (2025f): 268141731 (<https://www.inaturalist.org/observations/268141731>).

iNaturalist (2025g): 268141723 (<https://www.inaturalist.org/observations/268141723>).

iNaturalist (2025h): 268141722 (<https://www.inaturalist.org/observations/268141722>).

iNaturalist (2025i): 268141721 (<https://www.inaturalist.org/observations/268141721>).

iNaturalist (2025j): 268141718 (<https://www.inaturalist.org/observations/268141718>).

iNaturalist (2025k): 268141703 (<https://www.inaturalist.org/observations/268141703>).

iNaturalist (2025l): 268141701 (<https://www.inaturalist.org/observations/268141701>).

iNaturalist (2025m): 267798190 (<https://www.inaturalist.org/observations/267798190>).

iNaturalist (2025n): 267738093 (<https://www.inaturalist.org/observations/267738093>).

iNaturalist (2025o): 267738092 (<https://www.inaturalist.org/observations/267738092>).

iNaturalist (2025p): 258829836 (<https://www.inaturalist.org/observations/258829836>).

iNaturalist (2025q): 258662452 (<https://www.inaturalist.org/observations/258662452>).

- iNaturalist (2025r):** 258662416 (<https://www.inaturalist.org/observations/258662416>).
- iNaturalist (2025s):** 258662414 (<https://www.inaturalist.org/observations/258662414>).
- Kapeller, R. (2026):** European Mollusks (<https://www.rkapeller.eu/about.html>).
- Lombardo, A. & G. Marletta (2023a):** Diversity of the Marine Heterobranchia Fauna at the Island of Pantelleria, Sicily Channel, Mediterranean Sea: First Contribution. *Acta Zool. Bulg.*, 75(1), 37–48.
- Lombardo, A. & G. Marletta (2023b):** No longer so common: findings of *Calliopaea bellula* d'Orbigny 1837 (Gastropoda: Sacoglossa) and *Tayuva lilacina* (A. Gould 1852) (Gastropoda: Nudibranchia) along the central-eastern coast of Sicily (Ionian Sea). *NHS.*, 10(1), 79–82. <https://doi.org/10.4081/nhs.2023.632>.
- Lombardo, A. & G. Marletta (in press):** Atlas of the Opisthobranchs of the Central-Eastern Coast of Sicily. Edizioni Danaus, Palermo, 384 pp.
- Martínez Chacón, M. (2018):** Nudibranchios de la Isla de Tarifa. Pequeñas Joyas del estrecho de Gibraltar. Consejería de Medio Ambiente y Ordenación del Territorio. Junta de Andalucía, Sevilla., 220 pp.
- Martynov, A.V. & T.A. Korshunova (2011):** Opisthobranch molluscs of the seas of Russia. A colour guide to their taxonomy and biology. Fiton Press, Moscow, 229 pp.
- MEER & SPA/RAC-ONU Environnement/PAM (2018):** Programme national de surveillance de la biodiversité et les espèces non-indigènes marines en Algérie, Abdelhafid Chalabi. Ed SPA/RAC-Projet EcAp-Med II, Tunis, 167 pp.
- Meziane, K., A. Kerfouf & A. Baaloudj (2020):** Checklist of gastropod molluscs in west coast of Algeria. *Int. j. aquatic biol.*, 8(3), 224–227.
- Millot, C. (1999):** Circulation in the western Mediterranean Sea. *J. Mar. Syst.*, 20, 423–442. [https://doi.org/10.1016/S0924-7963\(98\)00078-5](https://doi.org/10.1016/S0924-7963(98)00078-5).
- Millot, C. & I. Taupier-Letage (2005):** Circulation in the Mediterranean Sea. In: Saliot, A. (ed.): *The Mediterranean Sea. The Handbook of Environmental Chemistry*, Vol. 5K. Springer, Berlin, Heidelberg, pp. 29–66. <https://doi.org/10.1007/b107143>.
- Pérez-Dieste, J., J.E. Trigo & B. Almón (2021):** Nudibranchios das Costas de Galicia. As cores do Atlántico. Xunta de Galicia, Ribeira, 288 pp.
- Pontes, M., M. Ballesteros & E. Madrenas (2025a):** “*Marionia gemmii*” in OPK-Opisthobranchios (<https://opisthobranchios.info/en/?p=27915>).
- Pontes, M., M. Ballesteros & E. Madrenas (2025b):** “*Martadoris mediterranea*” in OPK-Opisthobranchios (<https://opisthobranchios.info/en/?p=13160>).
- Pruvot-Fol, A. (1954):** Fauna de France. Vol. 58. Mollusques Opisthobranches. Lechevalier., Paris, 460 pp.
- Refes, W., N. Semahi, M. Boulahdid & J.P. Quignard (2010):** Inventaire de la faune ichtyologique du secteur oriental de la côte algérienne (El Kala – Annaba – Skikda – Jijel – Béjaïa). Rapport Commission international Mer Méditerranée, 39, 646 pp.
- Rudman, W.B. (1998-2010):** Sea Slug Forum (<http://www.seaslugforum.net/welcome.html>).
- Rufay, X., P. Girard, S. Le Bris, T. Menut, C. Santarelli & X. Salvador (2021):** Liste commentée des limaces de mer de la lagune de Thau, Hérault. Les cahiers de la fondation Biotope, 36, 1–189.
- Tamsouri, M.N., M. Benabdi & J.L. Cervera (2018):** First record of *Felimida purpurea* (Risso, 1831) and *Dondice banyulensis* Portmann & Sandmeier, 1960 for the Algerian marine fauna (Heterobranchia: Nudibranchia). *Cah. Biol. Mar.*, 59, 305–308. <https://doi.org/10.21411/CBM.A.AF89C439>.
- Toso, A., M. Solca, E. Trainito, M. Stifani & G. Furfaro (2025):** Arrivals and departures: exploring sea slug diversity (Mollusca, Gastropoda) in the Salento Peninsula harbours. *Mar. Biodivers.*, 55, 80. <https://doi.org/10.1007/s12526-025-01563-8>.
- Trainito, E. & M. Doneddu (2014):** Nudibranchi del Mediterraneo. Il Castello, Cornaredo, 192 pp.
- Trainito, E., M. Fantin, F. Torsani & G. Furfaro (2021):** So large yet so unnoticed: the case of *Marionia gemmii* Almón, Pérez & Caballer, 2018 (Heterobranchia: Tritoniidae) in the Mediterranean Sea. *Cah. Biol. Mar.*, 62, 65–70. <https://doi.org/10.21411/CBM.A.BD5B67F2>.
- Van Der Spoel, S. (1976):** Pseudothecosomata, Gymnosomata and Heteropoda (Gastropoda). Bohn, Scheltema & Holkema, Utrecht, 484 pp.