

Taxonomic knowledge on the biodiversity of bivalve mollusks on the Algerian west coast

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المعرفة التصنيفية حول التنوع الحيواني للرخويات ثنائية الصدفة على الساحل الغربي الجزائري

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ABSTRACT. Given the limited understanding of benthic fauna along the Algerian coast, this study was conducted to explore the diversity of bivalve mollusks specifically on the Algerian west coast. The primary objectives of this study were to create a comprehensive but not exhaustive inventory of bivalve species in this region and to analyze the distribution of these species within the study areas and neighboring regions. The research involved the investigation of numerous sandy beaches across four sectors of the Algerian west coast: Tlemcen, Béni-Saf, Ain-Temouchent, and Oran. Between June 2019 and April 2020, a random collection of empty bivalve shells was carried out in the foreshore zones of 16 beaches within these sectors. This extensive collection of 10,076 shells resulted in the identification of 56 bivalve mollusk species, categorized into 22 families. Among these families, the most prominent were *Cardiidae*, *Donacidae*, *Glycymerididae*, and *Veneridae*, serving as the most representative families across all four sectors. Notably, the *Glycymerididae* family was the most abundant along the Oran coast, with nearly 2,000 individuals, although they were less prevalent on the beaches of the Béni Saf sector. In contrast, the *Veneridae* family was prevalent on the beaches of the Tlemcen, Béni Saf, and Aïn-Témouchent sectors. Within the *Veneridae* family, there was remarkable diversity, featuring 11 species, followed by the *Cardiidae* family with 6 species, and the *Limidae* and *Pectinidae* families with 5 species each. Finally, among the identified species, the most abundant ones included *Acanthocardia tuberculata* (Linnaeus, 1758), *Chamelea gallina* (Linnaeus, 1758), *Glycymeris nummaria* (Linnaeus, 1758), and *Donax trunculus* (Linnaeus, 1758), each belonging to the *Cardiidae*, *Veneridae*, *Glycymerididae*, and *Donacidae* families, respectively.

KEYWORDS: Bivalve mollusks, shells, biodiversity, distribution, Algerian west coast

المستخلص: نظرًا لفهم المحدود للحياة البحرية القاعية على طول الساحل الجزائري، تم إجراء هذه الدراسة لاستكشاف تنوع الرخويات ثنائية الصدفة بشكل خاص على الساحل الجزائري الغربي. كانت الأهداف الرئيسية لهذه الدراسة هي إنشاء جرد شامل ولكن غير شامل لأنواع الرخويات في هذه المنطقة وتحليل توزيع هذه الأنواع داخل مناطق الدراسة والمناطق المجاورة لها. شملت البحث التحقيق في العديد من الشواطئ الرملية عبر أربعة قطاعات من الساحل الجزائري الغربي: تلمسان، بني صاف، عين تموشنت، وهران. تم في الفترة بين يونيو ٢٠١٩ وأبريل ٢٠٢٠ جمع عشوائي لواقع الرخويات الفارغة في المناطق الساحلية لـ ١٦ شاطئاً ضمن هذه القطاعات. أسفر هذا الجمع الواسع من ١٠,٠٧٦ قوقة عن تحديد ٥٦ نوعاً من الرخويات ثنائية الصدفة، تم تصنيفها إلى ٢٢ عائلة. من بين هذه العائلات، كانت عائلات كارديدي، دوناسيدي، جلايسيميريدي، وفينيريدي هي الأكثر بروراً، حيث كانت تمثل أكثر العائلات مثيلاً عبر جميع القطاعات الأربع. وكانت عائلة جلايسيميريدي الأكثر وفرة على طول ساحل وهران، حيث بلغ عدد أفرادها ما يقرب من ٢٠٠٠ فرد، على الرغم من أنها كانت أقل وفرة على شواطئ قطاع بني صاف. وعلى النقيض من ذلك، كانت عائلة فينيريدي وفيرة على شواطئ قطاعات تلمسان وبني صاف وعين تموشنت. داخل عائلة فينيريدي، كان هناك تنوع ملحوظ، حيث ظهرت ١١ نوعاً، تليها عائلة كارديدي بستة أنواع، وعائلة ليميدي وبيكتينيدي بخمسة أنواع لكل منها. وأخيراً، بين الأنواع المحددة، كانت الأكثر وفرة تشمل أكانثوكارديا توبيركولاتا (لينيوس، ١٧٥٨)، وكاميليا جالينا (لينيوس، ١٧٥٨)، وجلايسيميريس غاريا (لينيوس، ١٧٥٨)، ودوناكس ترونوكولوس (لينيوس، ١٧٥٨). تتبع كل منها لعائلات كارديدي، وفينيريدي، وجلايسيميريدي، دوناسيدي، على التوالي

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Introduction

The Mediterranean Sea represents an important hotspot of faunal biodiversity (Bellan-Santini et al., 1994). Among this fauna, bivalve mollusks are one of the most important and diversified groups of the Mediterranean benthos. Old works were carried out on the Algerian coast including those of Dautzenberg (1895) and Pallary (1900). More recently, those carried out by Grimes et al. (2003) and Grimes (2010) on the benthic fauna of the Algerian coast. For our part, we were interested in the study of the diversity of the marine bivalve fauna of the Algerian west coast by taking into consideration of different beaches. In this context, we opted for a taxonomic study of the bivalves present in four sectors of the Algerian west coast. This present study was focused on the bivalve mollusks found in the intertidal zone, through a semi-exhaustive inventory of these species, on some of the sandy beaches of the Algerian west coast. This contribution was aimed to enrich knowledge on the diversity of bivalve mollusks on the Algerian coast, with a view to possible commercial exploitation of the most abundant species and the protection of some of the most vulnerable species.

Materials and Methods

Study Zone

The prospected area is located in the western part of the Mediterranean Sea, between the Algerian-Moroccan border to the west and the port of Oran to the east. The samples were taken from sixteen sandy beaches spread over the four sectors studied, namely: the Tlemcen sector (Marsa Ben M'Hidi, Moskarda West and East), Beni Saf sector (Rachgoune West and East, Madrid, and Plage du Puits), the Ain Temouchent sector (Chatt El Hilal, Terga, Sassel, Sebiaat, Bouzedjar, and Madagh), and the Oran sector (Andalouses, Dunes, and Ain Turk). The geographical locations of the prospected sectors are shown in Table 1.

Sampling and Identification of Bivalve Species

The sampling campaign took place punctually between June 2019 and April 2020 over three seasons: summer, winter, and spring. The choice of prospected beaches was mainly motivated by their accessibility. A random collection of bivalve mollusks by

Table 1. Geographical coordinates of the prospected beaches based on the four studied sectors, Tlemcen, Beni Saf, Ain Temouchent, and Oran (Data from Google Earth)

| Sectors | Beaches |
|----------------|--|
| Tlemcen | Marsa Ben M'Hidi Moskarda Ouest Moskarda Est |
| Beni Saf | Rachgoune Ouest Rachgoune Est Madrid Plage du Puits |
| Ain Temouchent | Chatt El Hilal Terga Sassel Sebiat Bouzedjar Madagh |
| Oran | Andalouses Dunes Ain Turk |

the “hand-picking” method was carried out in the foreshore zone of each beach along a west east transects (Sammer et al., 2018). The species concerned are the empty shells forming part of the sea lines, as well as the living individuals encountered on the surface of the sand. The samples were labeled and transported to the laboratory in tightly sealed bags and placed in cardboard boxes to prevent any breakage during transport. In the laboratory, the shells were washed with tap water and then rinsed to remove impurities. It should be noted that only complete valves (right or left) that could be identified were counted. Once dried, species identification was carried out using the following references using the identification keys (Le Neustieec, 2013; Fulvo and Nistri, 2006; Lindner and Cuisin, 2004; Lindner, 2015; Poutiers, 1987).

Results

Inventory of Bivalve Species

The inventory of the shells collected on the four sectors studied, allowed us to identify 56 species, 44 genera, and 22 families. Thus, out of a total of 10,076 shells collected, 38% were collected in the region of Oran, of which 15 families and 29 species were identified; 22% in the region of Ain Temouchent (most diversified than the other sectors), of which 19 families and 41 species were inventoried, which represents the highest rate of specific richness compared to other sectors, 20% in the Tlemcen region includ-

Table3. Data on effectives, number of families, genera and species of bivalves in the four sectors studied between June 2019 and April 2020

| | Tlemcen | Beni Saf | Ain Temouchent | Oran |
|------------|---------|----------|----------------|------|
| Effectives | 2050 | 1951 | 2231 | 3844 |
| Families | 14 | 18 | 19 | 15 |
| Genera | 24 | 31 | 35 | 23 |
| Species | 28 | 38 | 41 | 29 |

Table2. Inventory of identified bivalves in the 4 sectors studied : Tlemcen (TLM), Beni Saf (BS), Ain Temouchent (AT) and Oran (ORN)

| Families | Genera/Species | TLM* | BS ⁺ | AT ⁻ | ORN ⁰ |
|----------------|--|------|-----------------|-----------------|------------------|
| Anomiidae | <i>Anomia ephippium</i> (Linnaeus, 1758) | 122 | 85 | 52 | 13 |
| | <i>Arca noae</i> (Linnaeus, 1758) | 2 | 34 | 22 | 0 |
| Arcidae | <i>Barbatia barbata</i> (Linnaeus, 1758) | 1 | 35 | 74 | 3 |
| | <i>Acanthocardia aculeata</i> (Linnaeus, 1767) | 4 | 1 | 0 | 0 |
| | <i>Acanthocardia paucicostata</i> (Sowerby II, 1841) | 5 | 0 | 0 | 0 |
| Cardiidae | <i>Acanthocardia tuberculata</i> (Linnaeus, 1758) | 155 | 45 | 76 | 310 |
| | <i>Cerastoderma glaucum</i> (Poirier, 1789) | 53 | 99 | 41 | 0 |
| | <i>Fulvia fragilis</i> (Forskål in Niebuhr, 1775) | 1 | 0 | 11 | 0 |
| | <i>Laevicardium crassum</i> (Gmelin, 1791) | 7 | 0 | 6 | 2 |
| Carditidae | <i>Cardita calyculata</i> (Linnaeus, 1758) | 1 | 15 | 15 | 3 |
| | <i>Centrocardita aculeata</i> (Poli, 1795) | 0 | 0 | 0 | 1 |
| Chamidae | <i>Pseudochama gryphina</i> (Lamarek, 1819) | 0 | 10 | 8 | 0 |
| Donacidae | <i>Donax trunculus</i> (Linnaeus, 1758) | 289 | 320 | 313 | 385 |
| | <i>Donax vittatus</i> (da Costa, 1778) | 44 | 110 | 65 | 80 |
| Glycymerididae | <i>Glycymeris glycymeris</i> (Linnaeus, 1758) | 31 | 9 | 8 | 42 |
| | <i>Glycymeris nummaria</i> (Linnaeus, 1758) | 398 | 90 | 520 | 1954 |
| Gryphaeidae | <i>Neopycnodonte cochlear</i> (Poli, 1795) | 0 | 0 | 0 | 2 |
| | <i>Lima lima</i> (Linnaeus, 1758) | 1 | 5 | 8 | 6 |
| | <i>Lima</i> sp. | 0 | 0 | 0 | 1 |
| Limidae | <i>Limaria hians</i> (Gmelin, 1791) | 0 | 4 | 15 | 0 |
| | <i>Limaria tuberculata</i> (Olivier, 1792) | 0 | 2 | 3 | 0 |
| | <i>Limaria</i> sp. | 0 | 1 | 10 | 0 |
| Lucinidae | <i>Loripes orbicularis</i> (Poli, 1791) | 0 | 8 | 20 | 38 |
| | <i>Lutraria lutraria</i> (Linnaeus, 1758) | 8 | 1 | 0 | 0 |
| Mactridae | <i>Mactra stultorum</i> (Linnaeus, 1758) | 79 | 22 | 9 | 9 |
| | <i>Spisula subtruncata</i> (da Costa, 1778) | 117 | 64 | 66 | 30 |
| Mytilidae | <i>Modiolus adriaticus</i> (Lamarck, 1819) | 1 | 0 | 3 | 0 |
| | <i>Modiolus barbatus</i> (Linnaeus, 1758) | 0 | 0 | 8 | 1 |
| | <i>Mytilus</i> sp. | 31 | 38 | 82 | 22 |
| Noetiidae | <i>Striarca lactea</i> (Linnaeus, 1758) | 0 | 2 | 5 | 0 |
| Ostreidae | <i>Crassostrea gigas</i> (Thunberg, 1793) | 38 | 3 | 7 | 4 |
| Pandoridae | <i>Pandora inaequivalvis</i> (Linnaeus, 1758) | 1 | 0 | 0 | 0 |
| | <i>Aequipecten opercularis</i> (Linnaeus, 1758) | 2 | 0 | 0 | 0 |
| Pectinidae | <i>Flexopecten flexuosus</i> (Poli, 1795) | 0 | 2 | 1 | 0 |
| | <i>Mimachlamys varia</i> (Linnaeus, 1758) | 0 | 10 | 16 | 7 |
| | <i>Pseudamussium</i> sp. | 0 | 0 | 1 | 0 |
| | <i>Talochlamys multistriata</i> (Poli, 1795) | 0 | 0 | 3 | 3 |
| Pholadidae | <i>Barnea candida</i> (Linnaeus, 1758) | 0 | 0 | 1 | 0 |
| Semelidae | <i>Abra prismatica</i> (Montagu, 1808) | 0 | 2 | 0 | 0 |
| Spondylidae | <i>Spondylus gaederopus</i> (Linnaeus, 1758) | 0 | 4 | 2 | 1 |
| | <i>Atlantella pulchella</i> (Lamarck, 1818) | 1 | 2 | 0 | 0 |
| Tellinidae | <i>Moerella donacina</i> (Linnaeus, 1758) | 0 | 0 | 2 | 0 |
| | <i>Peronaea planata</i> (Linnaeus, 1758) | 3 | 2 | 0 | 0 |
| | <i>Peronidia albicans</i> (Gmelin, 1791) | 0 | 2 | 0 | 0 |
| | <i>Callista chione</i> (Linnaeus, 1758) | 0 | 7 | 9 | 25 |
| | <i>Chamelea gallina</i> (Linnaeus, 1758) | 647 | 888 | 696 | 850 |
| | <i>Chamelea striatula</i> (da Costa, 1778) | 0 | 0 | 0 | 11 |
| Veneridae | <i>Dosinia lupinus</i> (Linnaeus, 1758) | 5 | 18 | 40 | 38 |
| | <i>Irus irus</i> (Linnaeus, 1758) | 0 | 0 | 1 | 0 |
| | <i>Polititapes aureus</i> (Gmelin, 1791) | 0 | 1 | 3 | 0 |
| | <i>Polititapes rhomboides</i> (Pennant, 1777) | 0 | 0 | 1 | 0 |
| | <i>Venerupis geographicus</i> (Gmelin, 1791) | 0 | 2 | 5 | 0 |
| | <i>Venus nux</i> (Gmelin, 1791) | 0 | 4 | 0 | 1 |
| | <i>Venus verrucosa</i> (Linnaeus, 1758) | 3 | 2 | 2 | 1 |
| | <i>Venus</i> sp. | 0 | 2 | 0 | 1 |
| Psammobiidae | <i>Gari depressa</i> (Pennant, 1777) | 0 | 0 | 1 | 0 |

ing 14 families and 28 species (less diversified than the other sectors); and 19% in the Beni Saf region, including 18 families and 38 listed species (Table 2).

Among the bivalve species identified (Table 3), we found 11 rare species in the Tlemcen sector, which are: *Acanthocardia aculeata* (Linnaeus, 1767), *Acanthocardia paucicostata* (Sowerby II, 1841), *Fulvia fragilis* (Forskål in Niebuhr, 1775), *Laevicardium crassum* (Gmelin, 1791), *Lutraria lutraria* (Linnaeus, 1758), *Modiolus adriaticus* (Lamarck, 1819), *Pandora inaequivalvis* (Linnaeus, 1758), *Aequipecten opercularis* (Linnaeus, 1758), *Atlantella pulchella* (Lamarck, 1818), *Peronaea planata* (Linnaeus, 1758) and *Venus verrucosa* (Linnaeus, 1758). In the Beni Saf sector, there were 14 rare species: *Acanthocardia aculeata* (Linnaeus, 1767), *Limaria tuberculata* (Olivi, 1792), *Lutraria lutraria* (Linnaeus, 1758), *Striarca lactea* (Linnaeus, 1758), *Flexopecten flexuosus* (Poli, 1795), *Abra prismatica* (Montagu, 1808), *Spondylus gaederopus* (Linnaeus, 1758), *Atlantella pulchella* (Lamarck, 1818), *Peronaea planata* (Linnaeus, 1758), *Peroniida albicans* (Gmelin, 1791), *Polititapes aureus* (Gmelin, 1791), *Venerupis geographica* (Gmelin, 1791), *Venus nux* (Gmelin, 1791) and *Venus verrucosa* (Linnaeus, 1758), 18 rare species in the Ain Temouchent area, namely: *Fulvia fragilis* (Forskål in Niebuhr, 1775), *Laevicardium crassum* (Gmelin, 1791), *Limaria tuberculata* (Olivi, 1792), *Modiolus adriaticus* (Lamarck, 1819), *Modiolus barbatus* (Linnaeus, 1758), *Striarca lactea* (Linnaeus, 1758), *Flexopecten flexuosus* (Poli, 1795), *Talochlamys multistriata* (Poli, 1795), *Barnea candida* (Linnaeus, 1758), *Spondylus gaederopus* (Linnaeus, 1758), *Moerella donacina* (Linnaeus, 1758), *Irus irus* (Linnaeus, 1758), *Polititapes aureus* (Gmelin, 1791), *Polititapes rhomboides* (Pennant, 1777), *Venerupis geographica* (Gmelin, 1791), *Venus nux* (Gmelin, 1791), *Venus verrucosa* (Linnaeus, 1758), *Gari depressa* (Pennant, 1777) and finally in the Oran sector, we found 9 rare species, which are: *Laevicardium crassum* (Gmelin, 1791), *Centrocardita aculeata* (Poli, 1795), *Neopycnodonte cochlear* (Poli, 1795), *Modiolus barbatus* (Linnaeus, 1758), *Talochlamys multistriata* (Poli, 1795), *Spondylus gaederopus* (Linnaeus, 1758), *Chamelea striatula* (da Costa, 1778), *Venus nux* (Gmelin, 1791) and *Venus verrucosa* (Linnaeus, 1758).

Specific Richness and Relative Abundance

The specific richness made it possible to identify for the four sectors studied combined, five main families

rich in species which are: the Cardiidae with 6 species, the Limidae with 5 species, the Pectinidae with 5 species, Tellinidae with 5 species and the Veneridae with 11 species (Table 4). However, this richness differed from one sector to another. Indeed, the sector of Tlemcen presents a richness of species in the families of Cardiidae, Mactridae and Veneridae, while in the sector of Beni Saf the families of Cardiidae, Limidae, Mactridae, Tellinidae and Veneridae were the richer in species. In the sector of Ain Temouchent the families of Cardiidae, Limidae, Mytilidae, Pectinidae and Veneridae were the richest in species. The Oran sector had a high specific richness in the families of Cardiidae, Carditidae, Donacidae, Glycymerididae, Limidae, Mactridae, Mytilidae, Pectinidae and Veneridae. On the other hand, the most abundant and omnipresent families in the four sectors studied were: Cardiidae, Donacidae, Glycymerididae and Veneridae. Nevertheless, the Arcidae and the Mactridae families were also presented by a remarkable abundance in the Tlemcen sector (Table 4).

Discussion

The coastal regions of Algeria exhibit diverse forms, ranging from sandy to rocky shores, which influence the presence of bivalve mollusk species. Specifically, the areas of Tlemcen, Beni Saf, and Ain Temouchent feature rocky coasts with cliffs, interspersed irregularly by numerous wadis that typically flow into sandy beaches after heavy rainfalls. The composition of the coastal bottoms, characterized by fine sands and sandy sediments, combined with terrigenous and planktonic contributions, fosters a rich biodiversity of bivalves (Grimes et al., 2004; Grimes, 2010). Beni Saf and Ain Temouchent stand out for their diverse bivalve species, possibly due to the favorable substrate supporting their proliferation. Additionally, terrigenous inputs through wadis, such as the Tafna outfall at Rachgoune beach, the Oued EL Hallouf outfall at Chatt El Hilal beach, and the watershed leading to Sbiaat beach, enrich the seawater with nutrients, promoting the richness of bivalve mollusks.

Contrastingly, the Oran sector displays lower species diversity of bivalves (29 species) despite

Table4. Specific richness (SR) and relative abundance (RA) of bivalve families in the four sectors studied

| Bivalves Families | Tlemcen | | Beni Saf | | Ain Temouchent | | Oran | |
|-----------------------------------|--------------|--------------|--------------|--------------|----------------|--------------|--------------|--------------|
| | SR (%) | RA (%) | SR (%) | RA (%) | SR (%) | RA (%) | SR (%) | RA (%) |
| Anomiidae | 3,57 | 5,95 | 2,63 | 4,36 | 2,44 | 2,33 | 3,45 | 0,34 |
| Arcidae | 7,14 | 0,15 | 5,26 | 3,54 | 4,88 | 4,30 | 3,45 | 0,08 |
| Cardiidae | <u>21,43</u> | 10,98 | <u>7,89</u> | 7,43 | <u>9,76</u> | 6,01 | <u>6,90</u> | 8,12 |
| Carditidae | 3,57 | 0,05 | 2,63 | 0,77 | 2,44 | 0,67 | <u>6,90</u> | 0,10 |
| Chamidae | 0,00 | 0,00 | 2,63 | 0,51 | 2,44 | 0,36 | 0,00 | 0,00 |
| Donacidae | 7,14 | 16,24 | 5,26 | 22,04 | 4,88 | 16,94 | <u>6,90</u> | 12,10 |
| Glycymerididae | 7,14 | 20,93 | 5,26 | 5,07 | 4,88 | 23,67 | <u>6,90</u> | 51,93 |
| Gryphaeidae | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 3,45 | 0,05 |
| Limidae | 3,57 | 0,05 | <u>10,53</u> | 0,62 | <u>9,76</u> | 1,61 | <u>6,90</u> | 0,18 |
| Lucinidae | 0,00 | 0,00 | 2,63 | 0,41 | 2,44 | 0,90 | 3,45 | 0,99 |
| Mactridae | <u>10,71</u> | 9,95 | <u>7,89</u> | 4,46 | 4,88 | 3,36 | <u>6,90</u> | 1,01 |
| Mytilidae | 7,14 | 1,56 | 2,63 | 1,95 | <u>7,32</u> | 4,17 | <u>6,90</u> | 0,60 |
| Noetiidae | 0,00 | 0,00 | 2,63 | 0,10 | 2,44 | 0,22 | 0,00 | 0,00 |
| Ostreidae | 3,57 | 1,85 | 2,63 | 0,15 | 2,44 | 0,31 | 3,45 | 0,10 |
| Pandoridae | 3,57 | 0,05 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| Pectinidae | 3,57 | 0,10 | 5,26 | 0,62 | <u>9,76</u> | 0,94 | <u>6,90</u> | 0,26 |
| Pholadidae | 0,00 | 0,00 | 0,00 | 0,00 | 2,44 | 0,04 | 0,00 | 0,00 |
| Semelidae | 0,00 | 0,00 | 2,63 | 0,10 | 0,00 | 0,00 | 0,00 | 0,00 |
| Spondylidae | 0,00 | 0,00 | 2,63 | 0,21 | 2,44 | 0,09 | 3,45 | 0,03 |
| Tellinidae | 7,14 | 0,20 | <u>7,89</u> | 0,31 | 2,44 | 0,09 | 0,00 | 0,00 |
| Veneridae | <u>10,71</u> | 31,95 | <u>21,05</u> | 47,36 | <u>19,51</u> | 33,93 | <u>24,14</u> | 24,12 |
| Psammobiidae | 0,00 | 0,00 | 0,00 | 0,00 | 2,44 | 0,04 | 0,00 | 0,00 |
| Total species / Effectives | 28 | 2050 | 38 | 1951 | 41 | 2231 | 29 | 3844 |

NOTE: Families with high species richness are underlined, dominant families are in **bold**

a significant number of individuals collected (3844). This could be attributed to the rocky nature of the coastal bottom and limited terrigenous supply. In this sector, the *Glycymerididae* family appears dominant, while the *Veneridae* family is more abundant in the other three sectors. Beni Saf and Ain Temouchent are particularly rich in the *Veneridae* family, each boasting 8 species. In the Tlemcen sector, the *Cardiidae* family demonstrates rich diversity with 6 species, though fewer compared to the other sectors. Among

these families, notable species include *Acanthocardia tuberculata* (Linnaeus, 1758) (*Cardiidae*), *Glycymeris nummaria* (Linnaeus, 1758) (*Glycymerididae*), *Chamelea gallina* (Linnaeus, 1758) (*Veneridae*), and *Donax trunculus* (Linnaeus, 1758) (*Donacidae*).

Global studies on bivalve mollusks, especially in the Mediterranean Sea, reveal a wide variety of species with varying distributions across regions. Comparisons with other studies, such as those by Grimes et al. (2004) covering all Algerian coasts,

Sammer et al. (2018), and Bekkaye and Melhaoui (2011) focusing on the Moroccan Mediterranean coast, offer valuable insights. Although our study cannot be exhaustive due to its random sampling method, occasional and non-continuous periodicity, and limited scope of considering valves only on beaches, the results can be discussed in terms of the presence or absence of families and species compared to these neighboring regions. Grimes et al. (2004) identified over 200 bivalve species along the entire Algerian coast, with about twenty species identified in our study, including *Acanthocardia tuberculata* (Linnaeus, 1758) (*Cardiidae*), *Cardita calyculata* (Linnaeus, 1758) (*Carditidae*), *Mimachlamys varia* (Linnaeus, 1758) (*Pectinidae*), *Mactra stultorum* (Linnaeus, 1758) (*Mactridae*), *Spisula subtruncata* (da Costa, 1778) (*Mactridae*), *Glycymeris nummaria* (Linnaeus, 1758) (*Glycymerididae*), *Dosinia lupinus* (Linnaeus, 1758) (*Veneridae*), *Chamelea gallina* (Linnaeus, 1758) (*Veneridae*), *Donax trunculus* (Linnaeus, 1758) (*Donacidae*), *Modiolus barbatus* (Linnaeus, 1758) (*Mytilidae*), *Anomia ephippium* (Linnaeus, 1758) (*Anomiidae*), and *Barbatia barbata* (Linnaeus, 1758) (*Arcidae*). *Modiolus barbatus* (Linnaeus, 1758) (*Mytilidae*) is unique to the sectors of Ain Temouchent and Oran, and *Mimachlamys varia* (Linnaeus, 1758) (*Pectinidae*) is absent from the Tlemcen sector. However, all other species mentioned above are found in all four surveyed sectors. Sammer et al. (2018) and Bekkaye and Melhaoui (2011) identified significant species richness on the Moroccan Mediterranean coasts, primarily in families like *Cardiidae*, *Donacidae*, *Glycymerididae*, *Veneridae*, and *Mytilidae*. Our results align with these findings, indicating a diverse presence of these families across all beaches in our studied sectors. The geographical proximity and similarities in climatic, hydrological, and sedimentary conditions between the Moroccan Mediterranean coast and the Algerian west coast likely account for these resemblances.

Conclusion

The inventory of bivalve mollusks shells in the sandy beaches of the four sectors of the Algerian west coast namely: Tlemcen, Beni Saf, Ain Temouchent and Oran have identified 56 species. The most abundant families are *Cardiidae*, *Glycymerididae*, *Don-*

acidae and *Veneridae*. A rich diversity was found in *Veneridae* and *Cardiidae* families. The species that stand out for their abundance are: *Acanthocardia tuberculata* (Linnaeus, 1758) (*Cardiidae*), *Glycymeris nummaria* (Linnaeus, 1758) (*Glycymerididae*), *Chamelea gallina* (Linnaeus, 1758) (*Veneridae*) and also *Donax trunculus* (Linnaeus, 1758) (*Donacidae*). These species are subject to artisanal exploitation in neighboring countries of Algeria, such as Morocco and Tunisia. Due to the fact that, the bivalve species remain less or unexploited along the Algerian coasts because of the ignorance of available stocks and/or the lack of interest of the fishermen in this halieutological branch, these last species mentioned could be the subject of an in-depth study on the available stocks and their distribution along the Algerian coast. The purpose of this study should lead to the development of this new activity in Algeria.

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