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Diversity and host specificity of monogeneans in Antarctic fishes: a review

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Abstract. We compiled and harmonised published records of monogeneans from Antarctic and sub-Antarctic fishes, standardising host names, georeferencing localities, deduplicating records, and excluding ambiguous entries (genus-level hosts or "not specified" hosts) from specificity metrics. We aggregated occurrences from 49 unique localities spanning the Scotia Arc, Antarctic Peninsula, East Antarctica, Ross Sea, and the Kerguelen–Crozet–Heard–Macquarie region. The dataset comprises 31 species (35 including genus-level records), representing 11 genera in 7 families and two subclasses, drawn from 46 publications; species richness within the Subclass Monopisthocotylea was concentrated in Capsalidae (10 species), Gyrodactylidae (9), and Tetraonchoididae (8), with one species each in Mazocraeidae, Hexabothriidae, and Diclidophoridae within Polyopisthocotylea. We identified 29 species-level taxa with unambiguous hosts; of these, 15 (51.7%) were recorded from a single fish host, 6 (20.7%) from two hosts, and 8 (27.6%) from three or more (median = 1; maximum = 12 for *Pseudobenedenia nototheniae*). The spatial distribution of records was uneven, with the Kerguelen Plateau and the Ross Sea containing the densest clusters. In contrast, many other records occurred as isolated points, limiting the reliability of inferring species ranges. Overall, our analysis provides a curated baseline of diversity, host associations, and regional coverage for Antarctic monogeneans, highlights gaps caused by underspecified hosts and localities, and supplies standardised counts for future taxonomic and ecological work.

Keywords: Antarctica, marine parasitology, Monogenea, Nototheniidae, fish parasite, diversity baseline

1 Introduction

Antarctica is a unique environment with extreme climatic conditions. Low temperatures, high oxygen concentration, limitation of shelf area because of ice cover, seasonality of illumination and productivity, and a long period of evolutionary isolation led to a series of unique adaptations. It has resulted in a high level of endemism among local species of flora and fauna, as well as their parasites, reflecting a long adaptation to these environmental conditions (Morley et al., 2020).

The Southern Ocean encompasses the southernmost parts of the Atlantic, Indian, and Pacific Oceans, covering approximately 22 million km^2, or about 6.1% of the global ocean surface. Its oceanographic boundaries are defined by the Antarctic Polar Front, a zone characterised by a strong thermal gradient and intense water flow. Within this region, the Antarctic Circumpolar Current plays a key role in the global thermohaline circulation, facilitating the transfer of heat, salinity, and nutrients across the world's oceans (Moore et al., 1999; Clarke et al., 2007; Peck, 2018; Murphy et al., 2021). These oceanographic features shape the spatial structure of marine ecosystems and contribute to a high level of endemism. The long-term isolation of Antarctica, intensified by the opening of the Drake Passage approximately 50 million years ago (van de Lagemaat et al., 2021), combined with its unique climatic conditions, has led to distinct evolutionary pathways within the region's marine fauna. Currently, an estimated 50% of species inhabiting the Southern Ocean are endemic, with even higher rates observed in specific taxonomic groups such as gastropod molluscs (De Broyer et al., 2014).

Historically, survey activities have been focused on West Antarctica, particularly around main research stations, including Arctowski (Poland), Palmer (USA), Almirante Brown (Argentina), Mendel (Czech Republic), Rothera, Fossil Bluff, and Halley (UK), as well as the Ukrainian Antarctic Akademik Vernadsky station (Kvach & Kuzmina, 2020; Kuzmina et al., 2021). The first records of parasites in the Southern Polar region date back to the late 19th century, when early oceanographic expeditions reported isolated findings of helminths in fish. Notably, the British expedition of HMS *Challenger* (1872—1876) became an important source of specimens (von Graff, 1884), and following the German expedition of 1882—1883, von Linstow (1891) published data on numerous helminths collected from marine mammals and fishes around South Georgia. During the same period, significant amounts of material were also gathered during two French Antarctic expeditions and the British—Australian—New Zealand Antarctic (BANZ) expedition. These surveys yielded ichthyofaunal samples from which parasitic worms were later identified, laying the groundwork for subsequent parasitological studies (MacKenzie, 2017). However, systematic parasitological research in Antarctica did not begin until mid-20th century.

The first systematic records of Antarctic monogeneans date back to the 20th century, with studies by Johnston (1931), Hargis and Dillon (1968), Parukhin and Lyadov (1981), Lyadov (1985), and Rohde et al. (1995) focusing primarily on the description and distribution of the diversity of parasites. According to MacKenzie (2017), between 1920 and 2016, a total of 279 scientific publications were published on fish parasites in Antarctica. Such a focus is well justified, as parasites play a critical role in Antarctic ecosystem functioning by influencing host survival, health, and population dynamics (MacKenzie, 2017).

Over the past decade, studies have expanded beyond these areas and now cover a wider range of host—parasite interactions, supported by the use of modern molecular techniques. These methods have led to the description of many new species. However, important knowledge gaps remain, particularly concerning host specificity, epidemiology, and the ecological effects of parasites in Antarctic fish ecosystems. For example, although Oğuz et al. (2015) provided a broad list of parasites in Antarctic fishes, their review did not include detailed information on these aspects. Nevertheless, major gaps remain in the understanding of these parasitic systems (Perkins et al., 2009).

Monogeneans are a class of ectoparasitic flatworms found on fish skin, gills, and fins. Approximately 3500 species have been described from marine fishes (Rohde, 2005), which number increases yearly with the descriptions of new ones and the integration of molecular data that allowed for the characterisation of several species-level lineages. Some representatives are proven highly pathogenic to their hosts and can cause death when heavy infections are present (Raffel et al., 2008). Monogeneans, like other parasites, play a significant ecological role in marine ecosystems by contributing to food web structures and influencing energy flows (Poulin, 1999; Marcogliese, 2002). Their presence can change the trophic level of hosts, creating new pathways for energy transfer and enhancing ecosystem stability (Hudson et al., 2006).

According to the FishBase electronic database (Froese & Pauly, 2025), about 236 fish species live in the Antarctic waters. Notothenioid fishes, largely restricted to Antarctic and sub-Antarctic waters, comprise ~77% of the regional fish fauna and represent its greatest diversity (Near, 2009). Since they occupy a main place in the trophic chain, they often become hosts to various parasites. These fish can function as definitive and intermediate hosts of parasites infecting predator fish, seabirds, and marine mammals (Rocka, 2006).

The rapid climatic changes in Antarctica (Convey & Peck, 2019; Morley et al., 2020) include growing air temperature and melting of glaciers, which contribute to the heating and desalination of bottom waters (Swart et al., 2018; Rye et al., 2020). These shifts may modify the distribution of parasites and their hosts and disrupt ecosystem structure. Abiotic factors already affect the highly endemic Antarctic fauna, triggering molecular-level responses and potentially influencing higher levels of biological organisation. However, the broader consequences of these disturbances for ecosystem structure are still not fully understood (Bargelloni et al., 1994). Increased thermal and osmotic stress can make fish more vulnerable to infections, which highlights the importance of further research, as parasites such as monogeneans can affect the physiological state of fish and serve as indicators of environmental change (Buchmann & Bresciani, 2006; Mintenbeck et al., 2012; Sures et al., 2017; Desvignes et al., 2022; Sures & Nachev, 2022). In extreme environments, even minor disturbances can have cascading effects on the ecosystem as a whole. Researchers began to focus on the parasites of this isolated ecosystem after large international expeditions that allowed a better study of the Antarctic ichthyofauna and its parasites, in particular, the class Monogenea (Poulin & Mouritsen, 2006).

Despite valuable single-site studies, uneven sampling and inconsistent reporting have limited synthesis across hosts and regions. Here we compile and systematise published records of Monogenea from Antarctic and sub-Antarctic fishes, aligning parasite and host taxonomy, georeferencing localities, deduplicating entries, and flagging out ambiguous host records. Using this curated dataset, we (i) summarise species diversity by family, (ii) quantify host range at the species level under explicit inclusion/exclusion rules, (iii) map geographic coverage to identify spatial and metadata gaps, and (iv) distinguish taxa supported by robust versus limited evidence. Thus, the aim of the study is to provide a clarified baseline for Antarctic monogeneans and to define practical priorities for standardised morphological and molecular data.

2 Materials and methods

This review is based on data collected from multiple scientific databases and literature sources. Systematic searches were conducted in Google Scholar, PubMed, Web of Science, and Scopus, as well as in specialised biological repositories such as the World Register of Marine Species (WoRMS, 2025) and FishBase (Froese & Pauly, 2025). The search terms included "parasites of Antarctic fish", "Monogenea", and "parasite–host interaction". The literature search covered the period from 1872 (the earliest records from the HMS *Challenger*) to August 2025.

To ensure accuracy, only peer-reviewed research articles, taxonomic descriptions, and verified species records were included. Where applicable, the original publications were accessed and cross-referenced to validate database entries and correct potential errors or omissions. Particular attention was given to monogenean taxonomy at the subclass and family levels, host associations, and parasite localisation sites. Data was organised into a comparative table, categorising parasite species by host fish taxon, region, and infection site. All species names were updated to their current valid taxonomy following WoRMS (2025) and the most recent systematic revisions. Synonyms, outdated combinations, and names no longer in use were reconciled, and only valid species were counted. When older publications used historical names, these were matched to their accepted modern equivalents before inclusion. Records with ambiguous identification or lacking clear host attribution were excluded.

We synthesised records of Antarctic and sub-Antarctic monogeneans across 49 unique localities of the Southern Ocean and adjacent shelves (Appendix, Table). The final dataset was synthesised to identify patterns in parasite diversity,

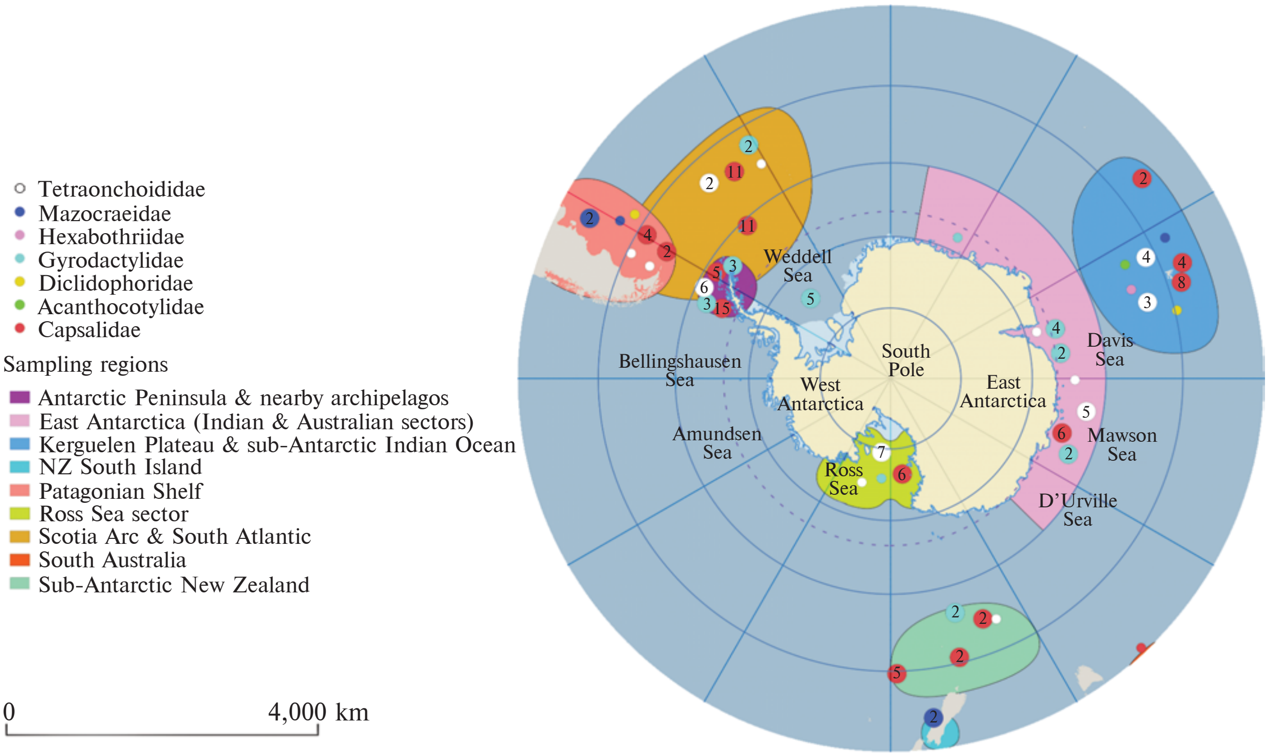

Figure 1. Geographic distribution of monogenean records across Antarctic and sub-Antarctic regions. Dots are coloured by parasite family (legend); shaded polygons delineate the sampling regions used in this review. Numbers indicate species-level records per locality/region. Non-georeferenced records were placed at regional centroids. South-polar stereographic projection. Map produced in QGIS using Quantarctica 3.4.0 base layers

host specificity, and geographic distribution. This structured analysis allows for the recognition of understudied regions, taxonomic uncertainties, and potential targets for future parasitological research in the Southern Ocean.

3 Results

The published data spans the Scotia Arc (Falkland/Malvinas, South Georgia, South Orkneys, South Shetlands), the Antarctic Peninsula (Anvers Island, Petermann Island; Vernadsky Station at Galindez), East Antarctica (Prydz Bay—Davis Sea; Windmill/Casey Islands), the Ross Sea (McMurdo Sound), and the Kerguelen—Crozet—Heard—Macquarie region, with temperate outliers on the Patagonian Shelf, South Australia, and New Zealand's South Island. Geographically, the Kerguelen Plateau and the Ross Sea harboured the densest clusters of species records (Fig. 1).

From the published data, we retrieved 31 monogenean species (or 35 when including genus-level records), representing 11 genera in 7 families and 2 subclasses, from 46 publications. Within the Subclass Monopisthocotylea, species richness was concentrated in Capsalidae (10 species), Gyrodactylidae (9 species), and Tetraonchoididae (8 species); within Polyopisthocotylea, Mazocraeidae, Hexabothriidae, and Diclidophoridae were each represented by one species. Regarding infection sites, monogeneans were found predominantly on gills, skin, and fins, typical of the group's ectoparasitic ecology.

In total, 29 species-level monogeneans with confirmed host records are currently known. Of these, 15 (51.7%) were recorded from a single fish host, 6 (20.7%) from two hosts, and 8 (27.6%) from three

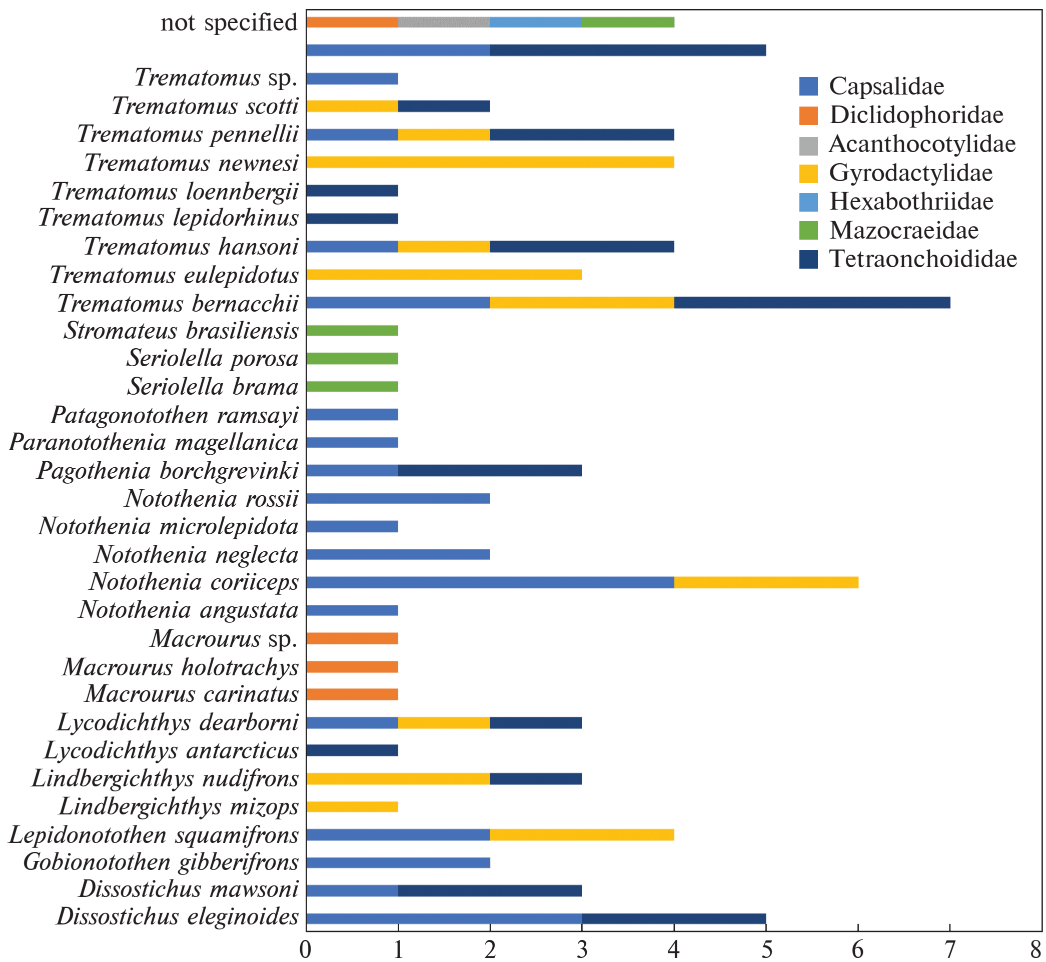

Figure 2. Monogenean species richness per host fish, by parasite family. Stacked horizontal bars show the number of monogenean species recorded on each host taxon (x-axis), with hosts listed on the y-axis. Records labelled "*Trematomus* sp.", and "not specified" indicate literature entries lacking species-level host identification; these were displayed for completeness but excluded from host-specificity ratio calculations in the text

or more hosts (median host range = 1; maximum = 12 for *Pseudobenedenia nototheniae* Johnston, 1931). Representative examples include single-host taxa such as *Gyrodactylus byrdi* Hargis & Dillon, 1968, *G. centronoti* Hargis & Dillon, 1968, *G. coriicepsi* Rokicka, Lumme & Ziętara, 2009, *G. nudifronsi* Rokicka, Lumme & Ziętara, 2009, and *G. rhigophilae* Hargis & Dillon, 1968; two-host taxa including *Allotetraonchoides rhigophilae* Dillon & Hargis, 1968, *G. antarcticus* Gusev, 1967, *G. australis* Gusev, 1966, *Pavlovskioides wilkesensis* Dillon & Hargis, 1968, and *Pseudobenedeniella branchialis* Timofeeva, Gaevskaja & Kovaliova, 1987; and multi-host taxa including *Pseudobenedenia nototheniae* (12 hosts), *Pavlovskioides trematomi* Dillon & Hargis, 1968 (5), *Pavlovskioides antarcticus* Bychowsky, Gussev & Nagibina, 1965 (4), *Pseudobenedenoides shorti* (Hargis & Dillon, 1968) Gibson, 1976 (4), *G. wilkesi* Hargis & Dillon, 1968 (3), *Neogrubea seriolellae* Dillon & Hargis, 1968 (3), *Neopavlovskioides dissostichi* Dillon & Hargis, 1968 (3), and *Neopavlovskioides georgianus* Kovaljova & Gaevskaja, 1977 (3). Genus-level parasite records (e.g., *Gyrodactylus* sp.) and host entries labelled "not specified" were tracked but excluded from these proportions (Fig. 2).

4 Discussion

The corrected analysis indicates that host specificity in Antarctic monogeneans is predominantly high. Due to the recent research (Rubtsova et al., 2024), *Pseudobenedenia nototheniae* is a complex species; it needs further detailed analysis taking into account the molecular identification of the host species. Re-auditing the tabular layout to prevent host misattribution (family headers, merged cells) reclassified several apparent generalists as single-host species – for example, *Pseudobenedeniella johnstoni* Rubtsova, Chaudhary, Glotov & Kuzmina, 2024, occurring only on *Notothenia coriiceps* Richardson, 1844. A smaller group, *P. nototheniae*, *Pavlovskioides trematomi*, *Pseudobenedenoides shorti*, retains broader host ranges. We interpret the long tail of multi-host records as a combination of genuinely broad host range in a few species and overestimation caused by uneven sampling among hosts and regions, historical lumping of cryptic forms, and morphology- only identifications. Removing genus-level hosts and "not specified" entries reduces, but does not eliminate, this effect. Standardised sampling across host clades, combined with DNA barcoding and phylogenomics, is required to determine whether the remaining broad-host species are truly generalist or represent unresolved species complexes.

To avoid confusion, we distinguish well-defined species descriptions from cases where host identity or locality information is incomplete or poorly documented. Several taxa are now well described on morphological grounds and supported by additional evidence, even if their hosts remain narrow and their geographic coverage is limited – for example, *Pseudobenedeniella johnstoni* on *N. coriiceps* in West Antarctica (Rubtsova et al., 2024), *P. coriicepsi* Rubtsova, Chaudhary, Salganskiy & Kuzmina, 2023 on *N. coriiceps* at Galindez Island, where SEM, EDX, and available molecular markers complemented the morphological diagnosis (Rubtsova et al., 2023), and the redescribed *P. lauriei* from *Notothenia neglecta* Nybelin, 1951 (Rubtsova & Marcotegui, 2024). By contrast, broader host ranges in the compiled literature are most evident for *P. nototheniae* (multiple hosts, multiple regions), *Pavlovskioides trematomi* (several *Trematomus* spp.; Ross Sea to Antarctic Peninsula), and *Pseudobenedenoides shorti* (multiple hosts including *Trematomus* spp. and *Lycodichthys dearborni* (DeWitt, 1962)), though these assessments still draw on sources of uneven diagnostic rigor (Dillon & Hargis, 1967; Hargis & Dillon, 1967; Rohde et al., 1995; Rokicka et al., 2009; Heglasová et al., 2020). Data-limited taxa, those represented by a single mention, narrow locality, or incomplete metadata, include *Pavlovskioides antarcticus* (single, incomplete record in our table), *Pavlovskioides meridianus* Bychowsky, Gussev & Nagibina, 1965, on *Pagothenia borchgrevinki* (Boulenger, 1902) at the Sabrina Coast, and *Macruricotyle claviceps* Mamaev & Lyadov, 1975 on *Macrourus carinatus* (Günther, 1878), all of which require new collections to evaluate range and host breadth (Bychowskii et al., 1967; Mamaev, 1976; Gibson, 1976). Comparable updates in *Gyrodactylus* on notothenioids illustrate how added evidence refines legacy identifications and host attributions (Heglasová et al., 2020).

Geographically, record density is highest on the Kerguelen Plateau and in the Ross Sea, with patterns consistent with sustained sampling and accessible shelf habitats. Coverage is patchy in the Amundsen and Bellingshausen seas, the interior Weddell Sea beyond Prince Gustav Channel, and portions of East Antarctica away from well-sampled nodes such as Prydz Bay – Davis and the Windmill/Casey Islands. Sampling within the Scotia Arc remains uneven among islands. A further limitation is incomplete metadata: many entries list only broad areas ("Antarctic Region," "Glacial Subregion") and or retain genus-level hosts (e.g., *Trematomus* sp., *Nototheniidae* gen. sp.) or "not specified" hosts, which constrains inference on host specificity and ranges. Spatially balanced surveys in the undersampled sectors, with georeferenced localities and species-level host names, will address these gaps.

Finally, methodological standards remain central to improving data quality. Because many monogeneans are host-specific and structurally fragile ectoparasites, fish should be dissected within the first 24 hours; improper fixation can introduce another level of challenges that could result in poor material unsuitable for proper descriptions and/or identification (Kvach et al., 2016). Such methodological limitations directly constrain our ability to infer broader ecological patterns, as incomplete or imprecise records hinder interpretation of host specificity, biogeography, and potential responses to environmental change. The Southern Ocean hosts a unique fish fauna, and monogeneans play an important ecological role. However, insufficient information on their diversity and taxonomy makes it difficult to assess their effects on fish populations and ecosystem functioning. Improved methodological consistency – especially rigorous fixation, vouchering procedures, and integration of molecular data – provides the foundation needed to link species-level data to wider ecological implications, including the use of parasites as indicators of environmental change. Long-term monitoring off the Antarctic and adjacent Southern Ocean shelves, combined with standardised protocols, is therefore essential for reducing uncertainty in diversity, host specificity, and biogeography (Heglasová et al., 2020; Rubtsova et al., 2023; Rubtsova & Marcotegui, 2024; Rubtsova et al., 2024).

Moving from observations to reproducible inferences on biogeography and host specificity will require coordinated surveys: (i) spatially balanced sampling across the main regions of the Southern Ocean, because many previous datasets were geographically restricted (e.g., from the least surveyed to date Amundsen and Bellingshausen Seas, the interior Weddell Sea beyond Prince Gustav Channel, and broad areas of East Antarctica away from established nodes); (ii) reporting precisely georeferenced localities and precisely identified host species to the lowest possible taxonomic level; (iii) use of standard fixation protocols and vouchering the obtained material that includes depositing it in renowned repositories that are accessible to the wider scientific community; and (iv) an integration of molecular data, including re-evaluation of legacy determinations. Urgent priorities on published data should consider verification of the taxonomic status of the taxa that appear to have broad host ranges (e.g., *P. nototheniae*, *Pavlovskioides trematomi*, *Pseudobenedenoides shorti*), and/or acquiring additional material for data-limited species (i.e., *Pavlovskioides antarcticus*, *P. meridianus*, *Macruricotyle claviceps*), and sampling across key host clades (e.g., *Trematomus*, *Notothenia*). Implementing such a framework will increase the reliability of the existing compilation, reduce uncertainty around host specificity and distribution, and provide a stronger foundation for future assessments of monogenean diversity in Southern Ocean fish communities.

5 Conclusions

This review highlights the substantial knowledge gap arising from inconsistent methodological standards in species descriptions. Current understanding of host ranges in Antarctic monogeneans is strongly influenced by how material was collected, fixed, and subsequently identified or described. The number of recognised species may be inflated when host records are imprecise, localities are not reported, or incomplete information leads to misattribution; revisiting earlier records has already resolved several putative multi-host taxa into single-host species. Overall, the prevailing pattern of narrow host ranges likely reflects not only genuine biological specialisation but also the application of rigorous research practices such as accurate georeferencing, reliable species-level host identification, and standardised fixation procedures. Strengthening these foundational practices will be essential for producing reproducible inferences on the taxonomy, host specificity, and biogeography of the class Monogenea across the Southern Ocean.

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vision, Y. K.; writing – original draft preparation, I. D.; review and editing, Y. K.

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Різноманіття і гостальна специфічність паразитів класу Monogenea у антарктичних риб: огляд

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Анотація. Ми зібрали та уніфікували опубліковані відомості про моногеней з антарктичних і субантарктичних риб: стандартизували назви хазяїв, здійснили геоприв'язку локалітетів, усунули дублікати записів і виключили неоднозначні випадки (хазяї, визначені лише до роду або не визначені) із розрахунків специфічності. Агреговано знахідки з 49 унікальних локалітетів, що охоплюють Дугу Скоша, Антарктичний півострів, Східну Антарктиду, море Росса та регіон Кергелен−Крозе−Герд−Маккуорі. Набір даних охоплює 31 вид (35 із урахуванням записів рівня роду), що представляють 11 родів у складі 7 родин і 2 підкласів, на підставі 46 публікацій; у підкласі Monopisthocotylea видове багатство було зосереджене в Capsalidae (10 видів), Gyrodactylidae (9) та Tetraonchoididae (8), тоді як у межах підкласу Polyopisthocotylea по одному виду зафіксовано в Mazocraeidae, Hexabothriidae та Diclidophoridae. Ми виокремили 29 таксонів видового рівня з однозначно встановленими хазяями; з них 15 (≈51.7%) виявлено у одного виду риб, 6 (≈20.7%) — у двох хазяїв і 8 (≈27.6%) — у трьох і більше (медіана — 1; максимум — 12 для *Pseudobenedenia nototheniae*). Просторовий розподіл записів був нерівномірним: найщільніші кластери припадають на плато Кергелен і море Росса, тоді як у багатьох інших регіонах записи поодинокі, що обмежує висновки щодо ареалів. Загалом наш аналіз надає вивірену базу даних про різноманіття, зв'язки з хазяями та регіональне охоплення моногеней Антарктики, окреслює прогалини, зумовлені недостатньо точно визначеними хазяями й локалітетами, та пропонує стандартизовані оцінки для подальших таксономічних і екологічних досліджень.

Ключові слова: Monogenea, Nototheniidae, Антарктида, морська паразитологія, основи біорізноманіття, паразит риби

APPENDIX

Table. List of Monogenea species recorded in fishes from the Antarctic waters

Parasite	Host	Sampling site	References
		Capsalidae	
Pseudobenedenia dissostichi Timofeeva, Gaevskaja & Kovaliova, 1987	*Dissostichus eleginoides* Smitt, 1898	Falkland Patagonia, South Georgia Island, Falkland Islands, Heard Island, Shag Rocks, Elephant Island	Timofeeva et al., 1987; Gaevskaya et al., 1990; Rohde et al., 1998; Brickle et al. (2005; 2006)
Pseudobenedenia coriicepsi Rubtsova, Chaudhary, Salganskiy & Kuzmina, 2023	*Notothenia coriiceps* Richardson, 1844	Galindez Island, Vernadsky Station	Rubtsova et al., 2023
Pseudobenedenia galindezensis Rubtsova, Chaudhary, Glotov & Kuzmina, 2026	*Notothenia coriiceps*	Galindez Island, Vernadsky Station	Rubtsova et al., 2026
Pseudobenedenia gibberifrons Timofeeva, Gaevskaja & Kovaliova, 1987	*Gobionotothen gibberifrons* (Lönnberg, 1905)	South Georgia Island, Elephant Island	Timofeeva et al., 1987
Pseudobenedenia lauriei Szidat, 1965	*Notothenia neglecta* Nybelin, 1951	Scotia Bay, Laurie Island, South Orkney Island, Petermann Island	Szidat (1965; 1969); Rubtsova & Marcotegui, 2024
Pseudobenedenia nototheniae Johnston, 1931	*Dissostichus eleginoides*	Crozet Islands, Lena Bank, Kerguelen Subregion Islands, Skiff Bank	Parukhin & Lyadov (1981; 1982); Parukhin, 1986
	Dissostichus mawsoni Norman, 1937	Paradise Bay	Oguz et al., 2012
	Gobionotothen gibberifrons	South Georgia Island	Parukhin & Lyadov, 1981
	Lepidonotothen squamifrons (Günther, 1880)	Lena Bank, Burwood Bank, Heard Island, Macquarie Island	Parukhin, 1986; Rohde et al., 1998
	Notothenia angustata Hutton, 1875	Antipodes Islands (Subantarctic Islands, New Zealand)	Johnston, 1931
	Notothenia coriiceps	Signy Island, Orkney Islands, Potter Cove (King George Island), King George Island, Admiralty Bay, Vernadsky Station, South Orkney Islands, Arthur Harbor, Anvers Island	Palm et al., 1998; Zdzitowiecki & Laskowski, 2004; Kuzmina et al., 2022
	Notothenia microlepidota Hutton, 1875	Antipodes Island (Subantarctic Islands, New Zealand), Auckland Island, Arthur Harbor, Anvers Island	Johnston, 1931; Hargis & Dillon, 1968; Suydam, 1972
	Notothenia neglecta	South Shetland Islands, Scotia Bay, Laurie Island, South Orkney Islands	Szidat (1965; 1967; 1969); Zdzitowiecki & Laskowski, 2004; Rubtsova et al., 2023

Continuation of Table

Parasite	Host	Sampling site	References
	Notothenia rossii Richardson, 1844	Kerguelen Subregion, Heard Island, Crozet Island, Skiff Bank, Borge Bay, Signy Island, Lena Bank, South Orkney Island, Arthur Harbor, Anvers Island, South Shetland Islands	Hargis & Dillon, 1968; Suydam, 1972, Hoogester & White, 1981; Parukhin & Lyadov (1981; 1982); Lutnicka & Zdzitowiecki, 1984; Lyadov, 1985; Parukhin, 1986; Kuzmina et al., 2022
	Patagonotothen ramsayi (Regan, 1913)	Falkland Islands	Parukhin & Lyadov, 1981
	Paranotothenia magellanica (Forster, 1801)	Antipodes Island (Subantarctic Islands, New Zealand), Macquarie Island	Johnston, 1931; Hargis & Dillon, 1968
	Trematomus bernacchii Boulenger, 1902	McMurdo Sound	Hargis & Dillon, 1968
	Nototheniidae gen. sp.	Patagonian Shelf, Glacial Subregion, Kerguelen Subregion, South Australia	Parukhin & Lyadov, 1982; Lyadov, 1985
***Pseudobenedenia* sp.**	*Pagothenia borchgrevinki* (Boulenger, 1902)	McMurdo Sound	Hargis & Dillon, 1968
Pseudobenedeniella branchialis Timofeeva, Gaevskaja & Kovaliova (1987)	*Dissostichus eleginoides*	South Georgia Island, Elephant Island	Timofeeva et al., 1987; Gaevskaya et al., 1990
	Notothenia rossii	South Georgia Island, Elephant Island	Timofeeva et al., 1987
Pseudobenedeniella johnstoni Rubtsova, Chaudhary, Glotov & Kuzmina, 2024	*Notothenia coriiceps*	Galindez Island, Vernadsky Station	Rubtsova et al., 2024
Pseudobenedenoides antarctica Kovaliova & Gaevskaya, 1977	*Lepidonotothen squamifrons*	Antarctic Region, South Georgia Island, Burwood Bank	Kovaljova & Gaevskaya, 1977; Rodjuk, 1985
	Nototheniidae gen. sp.	Glacial subregion	Lyadov, 1985
Pseudobenedenoides shorti (Hargis & Dillon, 1968) Gibson, 1976	*Lycodichthys dearborni* (DeWitt, 1962)	McMurdo Sound	Hargis & Dillon, 1968
	Trematomus bernacchii	Casey Station, Auckland, McMurdo Sound, Windmill Island	Szidat, 1969; Moser & Cowen, 1991; Rohde et al. (1995; 1998)
	Trematomus hansoni Boulenger, 1902	Casey Station, McMurdo Sound, Windmill Island	Rohde et al. (1995; 1998)
	Trematomus pennellii Regan, 1914	McMurdo Sound, Windmill Islands	Hargis & Dillon, 1968
	Trematomus sp.	Casey Station, Kerguelen subregion	Hargis & Dillon, 1968; Lyadov, 1985
Diclidophoridae			
Macruricotyle claviceps Mamaev & Lyadov, 1975	*Macrourus carinatus* (Günther, 1878)	Falkland Islands	Gaevskaja & Rodjuk, 1988

Continuation of Table

Parasite	Host	Sampling site	References
	Macrourus sp.	not specified	Mamaev, 1976
	not specified	Kerguelen Subregion	Lyadov, 1985
Diclidophoridae gen. sp.	*Macrourus holotrachys* Günther, 1878	Heard Island	Rohde et al., 1998
Acanthocotylidae			
***Acanthocotyle* sp.**	not specified	Kerguelen Subregion	Lyadov, 1985
Gyrodactylidae			
Gyrodactylus antarcticus Gusev, 1967	*Trematomus bernacchii*	Prince Gustav Channel (Weddell Sea)	Heglasová et al., 2020
	Trematomus newnesi Boulenger, 1902	Davis Sea (Eastern Antarctic)	Gusev, 1967
Gyrodactylus australis Gusev, 1966	*Trematomus eulepidotus* Regan, 1914	Lars Christensen Coast and Princess Ragnhild Coast	Gusev, 1967
	Trematomus scotti (Boulenger, 1907)	Princess Elizabeth Land	Gusev, 1967
Gyrodactylus byrdi Hargis & Dillon, 1968	*Trematomus newnesi*	Windmill Island, Prince Gustav Channel (Weddell Sea)	Hargis & Dillon 1967; Heglasová et al., 2020
Gyrodactylus centronoti Hargis & Dillon, 1968	*Trematomus pennellii*	McMurdo Sound	Hargis & Dillon, 1967
Gyrodactylus coriicepsi Rokicka, Lumme & Ziętara, 2009	*Notothenia coriiceps*	Admiralty Bay (King George Island, South Georgia Island, Arthur Harbor, Anvers Island, Prince Gustav Channel (Weddell Sea)	Suydam,1972; Rokicka et al., 2009; Heglasová et al., 2020
Gyrodactylus nudifronsi Rokicka, Lumme & Ziętara, 2009	*Lindbergichthys nudifrons* (Lönnberg, 1905)	Admiralty Bay (King George Island, South Georgia Island), Arthur Harbor, Anvers Island	Rokicka et al., 2009; Suydam, 1972
Gyrodactylus rhigophilae Hargis & Dillon, 1968	*Lycodichthys dearborni*	McMurdo Sound	Hargis & Dillon, 1967
Gyrodactylus trematomi Hargis & Dillon, 1968	*Trematomus newnesi*	Windmill Island	Hargis & Dillon, 1967
Gyrodactylus wilkesi Hargis & Dillon, 1968	*Trematomus bernacchii*	McMurdo Sound, Windmill Island, Prince Gustav Channel (Weddell Sea)	Hargis & Dillon, 1967; Heglasová et al., 2020
	Trematomus hansoni	McMurdo Sound, Prince Gustav Channel (Weddell Sea)	Hargis & Dillon, 1967; Heglasová et al., 2020
	Trematomus newnesi	Prince Gustav Channel (Weddell Sea)	Heglasová et al., 2020
***Gyrodactylus* sp.**	*Lepidonotothen squamifrons*	Heard Island, Macquarie Island, Prydz Bay	Rohde et al., 1998
	Lindbergichthys mizops (Günther, 1880)	Heard Island, Antarctic Region	Rohde et al., 1998
	Lindbergichthys nudifrons	Admiralty Bay, South Shetland Islands	Rokicka et al., 2009

Continuation of Table

Parasite	Host	Sampling site	References
	Notothenia coriiceps	Admiralty Bay, South Shetland Islands	Rokicka et al., 2009
	Trematomus eulepidotus	Prydz Bay, Davis Station	Rohde et al., 1998
Gyrodactylidae gen. sp.	*Trematomus eulepidotus*	Prydz Bay, Davis Station	Rohde et al., 1995
	Lepidonotothen squamifrons	Macquarie Island, Heard Island	Rohde et al., 1995
Hexabothriidae			
***Rajonchocotyle* sp.**	not specified	Kerguelen Subregion	Lyadov, 1985
Mazocraeidae			
Neogrubea seriolellae Dillon & Hargis, 1968	*Seriolella brama* (Günther, 1860)	Akaroa Harbour (Canterbury, South Island, New Zealand)	Dillon & Hargis, 1968
	Seriolella porosa Guichenot, 1848	Cape Campbell (Marlborough, South Island, New Zealand), Argentinean coast: north and central Patagonia	Dillon & Hargis, 1968; Hernández-Orts et al., 2014
	Stromateus brasiliensis Fowler, 1906	Patagonian shelf, Argentinean coast: north and central Patagonia	Evdokimova, 1969; Gibson, 1976; Hernández-Orts et al., 2014
	not specified	Glacial Subregion	Lyadov, 1985
Tetraonchoididae			
Allotetraonchoides rhigophilae Hargis & Dillon, 1968	*Lycodichthys antarcticus* Pappenheim, 1911	Windmill Island	Dillon & Hargis, 1967
	Lycodichthys dearborni	McMurdo Sounds, Windmill Island	Dillon & Hargis, 1967
Neopavlovskioides dissostichi Dillon & Hargis, 1968	*Dissostichus eleginoides*	Kerguelen Subregion, Crozet Islands, Burwood Bank, Heard Island, Lena Bank, Shag Rocks, Heard Island, McMurdo Sound	Parukhin & Lyadov (1981; 1982); Parukhin, 1986; Rohde et al., 1998; Dillon & Hargis, 1967
	Dissostichus mawsoni	McMurdo Sound	Dillon & Hargis, 1967
	Nototheniidae gen. sp.	Kerguelen Subregion	Parukhin & Lyadov, 1982; Lyadov, 1985
Neopavlovskioides georgianus Kovaljova & Gaevskaja, 1977	*Dissostichus eleginoides*	Antarctic Region, Falkland Patagonia, South Georgia Island, Shag Rocks, Prince Edward Island, Heard Island, Macquarie Island, Ross Sea, Falkland Islands	Kovaljova & Gaevskaya, 1977; Gaevskaya et al., 1990; Brickle et al., 2005
	Dissostichus mawsoni	South Shetland Island	Rodjuk, 1985
	Nototheniidae gen. sp.	Glacial Subregion	Lyadov, 1985
Pavlovskioides antarcticus Bychowsky, Gussev & Nagibina, 1965	*Lindbergichthys nudifrons*	Arthur Harbor, Anvers Island	Suydam, 1972

End of Table

Parasite	Host	Sampling site	References
	Pagothenia borchgrevinki	McMurdo Sound	Dillon & Hargis, 1967
	Trematomus bernacchii	Davis Sea, Casey Station, Arthur Harbor, Anvers Island, McMurdo Sound, Windmill Island	Bychowskii et al.,1967; Dillon & Hargis, 1967; Suydam, 1972; Rohde et al. (1995; 1998)
	Trematomus pennellii	McMurdo Sound, Windmill Island	Dillon & Hargis, 1967
Pavlovskioides meridianus Bychowsky, Gussev & Nagibina, 1965	*Pagothenia borchgrevinki*	Sabrina Coast (East Antarctic)	Bychowskii et al., 1967
Pavlovskioides prudhoei Gibson, 1976	*Trematomus scotti*	not specified	Gibson, 1976
	Nototheniidae gen. sp.	Glacial Subregion	Lyadov, 1985
Pavlovskioides trematomi Dillon & Hargis, 1968	*Trematomus bernacchii*	Ross Sea, NW Wylie Bay at Anvers Island, McMurdo Sound, Windmill Island	Boulenger, 1902; Dillon & Hargis, 1967; Suydam, 1972
	Trematomus hansoni	Ross Sea, NW Wylie Bay at Anvers Island, McMurdo Sound, Windmill Island	Boulenger, 1902; Suydam, 1972; Dillon & Hargis, 1967
	Trematomus lepidorhinus (Pappenheim, 1911)	Wylie Bay at Anvers Island, McMurdo Sound	Dillon & Hargis, 1967; Suydam, 1972
	Trematomus loennbergii Regan, 1913	Prydz Bay	Rohde et al., 1998
	Trematomus pennellii	NW Wylie Bay at Anvers Island, McMurdo Sound	Regan, 1914; Suydam, 1972; Dillon & Hargis, 1967
Pavlovskioides wilkesensis Dillon & Hargis, 1968	*Trematomus bernacchii*	McMurdo Sound, Windmill Islands	Dillon & Hargis, 1967
	Trematomus hansoni	McMurdo Sound, Windmill Islands	Dillon & Hargis, 1967