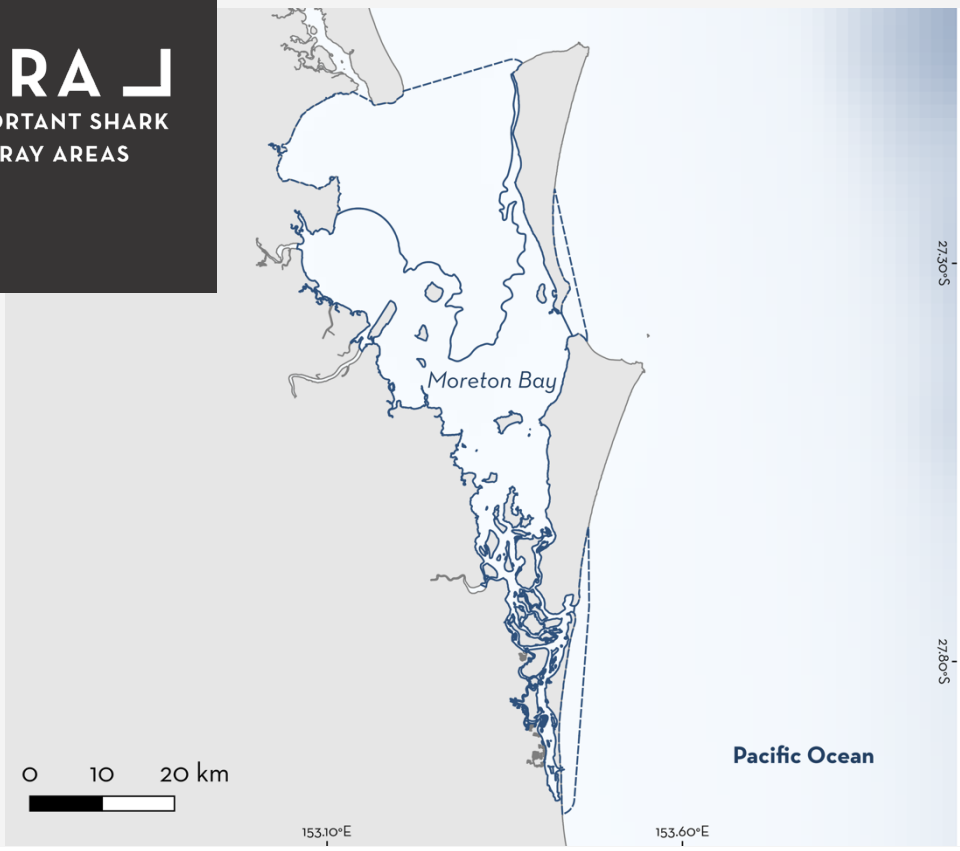
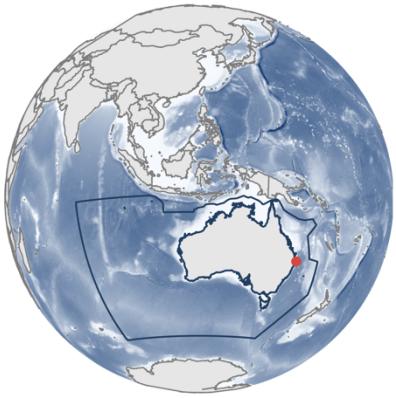
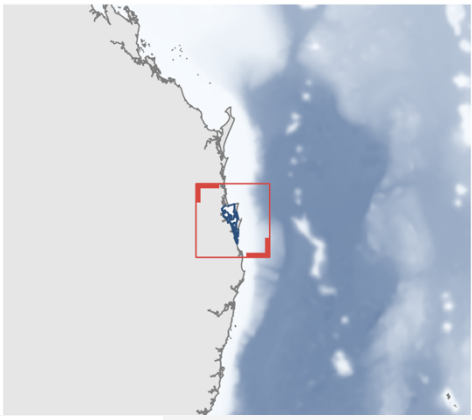
ISRA
IMPORTANT SHARK AND RAY AREAS







Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

MORETON BAY ISRA

Australia and Southeast Indian Ocean Region

AUSTRALIA

0–18 metres

871.1 km²

SUMMARY

Moreton Bay is located in southeast Queensland, Australia. The area comprises a range of shallow marine and estuarine habitats including extensive tidal mud flats, sandy channels, seagrass meadows, mangroves, and islands. These habitats form a productive hydrodynamic environment with strong tidal currents. The area overlaps with Moreton Bay Marine Park, Moreton Bay Ramsar Site, and Moreton Bay and Pumicestone Passage Key Biodiversity Area. Within this area there are: **threatened species** (e.g., Pink Whipray *Pateobatis fai*); **range-restricted species** (e.g., Eastern Shovelnose Ray *Aptychotrema rostrata*); **reproductive areas** (e.g., Estuary Stingray *Hemitrygon fluviorum*); **feeding areas** (e.g., Coral Sea Maskray *Neotrygon trigonoides*); and **undefined aggregations** (e.g., Bottlenose Wedgefish *Rhynchobatus australiae*).

CRITERIA

Criterion A – Vulnerability; Criterion B – Range Restricted;
Sub-criterion C1 – Reproductive Areas; Sub-criterion C2 – Feeding Areas;
Sub-criterion C5 – Undefined Aggregations

DESCRIPTION OF HABITAT

Moreton Bay is located in southeast Queensland, Australia. The area comprises a range of shallow marine and estuarine habitats including extensive tidal mud flats, sandy channels, seagrass meadows, mangroves, and islands (Tibbetts et al. 2019). These habitats form a productive hydrodynamic environment. Productive sediments in the area support abundant populations of soldier crabs, bivalves, and polychaete worms (Tibbetts et al. 2019).

The eastern region of Moreton Bay encompasses western Moreton Island and western North Stradbroke Island, and represents a diverse mosaic of coastal and marine habitats shaped by oceanic swells, tidal currents, and extensive shallow bank systems creating highly productive waters (Tibbetts et al. 2019). There are extensive seagrass meadows, mangrove-fringed creeks, rocky points, and sheltered bays. Moreton Banks and Amity Banks form extensive shallow flats with gentle gradients, intersected by deeper tidal channels (Tibbetts et al. 2019). Shallow sheltered waters include Wanga Wallen Banks, Myora, Dunwich, and One Mile Beach.

Hays Inlet is located in the northwestern reaches of the area. It is a dynamic estuarine ecosystem characterised by extensive intertidal mudflats, mangrove forests, and shallow subtidal waters that create a rich mosaic of interconnected habitats (Pierce et al. 2011). The inlet is dominated by dense mangrove communities which fringe the shoreline and tidal creeks, providing critical nursery grounds for juvenile fish, crustaceans, and molluscs while stabilising sediments and filtering nutrients from terrestrial runoff (Pierce et al. 2009). The shallow, turbid waters are influenced by semi-diurnal tidal flows and freshwater inputs from Hays Inlet Creek, creating brackish conditions that support patchy seagrass meadows (Tibbetts et al. 2019).

Wynnum Banks, an extensive shallow water area located in the western section of Moreton Bay adjacent to the suburban waterfront of Wynnum and Manly, is a highly productive intertidal and subtidal zone characterised by vast expanses of sandy and muddy substrate interspersed with seagrass meadows, algal communities, and patches of reef that create essential habitat for a diverse array of marine life (Pardo et al. 2015). The central part of Moreton Bay is characterised by various islands interspersed with sandy and muddy substrates. Islands include Peel Island and the cluster of small continental islands comprising St Helena, Mud, and Green islands, located in the western reaches south of the Brisbane River (Tibbetts et al. 2019).

The Gold Coast Seaway lies in the south of the area and is comprised of a strategic artificial ocean entrance located between South Stradbroke Island and The Spit (Dunn et al. 2014). It is a heavily engineered tidal inlet that connects the vast network of estuarine waterways including the Broadwater, Nerang River, and Coomera River systems with the Pacific Ocean, creating a dynamic transition zone where freshwater and marine environments converge (Dunn et al. 2014; Tibbetts et al. 2019). The strong tidal currents that surge through the relatively narrow entrance, exchanging water volumes twice daily sustain highly productive marine habitats characterised by turbulent mixing zones where nutrients concentrate (Dunn et al. 2014).

The area overlaps with Moreton Bay Marine Park (Queensland Government 2019), Moreton Bay Ramsar Site (Wetland of International Importance: Ramsar 2025), and the Moreton Bay and Pumicestone Passage Key Biodiversity Area (KBA 2025).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 18 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Seven Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. Threatened sharks comprise one Vulnerable species; threatened rays comprise two Critically Endangered species, one Endangered species, and three Vulnerable species (IUCN 2025).

CRITERION B – RANGE RESTRICTED

Moreton Bay holds the regular presence of Colclough's Shark and Eastern Shovelnose Ray as resident range-restricted species.

Between 2002–2006, 56% of Colclough's Shark records (n = 28) from across the geographic range of the species were from Moreton Bay (Kyne et al. 2011). This study collated records from museum specimens, incidental catch of commercial fisheries, and scientific literature. This is a cryptic species, so observations are infrequent and it is generally underreported. Between 2007–2022, an additional 11 observations were recorded in the Atlas of Living Australia (ALA) within this area (the most recent in October 2022; ALA 2025), with only 55 ALA records of this species from across its distribution. Despite being a cryptic species with a restricted distribution, Colclough's Shark is more common in Moreton Bay than adjacent areas. Colclough's Shark is restricted to the East Central Australian Shelf Large Marine Ecosystem (LME) and the Northeast Australian Shelf LME.

Eastern Shovelnose Rays have been regularly recorded in the area between 1999–2025 (Kyne & Bennett 2002; Taylor 2008; Pierce et al. 2011; Hyde et al. 2026). Between 1999–2001, 101 specimens were collected by scientific fishing (angling) and from incidental catch in commercial fisheries (Kyne & Bennett 2002). Gravid females were observed in August and November, and post-partum females in November and December (Kyne & Bennett 2002). Both adults and juveniles (n = 21) were caught in shark and ray fishing surveys between 2002–2005 at Wanga Wallen Banks, Myora, and Dunwich within the area (Pierce et al. 2011). Between 2005–2007, 54 Eastern Shovelnose Rays were reported in the gillnet fishery observer program from the area (Taylor 2008). Between 2017–2020, 73 Eastern Shovelnose Rays were observed during eight underwater visual census (UVC) surveys in the area, with 10 of the observations comprising small size classes (<50 cm total length; TL) (Hyde et al. 2026), supporting their continued residency in the area. Citizen science submissions on the iNaturalist platform between 2015–2025 confirm Moreton Bay as the main hotspot of sightings of this species, with 16 of the 27 observations (59.3%) in southeast Queensland originating from this area (iNaturalist 2025). Eastern Shovelnose Rays are restricted primarily to the East Central Australian Shelf LME and marginally into the Northeast Australian Shelf and Southeast Australian Shelf LMEs.

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Moreton Bay is an important reproductive area for three ray species.

Historic and contemporary data support Spotted Eagle Rays using the area for reproduction. In January 2005, two Spotted Eagle Rays were observed in courtship behaviour for 15 minutes prior to capture (Pierce et al. 2011). Between 2005–2007, 73 Spotted Eagle Rays were caught in gillnets or longlines by local fishers or field sampling, or collected from fish markets, with 11 classified as neonates (15.1%) based on the presence of open umbilical scars (Schluessel et al. 2010). Citizen science submissions (n = 13) to iNaturalist between 2015–2025 support the species' contemporary

use of the area (iNaturalist 2025), noting that this platform does not provide information on reproductive characteristics of rays. Between 2017–2020, 57 Spotted Eagle Rays were recorded during six UVC surveys in the area (Hyde et al. 2026). Fourteen of the observations (24.6%) were of rays classified as neonate or young-of-the-year (YOY) (neonate, n = 11, <40 cm disc width [DW]; YOY, n = 3, 40–70 cm DW). Size-at-birth for this species is variable between 18–50 cm DW (Last et al. 2016). The combined observations of courtship, neonates, and YOY in this area support its importance for reproduction.

Both neonate and juvenile Giant Guitarfish (n = 23) were caught in shark and ray fishing surveys between 2002–2005 at Wanga Wallen Banks and One Mile within the area (Pierce et al. 2011). Reported size-at-birth for the species is 38–40 cm TL (Last et al. 2016) and any rays <50 cm TL are classified as neonate/YOY. Captured rays ranged between 39–87 cm TL and were classified as immature, as size-at-maturity is 150–180 cm TL (Last et al. 2016). Neonates (<40 cm TL) were observed in March and May, indicating parturition likely occurs at intertidal mangrove and sand/mud flat areas in the eastern bay for this species (Pierce et al. 2011). Citizen science submissions (n = 43) to iNaturalist between 2013–2025 support the species' contemporary use of the area (iNaturalist 2025), noting that this platform does not provide information on reproductive characteristics of rays. Between 2014–2020, 150 Giant Guitarfish were recorded during 12 UVC surveys in the area (Hyde et al. 2026). Sixteen of the 21 observations (76.2%) where size was estimated were of rays classified as neonates (n = 5, <50 cm TL) or juveniles (n = 11, 50–150 cm TL), supporting the contemporary importance of this area for early life-stages.

Estuary Stingrays comprised one of the most regularly caught species in shark and ray fishing surveys conducted in the area between 2002–2006 (n = 139, 22% of total catch; Pierce et al. 2011). Individuals ranged in size between 15.5–76.2 cm DW. Size-at-birth for this species is ~11 cm DW (Last et al. 2016). Six (4.3%) of the rays were classed as neonates or YOY (<25 cm DW), and all were caught in the northwest of the area at Hays Inlet (Pierce et al. 2011). The apparent low catch of neonates in this study may be due to gear selectivity. In addition, uterine eggs were detected in five females caught in March 2005. In July 2003, nocturnal courtship was observed between a male and female at One Mile Beach in the east of the area (Pierce et al. 2011). Citizen science submissions (n = 33) to iNaturalist between 2013–2025 support the species' contemporary use of the area (iNaturalist 2025), noting that this platform does not provide information on reproductive characteristics of rays. Between 2014–2020, 226 Estuary Stingrays were recorded during 18 UVC surveys in the area (Hyde et al. 2026). Twenty-two of the 75 observations (29.3%) where size was estimated were of rays classified as neonates (n = 8, <25 cm DW) or juveniles (n = 14, 25–40 cm DW), supporting the contemporary importance of this area for young age classes.

SUB-CRITERION C2 – FEEDING AREAS

Moreton Bay is an important feeding area for two ray species.

Between 2010–2023, an analysis of stingray feeding pit density in Moreton Bay using aerial survey data found moderate to high densities of feeding pits along the northwestern and eastern sides of the bay indicating that these sites are important feeding habitat for rays (Giaroli et al. 2024). It was found that the patterns of higher density of stingray feeding pits along mangrove-backed shorelines are due to the combined effects of higher food availability, shelter, and wave abatement near mangroves resulting in stingrays prioritising feeding in these areas (Giaroli et al. 2024). The most common ray species observed on the intertidal sandflats of Moreton Bay are the Estuary Stingray (22.2%) and Coral Sea Maskray (53.8%), likely due to the foraging environment this habitat provides (Pierce et al. 2011).

Estuary Stingrays regularly and predictably feed in the area. Specimens of the Estuary Stingray were collected as incidental catch from commercial tunnel-netting operations at Wynnum Banks in the area between February and March 2006 and January to April 2012 (Pardo et al. 2015). The stomach contents of 20 Estuary Stingrays were investigated (n = 16 from 2006, n = 4 from 2012) and found that this species favoured brachyuran crabs (52.6% index of relative importance; IRI), which were found moderately frequently (38.5%) in the prey assemblage at Wynnum Banks. Between 2014–2020, 226 Estuary Stingrays were recorded during 18 UVC surveys in the area (Hyde et al. 2026). Between 2017–2020, 53 individuals were recorded actively foraging in the intertidal sand and mangrove habitats of Crab Island, Moreton Banks, and Wanga Wallen Banks during UVC surveys (Hyde et al. 2026). In August 2024, up to 10 individuals were observed feeding in intertidal zones at Wanga Wallen Banks and Myora within the area (CA Hyde pers. obs. 2025), confirming their contemporary use of this area for feeding. Moreton Bay is the only known area in southeast Queensland where this species is observed feeding in high numbers.

Coral Sea Maskrays regularly and predictably feed in Moreton Bay. Specimens of Coral Sea Maskrays were collected as incidental catch from commercial tunnel-netting operations at Wynnum Banks in the area between February and March 2006 and January to April 2012 (Pardo et al. 2015). The stomach contents of 78 Coral Sea Maskrays were investigated (n = 66 from 2006, n = 12 from 2012) and found that this species favoured polychaetes (90% IRI), which were the most common and abundant group in the prey assemblage at Wynnum Banks. Between March and November 2016, experimental surveys of Coral Sea Maskray feeding pits were conducted in Dunwich, in the eastern part of the area (Beckman 2017). Surveys took place at Bradbury's Beach, a relatively sheltered intertidal zone surrounded by seagrass beds and comprising mud and sand habitats which support many infaunal and epifaunal invertebrates that are common prey items for foraging rays. Fifty-two feeding pits were intermittently monitored over six months, with 13 Coral Sea Maskrays observed actively feeding within the survey zone (Beckman 2017). Between 2014–2020, 116 Coral Sea Maskrays were recorded during 12 UVC surveys in the area (CA Hyde unpubl. data 2025). Behavioural observations confirmed active foraging and feeding pits for 40 Coral Sea Maskrays between 2017–2020 at Crab Island, Wanga Wallen Banks, and Myora within the area (CA Hyde unpubl. data 2025). Moreton Bay is the only known area in southeast Queensland where this species is observed feeding in high numbers.

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

Moreton Bay is an important area for undefined aggregations of four ray species.

Broad Cowtail Rays are regularly observed aggregating in the area. Between 2017–2020, 315 Broad Cowtail Rays were recorded during eight UVC surveys in the area (Hyde et al. 2026). All observations were of rays resting on the sandy benthos off Crab Island in the east of the area (CA Hyde pers. obs. 2025). Observations ranged between 2–81 individuals, with a mean of 39.4 rays. There is a seasonal element to this species aggregating in the area, with very large aggregations observed in October of 2019 and 2020 (n >160 and n >200, respectively – with these observations not included in the formal surveys), when the rays remained resting at the site for ~3 weeks before dispersing (Hyde et al. 2026). Anecdotal observations in 2023 and 2024 indicate this aggregation occurs annually at Crab Island, however, no formal surveys were conducted in those years (CA Hyde pers. obs. 2025).

Pink Whiprays are regularly observed aggregating in Moreton Bay. Between 2014–2020, 343 Pink Whiprays were recorded during 10 UVC surveys in the area (Hyde et al. 2026). All observations were of rays resting on the sandy benthos off Crab Island in the east of the area (CA Hyde pers. obs. 2025). Observations ranged between 1–86 individuals, with a mean of 34.3 rays. There is a seasonal element to this species aggregating in the area, with very large aggregations observed in October of

2019 and 2020 (n = 143 and n >100, respectively – with these observations not included in the formal surveys), when the rays remained resting at the site for ~3 weeks before dispersing (Hyde et al. 2026). In addition to observations at Crab Island, Pink Whiprays are also observed resting in the Gold Coast Seaway in the south of the area. Social media accounts (e.g., Diving the Seaway and Nigel Marsh Photography) also demonstrate aggregations of Pink Whiprays in the area.

Australian Cownose Rays are regularly reported from the Gold Coast Seaway part of the area (Hyde et al. 2026). Observational records from social media posts between 2014–2022 confirm consistent large aggregations in the area (Facebook 2025a). Group sizes range between 30–400 individuals. For example, aggregations of over 30 individuals were documented in May, June, and July 2014 (n = 3); August 2015 (n = 1); May 2017 (n = 1); May 2018 (n = 1); June 2019 (n = 1); May, September, and October 2020 (n = 7); and September 2022 (n = 1; Facebook 2025a). Without consistent survey effort in the area, it is difficult to determine seasonality, however, all records are between May and October coinciding with winter and cooler waters in the area.

Bottlenose Wedgefish are regularly observed in the Gold Coast Seaway part of the area (Hyde et al. 2026). Observational records from social media posts between 2014–2022 confirm consistent large aggregations in the area (Facebook 2025b). Group sizes range between 2–7 individuals. For example, aggregations of over three individuals were documented in April 2016 (n = 1), May 2018 (n = 1), June 2019 (n = 1), and May and June 2020 (n = 2; Facebook 2025b). Without consistent survey effort in the area, it is difficult to determine seasonality, however, all records are between April and June suggesting there is a seasonal component to their aggregation here coinciding with cooler winter months.

More information is needed to understand the nature and function of these aggregations.

Acknowledgments

Ciaran A Hyde (University of the Sunshine Coast) and Asia O Armstrong (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2025 ISRA Region 08 – Australia and Southeast Indian Ocean workshop for their contributions to this process.

We acknowledge the Traditional Owners of Country throughout Australia and recognise the continuing connection to land, waters, and culture. We pay our respects to Elders past, present, and emerging.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

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Suggested citation

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QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
Brachaelurus colcloughi	Colclough's Shark	VU	4–217	X	X							
RAYS												
Aetobatus ocellatus	Spotted Eagle Ray	EN	0–40	X		X						
Aptychotrema rostrata	Eastern Shovelnose Ray	LC	0–220		X							
Glaucostegus typus	Giant Guitarfish	CR	0–100	X		X						
Hemitrygon fluviorum	Estuary Stingray	VU	0–28	X		X	X					
Neotrygon trigonoides	Coral Sea Maskray	LC	0–170				X					
Pastinachus ater	Broad Cowtail Ray	VU	0–60	X						X		
Pateobatis fai	Pink Whipray	VU	0–200	X						X		
Rhinoptera neglecta	Australian Cownose Ray	DD	0–50							X		
Rhynchobatus australiae	Bottlenose Wedgefish	CR	0–100	X						X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Carcharhinus amboinensis	Pigeye Shark	VU
Carcharhinus brevipinna	Spinner Shark	VU
Carcharhinus cautus	Nervous Shark	LC
Carcharhinus leucas	Bull Shark	VU
Carcharhinus limbatus	Blacktip Shark	VU
Carcharhinus obscurus	Dusky Shark	EN
Carcharhinus sorrah	Spottail Shark	NT
Chiloscyllium punctatum	Grey Carpetshark	NT
Hemigaleus australiensis	Australian Weasel Shark	LC
Hemipristis elongata	Snaggletooth Shark	EN
Orectolobus maculatus	Spotted Wobbegong	LC
Orectolobus ornatus	Ornate Wobbegong	LC
Rhizoprionodon taylori	Australian Sharpnose Shark	LC
Sphyrna lewini	Scalloped Hammerhead	CR
RAYS		
Himantura australis	Australian Whipray	LC
Maculabatis toshi	Brown Whipray	LC
Trygonoptera testacea	Common Stingaree	LC

IUCN Red List of Threatened Species Categories are available by searching species names at www.iucnredlist.org Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.

There are additional indications that this area may be important for reproduction for nine shark and one ray species.

Historical records (2004–2011) from multiple studies confirm neonate and YOY Pigeye Sharks (n = 3 of 69), Spinner Sharks (n = 2 of 130), Nervous Sharks (n = 7 of 40), Bull Sharks (n = 19 of 41), Blacktip Sharks (n = 55 of 252 and n = 136 of 171), Dusky Sharks (n = 5 of 131), and Scalloped Hammerheads (n = 10 of 50) in the area (Taylor 2008; Werry et al. 2011; Harry et al. 2019). In addition, pregnant Australian Weasel Sharks (n = 17 of 139 females) and Australian Sharpnose Sharks (n = 72 of 251) were recorded in the area between 2004–2007 (Taylor 2008). More information is needed to confirm the contemporary use of the area for reproduction for these species.

Coral Sea Maskrays comprised the most common species in shark and ray fishing surveys conducted between 2002–2006 (n = 317, 53.8% of total catch; Pierce et al. 2009, 2011). Rays ranged in size from 11.5–46.5 cm DW. Size-at-birth for the species is 11.5–17.0 cm DW (Pierce et al. 2009), meaning at least some were classified as neonate or YOY (a breakdown of numbers is not available) and parturition likely occurs in Moreton Bay. Catches of Coral Sea Maskrays were highest in the western bay, and this coincided with higher proportions of immature rays (Pierce et al. 2011). Neonate Coral Sea Maskrays (n = 5) were caught between February and September at Hays Inlet, One Mile Bay, and Wynnum Banks, with internal yolk sacs noted in individuals ranging 16.1–19.0 cm DW (Pierce et al. 2009). Pregnant females (n = 9) were captured at Hays Inlet, One Mile Bay, and Adams Beach from October to March (Pierce et al. 2009). Between 2014–2020, 116 Coral Sea Maskrays were recorded during 12 UVC surveys in the area (Hyde et al. 2026). Six of the 46 observations (13%) where size was estimated were of rays classified as neonates or YOY (<20 cm DW), suggesting this area may be important for small size classes of this species, however, more information is required to confirm the importance of the area for reproduction.

There are additional indications that this area may be important for feeding for one ray species.

Specimens of Brown Whiprays were collected as incidental catch from commercial tunnel-netting operations at Wynnum Banks in the area between February and March 2006 and January to April 2012 (Pardo et al. 2015). The stomach contents of 18 Brown Whiprays were investigated (n = 14 from 2006, n = 4 from 2012), and found this species preferred carid shrimp (65.2% IRI) found in the area. Contemporary observations and information from adjacent areas is required to confirm the importance of this area for feeding in this species.

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