

= North Island ( Houtman Abrolhos ) =

North Island is the northernmost island in the Houtman Abrolhos , a coral reef archipelago in the Indian Ocean off the coast of Mid West Western Australia . Located about 14 km ( 9 mi ) from the nearest island group , it is one of the largest islands in the Houtman Abrolhos , and one of the few to support dune systems . It has relatively diverse flora dominated by chenopod shrubs and fauna that includes the introduced tammar wallaby , around seven species of reptile , and about 15 resident bird species .

First recorded and surveyed in 1840 , North Island has been a seasonal camp for western rock lobster fishermen since the beginning of the 20th century , and this remains the principal focus of human activity on the island . There is also a small amount of tourism , though for the most part it is reserved as conservation habitat for vegetation communities and rare birds .

= = History = =

= = = Discovery = = =

The earliest recorded sighting of North Island occurred in May 1840 , during the third survey voyage of HMS Beagle , commanded by John Clements Wickham . It was sighted from the peak of Flag Hill on East Wallabi Island in early May , explored on 22 May , and given its name due to " its relative position to the remainder of Houtman 's Abrolhos " . Before he left the island , Wickham left a letter in a bottle atop the highest hill , which he accordingly christened Record Hill .

A map of the island first appeared in 1845 on a British Admiralty chart entitled " The Houtman Rocks " . The following year , Wickham 's lieutenant , John Lort Stokes , published the first account of the island in his Discoveries in Australia . He observed :

" The island was about a mile across , and nearly circular . It was surrounded by a range of hills , with a flat in the centre , covered with coarse grass , where a great many quails were flushed , affording good sport , but not a single wallaby . "

= = = Development of industry and infrastructure = = =

A western rock lobster fishery developed on the island in the early 20th century . There are records of the island being used as a base for crayfishers as early as 1902 , and for many years it was used as an anchorage by anglers . It was not until 1947 , however , that a seasonally inhabited permanent camp was established there . According to former crayfisher Ron Bertelsen , the first camp was established by skippers George Barker and George Nelson and deckhand John Long , who relocated there when lobsters around Pigeon Island grew scarce . They camped at the southern end of North Island in a camp initially built from packing case timbers . A local carrier boat , the Betty Margaret , serviced the camp . From about 40 seasonal inhabitants in 1940 , the population grew to about 130 by 2003 . An airstrip was built in 1979 .

= = = Visits by naturalists = = =

A number of naturalists have visited the island , starting with the Percy Sladen Trust Expedition to the Abrolhos Islands in 1913 . This expedition spent little time on North Island , as shore collecting was not very successful there , and other islands appeared better suited to their work . Expedition members nevertheless published substantial information about the island , including a description of its physiography and a list of its vertebrates .

Australian ornithologist Dom Serventy visited the island in 1945 but left no published account . In 1959 , a group from the University of Western Australia 's Department of Zoology , accompanied by the English botanist Mary Gillham , travelled to the island ; a brief article on its physiography , vegetation and vertebrate fauna was published the following year by Glen Storr . More recent

visitors have included P. R. Howden in 1974 , Robert Ivan Taylor Prince in 1976 , Ronald Eric Johnstone in 1981 and 1983 , Phillip Fuller in 1992 , and Judith Harvey and Vanda Longman in 1999 .

### = = Geography = =

Nominally located at 28 ° 18 ' 9 " S 113 ° 35 ' 41 " E , North Island is an isolated island , separated from its nearest neighbours in the Wallabi Group by the 14 km ( 9 mi ) wide South Passage . Despite this separation , it is sometimes treated as part of that group . It is roughly diamond @-@ shaped and is approximately 2 km ( 1 1 / 4 mi ) long from south to north , and 1 1 / 2 km ( 1 mi ) from west to east , giving it an area of about 180 hectares ( 450 ac ) .

Two high points are named Record Hill and Latitude Hill . These are the only gazetted places on the island , although some other features have informal names : The most northerly and southerly point on the island have been called " North Point " and " South Point " respectively , and in 1960 a high point in the northwest corner of the island was referred to as " Northwest Hill " .

On the eastern side is a seasonally inhabited permanent fishers ' camp . There is an unnamed lighthouse on the western side , a trig point on the eastern side , and a gravel airstrip near the centre .

The island is surrounded by a coral reef flat . This extends about 1 1 / 2 km ( 1 mi ) to the west of the island , and over 3 km ( 2 mi ) to the north and south , but the reef margin lies quite close to the island on the eastern side . Most of the reef is not navigable , but a passage through the reef just north of the island is named Suda Bay Passage ; one just south of the island is named Barker Passage ; and there are a few breaks or channels on the eastern side of the island where boats may obtain shelter in bad weather . An area of reef immediately north of the island is named The Flat , and at the northern extreme of the reef is a breaker named The Big Breaker . About 200 m ( 660 ft ) west of the island is a small rock informally known as " Shag Rock " , but with no official name ; it differs from Shag Rock in the Wallabi Group further south .

Like the rest of the Houtman Abrolhos , North Island is Australian territory . It is a part of Western Australia , and falls within the boundaries of the federal Electoral Division of Durack and the state electoral district of Geraldton . It is part of the Houtman Abrolhos Nature Reserve , an A @-@ class reserve managed by Western Australia 's Department of Fisheries .

### = = Geology and physiography = =

The basement of North Island is the Wallabi Limestone , a dense calcretised , coral limestone platform that underlies the entire Wallabi Group . Arising abruptly from a flat shelf , it is about 40 m ( 131 ft ) thick , and of Quaternary origin . Areas of reef that formed during the Eemian interglacial ( about 125 @, @ 000 years ago ) , when sea levels were higher than at present , are now emergent in places , and these form the basement of the group 's central platform islands , namely West Wallabi Island , East Wallabi Island and North Island .

North Island 's basement for the most part does not exceed 1 @. @ 5 m ( 4 ft 11 in ) in elevation . Much of it is capped by aeolianite , and nearly all of it is covered with sand , but there are some exposed outcrops . The southern margin of the island , for example , takes the form of a low cliff , which is severely undercut by the sea in many places .

There are extensive dunes of unconsolidated Holocene sand along both the western and eastern sides of the island . The topography of these dunes varies with time : in 1913 , Dakin recorded the dunes as being a good deal higher in the east than in the west , but in 1960 Storr found the eastern dunes to be severely eroded , apparently because of a fire that burnt much of the island 's vegetation in 1935 . In the centre of the island is a low plain with a sinkhole in its southwest corner and a small salt lake near its northern edge . The soil in the centre of the plain is shallow loam , whereas the rim is deeper and composed largely of shell fragments .

### = = Climate = =

An automatic weather station has been installed on the island since 1990 , and hourly measures of precipitation , air temperature , wind speed , wind direction , relative humidity and atmospheric pressure have been publicly available since then . This is the only weather station in the Houtman Abrolhos , so its data underlies climatic models of the island chain as a whole . Based on the data for North Island , the Houtman Abrolhos has been described as having a Mediterranean climate with warm , dry summers and cooler , wet winters . Mean temperatures range from 9 @. @ 3 to 19 @. @ 5 ° C ( 49 to 67 ° F ) in July , and from 19 @. @ 1 to 32 @. @ 4 ° C ( 66 to 90 ° F ) in February . This is a substantially smaller range than on the mainland : the summer temperature is typically a degree cooler , while winter temperatures are a good deal warmer . This is due to the influence of the ocean , in particular the Leeuwin Current .

Eighty @-@ six percent of the island 's rain falls between April and September ; on average there are 89 rain days , resulting in 469 mm ( 18 in ) of rain . The wettest month is June , when over 100 mm ( 4 in ) typically falls . In contrast , only about 70 mm ( 3 in ) can be expected to fall between October and March .

It is nearly always windy . During summer a high @-@ pressure ridge lies to the south , causing persistent winds from the southeast or southwest at speeds exceeding 17 kn ( 31 km / h ) almost half the time . During autumn and winter , the ridge moves north , increasing atmospheric pressure over the islands and creating variable winds . Winter tends to produce both the strongest gales and the most frequent periods of calm . In addition to these winds , there is daily pattern of land breezes in the morning , followed by the onset of south @-@ westerly sea breezes in the afternoon . This pattern is caused by temperature differences between the land and the ocean ; it is not as strong in the Houtman Abrolhos chain as on the mainland , but is present .

Three classes of storm have been identified in the region . Brief squalls may occur between December and April . A tropical cyclone occurs in the area about once in three years , between January and April ; these may generate extremely high wind speeds that are potentially destructive . During winter , extra @-@ tropical cyclones sometimes pass south of Geraldton , generating winter gales with gusts of up to 35 m / s ( 115 ft / s ) , the wind direction from the northwest initially , then gradually moving around to southerly .

= = Flora = =

Most of North Island is dominated by chenopod shrubs , generally less than a metre ( 3 ft ) high . The beach vegetation is largely *Spinifex longifolius* ( beach spinifex ) , *Salsola kali* ( prickly saltwort ) , *Atriplex cinerea* ( grey saltbush ) and naturalised *Cakile maritima* ( sea rocket ) . Stable dunes are vegetated by *Atriplex paludosa* ( marsh saltbush ) , *Scaevola crassifolia* ( thick @-@ leaved fan @-@ flower ) , *Olearia axillaris* ( coastal daisy @-@ bush ) , *Myoporum insulare* ( blueberry tree ) and *Exocarpos sparteus* ( broom ballart ) . Sheltered areas behind dunes support *Salsola kali* and *Myoporum insulare* and also *Nitraria billardiarei* ( nitre bush ) , the last of these being the only plant on the island to grow over 1 1 ? 2 m ( 5 ft ) high . In areas where limestone is close to the surface , the vegetation consists of *Pimelea microcephala* ( shrubby rice @-@ flower ) , *Spyridium globulosum* ( basket bush ) and *Acanthocarpus preissii* .

The rim of the central plain is vegetated by a dense shrubland of *Rhagodia baccata* ( berry saltbush ) , *Atriplex paludosa* and *Threlkeldia diffusa* ( coast bonefruit ) . Nearer the centre , the vegetation consists of *Frankenia pauciflora* ( seaheath ) , *Muellerolimon salicorniaceum* and *Tecticornia arbuscula* ( bulli bulli ) , although *T. arbuscula* is replaced by *Tecticornia halocnemoides* ( shrubby samphire ) where the soil is shallow . The most low @-@ lying area of the central plain , south of the salt lake , is water @-@ logged in winter ; it is vegetated by a dense mat of *Sarcocornia quinqueflora* ( beaded samphire ) , *Sporobolus virginicus* ( marine couch ) and *Suaeda australis* ( seablite ) .

The dune , limestone and salt lake vegetation communities on North Island are considered to have high conservation significance . The dune and limestone communities have high biodiversity , are highly sensitive to disturbance and regenerate slowly . The salt lake community is considered

significant because of the rarity of salt lakes on offshore islands .

According to a survey published in 2001 , the following vascular plants occur on North Island :

= = Fauna = =

= = = Mammals = = =

No land mammals are known to be native to North Island , but the Australian sea lion ( *Neophoca cinerea* ) occasionally hauls out on the island 's beaches , and it has been suggested that the island once had a native population of tammar wallaby ( *Macropus eugenii* ) .

Stokes explicitly stated the tammar wallaby to be absent from North Island in 1840 , and it was not recorded by the Percy Sladen Trust Expedition in 1913 . It was apparently introduced to the island in the 1920s , as early fishermen reported seeing it between 1928 and 1930 . This introduction failed , possibly due to overgrazing . The species was not found by Serventy during his 1945 visit , nor by Storr in 1959 , but the latter found plenty of remains , mostly mandibles . Storr interpreted these remains as predating the 1920s introduction , suggesting that a native population of tammars became extinct on the island before 1840 . Albert Russell Main agreed , but the theory has not been accepted by later researchers .

In 1985 , five tammar wallabies were introduced onto North Island , and the population established successfully . Possible reasons for this success include the absence of the wallabies ' natural predator , the carpet python ( *Morelia spilota imbricata* ) ; the availability of additional food and water from the fishers ' huts , which are occupied during the harshest time of the year ; and the presence of the air strip , which apparently provides additional food for them . By the 2000s , there were over 450 tammar wallabies on the island . The wallabies overgrazed and ringbarked the native vegetation , particularly the area burnt in 1935 , thus reducing vegetation cover and causing a serious decline in populations of some plant species . In 2003 , island residents asked the Department of Conservation and Land Management ( CALM ; now the Department of Environment and Conservation ) for help in managing the issue . CALM staff visited the island in April and May of that year and produced a report recommending an investigation into controlling population levels by the use of implanted contraceptives . Exploration of this option began in 2005 , but in July 2007 the research was discontinued . Around 60 wallabies were removed to educational institutions for research purposes , and culling began . By February 2008 , the wallaby population had been reduced to around 25 individuals .

The only other mammal known to occur on the island is the naturalised house mouse ( *Mus Musculus* ) . Eight European rabbits ( *Oryctolagus cuniculus* ) were introduced in 1934 , and were found to be " exceedingly numerous " by 1945 , but by 1960 they were extinct , apparently from predation by feral cats . Neither rabbits nor cats are now reported as naturalised on the island .

= = = Reptiles = = =

Reptiles recorded on North Island include Binoe 's prickly gecko ( *Heteronotia binoei* ) , the gecko *Christinus marmoratus* , the Jew lizard ( *Pogona barbata* ) , King 's skink ( *Egernia kingii* ) , the western limestone ctenotus ( *Ctenotus australis* ) , the western worm lerista ( *Lerista praepedita* ) , the common dwarf skink ( *Menetia greyii* ) , and the Abrolhos bearded dragon ( *Pogona minor minima* ) . The carpet python was reported as present on the island in very low numbers before 1960 , but it has never been observed there by naturalists , and is now absent .

The green turtle ( *Chelonia mydas* ) has been observed in large numbers near the shore , and it has been claimed that they breed on the island , but this has never been verified . If it is true , then North Island would be the species ' most southerly breeding site in Western Australia .

= = = Birds = = =

The birds most often mentioned in relation to North Island are the Abrolhos painted buttonquail ( *Turnix varius scintillans* ), a rare subspecies of the widespread painted buttonquail ( *Turnix varius* ) known only from the Wallabi Group and protected under the Wildlife Conservation Act 1950 ; and the brush bronzewing ( *Phaps elegans* ), one of the most common birds on North Island , the mainland populations of which are decreasing .

Other birds known to breed on North Island include the osprey ( *Pandion haliaetus cristatus* ), greater crested tern ( *Thalasseus bergii* ), Caspian tern ( *Hydroprogne caspia* ), silver gull ( *Chroicocephalus novaehollandiae novaehollandiae* ), and welcome swallow ( *Hirunda neoxena* ). Birds commonly recorded as resident on the island but not recorded as breeding there include the Pacific reef heron ( *Egretta sacra* ), white bellied sea eagle ( *Haliaeetus leucogaster* ), red capped plover ( *Charadrius ruficapillus* ), fairy tern ( *Sterna nereis nereis* ), Australasian pipit ( *Antus novaseelandiae australis* ) and western silvereye ( *Zosterops lateralis chloronotus* ). The sooty oystercatcher ( *Haematopus fuliginosus fuliginosus* ) and white backed swallow ( *Cheramoecca leucosterna* ) have also rarely been observed as resident on the island .

The most common visitors to the island are the bar tailed godwit ( *Limosa lapponica baueri* ), grey tailed tattler ( *Tringa brevipes* ), ruddy turnstone ( *Arenaria interpres interpres* ), red necked stint ( *Calidris ruficollis* ) and curlew sandpiper ( *Calidris ferruginea* ). Other observed visitors include the great cormorant ( *Phalacrocorax carbo novaehollandiae* ), nankeen kestrel ( *Falco cenchroides cenchroides* ), banded lapwing ( *Vanellus tricolor* ), greater sand plover ( *Charadrius leschenaultii* ), whimbrel ( *Numenius phaeopus variegatus* ), greenshank ( *Tringa nebularia* ), sanderling ( *Calidris alba* ), willie wagtail ( *Rhipidura leucophrys leucophrys* ) and brown songlark ( *Cincloramphus cruralis* ).

North Island is part of the Houtman Abrolhos Important Bird Area , identified as such by BirdLife International because of its importance for supporting large numbers of breeding seabirds .

= = Human uses = =

The entire Houtman Abrolhos is protected by an A class nature reserve that is wholly vested in Western Australia 's Minister for Fisheries for purposes of " Conservation of Flora and Fauna , Tourism , and for Purposes Associated with the Fishing Industry " .

= = = Fishing industry = = =

North Island 's primary human use is as a seasonal camp for Western Rock Lobster fishers . During lobster season , which runs from 15 March to 30 June , North Island 's camp is occupied by about 130 fishers . The camp is serviced by a carrier boat , the North Islander , which visits the island every three days , bringing supplies and taking out the catch and any domestic waste .

= = = Conservation = = =

North Island is considered to have high conservation value with respect to its populations of brush bronzewing and Abrolhos painted buttonquail , and its dune , limestone and salt lake vegetation communities . The potential existence of historically significant artefacts on Record Hill , namely the bottle left by Wickham and Stokes in 1840 , has not been assessed .

A 514 ha ( 1 ,270 acres ) area of reef immediately south of North Island is designated a Reef Observation Area ( ROA ) . Fishing is prohibited in this area , except for the use of lobster pots . One of four ROAs in the Houtman Abrolhos , these protected areas are intended to help conserve species of territorial fish that are fished elsewhere , and to provide divers with the opportunity to observe large populations that are not frightened by their approach .

= = = Tourism = = =

With extensive sand beaches , seabird breeding areas , and good dive sites in the Reef

Observation Area to the south of the island , North Island is considered an attractive tourist site . However , all of the island 's limited anchorage and jetty space is occupied by commercial fishers , so landings from private or charter boats are possible only by prior arrangement . Moreover , visitors are not permitted to camp on the island . North Island accounts for about 3 @. @ 5 % of private recreational boat trips to the Houtman Abrolhos and about 1 % of commercial charter boat trips . The most recent tourism plan for the Houtman Abrolhos supports the continued use of North Island by private charter boats and the use of the airstrip for tourism purposes , but recommends against the establishment of a land @-@ based tourist site there .