NSW NORTH COAST
WATER HABITATS STUDY

REPORT 1

WATER HABITATS OF THE TWEED, BRUNSWICK AND RICHMOND CATCHMENTS

Report prepared for the
Northern Rivers Water Management Committee

by the
NSW National Parks and Wildlife Service
Northern Directorate
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WATER HABITATS IN THE BRUNSWICK SUBCATCHMENT CLUSTER
(including the Upper and Lower Brunswick, Kings and Mullumbimby Subcatchments)

ESTUARINE WETLANDS

Description

Two types of Estuarine Vegetation communities occur in the Marshalls Creek subcatchment: Mangrove Forests dominated by Grey and River Mangrove and Seagrass beds dominated by Eelgrass. A number of threatened species are recorded form estuarine wetlands including the Osprey, Pied and Sooty Oystercatchers.

Location and Extent

The location of estuarine wetlands in the Brunswick Subcatchment cluster is shown in the attached map. Two small areas of seagrass bed in the lower estuary are the major occurrences of the community within the Brunswick subcatchment cluster. Areas of mangrove (some relatively large) occur in the Brunswick River as far upstream as the outskirts of Mullumbimby. Relatively large areas of mangrove forest occur both immediately upstream and downstream of the Pacific Highway Bridge across the Brunswick River. Another relatively large extent of mangrove forest occurs in the lower reaches of Kings Creek.

Tenure

All areas of seagrass are located below the intertidal zone, hence they are public lands (or waters). Relatively large areas of mangrove forest are contained within Brunswick Heads Nature Reserve, although relatively large areas of mangrove forest (eg. lower Kings Creek) are situated upon private property.

Threats and Management Responses

Estuarine wetlands on private property in the Brunswick Subcatchment cluster are threatened by clearance and drainage for agricultural and residential development. In addition, large areas of acid sulfate soil are located in the coastal sections of the Brunswick Subcatchment cluster and are a major threat to the ecological integrity of estuarine wetlands.

Description

A number of distinct freshwater wetland communities occur within the Brunswick Subcatchment cluster including:

- Broad Leaved Paperbark dominated forests
- Swamp Oak dominated forests
- Swamp Mahogany dominated forests
- Tea tree communities
- Mixed Sclerophyll forest (dominated by Swamp Box and a variety of other species).

Freshwater wetlands in the Brunswick Subcatchment cluster provide habitat for a number of threatened species including the Freckled Duck (a species that is very rare on the NSW North Coast), Comb Crested Jacana, Black Bittern and the endangered Jabiru.

Location and Extent

The location of freshwater wetlands in the Brunswick Subcatchment cluster is shown in the attached map. The majority of freshwater wetland communities occur at the lower end of the Brunswick catchment, downstream of Mullumbimby. Only small remnant areas of Broad Leaved Paperbark Forest occur upstream of Mullumbimby. A relatively large area of freshwater wetland is situated immediately to the west of Brunswick Heads. Other large areas of freshwater wetland community occur to the east of Mullumbimby and on the northern bank of the Brunswick River, immediately to the south of the Pacific Highway.

Tenure

The majority of freshwater wetland communities in the Brunswick subcatchment cluster occur on private property. All Swamp Sclerophyll forests in the Brunswick subcatchment cluster are located upon private lands, as are all Swamp Oak dominated forests. The majority of Swamp Mahogany dominated forests occur on private property in the Brunswick Subcatchment cluster.

Threats and Management Responses

Threats to freshwater wetlands in the Brunswick Subcatchments include clearance and drainage for agricultural, residential and commercial development and the presence of acid sulfate soils in the catchment.

RAINFORESTS

Description

The rainforests of the Brunswick Subcatchment cluster provide habitat for a great diversity of threatened species (amongst the highest in NSW) including Wompoo Fruit Dove, Sooty Owl and Black Flying Fox. A large number of threatened plant species (eg. Scented Acronychia, Smooth Davidsonia, Stinking Laurel and Harnieria) occur in lowland rainforests in the Brunswick Subcatchment cluster, which also contains one of the three known populations in NSW of the endangered and highly restricted Harnieria.

Location and Extent

The location of rainforests in the Brunswick Subcatchment cluster is shown in the attached map. The majority of rainforests occur in the headwaters of the Brunswick River. Small remnant areas of rainforest occur in the coastal sections of the Brunswick Catchment

Tenure

The majority of rainforests in the Brunswick subcatchment cluster occur on private property. Smaller areas of rainforest occur within Brunswick Heads and Inner Pocket Nature Reserves and Mt Jerusalem National Park.

Threats and Management Responses

Rainforests that occur on private property in the Brunswick Subcatchment cluster are threatened by logging activities and clearance for agricultural development.

RIPARIAN FORESTS

Description

A single forest type - Flooded Gum - represents riparian forests in the Brunswick Subcatchment cluster. Flooded Gum forests occur in the riparian zone and adjacent areas on deeper, more fertile substrates. A number of threatened species are known from riparian forests Stephens Banded Snake, Large Footed Myotis, Coolamon and Sweet Myrtle.

Location and Extent

The location of riparian forests in the Brunswick Subcatchment cluster is shown in the attached map. Flooded Gum riparian forests are restricted to the upper reaches of the Brunswick Subcatchment cluster, to the west of Mullumbimby.

Tenure

The vast majority of Flooded Gum riparian forests in the Brunswick Subcatchment cluster occur on private property; very small areas are reserved within Inner Pocket Nature Reserve.

Threats and Management Responses

Riparian Forests are potentially threatened by unsustainable timber production activities, resulting in loss of diversity and reduction of biomass and contributing to reduced flow availability. In addition, they are threatened by clearance of native vegetation from these highly productive habitats. Riparian forests dependent upon stream base flows during dry periods could potentially be threatened by unsustainable extraction of water from upper catchment reaches.

Riparian forests in the Brunswick Valley (and elsewhere on the NSW North Coast) are threatened by invasion and degradation by environmental weeds (particularly exotic vines such as Madeira Vine, Balloon Vine and Cats Claw Creeper). Another threat to integrity and viability is the uncontrolled access of stock with resultant negative impacts upon bank stability and remnant native vegetation.

FLOODPLAIN FORESTS

Description

A variety of forest communities occur on floodplains in the Brunswick Subcatchment cluster including Rainforest communities, Tallowwood dominated forests, Brush Box dominated forests and Mixed Eucalypt forests.

"Lowland Rainforests on Floodplain" are listed in the NSW Threatened Species Conservation Act (1995) as an Endangered Ecological Community. This highlights the high conservation significance of this community type and recognises that they are highly threatened from clearing, although any significant changes to aquifer hydrology could also potentially have an adverse impact on this community.

Many of the species that occur in Floodplain forests are listed as threatened, primarily as a result of the preferential clearing of these vegetation types for agricultural purposes. Examples of threatened species include the Koala, Stephens Banded Snake, Ball Nut and Small Leaved Tamarind.

Location and Extent

The location of floodplain forests in the Brunswick Subcatchment cluster is shown in the attached map. The majority of floodplain communities are in the upper reaches of the Brunswick Catchment. Most remnants of lowland rainforest on floodplain occur in the lower reaches of the Brunswick Catchment. The Tallowwood dominated forests in the Brunswick catchment occur in the lower reaches of the catchment adjacent to Mullumbimby.

Tenure

Most floodplain forests in the Brunswick catchment are situated upon private property. Small areas are located within Brunswick Heads and Inner Pocket Nature Reserves and Mt Jerusalem National Park.

Threats and Management Responses

Floodplain forests in the Brunswick Subcatchment cluster are primarily threatened by clearance for agricultural development, owing to the highly fertile and productive nature of floodplain habitats in the Brunswick Valley.

MOIST COASTAL VEGETATION COMMUNITIES

Description

Three distinct coastal vegetation communities occur lower reaches of the Brunswick Subcatchment cluster:

- Tea Tree dominated low open forests and woodlands,
- Wallum Banksia dominated heaths and
- Mixed Wallum Heath and Scribbly Gum communities.

Moist coastal vegetation, which mainly occurs on consolidated sandbeds close to the coast, provides habitat for a number of threatened fauna species (eg. Jabiru, Wallum Froglet, Common Planigale, Eastern Blossom Bat and Long Nosed Potoroo).

Location and Extent

The location of moist coastal vegetation in the Brunswick Subcatchment cluster is shown in the attached map. All moist coastal plant communities in the Brunswick subcatchment cluster occur in the near coastal section of the catchment. These communities all occur as one vegetated block to the west of Brunswick Heads and the Pacific Highway.

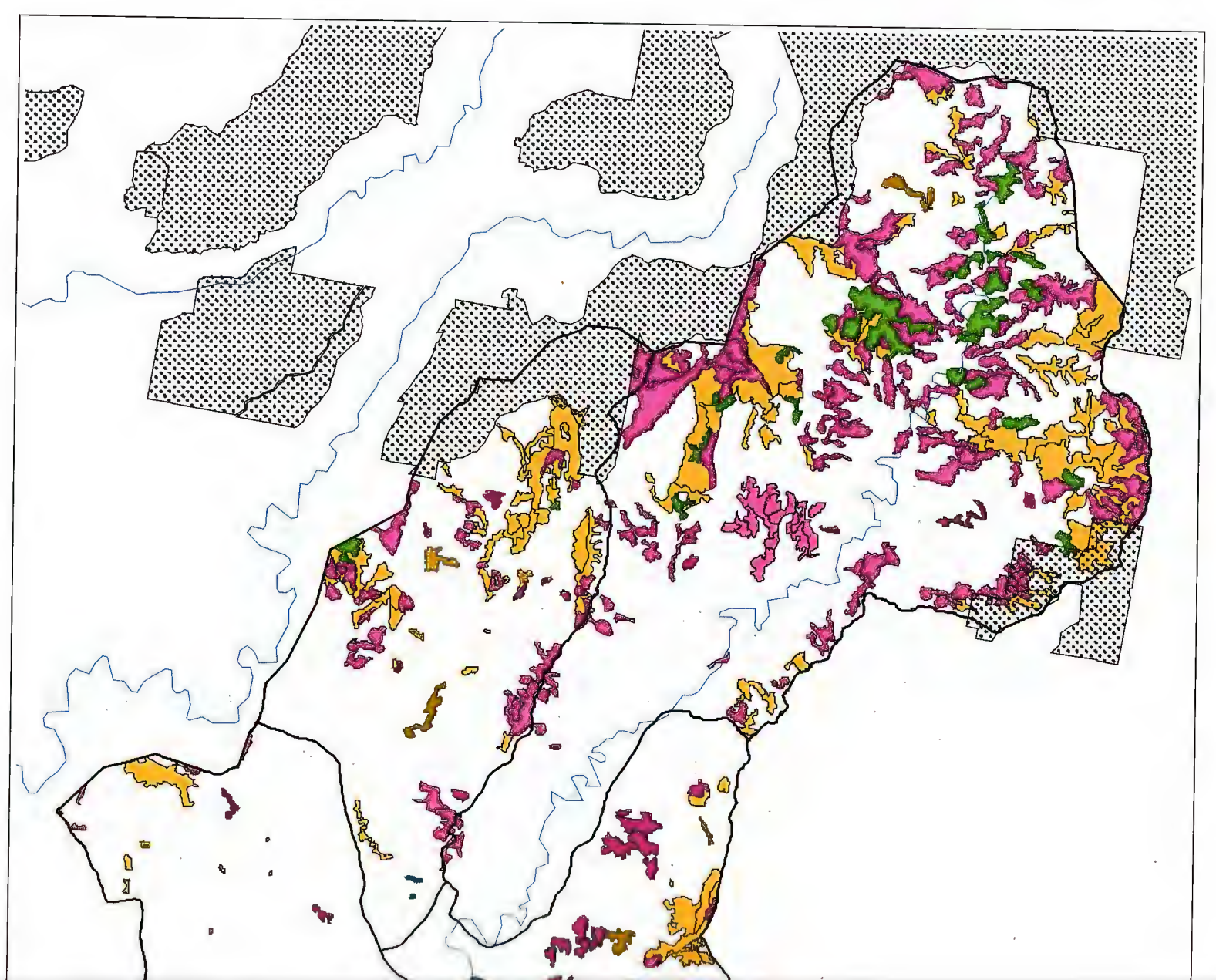
Tenure

The majority of Tea Tree and Wallum Banksia dominated communities occur within Brunswick Heads Nature Reserve. All mixed Wallum Banksia and Scribbly Gum forests are on private property to the immediate south of the southern section of Brunswick Heads Nature Reserve.

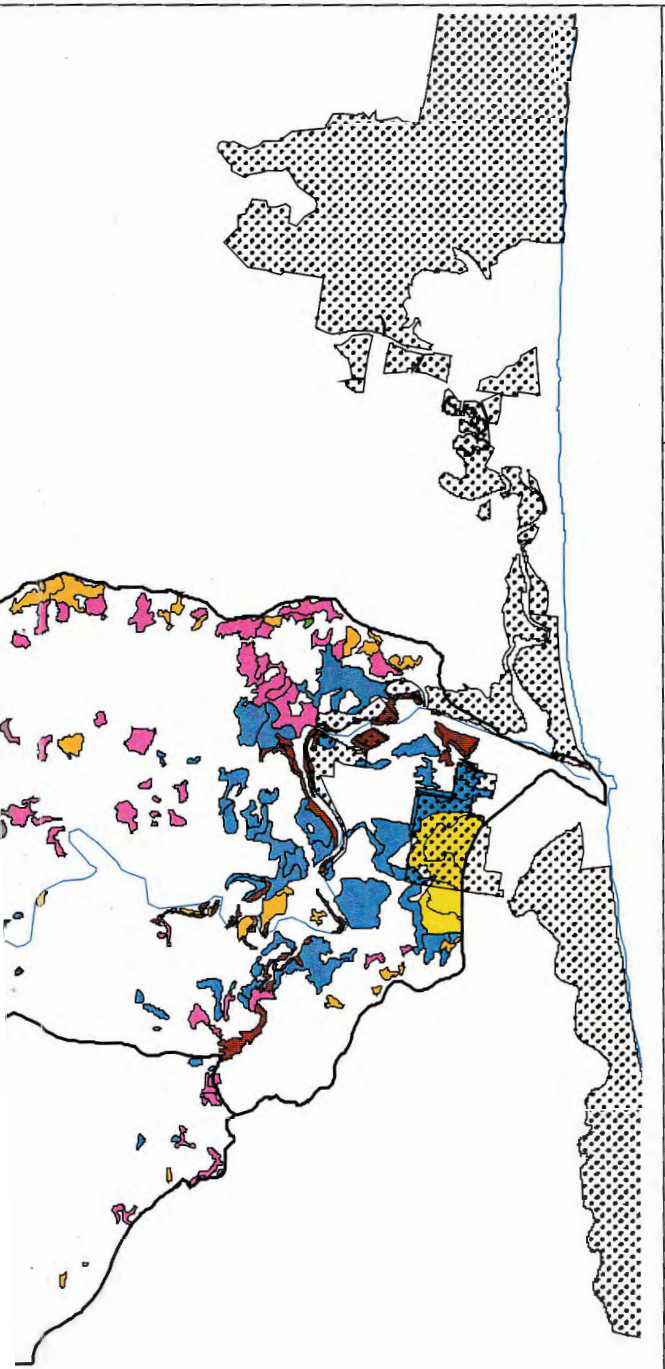
Threats and Management Responses

Moist Coastal Vegetation communities occurring on coastal sandmasses in the Brunswick Subcatchment Cluster are threatened by unsustainable extraction of water from sandplain aquifers. Over extraction of water from these coastal aquifers may result in loss of ecosystem health and viability. Those areas of Moist Coastal

Vegetation in the Brunswick Subcatchment cluster that are located on freehold land are potentially threatened by clearance for residential development.



Water Habitats in the Brunswick Subcatchment Cluster



- Brunswick Subcatchment Cluster
- National Parks Estate
- Moist Coastal Vegetation Communities
- Floodplain Forests
- Rainforest
- Riparian Forests
- Freshwater Wetlands
- Estuarine Wetlands

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WATER HABITATS IN THE TYAGARAH SUBCATCHMENT CLUSTER
(including Tyagarah and Simpsons Subcatchments)

ESTUARINE WETLANDS

Description

Two estuarine vegetation communities occur within the Tyagarah Subcatchment cluster: Mangrove forests dominated by Grey Mangrove, and open saltmarshes dominated by a variety of sedges and other subshrubs. The Estuarine Wetlands of the Tyagarah Subcatchment Cluster provide habitat for a large number of threatened species including the Pied and Sooty Oystercatchers, Little Tern, Osprey and Collared Kingfisher.

Location and Extent

The location of Estuarine Wetlands in the Tyagarah Subcatchment Cluster is shown in the attached map. All areas of saltmarsh and mangrove community in the Tyagarah Subcatchment cluster occur in the lower reaches of Simpsons Creek.

Tenure

All areas of estuarine wetland within the Tyagarah Subcatchment cluster occur within Tyagarah Nature Reserve.

Threats and Management Responses

Estuarine wetlands in the Tyagarah Subcatchment Cluster are threatened by over extraction of water from the upper reaches of the catchment. This results in increased salinity levels within estuarine waters that can lead to loss of estuarine vegetation and potentially detrimentally impact upon fisheries productivity.

FRESHWATER WETLANDS

Description

Several distinct freshwater wetland communities occur within the Tyagarah Subcatchment cluster:

- Broad Leaved Paperbark dominated forests
- Swamp Mahogany/Swamp Box dominated forests
- Tea Tree dominated forests
- Mixed Swamp Sclerophyll forests.

All freshwater wetlands in the Tyagarah subcatchment cluster occur at lower elevations and on the coastal plain. The Freshwater Wetlands of the Tyagarah Subcatchment Cluster provide habitat for a range of threatened species including the Jabiru, Osprey, Koala and the Swamp Palm Lily.

Location and Extent

The location of Freshwater Wetlands in the Tyagarah Subcatchment Cluster is shown in the attached map. Relatively large areas of Broad Leaved Paperbark dominated forests occur throughout the coastal plain of the Tyagarah subcatchment cluster (both east and west of the Pacific Highway). The other freshwater wetland communities are of more limited extent, all occur to the east of the Pacific Highway.

Tenure

All areas of freshwater wetland within the Tyagarah subcatchment cluster are located upon private lands.

Threats and Management Responses

Threats to freshwater wetlands in the Tyagarah Subcatchment cluster are likely to result from the following activities:

- Clearance and drainage of wetlands potentially resulting in the exposure and activation of acid sulfate soils.
- High rates of population growth and agricultural development which place pressure on wetland health
- Extraction of water from the catchments may also result in adverse impacts

RAINFORESTS

Description

Rainforests are characterised by a diverse range of plant species (>50 canopy species in some cases). A number of rainforest types occur in lowland rainforests in the Tyagarah Subcatchment cluster including Littoral, Subtropical and Dry Rainforests. These rainforests have three canopy levels (understorey, midstorey and canopy) and in some cases may have giant emergent trees (eg. Figs) greater than 50m. Vines are common in these rainforest types, as are epiphytes (hanging plants).

The rainforests of the Tyagarah Subcatchment Cluster provide habitat for a number of threatened species including the Coxens Fig Parrot, White Eared Monarch and the Wompoo Fruit Dove.

Location and Extent

The location of Rainforests in the Tyagarah Subcatchment cluster is shown in the attached map. Rainforests are of very limited extent, being represented by small isolated remnants scattered throughout the subcatchment cluster. The largest areas of rainforest in the Tyagarah Subcatchment cluster are littoral rainforest areas adjacent to Simpsons Creek and Subtropical and Dry Rainforest remnants along the southern and western boundaries of the subcatchment cluster.

Tenure

The majority (over 90%) of rainforests in the Tyagarah Subcatchment cluster are located on private property with very small areas located within Tyagarah Nature Reserve.

Threats and Management Responses

Rainforests that occur on private property in the Tyagarah Subcatchment cluster are threatened by logging activities and clearance for agricultural development.

FLOODPLAIN FORESTS

Description

A variety of forest communities occur on floodplains in the Tyagarah Subcatchment cluster including:

- Rainforest communities
- Tallowwood dominated forests
- Brush Box dominated forests
- Forest Red Gum Forests
- Mixed Eucalypt forests

"Lowland Rainforests on Floodplain" are listed in the NSW Threatened Species Conservation Act (1995) as an Endangered Ecological Community. This highlights the high conservation significance of this community type and recognises that they are highly threatened from clearing, although any significant changes to aquifer hydrology could also potentially have an adverse impact on this community.

Many of the species that occur in Floodplain forests are listed as threatened, primarily as a result of the preferential clearing of these vegetation types for agricultural purposes. Examples of threatened species that occur in floodplain forests include the Koala, Bush Stone Curlew, Ball Nut and Little Bent Winged Bat.

Location and Extent

The location of floodplain forests in the Tyagarah Subcatchment cluster is shown in the attached map. Floodplain forests are limited to the northern half of the Brunswick Subcatchment Cluster and are represented by isolated remnants of formerly more widespread forests. The most significant floodplain forests in the Tyagarah Subcatchment Cluster are located to the south and east of Mullumbimby.

Tenure

The vast majority (>95%) of floodplain forests in the Tyagarah Subcatchment cluster are located on private property, a single small area of floodplain forest is located at the western verge of Tyagarah Nature Reserve.

Threats and Management Responses

Floodplain forests in the Tyagarah Subcatchment cluster are mostly threatened by clearance for agricultural development, owing to the highly fertile and productive nature of floodplain habitats in the Brunswick Valley.

MOIST COASTAL VEGETATION COMMUNITIES

Description

Three distinct coastal vegetation communities occur in the lower reaches of the Tyagarah Subcatchment cluster:

- Tea Tree dominated low open forests and woodlands
- Wallum Banksia dominated heaths
- Mixed Wallum Heath and Scribbly Gum communities.

Moist coastal vegetation, mainly occurring on consolidated sandbeds close to the coast, provides habitat for a number of threatened fauna species (eg. Jabiru, Wallum Froglet, Wallum Sedge Frog, Grass Owl, Common Planigale, Eastern Blossom Bat and Long Nosed Potoroo).

Location and Extent

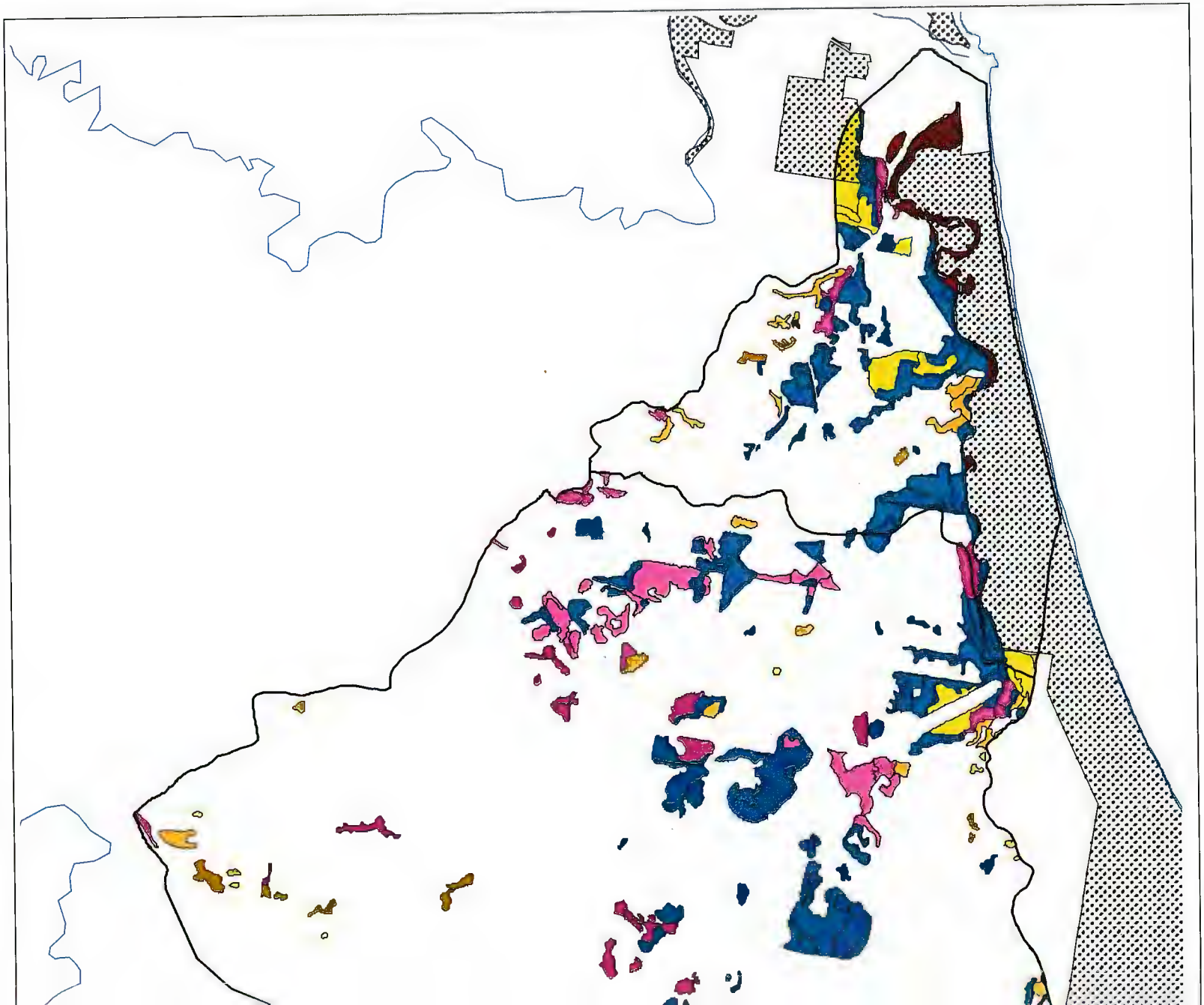
The location of moist coastal vegetation in the Tyagarah Subcatchment cluster is shown in the attached map. All areas of Moist Coastal Vegetation in the Tyagarah Subcatchment Cluster are located east of the Pacific Highway. The largest areas occur around the southern and western periphery of Brunswick Heads with two other major clusters of Moist Coastal Vegetation along the western shores of Simpsons Creek.

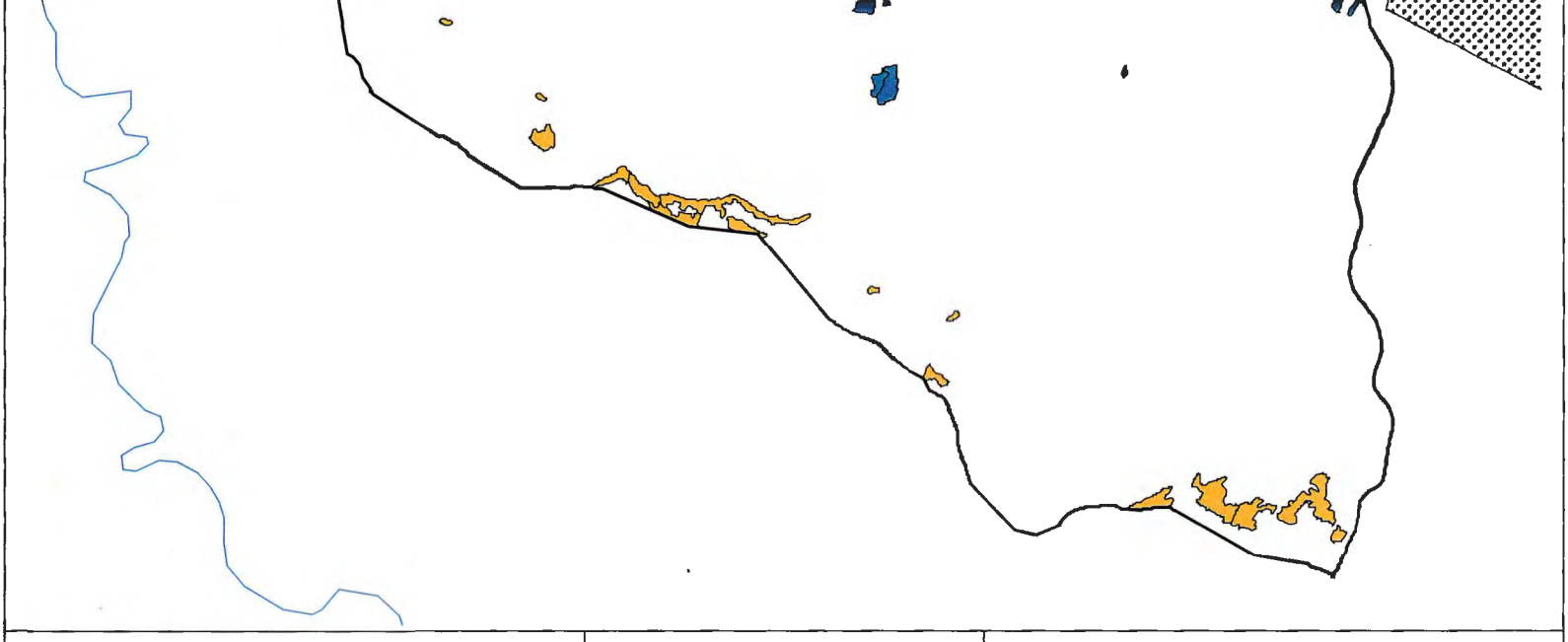
Tenure

Small areas of Moist Coastal Vegetation in the Tyagarah Subcatchment Cluster are reserved within Brunswick Heads Nature Reserve and Tyagarah Nature Reserve. The remainder (approximately 85%) is located on private property.

Threats and Management Responses

Those areas of Moist Coastal Vegetation in the Tyagarah Subcatchment cluster that are located on freehold land are potentially threatened by clearance for residential and commercial developments.





Tyagarah Subcatchment Cluster
National Parks Estate
Moist Coastal Vegetation Communities
Floodplain Forests
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Water Habitats of the Tyagarah Subcatchment Cluster

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