

Regional ecosystems: Dry Vine Forest



RE 12.9 – 10.15

Semi-evergreen vine thicket with Narrow-leaved Bottle Trees on sedimentary rocks

Softwood scrub is one of those uniquely Queensland terms. Early European settlers gave this name to the dark green patches of low, dense scrubby vegetation that grew on the subcoastal hills and ranges in South East Queensland (SEQ). Regional Ecosystem (RE) 12.9-10.15 is considered part of the softwood scrub.

Softwood scrub is a type of dry rainforest and contains many different trees, shrubs and vines. Plants are often small-leaved due to the relatively low rainfall and some have thorns or spines.

Tall trees of Narrow-leaved Bottle Tree (*Brachychiton rupestris*), Crows Ash (*Flindersia australis*), Rosewood (*Acacia fasciculifera*) and Small-leaved Fig (*Ficus obliqua*) rise above the canopy. While Narrow-leaved Bottle Tree and Crows Ash may be as tall as 25-30m, the canopy itself is uneven and ranges in height from 2-12m and is composed of densely packed small trees and shrubs. Scattered trees of Brigalow (*Acacia harpophylla*) may also be present.

Vines are very common in RE 12.9-10.15. They climb and drape over trees and often hang down to near ground level, one of the reasons why these ecological communities are referred to as 'vine thickets'. The ground layer largely comprises soil, rock and leaf litter but some shade tolerant grasses, forbs and ferns may occur. Soils supporting softwood scrub are usually fertile and well-drained.

RE 12.9-10.15 is formally defined as semi-evergreen vine thicket (SEVT) with Narrow-leaved Bottle Tree and microphyll vine forest in which Hoop Pine (*Araucaria cunninghamii*) may be present, growing on sedimentary rocks. The term 'semi-evergreen' refers to the tendency for plants to shed leaves during the dry spring season and during drought. The term 'microphyll' refers to the average size of the leaves of canopy trees when they are exposed to sunlight (not those in the shade). Microphyll-sized leaves are relatively small – up to 7.5cm long and 3.5cm wide.



Softwood scrubs can often be seen in the landscape as bands of dark green low vegetation in contrast to the surrounding bushland or cleared agricultural land. RE 12.9-10.15 often has large sedimentary rocks.

Regional Ecosystems, or REs for short, are used in Queensland to describe native vegetation types based on where they grow, the plant species in the tallest layer and the underlying geology. There are about 150 different REs in SEQ, all of which have a unique three-part number usually starting with '12'.

For more information on REs visit www.qld.gov.au/environment/plants-animals/plants/ecosystems



Distribution

RE 12.9-10.15 grows on sedimentary rocks in gently undulating to hilly country receiving an average rainfall of 700-1000mm per year. The sedimentary rocks on which RE 12.9-10.15 occurs are soft and easily weathered and form loamy to light clay soils.

Once within a patch of RE 12.9-10.15, the sparse groundlayer reveals the sedimentary geology that characterises this ecosystem.

Variations and similarities

The presence of Narrow-leaved Bottle Tree distinguishes semi-evergreen vine thickets from Hoop Pine vine forests. Hoop Pine vine forests occur in slightly moister situations (e.g. sheltered slopes) and Hoop Pine is usually present. Within SEQ, semi-evergreen vine thickets grow on a range of geologies. Consequently, four different REs, including RE 12.9-10.15, are recognised based upon the type of country where they grow.

Similar vegetation communities that occur on geologies different from RE 12.9-10.15 are:

- **RE 12.8.21** Semi-evergreen vine thicket on Cainozoic igneous rocks (especially basalt).
- **RE 12.11.13** Semi-evergreen vine thicket on metamorphics +/- interbedded volcanics.
- **RE 12.12.17** Semi-evergreen vine thicket on Mesozoic to Proterozoic igneous rocks.



RE 12.9-10.15 often co-occurs with RE 12.9-10.6 Brigalow (*Acacia harpophylla*). Brigalow trees sometimes overtop a dense understorey of vine thicket trees and shrubs, as shown above. This ecosystem could eventually develop into RE 12.9-10.15 as the Brigalow trees die out. Softwood scrub species will also successfully establish in some adjacent types of Eucalyptus woodland in the absence of fire and in time develop all of the floristic and structural features of a semi-evergreen vine thicket.

Left: Semi-evergreen vine thickets, such as RE 12.9- 10.15, are difficult places to traverse given the dense vines, rocks and scrub plants, which are often prickly or thorny. The name 'rupestris' as per the scientific name of Narrow-leaved Bottle-tree means 'living near rocks'.

Distribution map 12.9 – 10.15

RE 12.9-10.15 is one of the main types of semi-evergreen vine thicket in the Fassifern, Lockyer and Upper Brisbane valleys. In these localities it co-occurs with RE 12.8.21 (semi-evergreen vine thicket on basalt) where narrow basalt flows cap the tops of ridges, and also RE 12.9-10.6 (Brigalow forest) on heavier textured soils. There are also scattered occurrences in the Brisbane Valley where RE 12.9-10.15 occurs with RE 12.12.17. The semi-evergreen vine thickets of RE 12.9-10.15 have been widely cleared for agriculture and pasture. Around 15% of the pre-clearing extent remains today and as such RE 12.9-10.15 is considered 'endangered' under Queensland legislation. Semi-evergreen vine thicket remnants are small and scattered and some are tucked away in unusual places such as cemetery reserves. Some significant patches have been conserved as a result of local landholder interest in keeping some of the original country for future generations.

1. Conondale Forest Reserve, Monslidal Road, Monslidade.

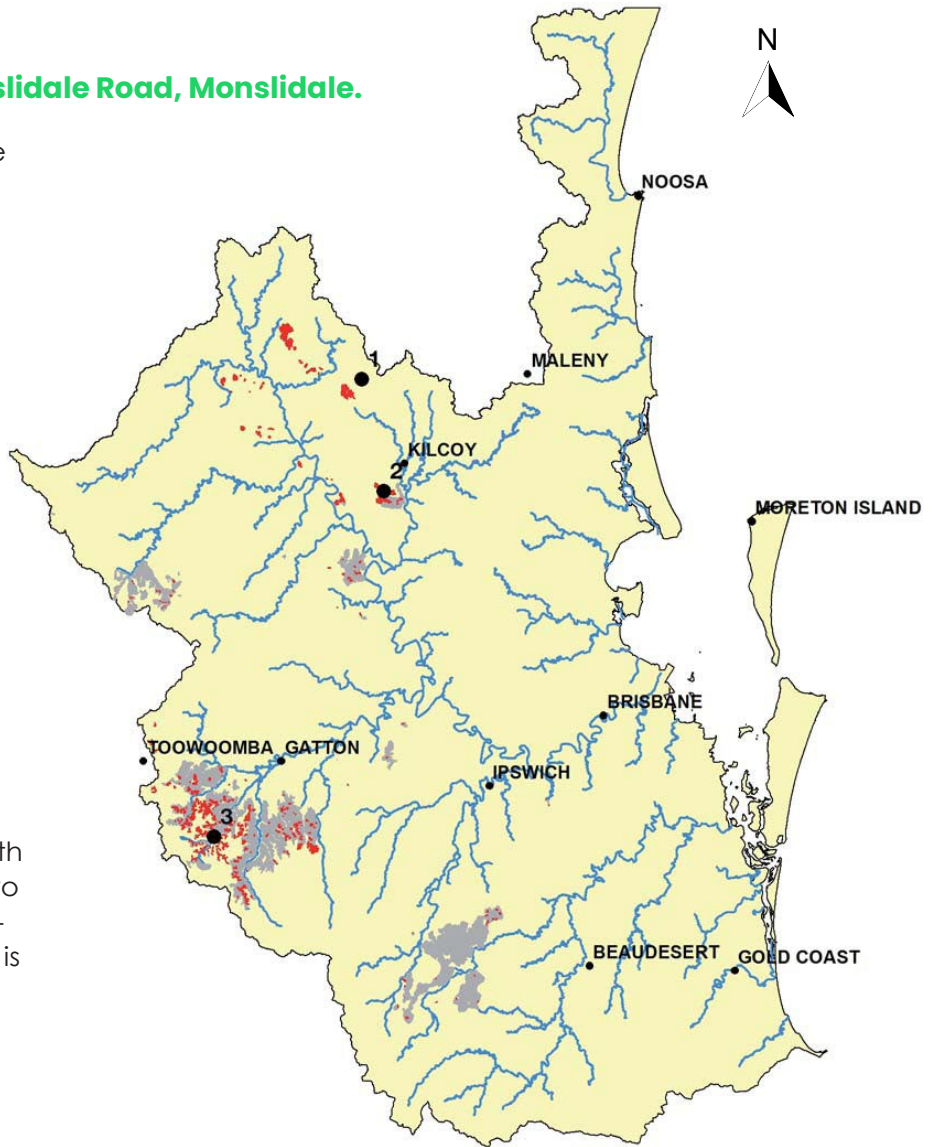
RE 12.9-10.15 can be view along the roadside as it winds up the range.

2. Esk-Kilcoy Road, Hazeldean.

At this location, the hills to the west of the road are covered in RE 12.9-10.15 on the steep slopes behind the residential estate. Many patches of this Regional Ecosystem remain because the steep and difficult terrain restricts other use of this land.

3. Dwyer's Scrub Conservation Park, Fordsdale.

This remnant forest is situated on both basalt and sedimentary rocks, so two vine thicket REs are present; RE 12.9-10.15 and RE 12.8.21. Dwyer's Scrub is a great place to view Narrow-leaved Bottle Tree in its natural habitat, with the spreading crowns rising above a dense sea of smaller trees and shrubs.



Pre-clearing (~180 years ago)

Today's distribution

*Map is indicative only - Due to scale, some RE occurrences may not be visible.

Vegetation Management Act (1999) status: Endangered
Level of Protection (extent in protected areas): Low

Pre-clearing extent,
or estimated amount
~180 years ago
(hectares)

Current extent
(hectares)

Percent of pre-
clearing extent
remaining

Amount
protected in
reserves
(hectares)

12.9-10.15

33,873

5030

15%

1,773



Past to present

The early European explorers of SEQ noted the presence of very dense 'brushes' (a historical term for rainforest that remains in use in NSW) as they traversed the country between Brisbane and the Great Dividing Range. The patches on the eastern flank of the Toowoomba Range and the Marburg Range were described as being between 10 and 30 feet tall and were difficult to traverse, often requiring a detour.

The Traditional Owners of the country used pathways to facilitate movement through the scrub country, which provided material for domestic items such as dillybags and weapons. The vine thickets were of little interest to the first pastoralists of the region and it wasn't until the mid to late 1800s that the fertile soils received attention. The softwood scrubs were felled for small farms used for dairying and cropping.

Over the years, the farms were combined into larger areas to maintain viability. Today many of those old farms have been subdivided into rural lifestyle blocks or are used for cattle grazing and seasonal cropping.

The extensive clearing of RE 12.9-10.15 that occurred in the 1800s has resulted in a fragmented landscape. Many examples of semi evergreen vine thickets are now confined to road corridors.

Natural values and functions

Semi-evergreen vine thicket is a structurally complex and biologically productive ecosystem that performs a wide range of ecological functions at varying scales. The diversity of plant life forms play a prominent role in intercepting, generating, storing and recycling energy, carbon, nutrients and pollutants. Vine thickets also protect soil from rain-wash and erosion, and they filter and trap sediments.

Vine thicket patches act as cool shady islands surrounded by hotter open pasture and woodland habitats, and are used for shelter and food by a wide range of birds and small to medium-sized mammals. Many plant species are bird-dispersed and some of the fruit-eating species use vine thickets as stepping stones on seasonal and annual migration routes. Butterflies, bats, litter-foraging vertebrates and a broad range of insects, land snails and other invertebrates are associated with the pollination and decomposition cycles. Remnant patches also play an important role as reservoirs or source populations for plant and animal species that are able to recolonise adjacent areas when conditions are suitable.

The threatened ground-dwelling Black-breasted Button Quail is a sedentary bird that lives in semi-evergreen vine thicket patches across SEQ. Softwood scrub is also a preferred roosting place for Grey-headed Flying Foxes.

Some threatened plants occur in RE 12.9-10.15 such as the tree, Boonah Tuckeroo (*Cupaniopsis tomentella*) and a tall shrub Mt Berryman Phebalium (*Phebalium distans*). The small threatened shrubs Edge Senna (*Senna acclinis*) and Brush Sophora (*Sophora fraseri*) may also occur within remnant and regrowth patches of RE 12.9-10.15.

The cool, protected refuge created by RE 12.9-10.15 allow species such as this Rock Felt Fern (*Pyrossia rupestris*) to survive in an otherwise dry environment (left). The Black-breasted Button Quail (right) is a threatened bird that lives in semi evergreen vine thickets, such as RE 12.9-10.15. Photo by Todd Burrows.



Management

Much of the softwood scrub country in SEQ has been in agricultural production for well over one hundred years. However, it is still relatively easy to determine where the scrubs once grew, as many of the original trees, shrubs and vines persist as scattered individuals in paddocks and as small clumps along fencelines, road reserves and around outbuildings and cattle yards.

Softwood scrub species tend to be slow growing and the survivors in paddocks may be very old. Their growth may now be restricted by competition from pasture grasses and Lantana (*Lantana camara*), browsing and trampling by cattle and macropods, and even the occasional fire. This often gives them a stunted, clumped appearance. However, it demonstrates a capacity for resilience amongst the species that can be used to good effect in restoration and rehabilitation.

The manner in which species have managed to survive after wide-scale clearing is attributable to a number of factors. Some species such as Crow's Apple (*Owenia venosa*) survive by root suckering whilst other species regularly flower and set fruit, which is dispersed by wind (e.g. Crows Ash) or animals such as birds.

Old paddock trees such as native figs provide perches and act as a focus for bird-dispersed seed to establish. A similar effect can be seen along fencelines, especially where Lantana provides some cover.

Softwood scrub patches that have been retained or re-established in the landscape require proactive management and attention including control of weeds and exclusion of cattle and fire.



The extent of RE 12.9-10.15 prior to clearing can often be determined by the presence of isolated scrub trees that persist, despite grazing and exposure (right).



The weedy Prickly Pear or Tree Pear (*Opuntia* sp.) can infest the edges of semi evergreen vine thickets (above).

A number of serious environmental weeds are associated with vine thickets. They include introduced trees such as Chinese Elm (*Ulmus parviflora*), Privet (*Ligustrum* spp.) and shade tolerant vines that can invade intact remnants. Foremost amongst these are Madeira Vine (*Anredera cordifolia*), Cat's Claw Creeper (*Dolichandra unguis-cati*), Climbing Asparagus (*Asparagus plumosus*), Climbing Nightshade (*Solanum seaforthianum*) and Dutchman's Pipe (*Aristolochia* spp.). These aggressively competitive vines smother plants and form dense clumps that exclude native plants. Dense clumps of Lantana can also form in canopy gaps and on edges.

The introduced pasture grass Green Panic (*Megathyrsus maximus*) is a prolific seed regenerator which establishes in semi-shade along the margins of semi-evergreen vine thickets. It becomes highly flammable when dry and increases the risk of damage from fire. Fire normally burns to the edge of vine thicket patches under moist or cool conditions. However, under dry conditions fires will burn some distance into softwood scrub and can creep through the leaf litter on the forest floor. While some edge species will sucker, fire usually causes a great deal of stem death and damage.

Fire also promotes weed invasion by Lantana, Green Panic, introduced members of the passionfruit family (*Passiflora* spp.) and other weedy grasses, vines and herbs. Softwood scrubs have limited value as fodder for cattle; however, cattle will use patches for camps resulting in trampling and spread of weeds. Coral Berry (*Rivina humilis*) often forms dense clumps in areas used by cattle.

Restoration and regeneration

Activities that aim to restore the ecosystem to an approximation of original condition will require different approaches depending upon the condition of the site. For example a degraded patch that retains much of its canopy may require intensive weed control, while restoring a bare paddock will require a carefully planned and staged planting over a long period of time.

Some native species will be present and these can be used to advantage in restoration by providing a basic framework or skeleton for the project. Pioneer species can be used to good effect in restoration projects as they tend to be the fastest growing species and will assist with providing shade and reducing exposure to wind. Shade is also beneficial in reducing weed vigour. Lantana and pasture grasses will be the main weeds competing with regenerating species in more open situations. Weed control will be necessary until the developing canopy is dense enough to provide shade. However, there will always be a potential for birds and wind to carry new weed species to the site and early control of infestations will save a lot of work later on.

Severe infestations of weed vines, such as Cat's Claw Creeper, Madeira Vine, Climbing Asparagus and Dutchman's Pipe in degraded semi-evergreen vine thickets are very labour intensive to control. A systematic approach may be the most effective in these situations, gradually working away from the starting point in small stages. A suitable starting point could be an area where risk or rate of re-infestation is judged to be relatively low, for example the edge of the infestation.

Fire and grazing are not recommended in semi-evergreen vine thicket restoration projects due to the potential damage these agents can cause to young plants. Consequently fencing and fire breaks are recommended where there is a risk of damage. Browsing from macropods and possums may also be an issue and tree guards may be needed around palatable species.

Long-term grazing of 12.9-10.15 may affect the overall structure of the scrub, as cattle will browse on trees within reach, and any regrowth. This results in a patchy appearance interspersed with pasture grasses (below).



The edges of softwood scrub are vulnerable to weed incursion, such as this Madeira Vine, which will quickly invade the interior of vine thickets without controls. When undertaking restoration of RE 12.9-10.15, it is important to manage patch edges for weeds and to prevent fire where possible.



Restoration tips

- Plan the project thoroughly, as ecological restoration of softwood scrub is slow and requires major inputs.
- Make use of the huge volume of information about softwood scrub in SEQ and nearby areas available on the internet.
- Become familiar with the local flora by observing the species surviving in gullies, roadsides etc. Also bear in mind that those prickly looking plants in the paddock are probably native species that will make a contribution to the project.
- If your project is going to need lots of planting, try growing your own! Most softwood scrub and dry rainforest trees and shrubs are much easier to germinate than eucalypts and bottlebrushes! The seed you collect doesn't usually stay viable for long so remember, fresh is best.
- Don't get carried away planting vines too early in the project. They tend to become rampant and smother trees and shrubs.
- Control or limit the use of fire and grazing to avoid damage to the regeneration.
- Protect the genetic resources of local wild populations of plants by reducing the risk of cross pollination with planted species sourced from outside the local area or planting species that did not occur within your local area.

Some native plants of RE 12.9-10.15

Tall trees

Crow's Ash	<i>Flindersia australis</i>
Crow's Apple	<i>Owenia venosa</i>
Ivorywood	<i>Siphonodon australis</i>
Moreton Bay Fig	<i>Ficus macrophylla</i>
Narrow-leaved Bottle	<i>Brachychiton rupestris</i>

Pine Mountain Coral	<i>Erythrina numerosa</i>
Rosewood	<i>Acacia fasciculifera</i>
Silky Oak	<i>Grevillea robusta</i>
Small-leaved Fig	<i>Ficus obliqua</i>
Yellowwood	<i>Flindersia xanthoxyla</i>

Trees and shrubs

Bastard Crow's Ash	<i>Pentaceras australis</i>
Black-fruited Thornbush	<i>Pittosporum viscidum</i>
Broad-leaved Leopard Ash	<i>Flindersia collina</i>
Brush Hovea	<i>Hovea longipes</i>
Celerywood	<i>Polyscias elegans</i>
Chain Fruit	<i>Alyxia ruscifolia</i>
Currant Bush	<i>Carissa ovata</i>
Daisy Bush	<i>Olearia canescens</i>
Deep Yellowwood	<i>Rhodosphaera rhodanthema</i>
Diplospora	<i>Triflorensa cameronii</i>
Hard Alectryon	<i>Alectryon subdentatus</i>
Holly-leaved Pittosporum	<i>Auranticarpa rhombifolia</i>
Mock Olive	<i>Notelaea macrocarpa</i>
Native Holly	<i>Alchornea ilicifolia</i>
Native Witch Hazel	<i>Turraea pubescens</i>
Native Pomegranate	<i>Capparis arborea</i>
Orange Bark	<i>Maytenus bilocularis</i>
Pavetta	<i>Pavetta australiensis</i>
Prickly Pine	<i>Bursaria incana</i>
Python Tree	<i>Gossia bidwillii</i>
Red Olive Plum	<i>Elaeodendron australe</i>

Scaly Ebony	<i>Diospyros geminate</i>
Scrub Whitewood	<i>Atalaya salicifolia</i>
Scrub Ironbark	<i>Bridelea exaltata</i>
Scrub Poison Tree	<i>Excoecaria dallachyana</i>
Scrub Wilga	<i>Geijera salicifolia</i>
Shiny-leaved Canthium	<i>Psydrax odorata form buxifolia</i>
Shrubby Deeringia	<i>Deeringia amaranthoides</i>
Small-leaved Acalypha	<i>Acalypha capillipes</i>
Small-leaved Canthium	<i>Everistia vacciniifolia</i>
Small-leaved Coondoo	<i>Pouteria cotinifolia</i>
Small-leaved Phyllanthus	<i>Phyllanthus microcladus</i>
Small-leaved Tuckeroo	<i>Cupaniopsis parvifolia</i>
Southern Erythroxylon	<i>Erythroxylon sp. 'Splityard Creek'</i>
Strychnine Tree	<i>Strychnos psilosperma</i>
Thorny Yellow Wood	<i>Zanthoxylum brachyacanthum</i>
Turkey Bush	<i>Acalypha eremorum</i>
Veiny Denhamia	<i>Denhamia pittosporoides</i>
Weeping Pittosporum	<i>Pittosporum angustifolium</i>
Whalebone Tree	<i>Streblus brunonianus</i>
White Tamarind	<i>Elattostachys xylocarpa</i>

Pioneer species

Bellfruit Tree	<i>Codonocarpus attenuatus</i>
Bitter Bark	<i>Alstonia constricta</i>
Flannel Weed	<i>Abutilon oxycarpum</i>
Green Kamala	<i>Mallotus laoxyloides</i>
Hickory Wattle	<i>Acacia disparrima</i> subsp. <i>disparrima</i>
Lolly Bush	<i>Clerodendrum floribundum</i>
Maiden's Wattle	<i>Acacia maidenii</i>

Native Cascarilla	<i>Croton insularis</i>
Native Rosella	<i>Hibiscus heterophyllus</i>
Native Peach	<i>Trema tomentosa</i>
Peach Bush	<i>Ehretia membranifolia</i>
Red Kamala	<i>Mallotus philippensis</i>
Scrub Boonaree	<i>Alectryon diversifolius</i>
White Cedar	<i>Melia azedarach</i>

Vines and scramblers

Black Silkpod	<i>Parsonsia leichhardtii</i>
Blood Vine	<i>Austrosteensia blackii</i>
Bower Vine	<i>Pandorea pandorana</i>
Burney Vine	<i>Trophis scandens</i>
Corky Prickle Vine	<i>Caesalpinia subtropica</i>
Hairy Silkpod	<i>Parsonsia velutina</i>
Hairy Water Vine	<i>Cayratia acris</i>
Hoya	<i>Hoya australis</i>
Lloyd's Milk Vine	<i>Marsdenia lloydii</i>
Native Grape	<i>Tetragium nitens</i>
Native Jasmine	<i>Jasminum didymum</i> subsp. <i>racemosum</i>
Pleogyne	<i>Pleogyne australis</i>
Scrambling Caper	<i>Capparis sarmentosa</i>
Stiff Jasmine	<i>Jasminum volubile</i>
Stinging Vine	<i>Tragia novae-hollandiae</i>
Wombat Berry	<i>Eustrephus latifolius</i>
Zig Zag Vine	<i>Melodorum leichhardtii</i>



Lolly Bush (*Clerodendrum floribundum*)



Leaves and prickly stems of the Pine Mountain Coral Tree (*Erythrina numerosa*)

Grasses, forbs, ferns and epiphytes

Dwarf Sickle Fern	<i>Pellaea nana</i>
Felt Fern	<i>Pyrosia confluens</i>
Hooky Grass	<i>Ancistrachne uncinulata</i>
Rough Maidenhair Fern	<i>Adiantum hispidulum</i>
Stout Bamboo Grass	<i>Austrostipa ramosissima</i>
Square-stemmed Broom	<i>Spartothamnella juncea</i>

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Information provided in the Regional Ecosystems of South East Queensland series provide a general guide and should not be taken to replace professional advice or a formal recommendation of land management.

Further Reading

SEQ Healthy Land & Water Ecological Restoration Framework - www.hlw.org.au

SEQ Land for Wildlife Notes - www.lfwseq.org.au

Queensland Government - www.qld.gov.au (search Regional Ecosystems and Planned Burn Guidelines)



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