

**Forest Practices Authority
FAUNA TECHNICAL NOTE SERIES**

Eagle Nest Management

The Fauna Technical Note Series provides information for Forest Practices Officers on fauna management issues in production forests. These technical notes are advisory guidelines and do not constitute additions or alterations to the Tasmanian Forest Practices Code.

Introduction

This Technical Note is a summary of the characteristics of Wedge-tailed Eagle and White-bellied Sea-eagle nesting sites, breeding behaviour, protocols for searching for nests, assessing the activity of nests and managing nest sites. It aims to provide a background from which informed assessments can be made once experience is gained, ensuring that management recommendations and advice are followed.

In all cases where nests are involved advice should be sought from the Ecology Program in the Forest Practices Authority. General management recommendations for both eagle species associated with forestry activities are delivered through the Threatened Fauna Adviser. For information on this program or for a copy contact the Ecology Program FPA.

Wedge-tailed Eagle

The Tasmanian subspecies of the Wedge-tailed Eagle (*Aquila audax fleayi*) is listed as **endangered** on the Tasmanian *Threatened Species Protection Act 1995* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The species is also a *Priority species* in the Tasmanian Regional Forest Agreement.

The Tasmanian Wedge-tailed Eagle is endemic to the State and is known to occur in all habitats throughout Tasmania (possible vagrant on King Island). The species requires old-growth forest or forest with some old-growth characteristics on sheltered sites for nesting and this, combined with territorial behaviour act to limit its breeding range and population. The size of the population is estimated at between 1000 and 1500 individuals. A population decline is inferred due to loss of nesting habitat, nest disturbance from land clearance and other inappropriate land management practices and from unnatural mortality, including persecution, and electrocution and collision with high voltage power lines. Available data indicate a high proportion of inactive nests and elevated adult mortality leading to a reduction in the mean age of the population and a subsequent reduction in breeding success.

White-bellied Sea-eagle

The Tasmanian White-bellied Sea-eagle population is listed as **vulnerable** under the Tasmanian *Threatened Species Protection Act 1995* and as a migratory species under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The species usually nests in forest within 5km of the coast, lakes or large rivers or areas with a complex mosaic of farm dams. While this species will choose old growth trees when available, this is not a critical requirement for nesting. The species also nests on sea cliffs and rock stacks. Nest trees can be on exposed slopes and close to forest boundaries, particularly near water. However, nests likely to be affected by forestry operations will generally have site characteristic similar to those for Wedge-tailed Eagles.

Breeding season

The eagle breeding season is accepted to be 1st August and 31st January inclusive. Adult eagles may maintain or commence reconstruction of nests to be used in a particular breeding season as early as June (for sea-eagles) and July (for wedgetails). In some areas of the State, especially when unusually dry conditions delay the onset of breeding or when eagles make secondary attempts to breed, chicks may not fledge until March. In areas where there is a strong likelihood of finding sea-eagle nests consideration should be given to the possible earlier commencement to breeding (ie. 1st July to 31st January) and incorporate this into planning and forestry operations.

Nest and nest site characteristics

- Very large nests, when in use are usually about 2.5m across and 1.5m deep (ranging from 1.2m across and 0.5m deep, to 3m across and 3m deep) built in large eucalypts at within the canopy. Nest material comprises sticks from pencil sized up to 40 mm in diameter. Most sticks are about the thickness of one's little finger. The nest often appears as a 'bowl' lined by bark and leaves or a flat platform, depending on the stage of use.
- Old-growth eucalypt forest greater than 27m in height (ie. E-3 up to E1 PI-type height class). Forest less than 27m in height (E4) need only be considered suitable nesting habitat if it contains emergent trees greater than 27m (ie. \geq E-3). This is often the case along creek lines. White-bellied Sea-eagles will generally often nest in trees less than 27m particular where habitat is limited.
- A nest tree is usually the largest or equal largest in the locality and has large branches that provide a stable support for the nest.
- Nests are generally sited on the leeward slope below the height of the ridge and between 60% of the height of the slope and the base of the slope, though there are exceptions where nests are in gorges or on the slopes below plateaux.
- Nests are usually positioned on the downhill side of the trunk and are usually positioned in the base of the emergent canopy.
- Aspects sheltered from the strongest winds (NW and W) are almost always chosen. Aspects are concentrated in the south-eastern half of the compass though they range through 360 degrees. Local topography has an important influence on shelter and therefore nest site selection.
- Ground slope is usually less than 35° and site altitude is variable.
- The spacing of active nests between territories (nearest neighbour distance, NND) tends to be fairly regular. Most territories have more than one nest (up to six) and as a result the likelihood of finding additional nests within 2km of a known nest is high. This likelihood decreases to very low at about 1/2NND then increases again reaching a maximum at around 1NND from an active nest. However, there appears to be an increasing tendency toward a breakdown in nearest neighbour distance therefore this measurement should only be applied to nests active in the same season.
- White-bellied Sea-eagle nest spacing ranges between 3 and 8km but due to the spacing of favourable water bodies there will be large gaps between occupied areas.

Age of nests

Old nests are generally larger than new nests as they are added to each breeding season. They will often develop a green stain that extends down the trunk. This stain results from algae growing on the nutrients leached from droppings and prey in the nest. The extent of the staining can indicate nest age. All but the uppermost sticks on an old active nest will be bleached grey. New nests are generally smaller, lack algae staining, contain mostly unbleached sticks and may contain sticks with leaves still attached. Nests

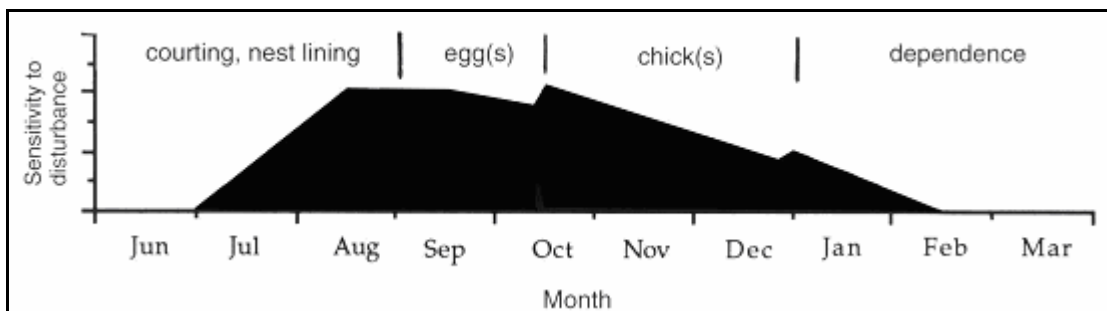
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that are no longer maintained or have not been used for many years appear bleached throughout. They may also lose form showing varying degrees of slumping and disintegration. **Never** assume that because a nest was not used in the previous season that it is abandoned. Provided the site characteristics are similar there is a reasonable chance that the eagles will return.

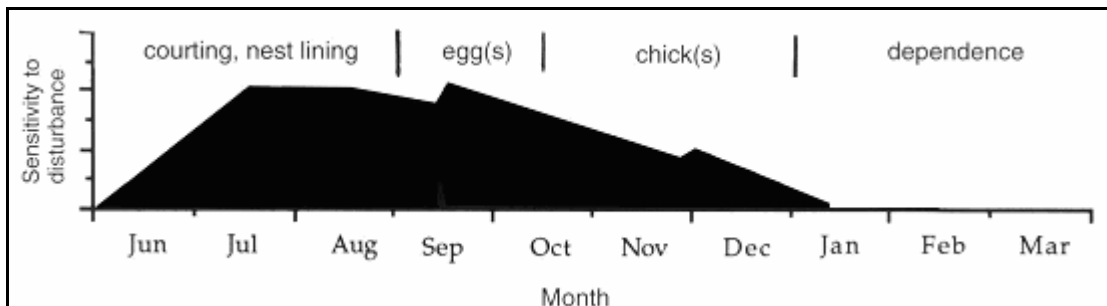
Nest disturbance

When considering disturbance it is important to understand that eagles' sensitivity to disturbance varies during the breeding season. Generally eagles are most easily disturbed at the start of the breeding cycle but sensitivity reaches its peak at the beginning of each phase (ie. nest lining, egg laying, incubation, hatching and fledging).

The diagrams below highlight the fluctuation in sensitivity to disturbance throughout the breeding cycle for each species.



Sensitivity of the Tasmanian Wedge-tailed Eagle to disturbance while breeding



Sensitivity of the White-bellied Sea-eagle to disturbance while breeding.

The effects of disturbance are cumulative and:

- increase with intensity;
- increase with proximity;
- increase with duration;
- increase with elevation above the nest;
- are dependent on timing;
- may decrease with regularity and predictability;
- are dependent on individual responses; and
- increase when the nest is the focus of disturbance.

Birds may desert nests at any stage (ie. eggs or chicks) if disturbance exceeds a certain threshold. Disturbance does not necessarily have to cause desertion to result in breeding failure, as birds can be kept away from the nest long enough for eggs or young chicks to

become chilled and fail to survive. Stress induced by disturbance may also lower the chick's resistance to disease.

Searching for nests

Pre-operational searches for eagle nests are required when a search recommendation is delivered through the Threatened Fauna Adviser.

Who can search for nests?

Only those accredited through training should conduct or supervise nest searches. The more experienced a searcher is, the greater the chance of success. The following people are considered suitable:

- DPIWE specialists;
- Forest Practices Authority specialists;
- Private Consultants accredited by FPA and the Threatened Species Section of DPIWE;
- Forest Practices Officers, Forest Planners and other persons accredited by FPA and the Threatened Species Section of DPIWE.

When should searches be done?

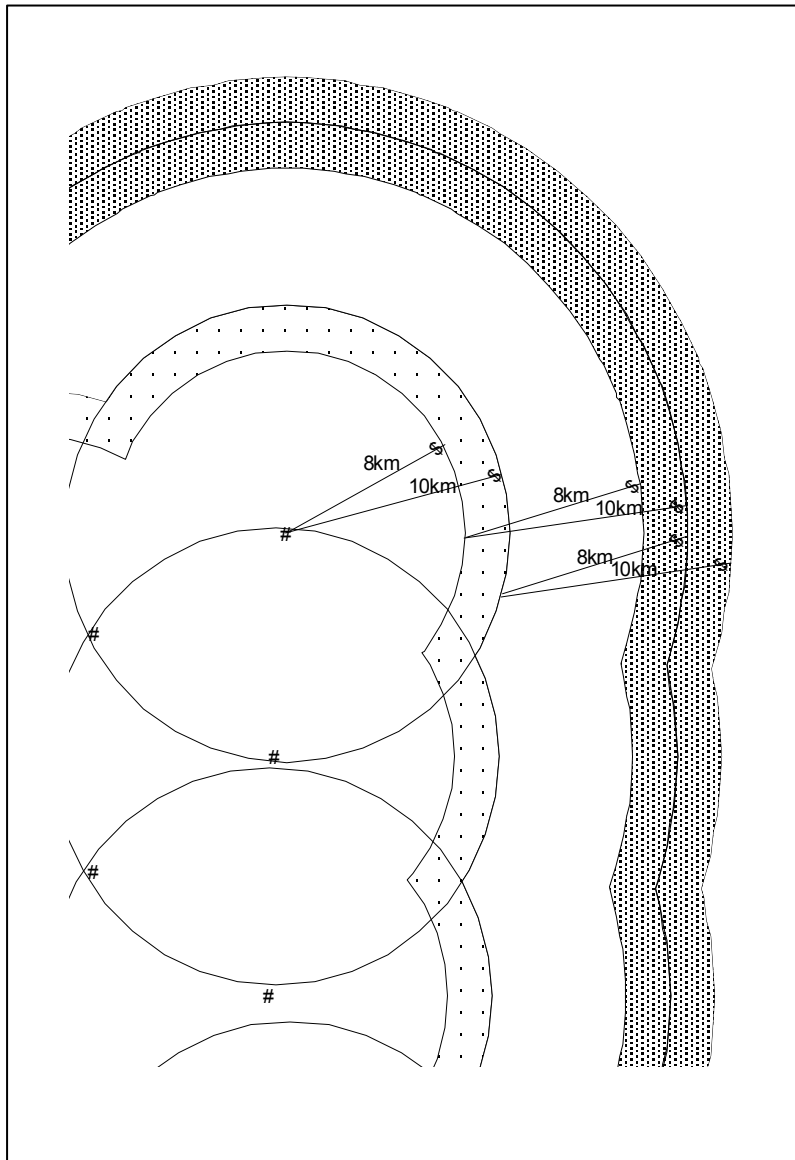
Searches should be conducted outside the breeding season (Wedge-tailed Eagles: August to January inclusive, White-bellied Sea-eagles: July to January inclusive). Specific advice should be sought from the TSS specialist if unsure as to the likelihood of Sea-eagle nests in a particular area. If a nest search is required during the breeding season of either species then approval will need to be sought from the Ecology Program FPA because if a nest is found while searching during the breeding season there is a serious chance of nest desertion. Searching near a nest might cause the attendant adult/s to leave the nest and remain away for hours before the nest is found. Directed activity at a nest such as observation from close range may represent one of the worst kinds of nest disturbances. Such situations are best avoided by strategic planning of coupe searches to avoid the need to conduct searches within the breeding season.

Finding an Eagle nest

The key to finding new eagle nests is good planning. The identification of suitable habitat with a high probability of containing nests is achieved through the use of forest type mapping, topography (slope, aspect and relief) and local nearest neighbour distance (NND).

The regular dispersion of Wedge-tailed Eagle territories provides an opportunity to predict where territories may be centred and therefore where nests may be found. This is also the case for White-bellied Sea-eagles, however nests tend to be distributed more linearly along land/water boundaries.

Throughout the State, distance between neighbouring active Wedge-tailed Eagle nests (the nearest neighbour distance) varies between 4 and more than 20km. This obviously makes stepping out nests on a map very difficult. However, within districts NND is more consistent. It is important to use information from an area as close as possible to that in question.



Consider a proposed logging area with an adjacent area where several neighbouring nests are known with NNDs of 8 - 10 km:

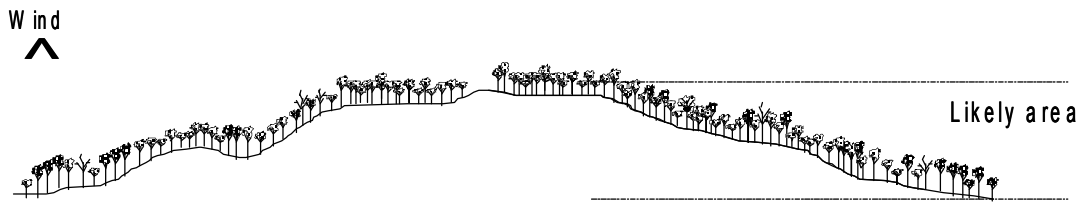
Nearest new nests could be anywhere within the dotted area. Predicting more distant nest sites (grey areas) compounds the 'slop' in the prediction and quickly becomes an academic exercise using distance alone.

In the areas of highest probability we then look for patches of old growth, eucalypt dominated forest of more than 5ha. The use of PI-type mapping is recommended in the assessment of nest search areas. This type of mapping identifies the average forest height. Forest height is one of the major factors determining nest site selection. Be aware that sometimes PI-typing will overlook potential sites where taller trees occur within forest of a lower height class.

As an addition it is good to make use of local knowledge and together with aerial photographs should give you these options. Notwithstanding very good planning there is no substitute for diligent observation and corrections can still be made during the process of searching. This is particularly important during aerial searching where the elevated perspective offers opportunities to reassess the mapped search area.

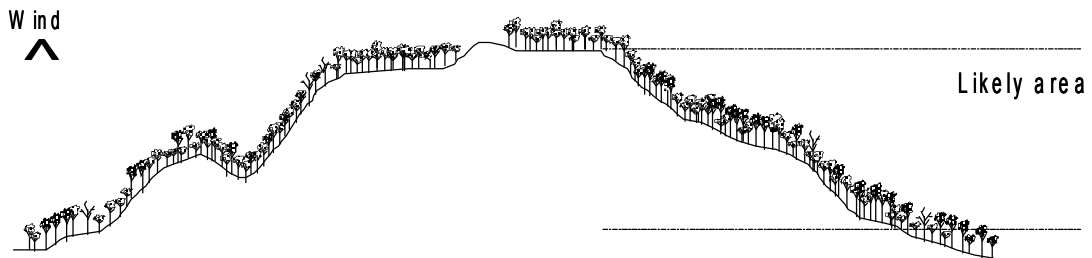
Site slope and the shelter offered by a site are important factors when attempting to predict the location of a nest. The vast majority of known nests are in a wind-sheltered position. Although there is a general tendency to shelter from north westerlies this can be overridden by local conditions. Knowing the size of the hill or slope in question can be helpful in predicting where a nest may be found. So important is shelter from strong winds that with nearly every site the nest is below the ridge top ground level.

Typical Wedge-tailed Eagle Nest Sites



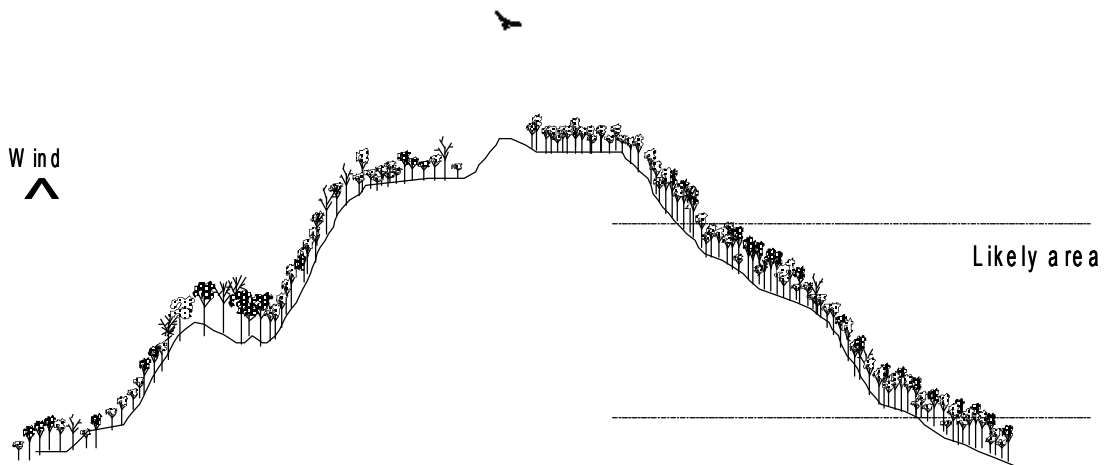
Small hill

On a small hill the nest tree will probably be down the bottom of the slope.



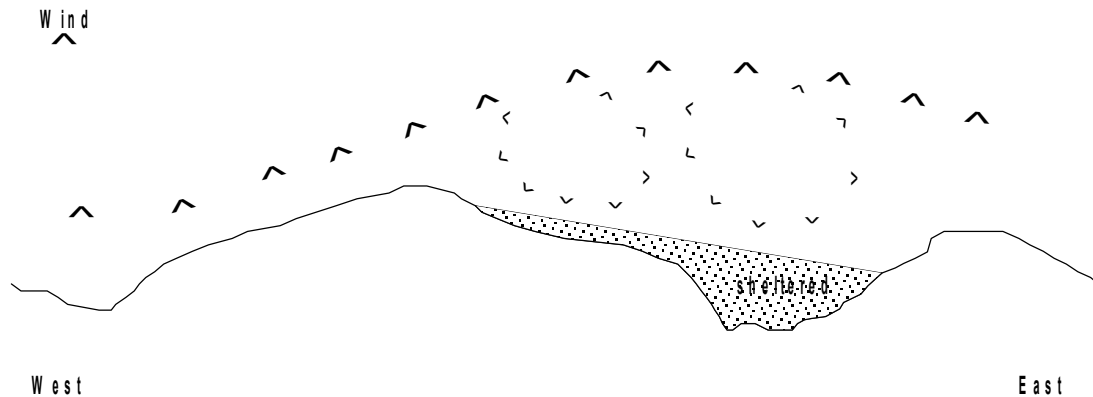
Medium hill

On a medium sized hill eagles can have the advantage of height yet still be sheltered which means that they can be in a broad belt between contours.



Large hill

On a large hill eagles have an even greater choice although they are usually less than half way up the slope, probably to avoid unnecessary effort when carrying prey up the hill.



Consider a gully with a large hill to the west. The westerly wind will be forced up and over the hilltop providing shelter on the leeward side. If the hill is large enough it will also provide shelter on the opposite side of the gully on the western aspect. These are also sites that should be considered when undertaking forest planning and searching for nests.

There may also be disturbance factors (such as a quarry or house) that limit potential nest sites. Thus, an educated scrutiny of the terrain in addition to localised disturbance factors should greatly focus the search area. However, nests may still occur in areas considered disturbed, as these will usually have been constructed prior to the disturbance.

Observation of eagles can be helpful in locating nests, especially in large areas of relatively homogeneous native forest. Begging fledglings are rarely far from a nest likewise for mating adults. Adults doing their spectacular undulating, aerial displays are usually near a nest although however, during the breeding season merely the sight of a neighbour can trigger such behaviour.

Other incidental behaviour such as an adult carrying food or nesting material can also focus search effort. At the least, a loci of adult activity warrants consideration in designing a nest search area.

A nest search area can, in most cases, be effectively designed within the office environment using contour map, forest maturity and forest height within an area prior to conducting the search in the field. The use of Geographic Information Systems (GIS) to identify potential habitat can streamline the process and remove human subjectivity. Habitat modelling has proven to be a highly effective method

How should a search be done?

The method selected will be a reflection of the forest type, the experience of searchers and the funding environment. There are two main methods for searching for potential nest sites:

1. Ground searching
2. Aerial surveys.

Ground surveys

Searching on foot is particularly suited to drier, more open forests where visibility between trees and into canopies is good. Surveys on foot become less appropriate in thick, wet forests where visibility is poor between trees and into the canopy (meaning a searcher must walk beneath every single tree because of thick understorey). Ground searching is efficient for smaller areas containing less potential habitat (eg. single

coupes) but less efficient for larger areas containing more potential habitat (eg. large hill slopes in inaccessible river valleys).

Ground surveys are best conducted by two people or more who walk about 50-100 metres apart (depending on visibility; ie. they are within cooee distance of each other), providing an overlap in the trees they are seeing. Potentially suitable areas are marked on a map prior to commencing the search. Searchers should walk along the contour at different levels to ensure that all areas of potential habitat are covered. Searchers should turn and look around at regular intervals - even large nests can be hidden surprisingly well from view from certain angles. All searchers should carry a GPS for recording nest locations and binoculars to be able to discern accumulations of bark from actual nests. In cases where the searchers are unsure, a good quality photograph can be referred to the TSS Specialist for identification. If a nest is found, remember to record the location by GPS standing as close to the nest tree as possible, noting also the accuracy and datum. GPS units can also be use to set pre-determine routes or to log the track taken. Either method will ensure thorough coverage of the search area.

Ground searches should **never** be combined with other work - there is more than one example of a nest tree having a piece of blue flagging tape tied around it. Marking boundaries, searching for rare plants, measuring trees, etc should be done separately, or at a minimum, take extra people with you, or spend longer searching.

Aerial surveys

Aerial surveys for locating nests are done by helicopter, not fixed wing aircraft. Helicopters can fly low and slowly enough for trained observers to find nests. Once again, trained eyes are best for this sort of work. It is important to have a very good idea of the areas that need searching. Helicopter time is expensive but can be very efficient in strategically searching a number of coupes or potential operation areas. It is very important that at least one of the observers (the most experienced) acts as a navigator, especially if a nest is located. A ground survey could be conducted to verify the location of a nest located during an aerial search and if necessary this should be done as soon after the aerial search as practicable while memory of the site is fresh.

Planning procedure

The same principles should be followed when planning aerial search as for ground searches but due to the expense of helicopter hire it is recommended that the planning stage be particularly diligent.

The use of technology can streamline this process and aid in ensuring appropriated coverage of the search area. GIS mapping of habitat allows the search areas to be monitored while flying.

Searching procedure

Maps of the search areas are pre-prepared and one person (the most experienced) acts as the navigator ensuring that the areas are adequately covered before moving-on. It is best for this person to be seated in the front, as this position has the best visibility. As a minimum a GPS unit should be up-loaded with search area waypoints to aid navigation and to record a log of the track for verification. Two spotters should be used in the back, each seated by a window and all crew should be in intercom communication with the pilot. The main flight direction is to be controlled by the navigator (for safety issues the pilot overrides all) but spotters should communicate if a possible nest is seen and they wish to observe more closely or if they feel an area has not been covered adequately.

The usual search method is to fly parallel transects following the contours. However, topography, weather conditions and safety considerations will ultimately determine the flight path. Narrow gullies are best investigated by flying up from the bottom. Flying downhill limits the view of the forest canopy, particularly that directly in front of the helicopter but may be unavoidable. In which case additional transects should be flown. In larger areas over even slopes the contour transect method is most effective but the width of transects and flight speed need to be adjusted for the density of the forest crown.

A GPS connected to a Laptop computer, up-loaded with search area polygons in combination with real time recording of the helicopter flight path it can provide valuable feedback on the adequacy of the search. This method especially useful in terrain where it is difficult to ascertain ones position relative to the topography (eg. highly forested landscapes where there are few discernible features). A GPS should also be used to record the grid coordinates while hovering over the newly discovered nest. It is important however, to note the accuracy of the recorded waypoints. Each nest should be photographed as standard practice. Digital cameras make this easy and efficient. When photographing nests ensure that the image is taken through an open window.

Considerations for aerial searching

The make of helicopter employed can significantly influence the efficiency of a search. The following should be considered when planning aerial searches.

Small diesel powered helicopters (eg. Robinson R22 and R44) are not suitable as they simply lack sufficient power when carrying four passengers and for negotiating tight gullies etc.

Bell Jet Rangers can be used but their efficiency is reduced by a limited capacity to fly slowly with four passengers and to hover while recording nest coordinates. The alternative of carrying fewer spotters helps to lower flight speed and aid hovering but reduces the observed area.

Aerospatiale Squirrels either B, B1 or B2 models are ideally suited to nest searching. The ability to fly more slowly and to truly hover are both significant advantages. These aircraft have reserve power even when carrying five passengers and are less affected by tail winds and gusts. They also have more comfortable seats, an important consideration for when undertaking full day searches.

Precautions for helicopter searches

The use of helicopters in close proximity to eagle nests during the breeding season poses risks to both eagles and the occupants of the helicopter. Human safety is paramount and wherever possible risky practices should be avoided. Protection of threatened species is also very important and every effort should be made to avoid detrimental impacts from human activity. Considerable time and money has been expended in efforts to protect eagle nests during forestry activities.

There have been six reported cases of eagle collisions with helicopters in Tasmania, none fatal to humans but all have been fatal to the eagles. Many close encounters are reported. Eagles of both species in Tasmania are capable of attacking and striking aircraft. Helicopters are particularly prone to strikes because of the nature of their flight, (ie. relatively slow and often indirect). Eagles are territorial, particularly during the breeding season, and will aggressively defend their territories from intruders. Aggressive behaviour usually is signalled by 'pot-hooking' displays, by flying with extended feet and talons but an attack may occur suddenly and without warning. While searching observers should be aware and convey eagle sightings to the helicopter pilot. All observers should then monitor the behaviour of the eagle while in the area.

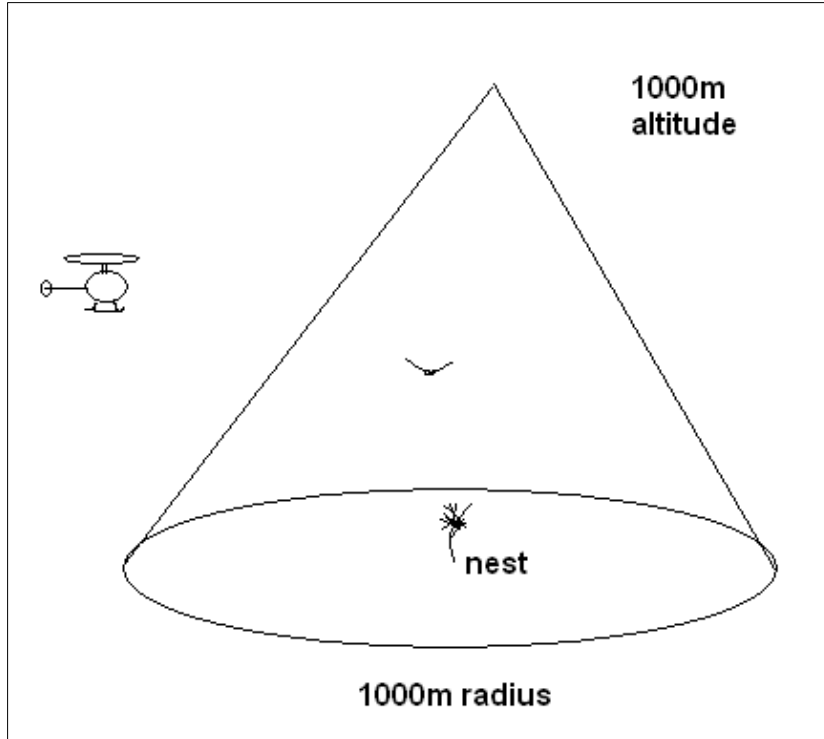
Aircraft are perceived by eagles to be large birds and are therefore seen as a threat. The degree to which an eagle will be threatened by aircraft will depend on a number of factors. These factors include:

Timing

- The time of year when the encounter occurs will significantly influence the likelihood of an attack. Territorial behaviour increases with the onset of the breeding season July to December, inclusive, for White-bellied Sea-eagles and August to January, inclusive, for Wedge-tailed Eagles.

Proximity to an active nest

- The closer an aircraft is to an active nest the greater will be the likelihood of an



attack. This applies both to horizontal and vertical distances. The zone of greatest risk is directly over the nest. Figure 1 illustrates the zone in which attacks are likely to take place. As a nest is approached the altitude at which attacks will occur increases reaching a maximum over the nest.

The diagram to the right illustrates the potential zone of attack around an active nest.

Elevation

- The altitude at which the aircraft is flying will determine the likelihood of an aggressive encounter. The lower and aircraft is flying the greater the risk of a strike.

Speed/Time

- Aircraft speed influences the time spent within a given distance of a nest and therefore the level of distress the eagles are subjected to. The longer an aircraft dwells in the zone of potential attack the greater the risk.
- Aircraft speed will influence the risk of a strike by affecting both the chance of an eagle catching the aircraft and the chance of an eagle misjudging the air speed of the aircraft.
- A slow flying helicopter is easier to strike than a fast flying fixed-wing plane, if that is the birds' intent. Conversely, an eagle is more likely to misjudge the speed of a fast moving aircraft, if its intent is to threaten and not to strike.

Flight path

- Helicopters often fly in a circuitous path rather than in a direct line. The nature of this flight makes it more likely to aggravate an eagle and allow it to 'catch' the helicopter.

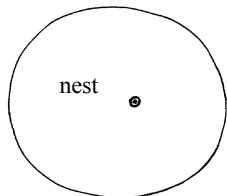
What happens if a nest (or nests) is found?

It is extremely important to keep the eagles at a nest. As far as they are concerned, nothing succeeds like breeding success. Desertions due to forestry activities or some other anthropogenic activity usually result in subsequent attempts to nest elsewhere in the territory, often in sub standard sites, and the whole disruptive procedure can just as easily be repeated. Thus, it is important to make serious attempts to keep the birds where they were first found. Each nest is important whether or not it is active because nests act as territorial flags and provide birds with alternative nests should the current nest fail. Individuals that will tolerate some disturbance have special value and must be assisted. It is possible they produce tolerant offspring – perhaps the only way for the future. It is critical to the continual use of nests that nest reserves are designed properly and that nest management prescriptions are **strictly** applied.

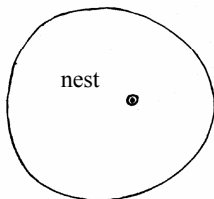
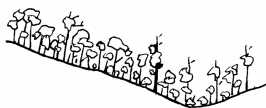
- **Reserves:** The basic requirement for nest security is a reserve of 10ha (a circle of 360m diameter or an oval of about 300 m x 400m) of undisturbed habitat around the nest concentrated uphill. On slopes this area should be oval shaped with a long axis up and down the hill and located so the nest is $\frac{2}{3}$ to $\frac{3}{4}$ down the reserve. The steeper the hill the greater proportion of the reserve needs to be above the nest tree. A strong recommendation stands for a surrounding buffer zone of an additional 10ha giving a circle of 500 m diameter in total or an oval of about 400 m x 600 m. The canopy height of this buffer should be maintained although it can be selectively logged at 50% of old-growth stems fallen outward. Roding should be below and outside of the reserve and out of sight of the nest. When designing reserves take into account the topography so that the reserve provides the maximum protection possible.
- **Timing:** Forestry activities must not occur within 500m or 1km line-of-sight during the breeding season of either species. For example, logging might start near the nest in autumn and get further away as the breeding season approaches. The basic rule is that the later during breeding disturbance occurs, the less harm it does.

The diagrams below indicate the recommended changes in reserve design according to the slope of a site.

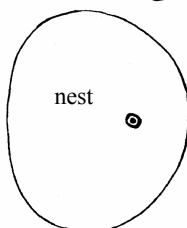
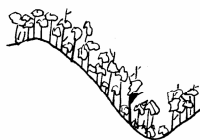
prevailing wind direction



Low slope: basically oval with more protection on the windward side.



Moderate slope: more protection on the uphill side

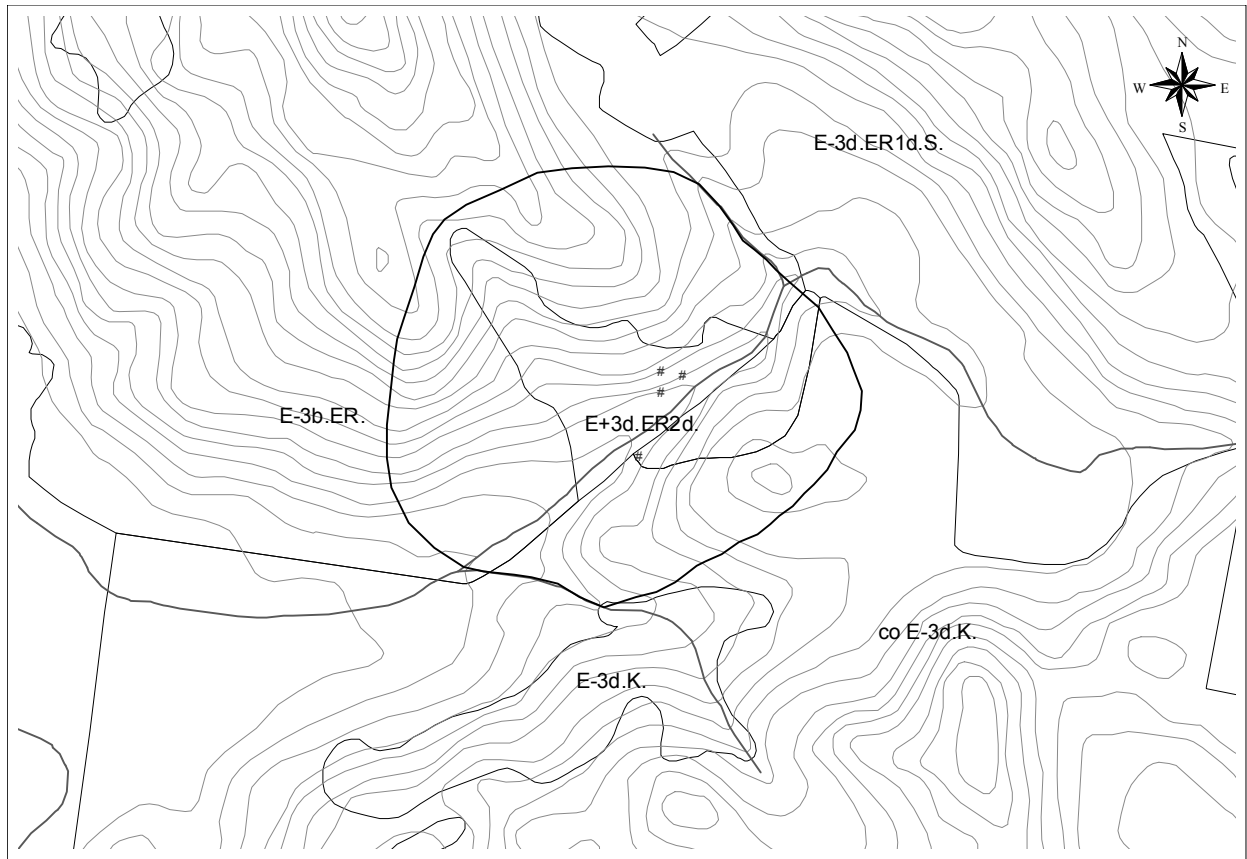


Steep slope: significantly more protection on the uphill side

Reserve Design

Rarely is reserve design simple. The diagram below illustrates a well-designed nest reserve for four nests. The reserve has been designed to follow natural boundaries such as creeks and ridges. The boundaries along the ridges extend to its far side to provide topographic and well as vegetative screens and help to protect the nests from visibility from above. As the aspect of the gully is south-west the nests require protection from strong westerlies. Extending the reserve to the windward side provides this shelter.

What is designed in the office may occasionally prove to be inadequate in the field. The density of the surrounding forest will govern how well the retained forest shelters a nest from the elements and how well it screens a nest from visibility. When marking reserve boundaries in the field, bear in mind that the perspective from a nest is very different from the perspective from the ground. This means that from a nest the eagles can see much further into the forest than is apparent from the ground.



Nest activity assessments

Numerous nests may exist within a single territory but only one nest is used in a single breeding season. Therefore, it is possible to determine if a nest is active for that year so that forestry activities may be permitted to occur within the 500m or 1km line-of-sight exclusion zones.

When can a nest be activity checked?

The breeding season of Wedge-tailed Eagles is between 1st August and 31st January inclusive but this can vary depending on seasonal effects. The best advice is to avoid activities near nests during this period. If this is not possible then an activity check of the nest must be conducted to determine if a nest is being used. Nests can be checked from the ground with the use of a telescope or good quality binoculars from a suitable vantage point (a telescope means that nests can be checked from a very long distance).

Nest activity checking will only be permitted during specified times through the breeding season. These dates will vary from year to year and are agreed to by the Forest Practices Authority and Threatened Species Section (TSS). **Nest activity checks must be done by people who have been accredited by FPA and TSS** following approval from FPA Ecology Program.

When is a nest active?

The activity status of a nest is determined by the Senior Ecologist of the Forest Practices Authority Ecology Program.

As a guide, nest activity can be determined from a number of observations:

- The presence of prey remains at the base of the tree, although an active nest will not always have prey remains as they are regularly visited by scavengers.
- The presence of droppings on the vegetation around the base of the tree and near the nest on branches.
- The presence of green leaves or sticks with leaves attached indicates at the very least that the nest is being maintained.
- Obviously, adults or a chick at the nest indicate activity, although adults nearby the nest may simply indicate that the nest is occupied territory.
- The shape of the nest will indicate the level of recent activity. Active and well-maintained nests will have a flat top but tend to become rounded with neglect. Old unused nests appear to sag at the edges, look dilapidated and untidy.
- Bleached grey sticks particularly on the top of the nest suggest no recent use, whereas brown unbleached sticks are fairly recent additions.

Important principles to consider before activity checking a nest

1. The coordinates of nest proposed for breeding season checks should be accurately known so that the nest can be approached quickly without the need for "searching",
2. Outside the breeding season a vantage point from which the nest can be observed should be established. It is recommended that this point be recorded by GPS so that it can be easily located during the breeding season,
3. Nests whose locality is unconfirmed should not be assessed during the breeding season.

Procedure for activity checking

All nests must be regarded as **ACTIVE** until otherwise confirmed by the Senior Ecologist, FPA Ecology Program. Activity checks should be conducted in a way that *avoids disturbance*. The following procedure is to be followed.

1. **Inform FPA Ecology Program (Senior Ecologist) of intent to check a specific nest for activity and obtain approval to approach the nest** (as required under Recommendation 3 for this species from the Threatened Fauna Adviser Program). You

will need to seek landowners/land managers permission before undertaking activity checks of nests on adjacent land.

2. A **maximum of two (2) people** are to do the checking.
3. **No more than 20 minutes is to be spent within 100m of a nest** to establish if the nest is active and record observations. If the nest can be observed from greater than 200m away then the time allowed can be extended up to 1 hour.
4. **Noise must be kept to an absolute minimum**, there should be no need for any significant noise, especially loud talking etc..
5. **Plan to approach the nest from uphill** to give the best possibility of observing nest contents. Only approach the nest as closely as you need to make the observations, but go **no closer than 50m**.
6. If a bird is observed on the nest or in the immediate area, including circling overhead, **leave the nest vicinity immediately (ie. move at least 500m away from the nest)**.
7. Complete an Activity check sheet and forward immediately to the FPA Ecology Program. Written approval must be obtained from FPA Ecology Program before breeding season operational restrictions are lifted.

Planning for Good Nest Management

There are some additional considerations that should be taken into account when managing eagle nests.

- Planning should aim to reduce the need to undertake activity checks. For all recently active nests plan forest operations and other developments to take place outside the breeding season.
- Assess carefully the need for nest searches when planning roads, quarries, walking tracks and any other form of land development in addition to forest harvesting operations.
- Where roads pass through or close to nest reserves consideration should be given to rehabilitation or gating of these roads and keeping gates locked during the breeding season. Where roads are required for access to operational areas, such operations should be programmed for outside the breeding season.
- When planning for plantation establishment, consider the implications of breeding season restrictions on the management of these areas. Plantations are likely to require the monitoring and control of browsing mammals, leaf beetles and weeds. They may also require more ongoing management such as fire control and thinning. Each of these activities may be restricted subject to the activity of nearby nests.
- If bark heaps close to nests require burning this should be conducted as early as possible and should be extinguished prior to the breeding season if there are disturbance issues.

Further reading

Brown, W.E. and Mooney, N.J. (1997). Modelling of the nesting habitat of the Wedge-tailed Eagle (*Aquila audax fleayi*) in Tasmania. Report to Tasmanian RFA Environment and Heritage Technical Committee.

Jackson, J. and Taylor, R. (1994). *Threatened Fauna Manual for Production Forests in Tasmania*. Forest Practices Unit, Forestry Tasmania

Mooney, N.J. and Holdsworth, M.C. (1991). The effects of disturbance on nesting Wedge-tailed Eagles (*Aquila audax fleayi*) in Tasmania. *Tasforests* **3**:15-31.

Raptor Nest Search Form

Coupe No.: Grid Coordinates:mEmN (GDA)

Action	Person	Date	Result
Previously searched?			
Potential nesting habitat assessment			Potential nesting habitat area (attach map)
Notification of FPA			Search area verified/extended (mark on map)
Search of nesting habitat	Person-hours:		Search results (mark area searched on map)
Follow-up search(?)	Person-hours:		
Notification to FPA			
Nest site/reserve added to planning maps/GIS			

Raptor Nest Record Form

2006

SPECIES:

OBSERVER: name, address, phone/fax

DATE OF THIS REPORT:

WHEN WAS THE NEST FOUND?

HOW WAS THE NEST FOUND? eg. during pre-logging search, during forestry operation, etc.

HAD THE AREA BEEN PREVIOUSLY SEARCHED? give detail

LOCATION OF NEST:

Nearest feature:

FPP number: Coupe number:

Grid Coordinates:EN Mapsheet:

Datum (GDA/AGD): GPSed? YES/NO Accuracy (m)

NEST SITUATION: was it in a tree (species?), on a cliff, or on the ground?

HISTORY OF NEST USE: known breeding attempts? results?

NEST DISTURBANCE: forestry, recreation, roading, building, etc.?

WHAT WAS SEEN? eggs, birds, droppings, nest material, prey, etc.?

NEST NUMBER & NAME: (office use only)

Raptor Nest Activity Assessment Form

NB: Ground assessments are **ONLY** to be conducted between
 ...11 to 22 September OR 13 to 24 November 2006...
 Ground assessments are **NOT** to be conducted if the weather is cold or wet.
 Time within 100m of the nest not to exceed 20 minutes.
 Time within 200m of the nest not to exceed 1 hour.

Nest Number:

Date:

Observer Name and Contact Details:

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Location Name:

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Environmental Variables
 Estimated Temperature:
 Fine/Overcast/Showers (Please circle)
 Notes:

Grid Reference
 Datum (circle): GDA AGD
 Easting mE
 Northing mN

(hh:mm)

Start Time:

:

(hh:mm)

Finish Time:

:

Duration (mins):

Nest Description: (Write a description of what was observed e.g. indicate quality, nest composition, colour, shape, size, condition.)

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Were any of these observed on the nest?	
<small>(tick or cross box)</small>	
Green Leaves	<input type="checkbox"/>
Fresh (brown) sticks	<input type="checkbox"/>
White wash (droppings)	<input type="checkbox"/>
Prey remains	<input type="checkbox"/>
Bird on nest or nearby <small>(note age if possible)</small>	<input type="checkbox"/>

Bird Activity Observed: (Write a description of what was observed e.g. Two birds soaring over the nest, bird carrying sticks)

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Specialist Use Only	
Activity Classification	
Active	<input type="checkbox"/>
Not in use	<input type="checkbox"/>
Requires Confirmation	<input type="checkbox"/>