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Range, Status and Biology of the Madagascar Sea Eagle Haliaeetus vociferoides

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ABSTRACT

The Madagascar Sea Eagle is one of the rarest birds of prey in the world, with probably approximately 50 pairs. Its range is confined to a small strip along the west coast of the island, from Antsiranana (Diego Suarez) at its northernmost point to Belo sur Mer, about 50km south of Morondava, 600km further south. It is doubtful whether it occurred further south in the past.

It occurs in three different types of biotopes: marine rocky areas, mangroves and lakes and rivers. Forty-eight occupied sites were recorded between 1978 and 1986 comprising 96 individuals, including 40 pairs and 10 isolated adults. The principal threats to this species are hunting, trapping and taking young from nests and disappearance of natural habitat. The existing network of protected areas does not guarantee its survival. Only the establishment of a reserve in the small rocky islands of the north-west and the creation of a National Park including the larger lakes in the Antsalova region would ensure the protection of a major population of the eagle.

The numbers and distribution of this endangered raptor may now be considered to be relatively well studied, thanks to the efforts of the WWGBP, but its biology still remains almost unknown. Only one occupied eyrie was found during this study.

INTRODUCTION

The little-known Madagascar Sea Eagle (*Haliaeetus vociferoides*), endemic to Madagascar, is to be regarded as one of the seven rarest birds of prey in the world (Meyburg 1986). Collar & Stuart (1985) and Collar *et al.* (1987) considered it to be "endangered", along with three other species of birds in Madagascar, including another raptor.

In the 19th century, the species was not rare and was often seen in the north-west (Schlegel & Pollen 1868), and was still fairly common there around 1930 (Delacour 1932; Rand 1936), but considered scarce in the 1940s (van Someren 1943).

During their first visit to Madagascar in 1978, B.-U. and C. Meyburg became aware of the critical situation of the Madagascar Sea Eagle. Whereas it was already known that the Madagascar Serpent Eagle (*Eutriorchis astur*) was possibly extinct, the critical state of the Sea Eagle had gone unnoticed. A memorandum in December 1978 advised the ICBP, IUCN, WWF and other international organisations of the grave situation of these two species (Meyburg & Meyburg 1978) and a detailed project was submitted to them in March 1979 (Meyburg 1979).

Fig. 1. Range of the Madagascar Sea Eagle. *Main towns of Madagascar*: A Antsiranana; AM Ambatondrazaka; AMB Ambilobe; ANT Antananarivo; F Fianarantsoa; M Morondava; MA Maintirano; MAH Mahajanga; MAR Maroantsetra; T Tolanaro; TO Toliara; TOA Toamasina.



It was vital to ascertain the number of Sea Eagles that remained, study their status and the threats to their survival, and propose measures for their protection, since it was estimated that only ten pairs survived (Meyburg 1979; Thiollay & Meyburg 1981).

Despite the extremely urgent need for such research, it was impossible for a long time to finance it. The F.I.R. (Fonds d'Intervention pour les Rapaces) alone supported our efforts by producing a leaflet on the Sea Eagle in French and Malagasy, informing the local inhabitants of the need to protect it (F.I.R. No. 9, 1983, p.44). Several thousands of these leaflets were distributed in Madagascar.

In 1980, 1982 and 1983 O. Langrand, B.-U. Meyburg and J.-M. Thiollay undertook, with no outside financial assistance, further trips to Madagascar devoted exclusively to ornithological studies and partially concentrated on research into raptors (Langrand & Meyburg 1984; Meyburg & Langrand 1987). Accordingly most of the island was explored. The total duration of these trips was 20 months. In 1984, the D.B.V. (Deutscher Bund für Vogelschutz), the German League for Bird Protection, voted a substantial sum of money towards this project, which received the approval of the Madagascar Minister of Education in February 1985. O. Langrand and B.-U. Meyburg returned to Madagascar in the summer of 1985 in order to carry out the planned census, most of this being conducted by O. Langrand, who was able to remain on the island until the end of 1985.

RESEARCH METHODS

Surveys on foot have been carried out in all accessible localities where the birds may occur. Villagers in those areas have also been systematically questioned about the species' whereabouts, using the illustrated information sheet written in French and Malagasy. Further information on lakes, rivers and mangrove swamps, where the birds potentially occur, was obtained by helicopter surveys over the area between Antsalova (18°40'S, 44°36'E) and Bekopaka (19°09'S, 44°48'E). Aerial surveys were also carried out in the area between Antsalova and Maintirano (18°05'S, 44°01'E), and the coast between Maintirano and Mahajanga (Majunga) (15°43'S, 46°19'E) including Besalampy (16°45'S, 44°29'E), the Kinkony lake (16°10'S, 45°50'E) and the Betsiboka river between its conjunction with the sea and Maevatanana (16°57'S, 46°49'E). All small rocky islands between Antsiranana and Nosy Be were surveyed by boat.

RANGE

In 1891 the eagle was reported as occurring "all along the western coast" (Silver 1891) and this is perhaps close to the true situation at that time, although evidence of its occurrence in the southern half of the west coast is extremely feeble.

This species occurs today in western coastal regions, between the extreme north of the island, i.e. Nosy Hara (12°15'S, 49°01'E) near Antsiranana (Diego Suarez), and Belo sur Mer (20°44'S, 44°00'E), south of Morondava (20°44'S, 44°17'E), covering 600km of coastline and numerous lakes and ponds close to the coast, together with the major rivers. The most eastern point of the species' range is Anivorano lake (12°45'S, 49°15'E). The farthest site from the sea is Lake Ampijoroa (Ankarafantsika) (16°18'S, 46°49'E), 88km inland from Mahajanga (Majunga). Generally the eagle occurs between sea level and an altitude of 200m. The highest altitudinal record for resident birds is Lac Maudit (1,250m) (12°36'S, 49°09'E) within the Montagne d'Ambre massif.

Further south there are seven observations recorded in the region of Toliara (Tuléar) (23°20'S, 49°41'E) and Morombe (21°47'S, 43°21'E) along the Fiherenana and Mangoky rivers for the period 1959 to 1975 (O. Appert, pers. comm.). These individuals, observed south of the present range, were largely immatures, whose erratic behaviour is well known. The same is true for the irregular observations made by natives at Lake Ihotry, 200km south of the breeding range. The absence of breeding there is explained by the extreme variability of the water level at this lake.

There is no known record, either old or recent, of the species' establishment south of Morondava.

The species was reported from near Morombe around 1930 (Rand 1936) and as frequent in one area around 1960, but was not to be found a decade later, according to Milon *et al.* (1973).

J. Audebert collected two male birds in December 1879 on the north-east coast between Antalaha and Sambava, these specimens being now in the Rijksmuseum van Natuurlijki Historie (Leiden) (Collar & Stuart 1985). All other records appear to be repetitions of each other and based on a single, somewhat insubstantial reference to its occurrence further south near Toamasina (Tamatave) in 1862 (Vinson 1865). There also appear to be two or three old records from Mauritius (Benson 1970).

All our surveys south and east of the present range, as well as information from villagers, do not confirm the breeding of the species beyond the borders described above. However, enquiries circulated among the natives lead us to think that there may be a very small population in the neighbourhood of Iharana (Vohemar) and Analamera forest in the north-east of the island (Nicoll & Langrand 1987).

Adult birds are sedentary, while immatures wander widely, occupying sites transiently and avoiding those used by adults.

HABITAT AND STATUS

In view of the few recent records from Lakes Ampijoroa, Kinkony and Masama, at the end of the 1970s it was believed that only ten pairs might survive (Meyburg 1979; Thiollay & Meyburg 1981). This project, seeking to obtain as accurate a population census as possible, has therefore been given the highest priority by the ICBP/IUCN World Working Group on Birds of Prey. The surveys carried out throughout the range from 1978 up to the end of 1986 revealed 96 individuals, including 40 territorial pairs and 10 isolated adults.

The population is found in three different habitats: rocky coastal areas (Type 1), mangrove swamps (Type 2) and lakes and rivers (Type 3).

1. The rocky coast

Rocky coastal areas form the principal biotope in the north-west sector of the island, between Antisiranana (Diego Suarez) $(12^{\circ}19'S, 49^{\circ}17'E)$ and Nosy Be $(13^{\circ}20'S, 48^{\circ}15'E)$, covering 350km of coast. The Madagascar Sea Eagle is established on numerous small islands or on promontories of the mainland which are sparsely inhabited, if at all. These sites consist either of vertical cliffs, chaotic masses of huge slabs of rock, or of less steep slopes overgrown with tall and dense forest right down to the sea or edged with a belt of mangroves.

The chosen nest sites are invariably sheltered from the wind, a constant factor confirmed on all the small islands in the region. 18 different sites which were found account for 30 different individuals, including 10 established pairs regarded as territorial.

Example 1: Case C1 at Nosy Hara, the northernmost breeding site. This island is a 4km long bar of calcareous rock with an average height of 100m and running north to south. Its coastline is a vertical windswept cliff 155m high. The west coast is more terraced but also includes substantial peaks of rock. It is completely uninhabited, only occasionally used as a stopping-off place by the local fishermen. The cliff combined with the nature and density of the vegetation make the island difficult, if not impossible, to penetrate. It is covered with large trees typical of the western deciduous forest. The pair of Sea Eagles inhabits the west coast, the wind seeming to be the factor limiting its establishment on the east coast. Indeed, the trade winds often blow for around 7 months of the year from the south-east at an average speed of over 10m per second (36km per hour).

Example 2: Cases C5 and C6 of Nosy Mitsio. This island is about 20km long and relatively flat except for high points in the north, south and west, reaching 210, 130 and 150m altitude respectively. The two pairs located occupy the rocky area in the south and the steep islets off the northern point on which to nest. It should be noted that the sites chosen are uninhabited, whereas the rest of the island is partially, if sparsely, populated. In addition to the coast, which is partially bordered with a thin belt of mangroves, the eagles here also frequent a freshwater lake, teeming with fish, which runs alongside a village and a coconut plantation. This was the only case encountered where the same pair simultaneously frequented sea, mangrove and fresh water sites.

2. Mangrove swamps

This type of habitat occurs scattered all along the 600km of coast from Ambilobe (13°30'S,

49°05'E) and Belo sur Tsiribihina (19°42'S, 44°33'E), covering an area of 3,220km² along the western coast (Kiener 1965).

The criteria determining frequentation of the magroves are as follows:

- the size of the mangrove forest is of little importance, since we confirmed that a pair could be content with as little as 2ha in which to build its nest.

- the forest growth must be dense and tall trees are preferred. Mangrove areas of a "bushy" type are avoided.

- the network of channels winding through the forest must be abundant and the channels them selves wide.

the water must not be too muddy to facilitate the spotting of fish below the surface.

In this regard, the mangrove forests too close to the mouths of rivers which bring down a lot of silt are less densely populated and even shunned by the Madagascar Sea Eagle (e.g. the estuary of the Betsiboka as far upstream as Mahajunga). It should be noted that survey of this type of habitat is extremely difficult owing to the fact that it is virtually impossible to penetrate the mangrove forest. 24 eagles were recorded at 12 places, including 11 territorial pairs.

3. Lakes and rivers

These form the principal type of biotope in the central and southern parts of the Sea Eagle's area of distribution. For the birds to frequent them, they must fulfil the following criteria:

- it is essential for the banks to be overgrown by tall trees branching out over the water, to serve as lookout posts.

- the lake must be sufficiently deep (or the river embanked) for the water level to remain constant or vary little throughout the year.

- the surface must not be covered with dense floating vegetation.
- the lake must not present too wide a margin of vegetation such as reeds.

- the water must not be too muddy and should permit prey to be spotted to a minimum depth of 10cm.

- the river current must not be too swift.

The lakes or stretches of river frequented are all close to sea level, with the exception of sites L1 and L2, situated at an altitude of 1,250m.

Example 1: Lac Maudit (L1) and Grand Lac (L2). These two lakes are very different in more ways than one from the other lakes checked. In fact, they are the only two sites lying considerably above sea level, since they are situated at an altitude of 1,250m and are the only two checked in the region covered by the eastern type of primary rain forest. Lac Maudit is a crater lake fairly steeply embanked, lying at the heart of the Montagne d'Ambre, a massif covered with primary forest (central domain rain forest). The crater is about 14ha and the lake only covers 1/4 or 1/3 of its surface, i.e. between 3.5 and 5 ha, during the rainy months of the year. The surrounding area is completely covered with tall trees. The lake is full of fish and the slightly opaque water allows prey to be spotted at a depth of 15cm.

Example 2: Lake Masama (L10). This lake is typical of certain sites checked (L5, L6, L11, L12, L13). It is a major stretch of deep water, covering about 20km², with densely wooded banks over part of its circumference, which is deeply indented, with numerous tongues of land projecting into it which are habitually frequented by the eagles. This place is only thinly populated, and this solely in its S-SW area converted into ricefields.

19 territorial pairs were found at 18 places and 43 birds observed altogether.

CAUSES OF DECLINE AND CONSERVATION

The Madagascar Sea Eagle is one of 8 endemic species out of the 14 different raptors which breed in Madagascar and must now be regarded as one of the rarest birds of prey in the world, with an overall population of 40 breeding pairs recorded in the whole of its range.

The causes of the massive decline in the population of the Madagascar Sea Eagle are principally forms of direct persecution -- shooting, trapping and destruction of the nests and young. Hunters shoot the eagle to obtain a trophy or out of mere curiosity on seeing a large and unfamiliar bird.

The reasons for this persecution by the local people are unclear, since they do not eat it and the fishermen do not regard it as a competitor. Indirect threats are the felling of the trees bordering the lakes and rivers and drainage of the lakes and marshes to make rice fields. In addition, erosion muddies the water and so inhibits fishing. The Sea Eagles are more secure in the northern part of their range, where the human population is thin and it is less likely that alteration of the habitat will lead to the disappearance of favourable biotopes.

Madagascar is a member of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), which controls the export of all Falconiformes (Annex II) and forbids the export of the Peregrine Falcon (*Falco peregrinus*) which is included in Annex I. However, there is no national legislation in Madagascar which protects birds of prey and these are still regarded as pests (Decree No. 61-096, February 1960). Their best protection at present is doubtless the political and economic situation of the country, which only permits a relatively small number of the inhabitants to possess firearms.

The protected areas system includes 2 National Parks, 11 Integral Natural Reserves and 22 Special Reserves but the Madagascar Sea Eagle occurs only in the Montagne d'Ambre National Park (one pair) and in the Ankarafantsika Integral Natural Reserve (one pair and an isolated adult). The creation of a protected zone between Antsalova and Belo sur Tsiribihina, in the form of a National Park or of an extension to Reserve No. 9, as has been urged on several occasions (the latest being Resolution No. 10 of the III World Conference on Birds of Prey), would protect 11 pairs. This region is not only of prime importance for the Madagascar Sea Eagle but also for numerous other endemic species of fauna and flora. The rocky north-west coastline, which includes several small rocky islands that are largely uninhabited could be managed as a reserve and ensure the protection of a further 6 pairs.

Since other Sea Eagles have been bred in captivity (*H. albicilla, H. leucocephalus*), it should be possible to establish a population in captivity which is self-supporting. At present there is apparently no Madagascar Sea Eagle in a zoo anywhere in the world. Since the second chick of this eagle seems to be lost due to "cainism", only these doomed young should be used to build up a captive population (Meyburg 1984).

FOOD AND HUNTING

The eagle feeds on live, surface-dwelling fish of medium length. Prey between 25 and 35cm in length has been identified. Other species of Sea Eagle in the world display a more or less pronounced taste for carrion (Brown 1980; Fischer 1984; Lobkov 1978; Lobkov & Neufeldt 1986; Love 1983; Oehme 1975; Stallmaster 1987; Willgohs 1961). This characteristic has not been noted in the Madagascar Sea Eagle, but reports from the local fishermen indicate that it may occur. They claimed to have seen two individuals eating a dead turtle on the shore. In addition to fish, the fishermen of this region catch a large number of turtles, whose flesh is commonly eaten by the tribes on the coast. This could therefore have been an abandoned carcase of which the eagles were taking advantage.

Like other Sea Eagles, this species perches on a lookout post overhanging the water (tree, rock, cliff, etc) from which it watches out for prey. Its exceptionally keen sight enables it to spot fish from a great distance. It takes to the air nonchalantly and glides for a few dozen or hundred metres, or else gains a little height, before swooping down to take its prey as it skims over the water. The depth at which fish are taken does not exceed 15cm, and it is rare to see the bird immerse more than its feet and lower tarsi. Following this, the bird returns to its perch or, if the prey is too bulky or struggling, lands on a sandbank or at the water's edge to set about killing it with its beak. Flights which do not end in an attack and unsuccessful stoops are not infrequent. No attempts at parasitism were observed on the other fish-eating birds in the vicinity (herons, anhingas, cormorants, etc), as is the case with the African Fish Eagle, which regularly practises piracy on pelicans and herons.

The food of the eagles living on the coast in the north-west mainly consists of Flute Fish (*Fistularia* sp. *Fistularidae*, and *Tylosurus* sp. *Belonidae*). The Flute Fish are fish with thin elongated bodies (0.30 to 1 m long) terminating in narrow jaws. They are surface-dwelling, gregarious and haunt the edges of the coral reefs. Their habit of hanging motionless, head down, just below the surface, or of letting themselves slowly drift, makes them a choice prey for the Sea Eagle.

One new fact discovered was that the Madagascar Sea Eagle consumes a considerable number of crabs (at site C1), especially when weather conditions impede the sighting and/or capture of the usual prey of surface-dwelling fish. It no doubt captures them at low tide, on or between the rocks, dead coral and along the beach.

The eagles living along the rivers and lakes live on fish (*Tilapia* spp. and *Carpus* spp.) which are between 25 and 35cm in length. The villagers at Site L8 affirmed that it also feeds on freshwater turtles, but no personal observation confirmed these reports. At Site L10 we watched an attack by an adult eagle on an African Spoonbill (*Platalea alba*) and another by the same bird on a Humblot's Heron (*Ardea humbloti*). These were unsuccessful; the Spoonbill, which was perched in a tree, having time to fly away, and the heron avoiding the attack by diving. This was the only case of an attempt at predation on birds that was noted in the Madagascar Sea Eagle. It should be noted that one eagle flying over a lake put to flight a group of White-faced Whistling Ducks (*Dendrocygna viduata*) (L4).

GENERAL BEHAVIOUR

The Madagascar Sea Eagle is largely inactive during the daytime. For the greater part of the day it remains on its lookout post or perched at some high vantage point, though not necessarily in sight. It is often to be seen soaring alone or in pairs, taking advantage of the rising thermals or the sea breeze to travel considerable distances without a single flap of the wings or to spiral up high into the sky. During these flights it is habitually molested by other birds, Crested Drongo (*Dicrurus forficatus*), Madagascar Kestrel (*Falco newtoni*), or Black Kite (*Milvus migrans*). If the attack is pressed home, it reacts by turning fully onto its back and thrusting out its feet with talons spread.

Breeding biology

Hardly any data exist on pre- and post-nuptial behaviour and on the breeding biology of the Madagascar Sea Eagle. The species seems to be territorial and occupies its territory throughout the year. A flight in tight spirals, with alternate flapping and gliding, was made by two individuals at Site L10 on 2 June 1982, which might be interpreted as part of a nuptial display flight. The nest is built on a rock (C1) or cliff(C1) overlooking the sea, on a mangrove (M5, M11) or some tall tree at the water's edge *Tamarindus indica*, - Leguminosae, Baobab *Adansonia* spp.-Bombacaceae (L8-L11)). The only occupied nest found and the first ever described was constructed on a huge slab of rock at the foot of a cliff about 100m high (C1). It overlooked the sea from a height of 8m and was sheltered from the winds which blow from the south-east. The nest was built of stout interwoven branches; these were between 1.5 and 3cm thick and had a maximum length of 50cm. The completed structure was about 120cm in diameter. The cup at the centre measured 70 x 50cm and was lined with finer vegetation, particularly sprigs of a climbing plant which covers the nearby sandy beaches. The clutch was composed of one white egg and a chick. The egg measured 68.0 x 54.0mm. The chick was covered with white down.

The clutch consisted of two eggs, but only one young was reared, which seems to be usual judging from the number of pairs observed with only one fledged young (C3 - C5 - L10). Cainism is therefore to be presumed, the more so since a 7cm pellet in the nest (C1) was found which was made up of whitish down. There seems to be no record of two young fledged, which accords also with various sayings of local people.

The nesting period is very uncertain. According to the following data and indications, it would seem that laying takes place from May to August, i.e. during the southern winter which corresponds to the dry season. The arguments in favour of this hypothesis are: C1: nest visited on 2 August 1982 containing 1 egg and a two-day-old chick; M11: one young bird, unable to fly and not fully feathered, captured by villagers in July 1985, derived from an egg laid some time in May; C15: 1 individual collecting nest material on 15 July 1983; L10: 1 pair giving signs of an apparent display flight on 2 June 1982.

Vocalisation

The Madagascar Sea Eagle is, like its African homologue, a very vocal species -- a characteristic which has earned it its scientific and vernacular names. Its cry is a sort of yelping reminiscent of that of the Herring Gull. It is shrill, bright and ringing, and carries far, a sort of "ko ko koy koy koy koy koy". The first part of the call - "ko ko" - is always less ringing, separated and sometimes

omitted altogether. The second part of the call - "koy koy" - is unbroken, more ringing and made up of 4 or 5 "koys" on average. This call is repeated at regular, short intervals, averaging about two a minute, over a space of time ranging from 5 to 12 minutes. The eagle is vocal at all times of the year and at all times of day, even starting to call one hour before sunrise.

The call is given as a solo or in duet with the other member of the pair. In the case of a duet, the calls are generally alternated (not synchronised). Also, in the case of a duet, we have always noted a different cry, a sort of "ki koy ki koy" given with the same frequency as the typical call.

The posture adopted during calling is characteristic. At the start of the call, the neck is stretched forward, following which the head is abruptly flung back over the bird's back, with the beak pointing skyward, and held in this position several seconds before the neck is once again stretched forward. The beak is kept wide open and the throat distended throughout the call. The call is usually given from a conspicuous perch -- a dead tree, a prominent rock or a cliff--or given in flight. In the case of a duet, both birds are most often perched side by side. It was possible to detect another vocalisation, given by an immature bird in contact with an adult. The typical "ko ko koy koy ..." call was preceded by a soft, high-pitched sort of "tuuuiiiiii" repeated several times with the beak slightly open.

Another vocalisation was given by a juvenile kept in captivity. Before the person who fed it, it gave a sort of "kien kihihihihi". The "kien" was short and guttural and the "... kihihihihii" soft, rather high-pitched, quavering, sustained and in decrescendo.

PLUMAGE

Adults: both sexes similar. Top of head and neck bright, light brown. White cheeks. Sides of neck, chin and throat whitish. Beak dark grey, ceres grey-blue. Iris dark brown. Upper parts of body brown. Lower parts brown except for the breast, which is liberally flecked with buff. Tarsi and feet whitish, tinged with yellow. Talons black. Wing brown, sparsely flecked with lighter brown, except for the primaries and secondaries, which are uniform brown. Tail white. Adult plumage is not attained until the fifth year.

Two-day-old chicks: covered with white down. Beak blackish, with edges grey. Tarsi and feet pink-ish-grey, talons yellowish-grey. Iris dark blue.

Juvenile: foreparts, top of head, nape, chin, throat and neck fawn-coloured. Cheek beige. Beak blackish. Iris dark brown. Upper parts of body brown flecked with fawn. Lower parts brown, streaked with fawn at the tips of the feathers except for the breast, which is fawn. Tarsus and foot whitish. Talons black. Wing brown, except for the tips of all feathers, which are fawn.

Secondaries brown with fawn tips. Primaries brown. Underside of wing brown with fawn tips to the feathers, except for the primaries and secondaries, which are grey. Tail: outer rectrices grey; inner rectrices whitish with a grey terminal bar. This plumage has apparently not previously been described and is lacking in Weick (1980).

Immature: Foreparts, top of head, nape and back of neck light brown. Chin and throat light brown, with whitish cheeks. Beak blackish. Iris dark brown. Upper parts of body brown; lower parts brown except for breast, which is light brown. Tarsus and feet whitish; talons black. Wing brown flecked with lighter brown, except for the primaries and secondaries, which are a uniform brown. Tail a dirty greyish-white, with a darker terminal bar. The general colour of the plumage is much duller than in the adult.

FOLKLORE AND LEGEND

Consideration of the sayings and legends ciculated amongst people who live in close and permanent contact with nature can sometimes bolster a scientific theory or supplement data on an individual species. In this way, as regards the Sea Eagle, the following sayings have been collected: "When the young achieve adult plumage, the father and mother die". And: "The Sea Eagle has only one child. If this is a male, the father dies; if a female, the mother dies". In both cases, this means that the young leave the parents' territory as soon as they have developed more or less adult plumage. Sakalava sayings collected at Antsalova in October 1985:A "Vavy ankoay" (= female eagle) is a term used to describe a woman who has only borne one child -- a Sakalava term commonly in use on the west coast. Another saying collected in Maintirano in June 1982, at the heart of the Sakalava tribal area, has it that only he who has already killed a man has the right to kill a Sea Eagle.

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