

On the earliest written descriptions of the Moluccan megapode *Eulipoa wallacei* and its peculiar nesting behaviour

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The Moluccan megapode *Eulipoa wallacei* made its entry in the scientific zoological literature in 1860. First as a species without a name in a letter of Alfred Russel Wallace published in *Ibis* (Wallace 1860) in which he reported the find in 1858 of "...a new *Megapodius*, I think, handsomely banded on the back ..." on the island of Gilolo (now Halmahera); and subsequently as *Megapodius wallacei*, by G.E. Gray in the official first description (Gray 1860) based on two study skins Wallace had forwarded to the British Museum of Natural History. This does not mean that the Moluccan megapode remained unnoticed in pre-Linnaean times, when all organisms roamed the earth unnamed. Heij *et al.* (1997) judged the vivid description of its nesting behaviour by Nicolaus Nuñez (1576) as the first known written report on *Eulipoa wallacei*.

However, mr W. Buijze and dr P. Schreurs recently traced and translated three older sources concerning encounters of early Portuguese visitors with megapodes in the Moluccas. They will be described and discussed below. Integral translations are printed in italics and put between double commas.

1563

Antonio Galvao, captain of Ternate Island in the years 1536-1540, writing about the islands

of Tidore and Ambon, reported: "... *there is a small kind of fowl that lays very large eggs in the soil, deeper than the length of one and a half arm, dug with their feet.*" (Galvao 1563).

1556

On 19 November 1556 Luis Frois reported: "*In the land of Moro* there are fowl living in the wild, smaller than ours, with colours like our partridge. They lay eggs as large or even larger as those of a duck; with much more yolk. These fowl lay eggs in soft soil, like the beach or in the wilderness, at a great depth of almost an arm length, and leave them there. Some say they lay two eggs next to each other. Only incubated by the heat of the sun, the chicks hatch. They survive without food and without the care of their mothers. Local people told the Jesuit priests that they saw the birds bore their burrow without scratching, until they leave their eggs behind. Local rulers have forbidden to kill these birds because of the large numbers of eggs that are being found and used as an important source of food for humans.*" (Frois 1556).

1544

In 'A treatise on the Moluccas', published in (circa) 1544 and generally regarded as the preliminary version of Antonio Galvao's lost 'Historia das Molucas' there is a passage that

* Batachina de Moro = Halmahera; 'Moro' is still in use in Morotai, an island close to Halmahera.

reads: "There are some wild birds that somewhat resemble partridges; they are a little bigger and incline to black, and they run like them. They lay their eggs, which look like duck eggs and also larger; in pits and holes they make in the ground, a cubit deep; and on these they heap still more sand; and there they breed and raise their offspring while these are small." (Galvao 1544).

DISCUSSION

Galvao (1563) undoubtedly writes about *Eulipoa wallacei*. The location (Tidore) is within the distributional range of the species, and the habit of digging deep burrows in the soil with their feet and laying large eggs in it (in the Moluccas) only applies to *Eulipoa*. See Jones *et al.* (1995) for general information on the nesting habits and distribution of the 22 species of megapodes.

Frois (1556) could not have given a better summary of the (breeding)biology of *Eulipoa wallacei*: size - 'smaller than our fowl'; plumage - 'like a partridge'; egg size - 'large'; egg contents - 'much more yolk'; nest - a self dug burrow; depth of burrow - 'an arm length'; heat source for incubation - sun; parental care - none. The only inaccuracies are the (secondary) observations that 'two eggs are laid side by side' and that they 'bore burrows without scratching'. The fact that Luis Frois wrote that local law protects the bird because of the importance of the large numbers of eggs as a source of food for man, is an outstanding observation. It proves that the tradition of harvesting *Eulipoa*-eggs in combination with the protection by local law (adat) of the (adult) birds and their nesting grounds, dates back much longer than was known before: Heij *et al.* (1997) give Van Hoëvell (1875) and Martin (1894) as the first references of sys-

qua lora, liqua no fundo d' agoa como maça **; ne escorrido d' agoa, pe-neirão-no brevemente, sem mais esperarem por levadura, e botão aquela farinha, que parece de trigo, muito alva em humas telhas mui vermelhas, em as quaes ahi huns repartimentos fundos de dous em dous ** onde se coze e asa como fatias de pão; mas á-se de comer emquanto está quente. Dizem que o achão por melhor mantimento que ho arroz.

13. Há também nesta terra do Moro humas galinhas do mato, mais pequenas que as nossas, as quaes tem as cores como perdizes; poem ovos tão grandes ou maiores que de pata, he o mais delles hé gema. Estas galinhas poem os ovos nas areas moles junto com as praias, ou na terra molle do mato, e poem os ovos tão fundos, que hé perto de huma braça onde os metem; e dizem que os poem de dous em dous, e sem mais choquar com o qualor do sol saem os filhos, e per si se sustentão sem nutrimento nem favor das mãis **1. Dezia a gente da terra aos Irmãos que as vião, quando querião pôr os ovos, sem esgaravatar furarem pola area dentro atee lá onde po[e]m os ovos. E pelos regedores da terra se defende muito matá-las, pola grande copia d'ovos que a gente acha pelo mato com que se mantem.

14. Tem mais esta terra duas maneiras de cangrejos em grandissima maneira diferentes, huns que tem as pernas como lagostas mas são muito maiores; tem huns buchos **, cousa muito suave, e as femeas tem ovas. Estes cangrejos crião ou se acolhem em tocas de arvores, e não se tomão senão com fogo ou com cortarem as arvores. Ai hi outros pretos que tem humas cedas compridas por onde são conhecidos; estes, no mes-

Figure 1 The first (and accurate!) description of *Eulipoa wallacei* and its breeding behaviour, written in Portuguese by Frois (1556).

tematic *Eulipoa*-egg harvesting in the Moluccas. Wallace (1869), in his accurate description of the habitus and habits of the bird he had discovered for science, wrote about the eggs: "*They are very good eating, and much sought after by the natives.*".

With regard to the identity of the bird described by Galvao (1544), I have some doubts. The observation that the bird 'lay their eggs ... in holes they make in the ground ... and on these they heap still more sand' does imply more than just the quick cover up of the burrow as is done by *Eulipoa*. One may even regard 'on these they heap still more sand' as mound building activities (not done by *Eulipoa* but invariably done by the sympatric *Megapodius* species: *M. forstenii* on Seram and satellite islands and *M. freycinet* on Halmahera). The addition '... and there they breed and raise their offspring while these are small' can not apply to any megapode (see: Jones *et al.* 1995) but comes closer to the habit of *M. forstenii* and *M. freycinet* to stay close to or even on their mound most of the time (Heij, pers. obs.), while *Eulipoa* leaves the nesting ground immediately after the egg has been laid and does only return to lay (in a new burrow) when another egg has matured after an average of 13 days (Heij *et al.* 1997). As to plumage colour, Galvao's observation that 'they incline to black' comes much closer to the colour of both *M. freycinet* (all-black) and *M. forstenii* (dark brownish grey) than to *Eulipoa* who is more piedly coloured, being olive-brown and bluish-grey with maroon bands on the upper parts and slate grey below (see: Jones *et al.* 1995).

In conclusion, until older sources are being found, we can safely label Frois (1556) as the earliest written description of the (nesting behaviour of the) Moluccan megapode and the harvesting of its eggs by man. Galvano (1544) probably described *Megapodius freycinet*.

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REFERENCES

- Frois, L., 1556 - Malacca, November 19, 1556 - page 189 in: Jacobs, H.Th.M., 1974 (ed.) - Documenta Historica Malucensia, Vol. 1 (1542-1577) - Monumenta Historica Societatis Iesu, Rome
- Galvao, A., 1544 - A treatise on the Moluccas (probably the preliminary version of Antonio Galvao's lost 'Historia das Molucas') - page 64-65 in: Jacobs, H.Th.M., (ed.) - Sources and studies for the history of the jesuits, Vol. III - Jesuit Historical Institute, Rome / St. Louis University, St. Louis
- Galvao, A., 1563 - Tratrado dos Descobrimentos - Bibliotheca Historia de Portugal e Brazil - Livraria Civilizacao, Porto (p. 173)
- Gray, G.E., 1860 - List of birds collected by mr Wallace at the Molucca Islands, with descriptions of new species, etc. - Proceedings Zoological Society London 1860: 341-366
- Heij, C.J., Rompas, C.F.E. & Moeliker, C.W., 1997 - The biology of the Moluccan megapode *Eulipoa wallacei* (Aves, Galliformes, Megapodiidae) on Haruku and other Moluccan Islands; part 2: final report - Deinsea 3: 1-124
- Jones, D.N., Dekker, R.W.R.J., & Roselaar, C.S., 1995 - The Megapodes - Bird Families of the World, Oxford University Press, Oxford, New York, Tokyo
- Martin, K., 1894 - Reisen in den Molukken, in Ambon, den Uliassern, Seran (Ceram) und Buru - E.J. Brill, Leiden
- Nuñez, N., 1576 - Goa, January 4, 1576 - page 679 in: Jacobs, H.Th.M., 1974 (ed.) - Documenta Historica Malucensia, Vol. 1 (1542-1577) - Monumenta Historica Societatis Iesu, Rome
- Van Hoëvell, G.W.W.C., 1875 - Ambon en meer bepaalde lijk de Oeliassers, Geographisch, Etnographisch, politisch en Historisch - Blussé en van Braam, Dordrecht
- Wallace, A.R., 1860 - Communication, in: Letters, Extracts from Correspondence, Notices, & c. - Ibis 2: 197-199
- Wallace, A.R., 1869 - The Malay Archipelago - MacMillan, London

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