Recent Observations of the Critically Endangered *Sulphurea* Subspecies of Yellow-crested Cockatoo in Rawa Aopa Watumohai National Park in SE Sulawesi, Indonesia

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The Lesser Sulphur-crested (or Yellow-crested) Cockatoo *Cacatua sulphurea* is an endangered Indonesian species and one of only five cockatoo species represented on Appendix I of the Convention on International Trade in Endangered Species (CITES). The species is comprised of four generally accepted races (subspecies): *parvula, abbotti, citronocristata* and *sulphurea* .The latter is endemic only to the Indonesian island of Sulawesi (formerly Celebes). Extant studies suggest **[#1]** that although some small populations may exist elsewhere, the remaining cockatoos are mostly confined to two locations in SE Sulawesi: Rawa Aopa Watumohai National Park (RAWNP) and Buton Island, and a single location in central Sulawesi (Pasoso Island). Of these, RAWNP is clearly the most significant. RAWNP is unique in having 7 ecosystem types, that is: tidal mudflats, mangrove forest, wooded savannas, hill forest, swamp forest, peat swamp and cultivation. In 2000, a team from the Indonesian Forestry Service (PHKA), BirdLife Indonesia, and the NGO YASCITA (Yayasan Cinta Alam-Kendari team) team undertook a survey of *C. sulphurea sulphurea* in selected areas of RAWNP **[#2]** and estimated a total population of perhaps 100 individuals or less. The current study, nearly five years later, represents a follow-up to that study, and was designed to gain new information into the status and habits of this highly endangered subspecies of cockatoo.

1. Population and Nests

The study was conducted starting twice a day, at 5.30 am and 5.00 pm. A total of 37 cockatoos were observed in 7 surveyed locations (28 in forested areas; 9 in cultivated areas), yielding a extraordinarily low average density of 1.3 individual per thousand sq. km., which is much less than even another highly endangered subspecies of *C. sulphurea*, the Citron-crested cockatoo *C.s. citronocristata* **[# 3]**. Six apparent cockatoo nest holes were sighted, with at least two seeming to be active. At one, the mated pair could be seen to interact energetically with crests raised at the nesthole entrance (**Photo**) The apparent nest holes were located in *Alstonia scholaris* or *Parinarium corimborum* trees and were at heights of ca. 10, 12, 13, 15, 15, and 20 m., respectively.

Fig.1 Two Lesser Sulphur-crested cockatoos outside their nesthole. Photo by Dudi Nandika.

2. Daily activities

In the morning, activities consisted of perching in trees (43% of time observed), eating (12%), playing (22%) and other activities such as moving about (22%), 'sun- bathing' in the tree top, preening and vocalizing. In afternoon, eating increased to 30%, whereas perching declined to 27%. Playing decreased, but socializing increased from 1 to 9% of time. The cockatoo preferred the middle spatial canopy (mean=61%) followed by using the top spatial canopy (30%) for performing daily activities. These percentages for middle canopy position broke down as follows: socialization, 100%; eating, 51%; moving about, 79%. When eating fruit and young leaves, the cockatoos were situated in the middle and top spatial strata or end of branches. Perching at top strata on dry branches predominated during mornings. The middle strata in the canopy seemed to be a 'pleasurable' place where there is protection from predators, sun's rays and hostile climate. They used the bottom strata only for perching and limited movements. The dominant plant species used at the Laea location are Bitti (*Vitex coffasus* and *vitex glabra),* Kuiya (*Alstonia scholaris)*, Bamboo (*Bamboosa spinosa*), Behi spp, and Soasoarate.

Data on the food preferences of Indonesian cockatoos in the wild are limited. Ten species of tree, bush or plant were observed to provide food for the cockatoo (Table).

No	Local Name	Scientific Name	Part eaten
1	Tompira	*Vitex coffasus*	Fruit
2	Bitti	*Vitex galabra*	Fruit
3	Tahulo	*Mallotus floribundus*	Young bud leaf
4	Tangkalase	*Gmelina asiatica*	Fruit
5	Bambu	*Bamboosa spinosa*	Flower
6	Kayu besi	*Intsia bijuga*	Fruit
7	Tampate	*Lagerstoemia foetida*	Seed
8	Soasoarate	-	Fruit
9	Onangki/Kayu raja	-	Fruit
10	Kuiya	*Alstonia scholaris*	Young leaf

The consumption of the fruit of tall timber tree such as "kayu besi" *Intsia bijuga* (the source of

"ironwood" for building) and tangkalase (a deciduous hardwood tree) suggests that logging might have adverse effects on cockatoo survival in addition to destruction of nesting sites, at least in drought years. In fact, non-structured interviews suggested that it was easier to see these rare birds in the dry season when cockatoo food was more limited and they were likely to frequent cultivated areas.

Other foods likely eaten, as observed by others and summarized in **[1],** include: fruits/seeds of maize *Zea mays;* banana *Musa;* mango (*Mangifera indica*); papaya *Carica papaya*; fig *Ficus*; guava *Psidium guajava*; jambu bol *Eugenia malaccensis*; "kedondong batu" ; "marang taipa" ; prickly pear *Opuntia elation;*, srikaya *Annona squamosa;* flowers of coconut *Cocos nucifer;* tamarind *Tamarindus indica,*; flowers and fruit of the mangrove *Avicennia* ; fruit of marangtaipa *Dehaasia* and young leaves of *Sonneratia*; and "ninifo" , thought to be a *Canarium.*

Cockatoo were seen to interact with several non-psittacine species: *Coracias temminckii,* (a purple-winged roller, which invaded a cockatoo nest hole, leading to competitive fighting); *Aplonis panayensis* (a Philippine glossy starling, which was seen to chase a cockatoo); and *Spilornis rufipectus* (a Sulawesi serpent-eagle, which also was observed chasing a cockatoo) .

3. Concluding Remarks

It is likely that at most only a few hundred individuals of the nominate race of *C. sulphurea* survive in the wild on Sulawesi; the breeding population might be only one-third to one-half as large **[4].** Once common enough to be considered an agricultural pest, it was one of most available of the world's cockatoos to the marketplace. Although no attempt was made to reproduce the 2001 study **[2]** for the sake of making precise analyses of population trends, it is clear that the number of birds at this, its most populous remaining site, is very low and possibly declining. Continued trapping, plus habitat limitation, now threaten it with extinction and the race is described as "potentially beyond recovery" in the Parrot Action Plan **[5].** It would be a tremendous shame if the world gave up on this beautiful cockatoo referred to in Indonesia as "*kakatua kecil jambul-kuning*"-- the little cockatoo with the yellow crest.

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