

ABSTRACT

THE BEHAVIORAL ECOLOGY OF THE GLOSSY BLACK-COCKATOO, *CALYPTORHYNCHUS LATHAMI HALMATURINUS*

by

John William Pepper

Chair: Richard D. Alexander

Parrots are unusual in their relative brain size and apparent intelligence in captivity, but little is known of their natural behavior. I studied a habituated flock of glossy black-cockatoos on Kangaroo Island, South Australia, in 1991-1993. I photographed plumage markings for individual identification, and used binoculars during focal follows and scan samples.

The subspecies fed almost exclusively on seeds of the drooping sheoak tree (*Allocasuarina verticillata*), and spent most of their time extracting seeds. Preferred trees yielded more nutritious seed at a higher rate than other trees.

I generated an ethogram of vocal and non-vocal behaviors for use in further analyses. Mated pairs remained together within groups year round, and no divorces were observed. Proximity within mated pairs was uncorrelated with both breeding season and actual nesting, and was not explained by male mate guarding. Pair bonds do function as alliances in resource competition within groups. The cockatoos temporarily defended individual feeding trees and nest hollows, but were not territorial. Non-random association patterns existed between pairs, but were not stable across years. Supplants

revealed a linear dominance hierarchy with paired above unpaired birds, and adults above subadults.

Preferences for one side in symmetric behaviors have been studied in other animals as evidence of brain organization and evolution. Glossy black-cockatoos show extreme population-level laterality in manipulating food with the foot, bill and tongue. Laterality involving central rather than paired appendages is inconsistent with functional explanations based on brain asymmetry. I propose a new hypothesis based on the advantage laterality provides in repetitive learning of complex motor skills.

I describe a new and widely applicable method for measuring social affinity from group composition data using computer randomization.

A survey of the subspecies found 136 birds, including 90% adults and 1.4 males per female. Foraging habitat was fragmented and reduced by land clearance to 1477 ha. The best predictors of distribution were quantity and quality of foraging habitat. A population viability analysis suggested the reproductive rate is critically low. I present a recovery plan comprising further research, habitat protection and re-establishment, provision of artificial nest boxes, and eventual reintroduction to the mainland.