Marine Ornithology 25: 68–69 (1997)

KLEPTOPARASITISM OF THE AMERICAN OYSTERCATCHER *HAEMATOPUS PALLIATUS* BY GULLS *LARUS* SPP. IN MAR CHIQUITA LAGOON, BUENOS AIRES, ARGENTINA

MARIANO M. MARTINEZ & SILVINA BACHMANN

Lab. de Vertebrados, Dep. Biología, Fac. Cs. Ex. y Naturales, Universidad Nacional de Mar del Plata, Funes 3350, (7600) Mar del Plata, Argentina
(bachmann@mdp.edu.ar)

Received 13 October 1995, accepted 17 July 1996

Kleptoparasitic behaviour is widespread in birds and particularly among gulls (Brockmann & Barnard 1979). Gulls' hosts include oystercatchers, such as the European Oystercatcher *Haematopus ostralegus*, which is kleptoparasitized by the Common Gull *Larus canus*, Iceland Gull *L. glaucoides* and Black-headed Gull *L. ridibundus* in Europe (Brockmann & Barnard 1979) and African Black Oystercatchers *H. moquini* which are kleptoparasitized by Kelp Gulls *L. dominicanus* in South Africa (Hockey 1980). The present note provides information about new records of kleptoparasitism of oystercatchers by gulls and assesses the impact of kleptoparasitism on the intake rate and behaviour of the host.

In Mar Chiquita Lagoon (37°46'S, 57°27'W) Buenos Aires, Argentina kleptoparasitism of American Oystercatchers *H. palliatus* by Brown-hooded Gulls *Larus maculipennis*, Grey-headed Gulls *L. cirrocephalus* and Band-tailed Gulls *L. belcheri* has been observed since 1981 (M.M. Martinez unpubl. data) and recorded between August 1993 and October 1994 during a study on oystercatcher feeding ecology. In Mar Chiquita Lagoon the American Oystercatcher feeds all year round on the infaunal bivalve the Stout Razor Clam *Tagelus plebeius*. From September to March, they also catch epifaunal crabs *Cyrtograpsus angulatus* (mainly ovigerous females) (M.M. Martínez & S. Bachmann unpubl. data). The observations of oystercatchers' feeding activity consisted of 15-minute focal sampling (Altmann 1974). During the study, 25 oystercatchers (17%) had interactions with gulls from a total of 144 oystercatchers recorded in feeding activity**.** The attacks were performed mainly by Brown-hooded Gulls (70%) and less frequently by Grey-headed Gulls (30%). The relative abundance (means of monthly countings over a year) of gulls in the Lagoon was 76 ±114 for Brown-hooded Gulls, 8 ±20 for Grey-headed Gulls, 11 ±24 for Band-tailed Gulls and 14 ±23 for Kelp Gulls (M.M. Martínez unpubl. data). This behaviour was observed irregularly throughout the year but only when oystercatchers were feeding on Stout Razor Clams. On three occasions there were interactions with Band-tailed Gulls when oystercatchers were feeding on crabs. Except for the Brown-hooded Gull (Hudson 1920, Weller 1967, Schlatter & Jaramillo 1983, Fjeldså & Krabbe 1990) the other two species mentioned have not been cited as kleptoparasites. Although the Kelp Gull is a frequent gull in the area and it was cited as kleptoparasitic on African Black Oystercatchers (Hockey 1980), interaction with the American Oystercatcher was never observed. The Chimango Caracara *Milvago chimango* has been observed as a kleptoparasite of the American Oystercatcher at Mar Brava, Chile (P.A.R. Hockey *in litt*.), but it was not observed robbing the oystercatchers in Mar Chiquita, although the Chimango occurred commonly (relative abundance: 6 ±4, M.M. Martínez unpubl. data).

The association took place, in general, between one gull and several oystercatchers, meaning that two or three oystercatchers could be watched over by a single gull which attacked the bird finding prey. Generally, while the oystercatcher handled the clam in its burrow hole, the gull stayed from three to seven metres away and only attacked at the moment the valves were totally open. The gulls' tactics to obtain the food consisted of:

1. rushing or short flights towards the host
2. chases over short distances running or flying, and
3. physical contacts by pecking or hitting the host with their wings.

These strategies were the same as described by Brockmann & Barnard (1979). Fifty-five percent (n = 74) of the gulls' attemps were successful without differences being noted between species. During each observation, an oystercatcher could be attacked several times by the same or by different gulls. We registered a maximum of 11 attacks on the same oystercatcher during a 15-minute observation period.

According to Amat & Aguilera (1989), robbery of food could have a serious impact on the hosts' intake rate. The amount of food lost by oystercatchers to kleptoparasites differs between studies from 1.2–50%, showing that kleptoparasites are clearly capable of stealing many of the prey captured by oystercatchers (Ens & Cayford 1995). During the present study kleptoparasitized oystercatchers lost 30% of 136 prey items to gulls. This resulted in a large decrease in their intake rate, compared with unattended oystercatchers (Z: 1.994, $P < 0.05$) (Table 1).

To reduce the impact of kleptoparasitism, the hosts may adopt three behavioural strategies: evasion, retaliation and toleration/compensation (Barnard 1984). A variety of evasive tactics has been observed by different authors: hosts may:

1. shift to a less vulnerable diet;
2. synchronize activities to reduce losses;
3. spend less time handling prey;
4. increase their distance from the kleptoparasites; or
5. they may keep their prey out of the kleptoparasite's sight (Amat & Aguilera 1989).

The American Oystercatcher, in this case, used two evasive tactics: handling and eating the clam more quickly and keeping it out of the gulls' sight, trying not to give clear evidence of prey capture. When the gulls attacked (n = 74), the oystercatchers left the prey to the gull (35 cases) or adopted a retaliation strategy, such as facing the gulls in 21 cases (76% success of avoidance), running with the prey in its bill in seven cases (86% success of avoidance) or flying with the prey to another area in three cases (100% success of avoidance). In some cases when the gulls' piracy was recurrent, the oystercatchers stopped feeding, possibly waiting for them to go away.

TABLE 1

Comparison of capture rate (prey caught per 15 minutes) and intake rate (prey ingested per 15 minutes) of American Oystercatchers *Haematopus palliatus* feeding with and without kleptoparasites

	With kleptoparasites (n = 19)	Without kleptoparasites (n = 49)
Capture rate (prey/15 min)	8.77 (SD 4.35)	7.59 (SD 3.83)
Intake rate (prey/15 min)	5.60 (SD 2.60)	7.48 (SD 3.77)*

(*$P < 0,05$)

There was no significant increase in the capture rate (toleration/compensation) of the kleptoparasitized oystercatchers, compared with unattended ones (Table 1) (Z: 1.047, $P > 0.1$). This is contrary to the observations of Amat & Soringer (1984) who noted that parasitized coots *Fulica* spp. dived for food more often than unattended ones, hence compensating for the decrease of food intake caused by Gadwalls *Anas strepera*. Barnard & Thompson (1985) observed that Northern Lapwings *Vanellus vanellus* had to spend longer feeding to meet their energy requirements when being kleptoparasitized by Black-headed Gulls *Larus ridibundus*. The time spent feeding was not measured in the present study.

Kleptoparasitism take place when particular ecological or behavioural conditions are present, such as:

1. large concentrations of hosts;
2. large quantities of food;
3. large, high-quality food items;
4. a lot of time spent in handling the prey before being ingested;
5. food supply predictable;
6. food visible; and
7. food shortage (Brockmann & Barnard 1979).

In the interaction studied, there could be several reasons for the development of kleptoparasitism: the oystercatchers captured clams that are a large and predictable food item (mean prey size: 52 mm); they handle the prey by stabbing (Norton-Griffiths 1967) for a long time (handling time: 35±16 s, n = 84) (M.M. Martínez & S. Bachmann unpubl. data) and they show an evident attitude when they found and handle the prey. Another explanation for kleptoparasitism is that the host has easier access to the prey than does the parasite (Duffy 1980). In Mar Chiquita, the gulls were never seen catching clams themselves (pers. obs.), possibly because they are unable to take the clams out of their burrows which are *c*. 50 cm deep (Holland & Dean 1977) or even to open them, as can the American Oystercatcher.

ACKNOWLEDGEMENTS

We thank F. Noriega for sending some papers, M. Favero, P.A.R Hockey and an anonymous reviewer for their helpful comments on the manuscript, J. Timi for helping with statistic analysis and M.N. Caimari for correcting the English.

REFERENCES

ALTMANN, J. 1974. Observational study of behaviour: sampling methods. *Anim. Behav*. 49: 227–265.

AMAT, J. A. & AGUILERA, E. 1989. Some behavioural responses of Little Egret and Black-tailed Godwit to reduce prey losses from kleptoparasites. *Ornis Scand.* 20: 234–236.

AMAT, J.A. & SORINGER, R.C. 1984. Kleptoparasitism of Coots by Gadwalls. *Ornis Scand.* 15: 188–194.

BARNARD, C.J. 1984. The evolution of food-scrounging strategies within and between species. In: Barnard, C.J. (Ed.). Producers and scroungers – strategies of exploitation and parasitism. London: Croom Helm. pp. 95–126.

BARNARD, C.J. & THOMPSON, D.B. A. 1985. Gulls and plovers: the ecology and behaviour of mixed-species feeding groups. London: Croom Helm.

BROCKMANN, H.J. & BARNARD C.J. 1979. Kleptoparasitism in birds. *Anim. Behav*. 27: 487–514.

DUFFY, D.C. 1980. Patterns of piracy by Peruvian seabirds: a depth hypothesis. *Ibis* 122: 521–525.

ENS, B.J. & CAYFORD, J.T. 1995. Feeding with other oystercatchers. In: Goss-Custard, J.D. (Ed.). The behaviour ecology of the Oystercatcher: from individuals to populations. Oxford: Oxford University Press. pp. 77–104.

FJELDSÅ, J. & KRABBE, N. 1990. Birds of the high Andes. Svendborg, Denmark: Zoological Museum, University of Copenhagen and Apollo Books.

HOCKEY, P.A.R. 1980. Kleptoparasitism by Kelp Gulls, *Larus dominicanus* of African Black Oystercatchers *Haematopus moquini*. *Cormorant* 8: 97–98.

HOLLAND, A.F. & DEAN, J.M. 1977. The biology of the Stout Razor Clam *Tagelus plebeius:* I. Animal-sediment relationships, feeding mechanism and community biology. *Chesapeake Science* 18: 58–66.

HUDSON, G.E. 1920. Birds of La Plata. Vol. 2. London: E. P. Dutton.

NORTON-GRIFFITHS, M. 1967. Some ecological aspects of the feeding behaviour of the Oystercatcher *Haematopus ostralegus* on the edible mussel *Mytilus edulis*. *Ibis* 109: 412–424.

SCHLATTER, R.P. & JARAMILLO, E. 1983. Ornitocenosis del litoral costero en Mehuin, Chile. *Hornero (Número extraordinario)*: 149–164.

WELLER, M.W. 1967. Notes on some marsh birds of Cape San Antonio, Argentina. *Ibis* 109: 391–411.