Tsachalidis E., Sokos C., Birtsas P., Patsikas N. 2006. The Australian Crow Trap and the Larsen Trap: Their capture success in Greece. Proceedings of the 2006 Naxos International Conference on Sustainable Management and Development of Mountainous and Island Areas. Vol. II. Pp. 325–329.

# The Australian Crow Trap and the Larsen Trap: Their capture success in Greece

E. P. Tsachalidis[1], C. K. Sokos[2], P. K. Birtsas[2] and N. K. Pasikas[1]

[1]*Department of Forestry and Environmental Management and Natural Resources, Laboratory of Wildlife Ecology, Democritus University of Thrace, 68200, Orestiada, Hellas, e-mail: etsaxal@fmenr.duth.gr*

[2]*Hunting Federation of Macedonia and Thrace, Ethnikis Antistasis 173-175, 551 34, Thessaloniki, Hellas, e-mail: sokos@hunters.gr*

**Abstract.** *The overpopulation of species of the Corvidae family causes serious problems to both people and wildlife. For this reason many damage prevention and control methods have been developed. Here, we report spring and summer capture success of Australian Crow Trap and Larsen Trap for Hooded Crow (Corvus corone cornix) and Magpie (Pica pica) in an agricultural – wetland complex near the city of Thessaloniki. The main aim of this study was the evaluation of effectiveness and selectivity of the two traps for future use in avian predator control programs, and also for use in research programs for the collection of biological samples. The Australian Crow Trap was the most successful trap after the application of some construction improvements and the use of call-birds and proper bait.*

**Keywords.** Corvid predation, trap operation, non-target species, EU Birds Directive (79/409/EU)

## 1. Introduction

Species of Corvidae family have worldwide range [1]. In Hellas the following species have been recorded: hooded crow (*Corvus corone cornix*), jackdaw (*Corvus monedula*), magpie (*Pica pica*), jay (*Garrulus glandarius*), rook (*Corvus flugilegus*), raven (*Corvus corax*), nutcracker (*Nucifraga caryocatactes*), chough (*Pyrrhocorax pyrrhocorax*) and alpine chough (*Pyrrhocorax graculus*) [2].

Hooded crow and magpie live in lowlands, cultivated areas and pastures. Their populations are increasing in most countries of Europe, reflecting their ability to adapt to artificial changes in the environment [3]. In Hellas hooded crow and magpie (thereafter corvids) are very ubiquitous [2], are considered pests and their hunting is permitted [4].

Corvids cause damages in crops [5, 6] and hazards in urban areas [7]. Corvids are also predators for endangered [8, 9] and hunting species [10]. Corvids predate mainly on eggs and nestlings of other bird species [9, 11, 12]. The relationship between corvid predation rate and corvid abundance is strong in some cases [11], but not in others [12].

Given the overall impact of human management on ecosystems, and the changes occurring in predator guilds in recent years, predator control is sometimes claimed as an important management tool [13]. Proposed methods for the damage prevention and predation control of corvids are exclusion, frightening, shooting and trapping [14, 15].

Trapping is a selective and legal method. However, it is often less attractive than other techniques because of the wide-ranging movements of corvids, the time necessary to maintain and manage traps, and the number of corvids that can be captured compared to the total number in the area. Yet, the capture and removing of corvids, can be a successful method of control at locations where a small resident population is causing damage or where other techniques cannot be used. Examples include capture damage-causing crows near a high-value crop or in an area where nesting galliforms and waterfowls are highly concentrated [14].

The most commonly used trap for crows is the Australian Crow Trap [14] (or Ladder Entrance Trap [16] or the Norwegian Large-Scale Crow Trap [17]) while for magpies is the Larsen Trap [15]. Capture success depends on how well the trap is constructed, the place where it is located, the time of the year, the bait, the call-bird and how well the trap is maintained [6,

14]. These traps may catch non-target birds like owls and diurnal birds of prey [14, 16, 17].

Despite widespread application of these traps in Continental countries, little information is reported in Mediterranean countries. Wildlife managers may have to conduct tests on the effectiveness of traps at local level [18]. The aim of this study is to evaluate the effectiveness and selectivity of the two traps for future use in avian predator control programs as well as research programs on the collection of biological samples.

## 2. Methods

The study area is located 14 Km south-east of the city of Thessaloniki in the Aristotelian University Farm (40° 45 N, 22° 58 E). The study area is characterized by a cereal-saltmarsh complex and is an important habitat for the reproduction of grey partridge (*Perdix perdix*) and pratincole (*Glareola pratincola*). The avian predators that were observed in the study area were: common buzzard (*Buteo buteo*), kestrel (*Falco tinnunculus*), short-eared owl (*Asio flammeus*), and also the corvids hooded crow, magpie, jackdaw.

**Figure 1. The Australian Crow Trap.**

After approval by the Ministry of Rural Development and Foods two Australian Crow Traps and one Larsen Trap were placed in the study area. The distance between the Australian Crow Traps was about one kilometer. The Larsen Trap was placed in different places, but always about 50 m from each Australian Crow Trap.

The Australian Crow Trap (Fig. 1) was constructed according to [14] and Larsen Trap (Fig. 2) was constructed according to [19]. The Australian Crow Trap was covered with a five cm square metal mesh and the lower one meter of the trap was covered with a 2 cm wire mesh to prevent escape of corvids and the entrance of small predators. All sides of the Larsen Trap were covered with a two cm wire mesh. Scraps, eggs, bread and meat were utilized as bait. Call-birds (hooded crow and/or magpie) were used in most capture days [14, 15].

Capture and escape were recorded through continuous watching of the traps during the first days of the placement of the traps in the study area. After this period the traps were controlled daily (one or two visits). The results refer to the period from April 1st until July 15th of 2006. Captured corvids were euthanized humanely according to [14].

The research is part of a greater project about the feeding ecology of corvids in North Hellas. The duration of the research is two years and is going to be completed at the end of 2007. In this study we compare the effectiveness and the selectivity of traps according to the influence of ladder gap opening, the calendrical time, the call-bird, the different baits and the capture of non-target species.

**Figure 2. The Larsen Trap.**

## 3. Results and discussion

### 3.1 The Australian Crow Trap

The total capture was 75 hooded crows and 26 magpies. The maximum daily capture was 10 hooded crows (at 06/07/2006) and four magpies (at 07/04/2006). The ratio between the captured species (1/3, 26/75) was not due to any selectivity of the trap, but to the lower population of magpies in the study area.

During the first days of the operation of the Australian Crow Trap, it was ascertained that because of the large ladder gap opening the captured corvids (mainly magpies) escaped. To prevent escaping, the ladder gap opening was reduced progressively from 35 × 15 cm to 17,5 × 15 cm (Table 1).

**Table 1. The escaping of Corvids by different ladder gap opening sizes. It is considered that a bird escaped if flew away within 24 hours after capture.**

| Ladder gap opening size | Hooded crow | | Magpie | |
|---|---|---|---|---|
| | Captured | Escaped | Captured | Escaped |
| 35 × 15 cm | 1 (20%) | >* 4 (80%) | 0 (0%) | > 10 (100%) |
| 25 × 15 cm | 3 (50%) | > 3 (50%) | 0 (0%) | > 10 (100%) |
| 17,5 × 15 cm | 71 (100%) | 0 (0%) | 21 (81%) | > 5 (19%) |

* The symbol > means that more birds may escaped, but these birds were not recorded by the researchers.

The openings of 30-45 × 15 cm that are suggested in the American and Israel models by Johnson [14] give many chances for escaping for hooded crows and no capture for magpies. The opening of 20 × 10 cm is recommended by Falcon Environmental Services [20], and it approximates the opening of our trap.

During the reproduction period (April – May) capture decreased (Fig. 3). This may be attributed to the limited movements of birds due to egg-laying, incubation, hatching and rearing of nestlings [1]. After this period capture increased, and this can be attributed to: 1) the increasing of the movement of families after the fledging of juveniles, 2) the increasing of the population because of the juveniles, and 3) the harvest of cereals that attracted the birds to the area.

The capture of hooded crows increased with the use of a call-bird of the same species. This result is in agreement with previous observations [6, 14]. In contrast, for magpies, with or without the use of a call bird, there is no difference in capture (Table 2).

Bread and corn baits did not attract the corvids. Meat seems to be the most effective bait for the Hooded crow and Magpie too (Table 2).

The only non-target species which was captured was the common buzzard. This species was captured twice at 5/4/2006 and 26/4/2006. The captured individuals were released immediately without any serious stress for the birds. In some other cases the Australian Crow Trap captured more non-target species and numbers [16, 17]. This difference may be due to the lower numbers of non-target species and higher food supplies for them in our study area in a certain season. Also, the construction improvement (decreasing of ladder gap opening) seems to increase the selectivity toward the corvids.

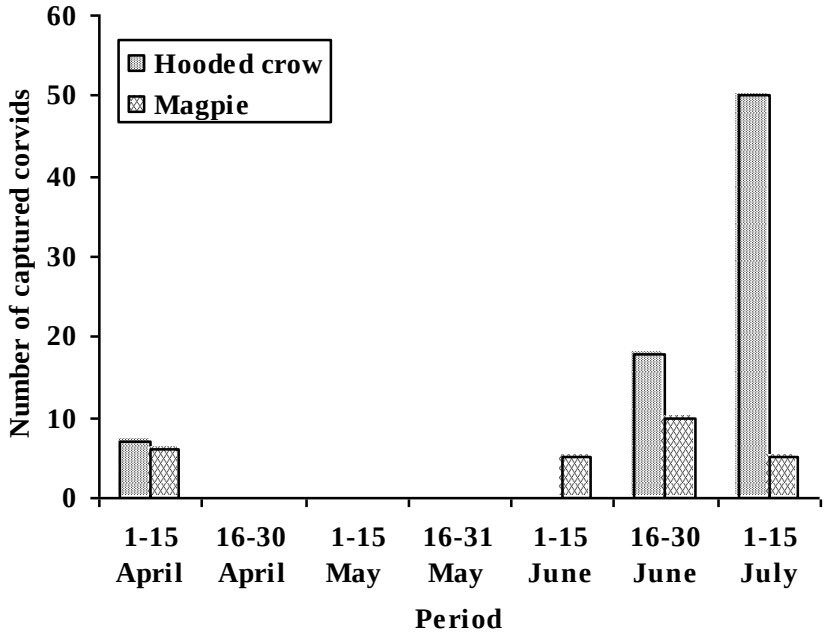


**Figure 3. Number of captured corvids in relation with time.**

**Table 2. The influence of call-bird and bait on the capture success (number of corvids/day/trap).**

| Call-bird | Bait | | | | | |
|---|---|---|---|---|---|---|
| | Bread and corn | | Eggs and scraps | | Meat | |
| | Captured species | | | | | |
| | *P. pica* | *C. corone* | *P. pica* | *C. corone* | *P. pica* | *C. corone* |
| No call-bird | 0 | 0 | 0,5 | - | 0 | 0 |
| *P. pica* | 0 | 0 | - | - | 0,67 | 0 |
| *C. corone* | - | - | 0,45 | 1,9 | 1 | - |
| *P. pica* and *C. corone* | - | - | 0,18 | 0,1 | 0,3 | 0,85 |

## 3.2 Larsen Trap

The effectiveness of Larsen Trap has not been satisfactory until now. The trap was active for 45 capture days, in three different positions and captured only one hooded crow. This result was surprising and may be attributed to the wire mesh of two cm that frightened the birds or to a weakness in our trapping mechanism.

## 4. Conclusions and management implications

Although these results are preliminary and require more detailed analysis as well as further collection of data, they highlight a number of important management implications:

1) Decreasing the dimensions of the ladder gap opening to 17,5 × 15 cm increased the effectiveness of the Australian Crow Trap for the capture of hooded crows and mainly magpies. An even smaller opening may be more effective for magpies and may decrease the capture of non-target species.
2) Capture success was reduced during the reproduction period of corvids which is mainly due to the restricted movements of the corvids. In the same period the bird species vulnerability to corvid predation is higher and for this reason the capture effort using the Australian Crow Trap must be carried out before the reproduction period (end of winter and beginning of spring).
3) The capture of hooded crows increased when call-bird of the same species was used; also meat was the most attractive bait.
4) Magpie capture is not influenced by the use of call-birds; meat was the most attractive bait.
5) A combination of call-bird species (crow and magpie) is possible, but the influence on trap effectiveness is doubtful.
6) The Australian Crow Trap was a selective trap in this study and can be used according to the EU Birds Directive (79/409/EU).
7) The Larsen Trap was an ineffective tool for the capture of corvids.
8) The Australian Crow Trap is more effective than Larsen Trap from a labor cost point of view because the entrance mechanism (ladder gap openings) gives the possibility of multiple captures continuously. In contrast, the mechanism of the Larsen Trap consists from two – four spring doors which must be opened after each capture.
9) The Australian Crow Trap seems to be a more attractive construction for corvids than the Larsen Trap. This is due to its larger size and to the fact that call-birds can move more freely, which, in turn, can attract free corvids. Surely, the Larsen Trap can be moved more easily to deal with specific pairs of crows or magpies during the reproduction period.

## 5. Acknowledgements

We are grateful to Kostas Dimitriou for his help in traps operation, and the Council of the Aristotelian University Farm which has allowed the placement of traps in study area.

## 6. References

[1] Cramp S, Perrins CM. Birds of the Western Palearctic: Handbook of the Birds of Europe, the Middle East and North Africa. Oxford Univ. Press, Oxford; 1994.

[2] Handrinos G., Akriotis T. The Birds of Greece. Christopher Helm. A & C Black London; 1997.
[3] Hagemeijer WJM, Blair M (Editors). The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance. T & AD Poyser, London. 1997.
[4] Ministry of Agriculture (2005). Hunting Regulations for the Hunting Season 2005 - 2006.
[5] Conover MR. Protecting vegetables from crows using an animated crow-killing owl model. Journal of Wildlife Management 1985; 49: 643-645.
[6] Moran S. Control of hooded crows by modified Australian traps. Phytoparasitica 1991; 19 (2): 95-101.
[7] Corenzel WP, Salmon TP. Tape-recorded calls disperse American crows from urban roosts. Wildlife Society Bulletin 1993; 21: 334-338.
[8] Liebezeit JR, George TL. A Summary of Predation by Corvids on Threatened and Endangered Species in California and Management Recommendations to Reduce Corvid Predation. Calif. Dept. Fish and Game, Species Conservation and Recovery Program Rpt. 2002-02, Sacramento, CA. 103 pp.; 2002.
[9] Ivan JS, Murphy RK. What preys on piping plover eggs and chicks? Wildlife Society Bulletin 2005; 33 (1): 113-119.
[10] Tapper SC, Potts GR, Brockless MH. The effect of an experimental reduction pressure on the breeding success and population density of grey partridges *Perdix perdix*. Journal of Applied Ecology 1996; 33: 965-978.
[11] Luginbuhl JM, Marzluff JM, Bradley JE, Raphael MG, Varland DE. Corvid survey techniques and the relationship between corvid relative abundance and nest predation. Journal of Field Ornithology 2001; 72 (4): 556-572.
[12] Gooch S, Baillie SR, Birkhead TR. Magpie *pica-pica* and songbird populations - retrospective investigation of trends in population-density and breeding success. Journal of Applied Ecology 1991; 28 (3): 1068-1086.
[13] Suarez F, Yanes M, Herranz J. Nature reserves and the conservation of Iberian shrubsteppe passerines: the paradox of nest predation. Biological Conservation 1993; 64: 77-81.
[14] Johnson, R. American crows. In: Hygnstrom SE, Timm RM., Larson GE, editors. Prevention and control of wildlife damage. Cooperative Extension Division Institute of Agriculture and Natural Resources University of Nebraska. US Department of Agriculture. Animal and Plant Health Inspection Service Animal Damage Control. Great Plains Agricultural Council Wildlife Committee; 1994. http://icwdm.org/handbook/birds/AmericanCrows.asp [10/3/2006]
[15] Game Conservancy. Hints for using Larsen traps. http://www.gct.org.uk/uploads/NGK%20PCS%20Factsheet%205%20Using%20predator%20control.pdf [10/3/2005].
[16] Bub H. Bird trapping and bird banding. Cornell Univ. Press, New York; 1991.
[17] Epple W, Helb HW, Mäck U. Selectivity and Suitability of the Norwegian Large-Scale Crow Trap with Respect to Animal Conservation and the Protection of Species, Based on a Specific Example: a Project for Mass Trapping of Carrion Crows and Magpies conducted by the Hunting Community in the District Leer/Ostfriesland/Niedersachsen. Berichte zum Vogelschutz 2004; 41: 45-63. (in german)
[18] Gerald ID, Schemnitz SD, Taber RD. Capture and marking wild animals. In Schemnitz SD editor. Wildlife management technique manual. The Wildlife Society. Washington; 1980.
[19] Game Conservancy. Predator Control. Game Conservancy Limited. UK; 1994.
[20] Falcon Environmental Services at JKF Airport 2006. http://www.rci.rutgers.edu/~lreed/dimensions.htm [20/5/2006]