

Sun-bathing in some Birds

By
HOLGER POULSEN

(Med et dansk resumé: Solbadning hos nogle fuglearter)

A regular habit of many birds in sunshine is a behaviour called sun-bathing. This term is used about behaviour involving postures held for a relatively prolonged time. Sun-bathing is known in many different species (KENNEDY 1969). I have observed the behaviour in Grey Heron *Ardea cinerea*, Condor *Vultur gryphus* (POULSEN 1963), Road-runner *Geococcyz californianus*, Hummingbirds (unidentified species), and Hoopoe *Upupa epops* in aviaries in the Zoological Garden of Copenhagen. Further, I have seen the behaviour in Blackbird *Turdus merula* in the wild. Out of the above-mentioned species, the Blackbird has the typical passerine-type of sun-bathing, beforehand known by e.g. HEINROTH (1924-31). Grey Herons were observed sun-bathing standing upright, facing the sun with the neck stretched up and both wings lowered, exposing wing undersides to the sun. The sun-bathing of the Condor involves fully extended wings and expanded tail, similar to other birds of prey (HEINROTH l.c.). The Road-Runner was observed sitting exposing the back to the sun, raising back and neck feathers, and keeping the folded wings a little out from the body. The hummingbirds were observed sun-bathing by lowering and extending their wings a little, raising body and head feathers, and turning their body to the sun. The Hoopoe was observed sun-bathing on warm days with bright sunshine. Head and body feathers were erected, the tail spread a little, and one of the wings – the one facing the sun – was extended. The neck was bent back over the back and the open beak was held in an oblique position upwards (Fig. 1). Occasionally the eyes were closed. Now and then the sun-bathing was interrupted by preening and scratching over the wing (Fig. 2).

Sun-bathing behaviour is known from many observations made by bird watchers, however very often without an exact description of the behaviour. In HEINROTH (l.c.) there are many photographs showing the behaviour in hand-raised birds, often early in life as fledglings. It is hereby obvious that sunning is a so-called innate behaviour. In Water Rail *Rallus aquaticus*, Corncrake *Crex crex*, and Moorhen *Gallinula chloropus* both wings are a little spread out and turned down and backwards. In Partridge *Perdix perdix* the bird lies on the ground somewhat on the side, the wing facing the sun spread out a little, and the body feathers erected. In woodpeckers *Picidae* apparently only body feathers are erected (HEINROTH l.c., WINKLER 1972). Pigeons sun-bathe by lifting the extended wing upright and leaning the body to the other side, like in rain-bathing. In low intensity they lie down on one side with one wing partly spread out and the tail spread out to the same side. In high intensity both wings and tail are fully spread (GOODWIN 1967). Sun-bathing with lifting of one wing is moreover seen on a photo of Swallow *Hirundo rustica* (HEINROTH l.c.).

In passerines the sun-bathing posture consists of raised head and body feathers and spreading out and lowering of the wing facing the sun. At the same time the wing feathers on the wing nearest to the sun are spread down and the bird leans over away from the sun. Besides the tail is spread out, the beak is often open and the eye more or less closed.

Spreading out of both wings, which are held drooped, is seen on photos in HEINROTH (l. c.) in the following species: Pied Flycatcher *Muscicapa hypoleuca*, Sand-Martin *Riparia riparia*, Wood-Lark



Fig. 1. Hoopoe *Upupa epops* sunning.

Hærfugl Upupa epops der soler sig.

Lullula arborea, Snow-Finch *Montifringilla nivalis*, and Nightjar *Caprimulgus europaeus*.

Beyond this difference in postures the degree of erection of the body feathers can vary from fluffing – partial erection – to ruffling – complete erection. By this the bird exposes a larger or smaller area of feathers to the sun. The difference in postures in the various species can be due to higher or lower intensity, dependent on light and internal factors, but I have never seen sun-bathing with one wing change into sun-bathing with both wings. Variations of sun-bathing behaviour can be seen in various species, probably owing to variations in intensity, from slight erection of head and body feathers to complete erection and spreading out of wings and tail, while at the same time the bird is inclining its body towards the oblique rays of the sun, but it seems that each species has its own form of sunning. However, some species – e. g. Starling – have a whole range of sunning postures. I have never seen the postures that can be seen in photos by TEAGER (1967) and the drawings in HAUSER (1957) which show a variety of postures from low intensity to full intensity of sun-bathing. Song-Thrush *Turdus philomelos*, Blackbird *Turdus merula*, and Starling *Sturnus vulgaris* sit in high intensity postures with their tail spread out and both wings extended and the contour feathers ruffled with their back towards the sun. This is completely different from low intensity posture, in which the bird is leaning sideways to the

sun. Doubtlessly the above-mentioned low intensity posture is the usual form of sunning in passerines.

Most of my observations were made in sunshine on the warmest times of the day and during the warmest time of the year, but sunning was also observed on other times of the year, when it was cold. Sunning was especially observed after some time of cloudy weather, when the birds either deliberately went into a sunny place or by accident were suddenly caught by the sunbeams. Sunning was further observed in indoor aviaries in light from spotlights, however not in the diffuse light from neon tubes.

During sun-bathing the body feathers are erected so that the sunbeams penetrate to the skin. The birds keep this posture for several minutes, and they can be closely approached while performing this behaviour. It therefore seems that there must be a great risk of predation in this vulnerable position. Common in all sun-bathing is that the birds fluff up their feathers and keep their body in a position so as much as possible of plumage and body is exposed to the sunbeams. As regards the causes of sun-bathing behaviour in birds there are various opinions. According to my observations the sunning behaviour is not caused by warmth as such, at any rate I have never observed the behaviour in cloudy warm weather, and I have never seen the behaviour in birds in shadow on sunny days. However, the possibility that sun-bathing behaviour is released by radiant heat cannot be excluded. The brilliance

of the sunshine seems to be very important for the appearance of the behaviour. Most often I have observed sun-bathing in warm sunshine, but also on cold sunny days. I have also observed that when the sun went under a cloud the bird depressed its feathers and sometimes preened its feathers and went away. MUELLER (1972) found that Broad-winged Hawks *Buteo platypterus* responded with sun-bathing to an increased illumination, not to heat, so that light releases sun-bathing. This fits well in with my observations, which were all made in bright sunshine. As regards the significance of sunning behaviour there are many suggestions, but they are all speculative and lack experimental evidence. KENNEDY (l.c.) reviews the theories which have been put forward:

- 1) That it is a pleasurable stimulus connected with heat absorption.
- 2) That sunlight increases the mobility of ectoparasites, making easier their removal by subsequent preening.
- 3) That birds may sun-bathe to dry wet plumages.
- 4) That sun-bathing results in vitamin D production.
- 5) That sun-bathing plays a role in moulting.
- 6) That it increases the flow of prene gland secretion.

In my opinion it looks like sun-bathing is done to accumulate warmth and it seems that sun-bathing increases at the time of moulting. Further, I have often seen that sun-bathing is interspersed with or followed by preening. Moreover, the birds erect their feathers while sun-bathing. This may serve to expose the bare skin to the sun. It is not likely that this raising of the feathers should increase the insulating value of the plumage, because the birds in all my observations, either they deliberately went into the sun or accidentally were caught by the sunbeams, exposed themselves to the sunshine with erected feathers, whereas birds, when otherwise being in warm sunshine, keep the plumage smooth and tight to the body. Only in cold weather do they raise the body feathers and hereby increase the insulating value of the plumage. It therefore seems that sun-bathing belongs to comfort behaviour and in some way or another is

good for the feathers. Further studies including exact description of the behaviour, the situations in which it appears, and which other actions are connected with sunning will throw light on the release, motivation, and function of sun-bathing behaviour in birds.

SUMMARY:

The article covers observations of sun-bathing in birds in captivity in the following species: Grey Heron *Ardea cinerea*, Condor *Vultur gryphus*, Road-Runner *Geococcyz californianus*, hummingbirds (Unidentified species), and Hoopoe *Upupa epops*. Further, in Blackbirds *Turdus merula* in the wild.

Each species has its own form of sun-bathing, which can appear in various intensities. It looks like sun-bathing is not released by warmth as such, but occurs when the birds are exposed to bright light. However, sun-bathing could possibly be caused by radiant heat. It seems that sun-bathing belongs to comfort behaviour and in some way is good for the feathers, and possibly at the same time provides pleasurable stimuli.

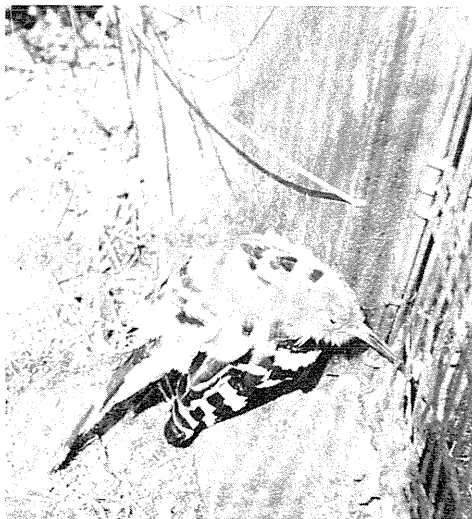


Fig. 2. Sun-bathing in Hoopoe interspersed with scratching.
Hærtugl der kradser sig midt i solbadningen.

Note:

After having finished the manuscript the author observed a Song Thrush on a warm, sunny day, June 20th 1973, in high intensity sun-bathing posture.

DANSK RESUME

Solbadning hos nogle fuglearter

Når fugle tager solbad, indtager de en særlig positur med løftede fjer og kroppen i en sådan stilling, at den mest muligt rammes af solstrålerne. Undertiden holdes næbbet åbent og det øje, der vender mod solen, lukkes mere eller mindre. Denne positur holder fuglen i flere minutter, og de er så optaget af denne adfærd, at man kan komme dem mere nær end ellers, inden de flygter. Posituren er en typisk instinktiv adfærd, der er artsspecifik og ikke skal læres. Hos forskellige systematiske fuglegrupper findes der forskellige positioner, f. eks. holder rovfugle vingerne udbredt, hejrer strækker halsen og vender undersiden af de sænkede og udbredte vinger mod solen. Duer lægger sig på siden, løfter den anden vinge med undersiden mod solen og indtager derved samme stilling, som når de bader i regn. Spurvfugle holder kroppen skråt mod solen, løfter hoved- og kropsfjer, holder den vinge, der vender mod solen, sænket og noget udbredt, og spreder fjere på den del af halen, der vender til samme side. Det er den almindelige form hos spurvfugle, men der findes forskellige former af mindre og større intensitet, lige fra en svag rejning af fjere til at fuglen ligger med hale og begge vinger udbredt. Denne form ses øjensynligt ikke så ofte.

I artiklen gives der beskrivelser af forfatterens iagttagelse af solbadning hos Fiskehejre *Ardea cinerea*, Kondor *Vultur gryphus*, Jordgøg *Geococcyx californianus*, Kolibri (uidentificerede arter) og Hærfugl *Upupa epops* (fig. 1) i Zoologisk Have. Desuden hos vildtlevende Sol-sorter *Turdus merula*. Forfatterens iagttagelser er gjort om sommeren i solskin og varme, men også på årstider hvor det er koldt, især når so-

len kommer frem efter længere tids gråvej. Endvidere er solbadning iagttaget i indendørs bure i projektørlys, men ikke i det diffuse lys fra lysstofrør. I nogle tilfælde indtog fuglene solbadningspositur, når de pludselig blev ramt af stærkt lys, i andre tilfælde søgte de ud på en solbeskinnet plads og foretog solbadning. Adfærden blev aldrig fremkaldt af varme alene, f. eks. når det er varmt i gråvej eller i skygge. Den biologiske betydning af denne adfærd er meget omdiskuteret, og nogen endelig forklaring er man ikke nået til. Sikkert har både solens lys og varme en betydning og er på en eller anden måde til gavn for fjerdragten. Solbadningen må stå i forbindelse med den øvrige adfærd, der foretages under fjerplejen, idet den ofte afbrydes af og efterfølges af fjerpudding og kradsning, og desuden ses solbadning ofte i fældetiden. Men meget er endnu uopklaret vedrørende denne adfærd.

REFERENCES

- GOODWIN, D., 1967: Pigeons and Doves of the World. – Brit. Mus. Nat. Hist., London.
 HAUSER, D.C., 1957: Some Observations on Sun-bathing in Birds. – Wils. Bull. 69: 78-90.
 HEINROTH, O. & M., 1924-31: Die Vögel Mitteleuropas. – H. Bermühler, Berlin.
 KENNEDY, R.J., 1969: Sunbathing Behaviour of Birds. – Brit. Birds 62: 249-258.
 MUELLER, H.C., 1972: Sunbathing in Birds. – Z. f. Tierpsychol. 30: 253-258.
 POULSEN, H., 1963: On the Behaviour of the South American Condor (*Vultur gryphus*). – Z. f. Tierpsychol. 20: 468-473.
 TEAGER, C.W., 1960: Birds Sun-bathing. – Brit. Birds 66: 361-363.
 WINKLER, H., 1972: Beiträge zur Ethologie des Buntspechts (*Dendrocopos syriacus*). – Z. f. Tierpsychol. 30: 300-325.

MS received 6th April 1973

Author's address: Zool. Garden
2000 Copenhagen F.