
A BRIEF ACCOUNT OF TERRITORIAL BEHAVIOUR IN ANIMALS

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Hitler called it *Lebensraum*. Some are of the opinion that it is the cause of all capitalistic evils, while others defend it as an essentially basic human right. The acquisition of private property and the passion for a place of one's own is at the root of many of our economic and political issues. It may come as a surprise to some that this is no passion which man has acquired as a result of his culture or society. As an instinct, territorial behaviour — the need to acquire and defend a place of one's own, is widespread amongst many animals. It is encountered with in dragonflies, fiddler crabs, many fish, some reptiles and the majority of birds and mammals. One of the first to fully understand and study this basic animal instinct was Eliot Howard.¹ In 1920, after a lifetime of bird-watching and patient study of bird behaviour, he published (a book called) *Territory in Birdlife*, in which he rescribed how a male bird seizes a territory, defines its boundaries by his aggressive behaviour towards males of his own species, and how he earnestly sings his "no trespassing" warning signal to his neighbours.

The yellow bunting (*Emberiza citrinella*) is a small yellow bird with dark markings, quite common in the Northern countries, rural areas. In

early February, the males leave the flock and seek out a particular perch — a bush, a hedge, a railing or even a gate. As soon as he acquires a territory he sings his warning song to warn and drive off any male intruders. Mating occurs only after a territory is set up. In many cases the male without a territory of his own neither sings nor succeeds in finding himself a female.²

The Stickleback (*Gasterosteus aculeatus*) is an aggressive looking small fish with three sharp spines on its back, inhabiting both freshwater and marine environments. In spring the male builds a nest on the sandy bottom with sea weeds cemented by renal secretions he produces. He soon acquires a red belly, becomes aggressive to any other male of the same species who intrudes in the vicinity of his nest and chases him away from his territory. Beyond his territory, the stickleback appears to lose much of his original aggression, while the former intruder picks up courage and becomes more aggressive the closer he gets to his own nest. He then starts to pursue the original chaser. At a certain point been the two adjacent territories, the two male sticklebacks glow at each other menacingly, but little actual fighting occurs.^{3,4} A territorial boundary has

been set up! The size of a particular territory depends on the aggressive nature of its holder. This applies not just to sticklebacks but to many other territorial animals.

In the case of social animals, a territory can be occupied by a whole group of individuals — such as with the howler monkey (*Alouatta*). This relatively large New World monkey lives in small groups in the South American forests, each troop being made up of a few adult females, fewer males and their offspring. They make their way through the thick forest, travelling in file from one branch to another usually led by an old male (the one likely to have more experience) from one branch to the next. Each social group or family occupies a relatively fixed territory.⁵ When two adjacent families meet at their territorial border, they express their hostility by vigorously howling at each other — but only in relatively rare cases do they engage in actual body combat. One such encounter has been so described. “When two groups sight each other, each on the fringe of its territory, all break into a total rage. Males, females, juveniles and infants become ants on a hot plate, leaping through the branches, scudding through the tree top, screeching, barking, chattering in frenzy. The forest cathedral becomes a green asylum for its insane habitants, and the howls of apparent melancholia become the shrieks of the truly demented!”² Evolution has provided this remarkable monkey with a magnificent howling organ in the form

of a huge bony reverberating voice-box in its enlarged throat.

All animal behaviour must ultimately be adaptive in nature, that is it must have been slowly evolved to give some survival advantage to the particular species. The widespread occurrence of territorial behaviour in so many different species, indicates its important selective value. One of the most important advantages gained by territoriality is the spacing out of individuals of the same species (i.e. — living in the same ecological niche) so that a given habitat will be more profitably shared between the population in terms of space, food and shelter. Such spacing-out of individuals may also help in checking against the spread of epidemic diseases, and in rendering them less conspicuous to their natural predators. Moreover, the successful male possessing a territory ensures a successful mating season. This means that the successful male (who is usually the one best adapted to survive and successfully compete in the particular environment) will have a greater chance of producing offspring carrying his successful genetic characteristics, and he will contribute more to the gene pool of future generations. In many cases the male without a private property is shunned by the females and does not succeed in mating. This is the very basis of the process of evolution by natural selection, often referred to as differential reproduction.

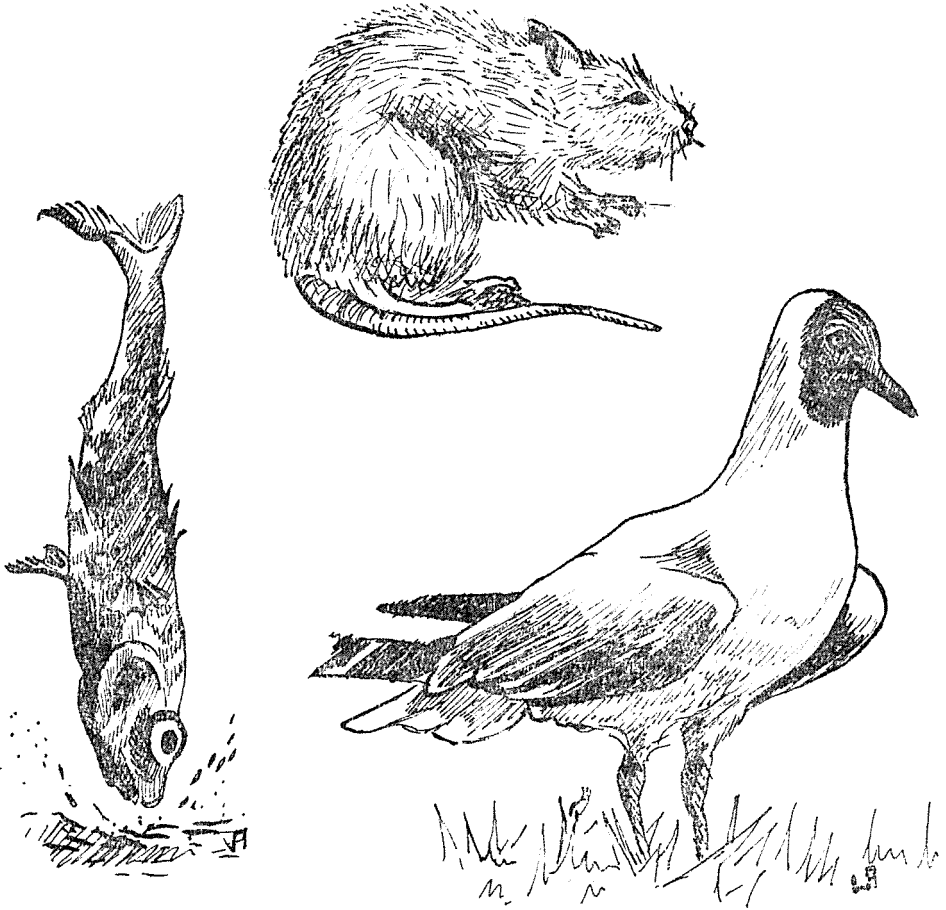
Several types of behaviour patterns are involved in acquiring

and maintaining a territory. The extent of a territory is usually dependent on the degree of aggressiveness of the male towards his neighbouring males. Such aggressive behaviour may be induced by the sight of an intruder. The male Stickleback is mostly hostile towards the sight of the red belly of his neighbour. Tinbergen⁶ has clearly shown how even inaccurate models of fish are vigorously attacked by the male Stickleback when introduced in his territory in an experimental aquarium, as long as their bellies are painted red. Similarly, the red breast of the male Robin serves as the releasing factor (i.e. — the external stimulus inducing a particular type of behaviour) in territorial aggression, so that a robin may even attack an isolated tuft of red feathers stuck on his perch.⁷ In the male Fence Lizard, it is the blue belly which releases territorial aggression.

However, if this perpetual state of aggression between neighbouring territory holders were to result in real fights leading to death, the territorial instinct would have defeated its own end, i.e. — the survival of the species. In reality, territorial aggression rarely leads to death since nature has evolved several mechanisms to ensure territoriality with the minimum body damage. In fact many territorial disputes are often settled by means other than body combat. The howling pandemonium raised by neighbouring troops of howling monkeys is a non-violent means of territorial aggression, and nearly never leads to actual fights. After his field

studies on howling monkeys, C.R. Carpenter was convinced that another non-violent means by which these creatures repel any intruders is by urinating or even defecating on them. In fact, the specimens under observation frequently used him as their target!

In many cases, most territorial fights are in the form of "bluff" or "threat displays" — which is another adequate means of mutual repulsion between neighbouring males of the same species. Thus when his territory is endangered, a male Stickleback assumes a "threat posture" by standing vertically with his head down and erecting his ventral spine and vigorously fanning his fins and tail. The Black-headed Gull (*Larus ridibundus*) which nests colonially on marches, moors and the shoreline of marine and fresh waters, assumes a "threat posture" by ruffling his neck feathers, straightening his neck upwards and pointing his menacing beak downwards towards the intruder. The Brown rat (*Rattus norvegicus*) arches his back and with legs extended and partially raised fur, moves around his opponent with mincing steps.⁸ Such threat displays may be the result of conflicting body actions due to attack and escape tendencies displayed at a territorial boundary. Other threat actions are referred to as "displacement activities" when they appear irrelevant in the particular situation in which they occur, and they may arise as a means of relieving aggressive tensions resulting from conflicting fight and flight drives. Thus the vertical



“Threat displays” in Brown Rat, Stickleback, and Blackheaded Gull.

threat posture of the male Stickleback may be a simulation of sand burrowing for nest formation, while a threatening Gull often tears at grass as if collecting building material for the nest. However this activity may become more energetic until the gull will aggressively pull at the grass as

if pulling at its opponents’ feathers. The intruder often backs off at such a display before it is too late!

In an effort to acknowledge defeat before the real fight, the intruder often displays certain “submissive actions” which induce the attacker to break off the fight. The intruding

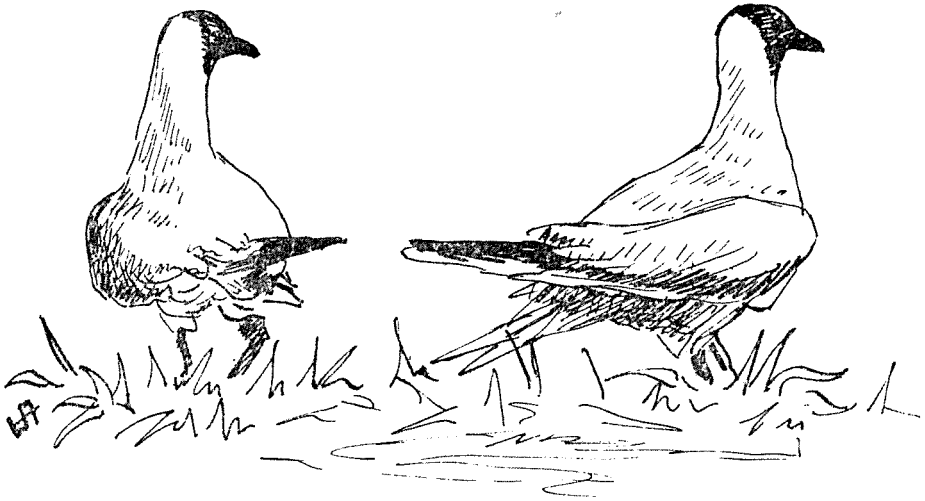
gull acknowledges defeat by turning his head and pointing his beak away from the opponent, while the rat lies on his side with eyes half-closed in submission. In many cases, the submissive action takes the form of offering the most vulnerable parts of the body to the victor. Both the wolf and the dog acknowledge defeat by presenting their neck.

Another way of minimizing actual conflict as a result of territorial behaviour, is the marking of one's territory in an unmistakable way so as to discourage any likely intruder. Within an already marked territory an intruder usually becomes less and less aggressive. In the case of birds the male's song adequately announces its territorial rights, while many mammals mark their territory with special individual scents. Antelopes, hyaenas and deer mark bushes, trees

and ground by secretions from special glands found above their eyes, while the Californian ground squirrel (*Sciurus carolinensis*) marks stones within its territory by rubbing them against dorsal glands. Brown Bears (*Ursus arctos*) which usually lead a solitary life and may maintain a territory of up to ten square miles, mark territorial trees by rubbing and urinating against them. The dog which cocks its foot against a wall is also presumably marking territory, while civets and ocelots use their own excreta as markers. The hippopotamus (*Hippopotamus amphibius*) lives in family groups, crowded and pressing together within a particular territory in a river. At night, this grazing creature comes out of his watery home and occupies a second territory along the river bank which provides him with the



Submissive action in Brown Rat



Submissive action in Blackheaded Gull

necessary plant food. The hippopotamus marks this territory by wagging his posterior rapidly while urinating and defecating, spreading this excreta over a wider area at certain strategic points within his territory.

The fact that many primates exhibit territorial behaviour might indicate that other primate *Homo sapiens*, is another territorial creature. In fact many ethnologists agree that many human actions result from a well-developed territorial instinct. Desmond Morris^{9,10,11} distinguishes three types of human territories — tribal, family and personal. The tribal territory may be presented by a club, a school, a political party or a country, while the family territory is the home residence. The home territory is well

marked by the garden wall, the name pinned on the front door, or even the personal style and taste for interior and exterior decorations. Territorial aggression is unleashed on the burglar breaking in the house, or even on an impolite visitor (who does not respect one's territoriality), while this aggression reaches ferocious levels in the event of some family being evicted from its house, or a whole population being forced out of its home country. How else can one explain the turbulent past three decades in the Middle East? While the two superpowers confront each other across the world in an effort to maintain a balance of power (or balance of influential territory — i.e. geopolitics) and while human territorial aggression is causing the out-

break of local wars, we may look at the two neighbouring Sticklebacks glowing menacingly at each other, or hear the howling monkey maintain-

ing his territory intact by nonviolent means. Then perhaps we may finally understand.

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