

Parental Care

The most widespread form of social system is the family, an association of one or more adults and their dependent offspring. Parental care is the attention that is taken by the parents toward rearing and protecting their offspring until they attain the age of being self-reliable and independent. Some animals will extend parental care even if their progenies are able to sustain themselves. These will include man and other primates. Caring of offspring requires time and energy.

If parental care lasts a long time, or if the breeding season is longer than the time it takes for offspring to mature, adults may still be caring for younger offspring when older offspring reach parenting age. These older offspring may help their parents care for their younger siblings. Among birds, many communal breeding systems probably evolved by this route. Florida scrub jays live all year on territories, each of which contains a breeding pair and up to six helpers that bring food to the nest. Nearly all helpers are offspring from the previous breeding season that remain with their parents.

Most mammals also evolved social systems via an extended family. In simple mammalian social systems, solitary females or male-female pairs care for their young. As the period of parental care increases, older offspring are still present when the next generation is born, and they often help rear their younger siblings. In most social mammal species, female offspring remain in the group in which they were born, but males tend to leave, or are driven out, and must seek other social groups. Therefore, among mammals, most helpers are females.

In parental care elephants would ensure enough security that requires cooperation of all elephants in that social colony. Elephants would surround the female on birth and would not move until when the calf is able to do the walking. The mother would protect the calf from predators such as lions and tigers.

Cat family animals have mating behavior that involves use of males to seduce females. Fighting in male cheetahs for example makes the female to become on heat after some time. After conceiving and giving birth, the female usually takes care of the young ones by suckling, hunting for preys and protection. Protections involves hiding cubs in a safe place from enemies. The female will carry disabled cubs to a safer place by holding it at the back of neck using its mouth; most animals of cat family will do this to their offspring.

Parental care in cat family will also include killing of other competitors e.g. lion would try as much to kill young ones of other cats and even hyenas cubs to reduce competition since all are carnivorous and compete for herbivores together. All carnivores depend on meat from herbivores. Males in this family

will only protect the pride when there is extreme enemy or danger. The female is always active but the male is not. Animals like giraffe would kick its calf after birth to alert it on danger ahead. Parental care would involve protecting the calf against lion and hyena and other possible predators.

Types of Parental Care

Animals show many different kinds of parental care, with taxonomic and ecological factors playing a major role in determining parental strategies. Within these, however, a number of broad forms of care can be recognised.

Establishing and maintaining nests, burrows or territories:

Males and/or females of many species, both invertebrate and vertebrate, dig, build or otherwise prepare nest constructions of some kind, whether they are burrows in the ground or woven edifices in trees. In some cases, males call from, or display near, the constructions to attract females, which then lay their fertilized eggs in them. In other cases, females construct burrows or nests themselves (as in digger wasps). Males may also defend territories around resources needed by females to rear offspring. However, it can be difficult to know whether these behaviours represent parental effort or mating effort, since females often refuse to mate with males that do not possess appropriate constructions or territories.

Production and provisioning of gametes:

The production of well-provisioned gametes by females constitutes the main form of parental expenditure in many species. Gamete size is often directly related to offspring growth and survival, though there are exceptions, and larger eggs can sometimes take longer to hatch, so incurring a greater risk of mortality. Males can contribute to the production of female gametes in various ways, including defending resources needed for eggs, offering nutritious nuptial gifts, passing on nutrients in ejaculates or even allowing themselves to be eaten by the female.

Care of fertilised eggs:

Care of fertilised eggs by one or both parents is found across a wide range of taxonomic groups. Care may be necessary to guard against predation or brood parasitism, or to maintain appropriate environmental conditions (temperature, salinity, oxygen levels, etc.) for pre-hatching development. Various forms of care have evolved, including laying eggs on carefully chosen substrate or in nests or burrows, one or both parents carrying eggs (attached or unattached) around with them, the retention of fertilised eggs within the female reproductive tract, and protection within some other part of the parent's body, such as the mouth (in mouth-brooding cichlids and some amphibians), specialised brood chambers (as in seahorses and pipefish) or the stomach (as in some frogs).

Care of offspring without provisioning:

Some species care for young without further provisioning. This often takes the form of guarding aggregations of offspring, or allowing offspring to shelter beneath, or cling to, the body of one or other parent. Removal experiments in a range of species have shown that such parental guarding can be vital in reducing offspring mortality. In many cases, parents are protecting offspring from predators or parasites, but sometimes they associate with offspring to maintain suitable environmental conditions, for example by ventilation or cleaning.

Provisioning offspring before hatching or birth:

Various mechanisms have evolved to provision young prior to their emergence into the world. In some insects, this takes the form of provisioned burrows where eggs are laid on stored food supplies. In other cases, offspring are nourished from the mother's own body tissues, by eating her other eggs (oophagy) or embryos (adelphagy), by specialised secretions from the female reproductive tract or from brood chambers, or, as in some fish, amphibia and all therian mammals, from the female's blood supply via a placenta or pseudoplacenta.

Provisioning after hatching or birth:

In many species, offspring are fed after hatching or birth. Sometimes this is with the same diet as the parents, as in some insects, crustaceans and birds, and sometimes it is with a more or less specialised diet tailored to the needs of the young. Some birds that feed on grain as adults, for example, feed their chicks with small insects. In a wide range of species, food is often predigested or preprepared in some other way. Many carnivorous mammals, for instance, regurgitate partially digested meat for their offspring. In naked mole-rats, young are even fed on the faeces of other colony members. In other cases, offspring are nourished with specialised secretions, such as milk in mammals, so-called 'crop milk' (a creamy regurgitation of sloughed cells from the crop) in pigeons and doves, and various liquid secretions in insects. In some fish, young are fed on cutaneous blood or mucus from a parent.

Care after nutritional independence

In some long-lived species, parental care may extend beyond the time offspring are able to feed for themselves. In some sloths and primates, for example, parents may help offspring acquire or defend a territory until they can compete for themselves and acquire a mate. Care may even extend to suppressing potential competition by threat and aggression. In some social mammals, mature daughters may establish home ranges that overlap with that of their mother, or stay in the mother's social group, thus allowing them to benefit from access to resources.

Raising a family involves tremendous costs for parents and helpers. Animals who provide food for

their young may sacrifice food for themselves, and protecting the young may involve the animal putting itself in danger. Acts that benefit another individual at a cost to the performer are altruistic acts.

Responding to Environmental Variation

Any organism that reaches old age has made decisions throughout its life history as it grew to maturity, reproduced, and suffered the effects of aging. Animals choose where to settle, how long to stay there, and when, if ever, to leave. They also select places for specific activities, such as resting and nesting, and they choose which things to eat from among the rich array of potential food sources in their immediate environments. Most animals also choose with whom to associate and for what purposes. And they make these choices in an environment that is continually changing. Plants, because they lack nervous systems and (except as seeds or spores) generally can move only by growing, make fewer choices than animals, but the same principles apply to them.

Environmental changes to which organisms must respond happen at many different time scales. Some changes, such as the approach of a fire, storm, or predator, require immediate responses; other changes allow time for a more gradual response. Some plants detach their leaves when storm winds reach a critical velocity and regrow new leaves afterward. Many plants reduce water loss and overheating by shifting the position of their leaves during the day so that they intercept sunlight early and late in the day, but do not overheat at midday. Lizards bask in sunshine in the morning to raise their body temperature but move into the shade when it gets too hot.

All organisms have the ability to change their locations, either actively or passively, at some time during their lives; that is, few individuals die exactly where they were born. Individuals may leave the site of their birth to find a place where they can reproduce. Others may seek new locations when local conditions deteriorate. If repeated seasonal changes alter an environment, organisms may evolve life cycles that appear to anticipate those changes. Migration is one response to cyclical environmental changes. Most insectivorous birds, for example, leave high (temperate) latitudes in autumn for more favorable wintering grounds at low latitudes.

Grazing mammals migrate away from seasonally dry areas, following the rains that produce lush grass. Other animals enter a resting state (hibernation) before adverse conditions materialize and remain in that state until environmental signals indicate that conditions have improved.