A Labour Day for nature?

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LAST week the country celebrated Labour Day, the anniversary of the Butler Riots of 1937 for the rights of oil workers.

But do we ever take a moment to think about how labour is divided up in the animal kingdom? In the animal kingdom, there four main jobs to be performed: reproduction, defence, gathering food and caring for the young. These jobs may be carried out by certain individuals of social species some of which have developed certain physical features which aid them in carrying out their job more efficiently. The division of labour also does not only extend to other members of a species or social group and can incorporate individuals from other species as well as inanimate organisms like plants.

Division of labour is best displayed by the caste system used by social insects such as termites. Two of the most common species of termites you will find in our forests belong to the genus Nasutitermes. They can be distinguished by their nest structure with Nasutitermes costalis building a nest covered with short spines while N. ephratae's nest has a smooth surface. Their occupants are just as distinct and can be placed into three categories. The first is the queen of which there is only one per colony. She is easily distinguished by her large size and large yellow abdomen which is understandable since her function is to reproduction and to produce the other members of the colony. These members fall in one of two groups, workers and soldiers. The workers have whitish bodies with a dark head and oval abdomens. They are blind and follow chemical trails set by other workers. Their job is to care for the brood and build and repair the nest. The soldiers, as their name implies perform the function of guarding the nest. They are slightly larger than the workers but their heads have snouts through which they shoot out a sticky substance with a turpentine odour to deter predators.

Other social insects such as bees and ants also employ the caste systems and have one or more queens, workers and soldiers; however, with social wasps the workers also perform the role of soldiers and defend the colony.

Spiders on the other hand are mainly solitary creatures with approximately 20 species displaying differing degrees of sociality. In Trinidad, this is shown by the comb-footed spider species, Anelosimus eximus and A. rupununi and the tarantula Ischnothele caudata. The first species constructs large colonies sometimes spanning the entire crown of forest trees, while the later makes smaller colonies and parental care only extends towards spiderlings that have undergone their third moult for varying periods of time.

However, division of labour is also exhibited by larger animals such as lions, where although the males are the leaders of the pride and more concerned with the safety of the group; the females carry out up to 90% of the hunting. The females are more adapted to hunting as they are smaller and swifter as they are not restricted by the heavy bushy mane grown by the males which also cause them to become overheated when they exert themselves. Unfortunately after a kill is made if males are nearby they would dominate the kill.

Even between males and females of non-social species there is division of labour. This is best displayed by the White-Bearded Manakins (Manacus manacus). In this bird species the females are brown. This cryptic body colouration allows them to blend into the understory vegetation where they build nests and care for their young. The males on the other hand have bright white plumage which makes them conspicuous as they hop from branch to branch (dance) around a patch of forest floor cleared of debris and leaf litter for the sole purpose of attracting and mating with females. In other bird species both parents take turns guarding the nest and gathering food for their young. While in other species nest building might fall on one parent.

I would like to take the concept of division of labour further by giving some examples of how animals delegate uses to stationary organisms such as plants. Take for instance the hollow trunk of the Cecropia tree (Cecropia peltata) which is used by some species of ants as a place to live. Another example is the construction of webs by species such as the orb-weaving spider Argiope argentata which when in a dry environment will make its webs between the spines cacti.

Besides providing the spider with lots of places to attach her web, the spines also make it difficult for predators to get to her.

Animals and plants of one species can also use another species to carry out one of the four main jobs mentioned earlier. The example of ants and the Cecropia tree give a perfect example of this as the ants do not have to invest energy in constructing a nest and the tree does not have to invest energy in making toxins or growing spines to deter predators like wood boring beetles.

Therefore we can see that in nature the question of who does what, is a simple question with a complex answer.