Setophaga petechia (Yellow Warbler or Trinidad Canary)

Family: Parulidae (New World Warblers)
Order: Passeriformes (Perching Birds)
Class: Aves (Birds)

Fig. 1. Yellow Warbler, *Setophaga petechia.*
[http://www.allaboutbirds.org/guide/yellow_warbler/id, downloaded 17 November 2014]

TRAITS. The yellow warbler is a small songbird of an average size between 10-18cm in length, a weight of approximately 9-11g and a wingspan of approximately 20cm. It is evenly proportioned with a medium-length tail and rounded head, and as its name suggests it is bright yellow in colour, giving the local name Trinidad canary. It exhibits sexual dimorphism where the males' feathers are a very bright vibrant yellow with red or chestnut brown streaks on its breast and stomach (Fig. 1). Its upper-parts and wings are dark green, yellow and black. They are stout-bodied with short tails and are usually larger in size than the females. The females' feathers are bright yellow (not as vibrant as the males), with olive tones on back and wings and the crown of its head (Fig. 2). Their faces are a plain, bright yellow colour. They are long-bodied and stout-billed (strong beaks). This species was formerly known as *Dendroica petechia.*

ECOLOGY. The yellow warbler migrates from North America (for example, Alaska, Northern Canada) to South America (for example, Sothern Florida, Southern California and the Caribbean. They are common winter visitors to both Trinidad and Tobago, and one of their preferred roosting areas is the Caroni Swamp. They can also be spotted in home gardens and rain forests. They prefer moist habitats where insects are usually in abundance. Their diet comprises of caterpillars, beetles, wasps, other small arthropods etc. They also inhibit dry areas such as thickets, orchards, suburban yards etc. The McGill Bird Observatory conducts experiments to observe the colour changes in yellow warblers. They also specialize in tagging them as a marker for keeping records of a certain population, and observe the growth and aging of the birds especially the young ones. Below is a link, which will give pictorial representations of the monthly colour changes of both male and female yellow warblers: http://www.migrationresearch.org/mbo/id/ywar.html. An abundance of energy is required for these small birds to migrate. Their feathers usually go through a process called moulting. This process is where the feathers are replaced (Fig. 3). Unlike living tissue, feathers are not supplied by nutrients, so they need to be replaced regularly so that they will not become so degraded which would impair the bird's flying.

COMMUNICATION. The yellow warbler's sound is a distinctive whistle/ chirp sound. Their sound can be remembered by using the simple mnemonic "sweet, sweet, sweet, I'm so sweet". Male yellow warblers use a series of approximately 6-10 sweets, accelerating over an estimated 1 sec. song, which often ends on an elevated tone. To indicate a territorial claim both male and female execute a high-pitched hissing noise to warn other birds. As a small animal the yellow warbler also communicates with other family members to warn of predators such as, raccoons, red foxes, American crows etc. They signal to other family members by producing a high-pitched "seet call". Hobson et al. (1988) found that females respond 96% of the times in 80 trials to reinforce a defense mechanism to protect the baby chicks. Some female nest defences are measured by defensive vocalizations these include 'chipping', and females use distraction displays, strikes, and even close passes or hovers to protect their young.

SEXUAL BEHAVIOUR. Yellow warblers breeding season is between late May and early June. This exercise begins with the males performing an elaborate courtship. During this courtship they will sing up to approximately 3,240 songs to attract a mate. Males perform numerous short chip notes, some with a metallic or buzzing sound. They often alternate these chirp songs with their personal sound and the females respond with high-pitched chirps. These birds are primarily monogamous, where their mates may be the same for more than one breeding season or in some cases they conduct occasional polygynous practices. Females lay approximately 4-5 eggs at the end of their seasonal reproduction process, which takes a minimum of 45 days.

NESTING BEHAVIOUR. Female yellow warblers build the nest which most times house two parents and their young. She does this with the use of tree bark strips, grass etc. She then puts up a protective barrier using spider webs, and other plants surrounding the outside. On the inside she lines the nest with animal hair, feathers, dried grass, flowers etc. These nests are usually approximately 3m from the ground but can be sometimes built up

to 12m from the ground. In an experiment conducted by Sealy (1995), yellow warblers would sometimes bury its own eggs along with the invader's eggs, when a parasitic invasion occurred. In this experiment the brown-headed cowbird, *Molothrus ater*, was allowed to lay its eggs in a yellow warbler's nest. The yellow warbler would cover up the eggs and build another nest on the previous one with the cowbird's and sometimes its own eggs sill in the old nest.

PARENTAL CARE. Females are usually the ones taking care of the young with the occasional assistance from their male counterparts. Females build the nests, incubate the eggs (Fig. 4) and are usually the first their when the eggs hatch. Most times females forage for food and feed the young ones, with the occasional assistance of the males in this department of parental care. A study was conducted that showed that sometimes the yellow warbler would neglect its chicks and feed the cowbird chicks when they are in the same nest, hence they are called "parasitic birds" towards the yellow warbler (Fig. 5). Lichtenstein and Sealy (1998) found that the parasitic birds developed features preferred by the adults rather than their own young's features. One feature was that the parasitic birds begged more intensely than the adults' own young hence the parasitic young received more food than the adults' own young.

FEEDING BEHAVIOUR. They forage along slender braches, small trees or shrubs, picking off small insects as they hover over the leaves. Males usually forage higher than females and sometimes "show-off"; they also use this opportunity to court the females. This occurs in the cases where the area the female goes to forage food is already the territory of another male. The male indicates his territory by performing a "circle flight". He does this by flying towards the bird, which is close proximity usually a yellow warbler like itself (male or female), in a horizontal semi-circular manner. To "show-off" for the female he is courting he sometimes fly slowly with fast flaps of his wings away from her. In times of conflict with another male he does as a signal for competition. The battle begins with the two males singing at each other, which elevates to them chasing each other.

REFERENCES

Hobson A.K, Bouchard, M. L. and Sealy, S. G. 1988. Responses of naive yellow warblers to a novel nest predator. *Animal Behaviour*, 36, 1823–1830.

Lichtenstein,G. and Sealy, S. G. 1998. Nestling competition, rather than supernormal stimulus, explains the success of parasitic brown-headed cowbird chicks in yellow warbler nests". *Proc. R. Soc. Lond. B*, 265, 249-254.

Sealy S. G. 1995. Burial cowbird eggs by parasitized yellow warblers: an empirical and experimental study Spencer. *Animal Behaviour* 49, 877–889.

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Fig. 2. Female yellow warbler.

[http://www.allaboutbirds.org/guide/yellow_warbler/id, downloaded 17 November 2014]

Fig. 3. A yellow warbler's moulting feathers.

[http://www.migrationresearch.org/mbo/id/ywar.html, downloaded 17 November 2014]

Fig. 4. Nesting yellow warbler.

[http://birddog55.zenfolio.com/p1050757612, downloaded 17 November 2014]

Fig. 5. Yellow warbler feeding cowbird chicks.

[www.flickr.com/photos/chickadeetrails/7400931138/**,** downloaded 17 November 2014]