'Ancient' coral growth layers: yearly or monthly?

I wish to thank Dr Robert Carter for his article, 'Ancient' coral growth layers, in *J. Creation* **26**(3):50–53, December 2012. It was an interesting read. Nevertheless, after reading it I was plagued by some unanswered questions:

1) Has it actually been observed that coral banding variation can occur on a monthly rather than on an annual basis, or is that just an idea that hasn't been substantiated yet?

2) If the variations are on a lunar rather than an annual basis, then why would the annual number of bands all be in the same ballpark as the amount of days in a year? That seems to me to be an unlikely coincidence.

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» Robert Carter replies:

First, as I wrote in my paper,[1] Scrutton did not see anything that he could consider annual banding. He saw shorter-period banding, though, that he attributed to monthly banding. He wrote:

> "Whilst Wells (1963, p. 950) recognises yearly annulations on the coral he has studied, it has been concluded from the material examined here that, for these specimens at least, *no regular grouping of ridges larger than the bands described above can be distinguished* [emphasis added]."

Second, there are many corals that spawn on a monthly cycle during the warmer months. In fact, the smaller, weedier types that tend to live in muddy areas (the presumed ecological equivalents of the Tabulata and Rugosa) generally fall into this pattern. That should influence how much energy they put into skeletal production throughout the month (these corals invest a significant amount of energy producing babies). Were the Paleozoic corals similar? Scrutton thought so. That addresses your first question, though not completely. He did not see anything that corresponded to an annual cycle, so the monthly cycle is a good deduction.

In the article, the evolutionary estimate was calculated in a different way from the biblical estimate. This is probably the source of confusion. Putting them both into the same form helps clarify things.

Method 1:

If there were 399 days in a year, at 30.59 days per lunar month, there would be 13.04 months per year.

If there were 365 days in a year, at 30.59 days per lunar month, there would be 11.93 months per year. Of course, any variation in the number of days would affect the number of months calculation.

Method 2:

If there were 30.59 days per month and 13.04 lunar months per year, the year would have 399 days.

If there were 30.59 days per month and 12.36 lunar months per year, the year would have 378.4 days. Of course, any variation in the number of months would affect the number of days calculation.

Since there are no annual variations to discuss, we are left with the monthly cycle only. The present number of days in a lunar month is 29.53. This is smaller than the number of bands (more technically, 'ridges') Scrutton calculated, but how accurate are his calculations? He discussed the difficulties inherent in his methods and how hard it was to find good places to measure on the fossils, etc. I am less than confident that '30.59' is an accurate measure, and it is but one day off the modern average.

As pointed out in my article, there are multiple possible ways to change the rotational rate of the earth to a small degree. For a more extreme possibility that was published after my article was written, please see Don Stenberg's paper describing his magnetic field and flood model.[3] The author also discusses

Wells' coral data but draws different conclusions. Interestingly, my analysis unintentionally adds to his arguments that the earth was spinning faster in the past (assuming the accuracy of Scrutton's numbers).

There are two competing factors here: tidal friction is causing both the rotation of the earth to slow and the moon to recede. But this means the length of a month (its sidereal period) must be lengthening, according to Kepler's Third Law of Planetary Motion.

There has not been enough time in the biblical timescale to allow for tidal friction to cause significant lunar recession or a significant slowing of the earth's rotation. In the far distant future, however, the earth and moon can reach the point of 'tidal lock' where the lunar month is 47 of our current days long and the earth rotates only once during that same amount of time. If the earth-moon system existed billions of years ago, the moon would have been much closer. Yes, the earth would have rotated faster but the lunar month would have been comparatively shorter. In his famous book, *The Panda's Thumb*, Gould said:

> "But Wells's corals had affirmed only half the story-increasing length of day. The other half, recession of the moon, required fossils with daily and monthly banding; for if the moon had been much closer in the past, it would have revolved around the earth in a much shorter time than it does today. The ancient lunar month should have contained fewer than the 29.53 solar days of the present month."[4]

In the past, there should have been *fewer* days in a month, not more. Scrutton's calculation is erring on the wrong side!

Gould did not cite Scrutton's work, however, and was left with the feeling that Wells had shown there were more days in the year in the ancient past. Thus, it seems that everybody—Wells, Scrutton, Gould, and the folks at BioLogos—have missed some very important details in this story. Yes, there are ancient, extinct corals with microscopic evidence for growth patterns in their skeletons. But, no, the evidence doesn't fit *any* evolutionary scenario.

Because he should have seen fewer days per month, not more, Scrutton's assumption that there were 399 days in a year was derived from deep-time assumptions *alone*:

> "Extrapolating, therefore, *from the astronomical calculations alone*, the Middle Devonian year was approximately 399 days in length [emphasis added]."[5]

In other words, Scrutton *assumed* that 399 ridges corresponded to one year, so it's hardly a coincidence that there was a correspondence between the number of ridges and the number of days in a year! That is the answer to your second question.

(I would like to acknowledge Shaun Doyle for his help in crafting this response.)

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References

1. Carter, R.W., 'Ancient' coral growth layers, *J. Creation* **26**(3):50–53, 2012; creation.com/ancient-coral.
2. Scrutton, C.T., Periodicity in Devonian coral growth, *Palaeontology* **7**(4):552–558, 1964; p. 555.
3. Stenberg, D., A new magnetic field theory and Flood model—part 2, *J. Creation* **26**(2):63–69, 2012; creation.com/images/pdfs/tj/j26_2/j26_2_63-69.pdf.
4. Gould, S.J., *The Panda's Thumb: More Reflections in Natural History*, W.W. Norton & Company, New York, p. 319, 1980.
5. Scrutton, ref. 2, p. 555.