Table S1 Restricted maximum likelihood linear mixed model (LMM) analysis, with animal id as the random intercept variable, exploring the relationship between hormone and the fixed variable adult female status (combined non-pregnant and non-pregnant lactating versus pregnant) in Amazon River dolphins (*Inia geoffrensis*). For all LMM, degrees of freedom were estimated using the Kenward-Roger approximation. Significance of random variable assessed using LR test. The fixed variable was evaluated for marginal significance using the Walds χ^2 test.

Hormone	Full Model	Random Variable (ID)	Fixed variable: adult female
Progesterone (ng ml^{-1})	$F_{(1,122)} = 124$ $P < 0.0001$	$\chi^2 = 2.1$ $P = 0.076$	$\chi^2 = 128$ $P < 0.0001$
Testosterone (ng ml^{-1})	$F_{(1,123)} = 119.0$ $P < 0.0001$	$\chi^2 = 0.0$ $P = 1.0$	$\chi^2 = 122.4$ $P < 0.0001$
P:T ratio (nMol)	$F_{(1,123)} = 0.90$ $P = 0.346$	$\chi^2 = 0.0$ $P = 1.0$	$\chi^2 = 0.92$ $P = 0.34$
P x T^2 (ng ml^{-1})	$F_{(1,123)} = 208.0$ $P < 0.0001$	$\chi^2 = 0.5$ $P = 0.24$	$\chi^2 = 214.4$ $P < 0.0001$
Androstendione (ng ml^{-1})	$F_{(1123)} = 0.87$ $P = 0.354$	$\chi^2 = 2.3$ $P = 0.06$	$\chi^2 = 0.89$ $P = 0.34$
Relaxin (ng ml^{-1})	$F_{(1,123)} = 136.3$ $P < 0.0001$	$\chi^2 = 1.37$ $P = 0.12$	$\chi^2 = 142.0$ $P < 0.0001$

Table S2 Restricted maximum likelihood linear mixed model (LMM) analysis, with animal id as the random intercept variable, exploring the relationship between hormone and the fixed variable trimester (immature female, first, second and third trimester of pregnancy, non-pregnant adult female) in Amazon River dolphins (*Inia geoffrensis*). For all LMM, degrees of freedom were estimated using the Kenward-Roger approximation. Significance of random variable assessed using LR test. The fixed variable was evaluated for marginal significance using the Walds χ^2 test.

Hormone	Full Model	Random Variable (ID)	Fixed variable: trimester
Progesterone (ng ml^{-1})	$F_{(3,119)} = 30.3$ $P < 0.0001$	$\chi^2 = 2.23$ $P = 0.07$	$\chi^2 = 94.83$ $P < 0.0001$
Testosterone (ng ml^{-1})	$F_{(3,119)} = 63.2$ $P < 0.0001$	$\chi^2 = 0.0$ $P = 1.0$	$\chi^2 = 193.3$ $P < 0.0001$
P:T ratio (nMol)	$F_{(3,119)} = 2.91$ $P = 0.038$	$\chi^2 = 0.0$ $P = 1.0$	$\chi^2 = 8.9$ $P = 0.031$
P x T^2 (ng ml^{-1})	$F_{(3,119)} = 0.82.9$ $P < 0.0001$	$\chi^2 = 0.28$ $P = 0.30$	$\chi^2 = 254.5$ $P < 0.0001$
Androstendione (ng ml^{-1})	$F_{(3,119)} = 4.6$ $P = 0.004$	$\chi^2 = 2.94$ $P = 0.04$	$\chi^2 = 13.99$ $P = 0.0029$
Relaxin (ng ml^{-1})	$F_{(3,101)} = 59.7$ $P < 0.0001$	$\chi^2 = 3.3$ $P = 0.03$	$\chi^2 = 88.2$ $P < 0.0001$

Table S3. Predicted fecundity data based on ultrasound diagnosis (n = 126) and hormone diagnostic test results in Amazon River dolphins (*Inia geoffrensis*).

	Gold Standard	Ultrasound	P4	Relaxin	P4 xT^2	Logit P4, T, Relaxin
Total Adult females (TA)	126	126	126	126	126	126
Diagnosed Pregnant (TDP)	61	60	65	73	60	68
PPV (%)		100	84.6	78.1	95.0	85.3
Predicted Pregnant (TPP =TDP*PPV)		60	55	57	57	58
Diagnosed Open (TNP)	65	66	61	53	66	58
NPV (%)		98.5	90.2	92.5	93.9	94.8
Total FN (TNP-(TNP*NPV)		1	6	4	4	3
Total Pregnant (TP = FN + TPP)	61	61	61	61	61	61
Total Predict Open (TA-TP)		65	65	65	65	65
Total Observed Calves (TC)	53	53	53	53	53	53
Total Lost Calves (TCL = TP-TC)	8	8	8	8	8	8
% Pregnant (TP/TA)	48.4	48.4	48.4	48.4	48.4	48.4
% Calving Rate (TC/TA)	42.1	42.1	42.1	42.1	42.1	42.1
% Calf loss (TCL/TP)	13.1	13.1	13.1	13.1	13.1	13.1

[1]Gold standard results = ultrasound results corrected for the presence of a calf if diagnosed non-pregnant by ultrasonography. Diag. = diagnosed, PPV = positive predictive value (true positive [TP]), NPV = negative predictive value (True negative), FN = false negatives.

Table S4. Pregnancy rates (PR) and calf loss rates (CLR) in adult female (AF) Amazon River dolphins (*Inia geoffrensis*) during each survey year and combined across all years.

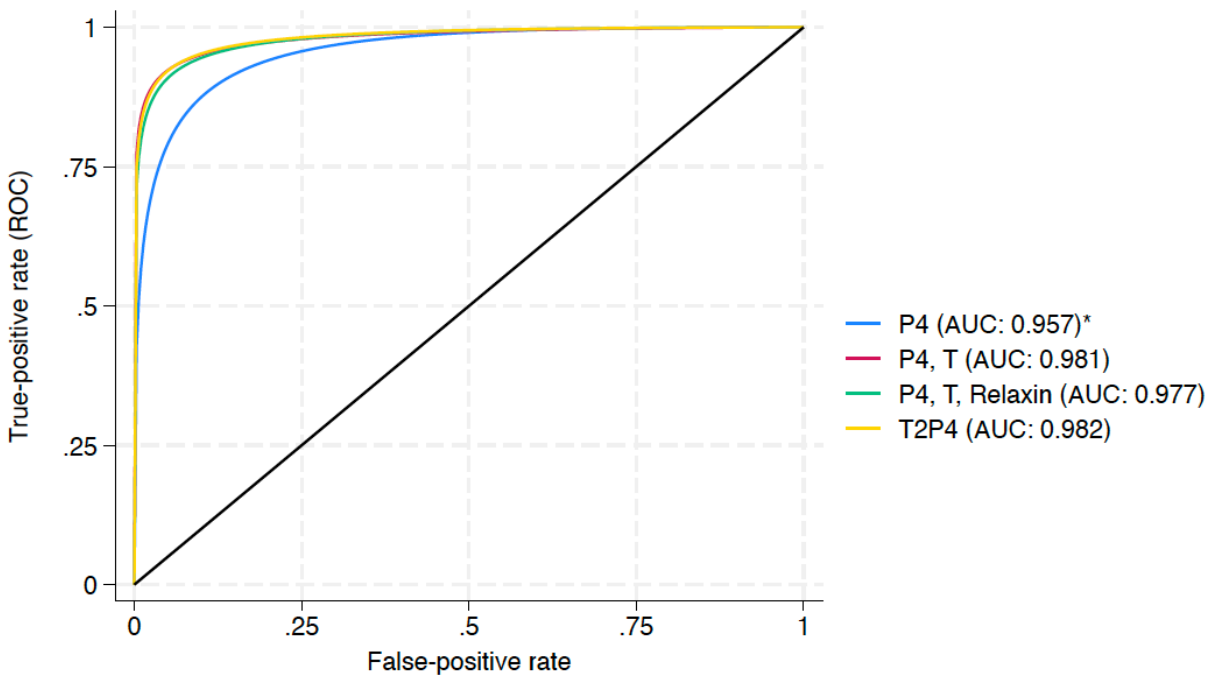| Exam year	2003	2004	2005	2006	2007	2008	2010	2011	2012	2013	2014	2015	Total
Total AF	6	10	3	6	5	3	6	7	13	11	15	42	127
Total Pregnant	6	10	3	6	5	3	1	2	2	4	8	11	61
Total Calves	6	10	3	6	4	3	0	0	2	1	7	11	53
PR (%)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	16.67%	28.57%	15.38%	36.36%	53.33%	26.19%	**48.03%**
CLR (%)	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	100.00%	100.00%	0.00%	75.00%	12.50%	0.00%	**13.11%**

Fig. S1. Comparison of area under the curve (AUC) as calculated by receiver operator analysis (ROC) for the incremental logistic combinations of progesterone (P4), testosterone (T) and relaxin compared against P_4T^2 in Amazon River dolphins (*Inia geoffrensis*).   True positive rates (sensitivity) are plotted (ROC curves) versus false positive rates (FPR, 1 – specificity). Gold standard represents combination of positive pregnancy as determined by ultrasonography plus corrected for any false negative females which had been diagnosed as non-pregnant but were later observed with a calf of an age that indicated she was pregnant during the preceding exam.