



Helbing Laboratory eDNA Technical Bulletin

All eDNA tools are validated through a rigorous multi-step evaluation protocol that includes tests of DNA target specificity and amplification sensitivity¹⁻³.

General eDNA Assay Information

Target Species: Pacific herring (*Clupea pallasii*) eDNA qPCR Tool: eCLPA1 Gene Target: MT-RNR2
Species Code: te-CLPA eDNA qPCR Format: TaqMan Published in: _____

eDNA Assay Sensitivity Test Summary using gBlocks™ Synthetic DNA

LOD 0.5 95% CI 0.3-1 Copies/Rxn LOQ 1.8 95% CI 1.2-3.7 Copies/Rxn LOB 0 hits/8
LOQ_{continuous} 4 Copies/Rxn

Binomial-Poisson model for 8 technical replicates determined using eLowQuant R code⁴. When the LOQ < LOD, use the LOD for the LOQ. Enzyme: Immolase

eDNA Assay Specificity Test Information

Each qPCR reaction in the specificity assay contained 10 picograms of voucher target gDNA (n=25 technical replicates)

Species	Common Name (<i>Species</i>)	# Voucher		
		Detection	Specimens	Sample Sources/Locations
ma-CALufa	Dog (<i>Canis lupus familiaris</i>)	No	1	British Columbia
ma-HOSA	Human (<i>Homo sapiens</i>)	No	1	Netherlands
te-AMPE	Pacific sand lance (<i>Ammodytes personatus</i>)	No	6	British Columbia
te-ANFI	Sablefish, black cod (<i>Anoplopoma fimbriatum</i>)	No	2	British Columbia
te-CLPA	Pacific herring (<i>Clupea pallasii</i>)	Yes	6	British Columbia
te-HYPR	Surf smelt (<i>Hypomesus pretiosus</i>)	No	3	British Columbia
te-ONGO	Pink salmon (<i>Oncorhynchus gorbuscha</i>)	No	2	British Columbia
te-ONKE	Chum salmon (<i>Oncorhynchus keta</i>)	No	1	British Columbia
te-ONKI	Coho salmon (<i>Oncorhynchus kisutch</i>)	No	2	British Columbia
te-ONNE	Sockeye salmon (<i>Oncorhynchus nerka</i>)	No	2	British Columbia
te-ONTS	Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	No	2	British Columbia
te-THPA	Eulachon (<i>Thaleichthys pacificus</i>)	No	2	British Columbia

References

- Hobbs, J, Adams, IT, Round, JM, Goldberg, CS, Allison, MJ, Bergman, LC, Mirabzadeh, A, Allen, H, Helbing, CC (2020) Revising the range of Rocky Mountain tailed frog, *Ascaphus montanus*, in British Columbia, Canada, using environmental DNA methods. Environmental DNA. 2020; 2: 350-361. <https://doi.org/10.1002/edn3.82>
- Hobbs, J, Round, JM, Allison, MJ, Helbing, CC (2019) Expansion of the known distribution of the coastal tailed frog, *Ascaphus truei*, in British Columbia, Canada, using robust eDNA detection methods. PLOS ONE 14(3): e0213849. <https://doi.org/10.1371/journal.pone.0213849>
- Langlois, VS, Allison, MJ, Bergman, LC, To, TA, and Helbing, CC (2021) The need for robust qPCR-based eDNA detection assays in environmental monitoring and risk assessments. Environmental DNA, 3: 519-527. doi: 10.1002/edn3.164
- Lesperance, M, Allison, MJ, Bergman, LC, Hocking, MD, and Helbing, CC (2021) A statistical model for calibration and computation of detection and quantification limits for low copy number environmental DNA samples. Environmental DNA, 3: 970-981. doi: 10.1002/edn3.220

